



ANAND AGRICULTURAL UNIVERSITY

17th Annual Report
2020-21







Anand Agricultural University

17th Annual Report 2020-21

From **01-04-2020** to **31-03-2021**

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Anand Agricultural University
Anand - 388110, Gujarat, India

Our Symbol



This is our Emblem;

One Square, One Leaf
with "AAU" firmly embedded

The Square with lighter and darker shades of green
Stands for Lusciousness, Fertility and Abundance of this land.
This is our Mother Land
With all the three elements abounding

Among the entire world, there is only one thing
That Could photo synthesize solar rays
into biomass i.e., the LEAF.
Hence, the LEAF stands as our symbol
Which could transform sun rays i.e. energy into matter

Thus leaf as a symbol of our commitment;
Our Dream
to make our Country
abundant in agriculture

Leaf is our tribute to
Our Mother Land
Our pledge to make Country prosperous

Our Motto is :

कृणवन्तो राष्ट्रं कृषिसंपन्नम्

Means

We, the Scientists, Students and
all the employees of AAU unitedly
stand to make the solemn pledge
that we enrich and glorify
the grandeur of our Country
and make it agriculturally prosperous



ANAND AGRICULTURAL UNIVERSITY ANAND

From VC's Desk




It is well said that adversity brings out the best from every lives. We have been through a never before adversity during the year 2020 in form of Covid-19 pandemic. The year has been a challenging year for all of us, but challenges also brought along opportunities to experience, learn and bring out the best in us. It gives me immense pleasure to present 17th Annual Report of Anand Agricultural University featuring key activities undertaken and progress made by the University during the year 2020-21. Being an agrarian country, agricultural education plays a very important role in overall nation development and so does agricultural research and technology transfer. Economic prosperity of India will be ensured only by growth of agriculture and allied sector on sustainable basis. Agricultural universities are playing key role in this journey of evolution of through teaching, research and extension activities.

AAU is committed to nurture and groom new talent and develop competent human resource to secure the society in general and farmers and food industries in particular for sustainable livelihood, efficient use of natural resource, ensuring food security and safety of nation. During the difficult time of epidemic, AAU's academic activities remained functional through online platform by the noteworthy efforts made by our faculty. We have ensured for timely completion of academic activities so that none of our students suffered.

Agricultural research has been one of distinct endeavor of AAU. Our scientists are committed to evolve new agricultural technologies for the country's development in general and farmers' upliftment in particular. We are focusing in development of sustainable and nature friendly agricultural technologies for small and marginal farmers who contribute a big share in economic development. Last year, AAU has developed and released five new high yielding varieties which includes guar, tur, desi cotton, kodo millet and guava. Apart from this, technologies developed during last year were 71 and 41 for the farming and scientific community, respectively.

Research is meaningless if it is not reaching to the most concerned beneficiary. Our extension centers are working tirelessly and night to provide latest research and new technology to the end users. The extension functionaries of the university like Krushi Vigyan Kendras (KVKs), research stations and the concerned departments are making their constant efforts through organization of



trainings, field demonstrations, TVs and Radio talks etc. University web site is updated regularly for disseminating latest agricultural information including the weather forecast.

I am sure that incessant and committed efforts made by faculty and staff of the university will be reflected through this report. I thank the state and central government, ICAR and the funding agencies for their financial and technical support to the University. The efforts will be continued to achieve new height in research, education and extension for the opulence of Indian Agriculture.

Place : Anand
Date : 28/12/2021



(K. B. Kathiria)
Vice Chancellor

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Our Song

हो संस्कृति कृषि वत्सलम्, कल्याण कीर्णे मंगलम्
कृषावन्तो राष्ट्रं कृषिसंपन्नम् कृषावन्तो राष्ट्रं कृषिसंपन्नम्
कृषावन्तो राष्ट्रं कृषिसंपन्नम्

सरदार गाथा गुर्जरी, याइ अमुल यरोतरी,
क्षीर संस्कृति महीसागरी, आतिथ्य आदर से भरी,
कृषावन्तो राष्ट्रं कृषिसंपन्नम्

डाडोर श्रीठाडोर डा, कायावरोहण कलिडा,
वडताल लाल गुलाल, सून करताल धून नारायणी,
कृषावन्तो राष्ट्रं कृषिसंपन्नम्

संतराम ओडाणा श्रीमद्, हरि मारगी जेधन लगत,
दिल के दिये जलते किये, गुंशु गीरा रविशंकरी,
कृषावन्तो राष्ट्रं कृषिसंपन्नम्

सरदार रास अडासमें, आपु यले थे साथ में,
विधानगर आणंद में, विज्ञान ज्ञान गंगोतरी,
कृषावन्तो राष्ट्रं कृषिसंपन्नम्

- डॉ. आलकृष्ण जेधी

Chapter 1

INTRODUCTION

In central region of Gujarat State, the agricultural education was started way back in 1938 through establishment of *Krush-Go-Vidya Bhavan* at Anand, the milk city of India. This Institute was popularly known as *Khetiwadi* or the Institute of Agriculture. Later on, in 1947, with the establishment of B. A. College of Agriculture, which was initially affiliated to Bombay University until 1956 then to Gujarat University until 1962 and subsequently to Sardar Patel University, became integral institution of Gujarat Agricultural University in 1972 along with Sheth M. C. College of Dairy Science and the Government College of Veterinary Science and Animal Husbandry, Anand.

Anand Agricultural University came into existence with effect from **01 May, 2004** by enactment of Gujarat Agricultural Universities Act, 2004 (Gujarat Act, No.5 of 2004) with transfer of the activities of the Anand zone of the erstwhile Gujarat Agricultural University. This resulted in greater autonomy for regional agriculture development, and as it had inherited such a well-developed infrastructure with vibrant activities, AAU used this strength as a force multiplier to enlarge its vision, adding momentum to its efforts in fulfilling its mandate.

AAU and its progenitor Gujarat Agricultural University, always have dominant presence in Indian agricultural education system, ever since 1972. Prime institutions/colleges like B. A. College of Agriculture, Sheth M. C. College of Dairy Science and College of Veterinary Science & A.H. had their reputed presence even from 1947, 1961 and 1964 respectively

to undertake useful interventions related to agricultural education and research, which later contributed significantly in paving a path for many revolutions (green revolution, white revolution and many other historic agricultural innovations). These historic institutions continue to remain prime faculties of present days AAU, which along with the subsequently added new faculties and colleges have gained increasing importance as well as higher status across the nation even though the AAU is in its second decade of existence.

AAU has now 10 constituent colleges, including three colleges for Agriculture, and one each for Veterinary Science and Animal Husbandry, Dairy Science, Agricultural Information Technology, Food Processing Technology and Bio Energy, Agricultural Engineering, Horticulture and Agricultural Business Management Studies. It also has **25 on campus** and **23 off-campus research centres**, **1 Extension Education Institute** and **22 Extension Education centres**. The districts of Ahmedabad, Anand, Botad, Chhotaudepur, Dahod, Kheda, Mahisagar, Panchmahal and Vadodara are covered under territorial jurisdiction of the university comprising nearly 17.41 per cent (3.413 million ha) area of Gujarat State (19.60 million ha). The headquarter of University is Anand, Milk City- famous for the Amul Dairy, located in Agro-climatic Zone-III. It is on the Ahmedabad-Mumbai railway line, 65 km from Ahmedabad and 40 km from Vadodara railway station and connected by express highway on Golden quadrilateral. The city is located at 22.56 °N Latitude and 72.95 °E Longitude.

AAU has passed several notable milestones and consistently improved on many fronts that have a bearing on achieving academic excellence. Successful attempts have been made to establish the university as a great center for the purpose to create the wealth of knowledge in its domain area. It has endeavoured to create a highly inspiring atmosphere and learning environment in a beautiful and green campus. Apart from quality education, AAU shoulders the responsibility of agricultural research of par excellence meeting the escalating demands of food grains and animal products as well as successful transfer of technologies through a strong network of extension education imparted to the farmers. Combined efforts have escalated the decadal agricultural growth of the state.

AAU is committed to develop competent human resource to serve the society in general and farmers and food industry in particular for sustainable livelihood, efficient use of natural resources, ensuring food security and safety for the nation. AAU believes in harnessing the power of science and innovation for increasing the prosperity of the society. The Emblem symbolizes our commitment to make our country abundant in agriculture and pay tribute to our mother land and our pledge to make country prosperous. Our Motto is *“Krunvanto Rastram Krushi Sampannam”* which means that we, the scientists, students and all the employees of AAU unitedly stand to make the solemn pledge that we enrich and glorify the grandeur of our country and make it agriculturally prosperous.

Considering the strengths acquired by AAU and opportunities looming large for further achievements and progress, the University is rightly set not only to continue its ongoing success stories but is also positioned rightly to usher in to next phase of excellence and contribution for agriculturally prosperous Gujarat and India.

1.1 Vision

Agriculturally Prosperous Gujarat and India

1.2 Mission

The mission of the Anand Agricultural University is to provide teaching, research and extension education services related to Agriculture, Dairy, Veterinary and Allied Sciences including newer sciences like Agricultural Information Technology, Agricultural Engineering Technology, Food Processing Technology, Agricultural Business Management, Horticulture etc. and thereby develop excellent human resource and innovative technologies to serve the farming community with the motto of making Gujarat and India agriculturally prosperous.

1.3 Goals and Objectives

- ◆ Make provision to impart education and thereby develop quality human resources
- ◆ Furthering the advancement of learning through research
- ◆ Passing the knowledge gained through research to the stake holders – the farmers, through extension education
- ◆ Promoting partnership and linkages with national and international institutions
- ◆ Budding cutting edge technologies for national and international arena/ markets

1.4 Education

- ◆ To impart education in agriculture and allied sciences at undergraduate and post graduate levels leading to Bachelor's, Master's and Doctorate degrees in various Colleges of Agriculture, Dairy, Veterinary, Agril. Engineering, Agril. Information Technology, Food Processing Technology & Bio-Energy, International Agribusiness

Management, Horticulture and leading to Diploma in various Polytechnics in Agriculture, Horticulture, Food Science & Home Economics and Agricultural Engineering

- ◆ To provide integrated agricultural education at different levels to increase efficiency and effectiveness of skill of students
- ◆ To upgrade the technical competence of teachers by redesigning course curriculum as suggested by the ICAR/Dean's Committee/VCI and coordinating the teaching with research in the field of agriculture
- ◆ To organize vocational courses to educate rural youth in various disciplines of agriculture and allied sciences with intention to develop self-employment
- ◆ To provide consultancy and advisory services to the industry, government and non-government sectors
- ◆ To architect agribusiness professionals for Agricultural, Agri. food firms, rural and allied sectors
- ◆ To encourage entrepreneurial spirit and develop qualified entrepreneurs for rural development
- ◆ To cater the needs of enterprises and cooperatives in agribusiness at national and international level

1.5 Research

- ◆ Evolving new varieties and breeds and developing technologies for increasing agricultural and animal productivity with a view to improve socio-economic status of farmers of Gujarat and India
- ◆ Develop package of practices for cultivation of various crops and cropping systems of middle Gujarat

- ◆ Develop integrated farming system, Integrated Pest and Disease Management Systems, Organic farming and Biological control

- ◆ Develop cutting edge technologies in the field of Nanotechnology pertaining to agriculture, Animal husbandry and Food sciences

- ◆ Develop technologies in the field of Milk production, Food processing and Bio-energy

- ◆ Develop specific indigenous and cross breeds suitable to agro-climate zone of Middle Gujarat

1.6 Extension Education

- ◆ Impart training to the officers and extension workers of line departments of Government of Gujarat and India, field functionaries, staff of the University, NGOs, farmers, entrepreneurs, etc

- ◆ Conduct short and long duration vocational trainings for the farmers, farm women, farm youth, entrepreneurs and tribals

- ◆ Assess, refine and demonstrate latest agricultural technologies of the University through front line demonstrations for their wider adoption

- ◆ Transmit agricultural technologies to the farmers and rural masses of Gujarat through mass media, information technologies and video conferencing

1.7 University Organization

As per the GAU Act-2004, the Chancellor, Vice Chancellor, Director of Research & Dean Post Graduate Studies, Dean Faculty of Agriculture, Dean Faculty of Dairy Science, Dean Faculty of Veterinary Science & Animal Husbandry, Dean Faculty of Food Processing Technology and

Bio-energy, Dean Faculty of Agricultural Engineering & Technology, Dean Agricultural Information Technology, Dean, International Agri-business Management Institute, Dean Faculty of Horticulture, Director of Extension Education, Registrar, Comptroller, Librarian, Executive Engineer, Director of Students' Welfare and Director of Information Technology are Officers of the University. The detailed organizational set-up as well as administrative and functional aspects are given in Chapter 2.

Hon'ble Governorshri of Gujarat acts as the Chancellor of the University. During the period of the year under report, Hon'ble Governorshri of Gujarat, Shri Acharya Devvrat, Chancellor; (From 17-07-2019 to continue). Dr. R. V. Vyas, I/c. Vice Chancellor (From 01-09-2019 to 15-02-2021) and Dr. R. M. Chauhan, I/c. Vice Chancellor, Sardar Krushinagar Dantiwada Agricultural University (From 16-02-2021 to 03-03-2021 before noon); & Dr. K. B. Kathiria, Vice Chancellor (From 03-03-2021 after noon continue); and Dr. R. V. Vyas, I/c. Director of Research & Dean, Post-graduate Studies (From 01-09-2019 to 04-03-2021) and Dr. M. K. Jhala, I/c. Director of Research & Dean, Post-graduate Studies (From 05-03-2021 to continue) and Dr. Arun A. Patel, Director of Extension Education (From 28-09-2017 to 31-07-2020) and Dr. H. B. Patel, I/c. Director of Extension Education (From 01-08-2020 to continue) and Dr. M. M. Trivedi (From 01-06-2019 to 09-09-2020), Dr. P. R. Vaishnav (From 10-09-2020 to 20-09-2020), Dr. M. M. Trivedi (From 21-09-2020 to 24-03-2021 after noon) and Dr. Gautam R. Patel (From 25-03-2021 before noon continue) as the I/c. Registrar of the University.

1.8 Power and Functions of the University

Under Section 6 of the GAU Act, 2004, the University is empowered to exercise the following powers.

- ◆ Provide education and instruction in agriculture and allied sciences and in such other branches of learning as the University may deem fit;
- ◆ Make provision for research in agriculture and allied branches of learning; Make provision for dissemination of the findings of research and technical information through extension education programmes;
- ◆ Make such provision which would enable affiliated colleges and recognised institutions to undertake specialisation in different fields of studies;
- ◆ Institute degrees, diplomas and other academic distinctions;
- ◆ Lay down courses of study and instruction for various examinations;
- ◆ Hold examinations and confer degrees, diplomas and other academic distinctions and confer certificates to persons who -
 - a) have pursued approved courses of study at the University or at a college unless exempted there from, in the manner prescribed and have passed the examinations prescribed by the University or
 - b) have carried on research under conditions prescribed;
- ◆ Withdraw or cancel any degree, diploma or certificate conferred or granted by the University in such a manner as may be prescribed;
- ◆ Confer Honorary degree and other distinctions in the manner prescribed;

- ◆ Provide lectures, instructions and training to persons who are not enrolled students of the University and grant such certificates to them as may be prescribed;
- ◆ Co-operate with any other University or authority in such manner and for such purpose as the University may determine;
- ◆ Establish and maintain colleges for imparting education in agriculture and allied sciences;
- ◆ Establish and maintain classrooms, laboratories, libraries, english language laboratory, research stations, institutions and museums with latest technologies for teaching, research and extension education;
- ◆ Create such teaching, administrative and other posts as the University may deem necessary from time to time and make appointments thereto;
- ◆ Institute and award fellowships, scholarships and prizes in accordance with the Statutes;
- ◆ Associate or admit educational institutions imparting education in agriculture and allied sciences with, or to the privilege of the University by way of affiliation or recognition;
- ◆ Withdraw or modify, either in whole or part, affiliation or recognition of educational institutions;
- ◆ Inspect colleges and recognised institutions and take necessary measures to ensure that proper standards of instruction, teaching and training are maintained in them and that adequate library and laboratory provisions are made therein;
- ◆ Lay down and regulate the salary scales, allowances and other service conditions of the members of teaching, other academic and non-teaching staff of the University;
- ◆ Lay down and regulate the salary scales, allowances and other conditions of service of the members of the teaching, other academic and non-teaching staff in the affiliated colleges and recognised institutions to,
 - ⇒ Control and co-ordinate the activities and to give financial aid to affiliated colleges and recognised institutions; and
 - ⇒ regulate fees to be paid by the students in affiliated colleges and recognised institutions;
- ◆ Institute and maintain residential accommodation for students and staff of the University;
- ◆ Fix demand and receive or recover such fees and other charges as may be prescribed;
- ◆ Supervise, regulate and control the residence, conduct and discipline of the students of the University, make arrangements for promoting their health and general welfare;
- ◆ Conduct, co-ordinate, supervise, regulate and control post-graduate teaching and research work at the University departments and affiliated colleges and recognised institutions;
- ◆ Co-ordinate, supervise, regulate and control conduct of undergraduate teaching and instruction in the affiliated colleges and undertake the same in University colleges;
- ◆ Make special provision for agricultural education, research and extension in relation to arid areas and areas prone to scarcity in the University area;
- ◆ Perform all such other acts and things whether incidental to the powers aforesaid or not, as may be requisite in order to further the objectives of the University.

1.9 Focus and Thrust Areas

AAU's activities have expanded to span newer commodities and other sectors such as soil health card, plant tissue culture, plant bio-technology, medicinal plants, liquid biofertilizer, location specific micronutrient status, pesticide residue, genomics, probiotic food, interface between industry and scientists, distance education etc., apart from the mandatory ones like research focus on rice, maize, tobacco, vegetable crops, fruit crops, forage crops, animal breeding, nutrition and dairy products etc. The core of AAU's operating philosophy however, continues to create partnership between the rural people and committed academia as the basis for sustainable rural development. In pursuing its various programmes, AAU's overall mission is to promote continuous process of development of sustainable growth and economic independence in rural society. AAU aims to do this through education, research and extension education. Thus, AAU works towards the empowerment of the farmers.

AAU has taken a lead in agricultural education, research and extension education in the Country. The University is committed to frontier areas of research and formulate the programmes as per the need of the farmers. So far, 1356 technologies have been recommended for farmers/scientists/entrepreneurs including 80 crop varieties. About 862 projects pertaining to education, research and extension education are underway in different areas of agriculture, veterinary, dairy, food processing technology, agricultural engineering and horticulture. We have shown our strength in the areas of Liquid biofertilizer,

Pesticide residue analysis, Soil health card, Astrometeorology calendar, Micro-propagation, Bio-diesel, Animal genomics, Rumen metagenomics, Modern surgical tools, Probiotic and Prebiotic fermented food products, post harvest value addition, ICT tools etc.

1.10 Accreditation

The Accreditation Board of ICAR, New Delhi has granted reaccreditation to Anand Agricultural University for a period of five years w.e.f. 2016-17 to 2020-21.

1.11 Recognitions

Indian Council of Agricultural Research (ICAR) accredited AAU and its colleges, which indicates the higher standards of education and research maintained by the university. In 2019, AAU was ranked at 24th in ICAR ranking of agricultural universities in India done by ICAR.

AAU has signed memorandum of understanding with reputed foreign universities viz, Lund University, Sweden; Copenhagen University, Denmark; University of Alberta, Canada; and Florida Agricultural and Mechanical University, USA. In addition, AAU has 60 other MoUs including generic MoU with ICAR institutions and specific MoUs with other universities/institutes/NGOs in Gujarat and India. Apart from national projects, AAU has handled and still operating collaborative projects funded by the European Union, Swedish International Development Agency, Government of Australia for the exchange of students, faculty as well as conducting high end research.

Chapter 2

MANAGEMENT AND ADMINISTRATION

Agricultural Universities are mainly working on three aspects, i.e., teaching, research and extension education. Teaching imparts knowledge, while research provides wisdom, which ultimately leads to strengthening of extension activities in agriculture sector. Manpower at the University is broadly divided into two categories, i.e., technical and non-technical. Technical manpower includes staff involved in teaching, research and extension education activities. They are Professor, Associate Professor, Assistant Professor, Research Scientist, Associate Research Scientist, Assistant Research Scientist, Extension Educationist, Associate Extension Educationist, Assistant Extension Educationist, etc. Non-Technical personnel are concerned with administrative and allied activities.

2.1 Management

Authority to govern the affairs of Anand Agricultural University flows from the GAU Act, 2004.

AAU was established under GAU Act, 2004 (Gujarat Act No. 5 of 2004) and functions under due authority of Chancellor, Vice Chancellor, Board of Management, Academic Council and Officers of the University. It has a territorial jurisdiction of nine districts of Gujarat namely Ahmedabad, Anand, Botad, Chhotaudepur, Dahod, Kheda, Mahisagar, Panchmahal, and Vadodara.

Functioning of the Authority

During the year under report, following authorities, as provided in Section-17 of the GAU Act, 2004 were functional.

- ◆ Board of Management
- ◆ Academic Council
- ◆ Faculties
- ◆ Board of Studies of different groups of subjects from different faculties
- ◆ Research Council
- ◆ Extension Education Council

The organizational set-up and decision making channel are given in chart-1 and chart-2.

Board of Management

The Board of Management considers and decides matters of general policies relating to the progress and development of the University. The list of Hon. members of the Board of Management is given in Annexure-2.

During the period of the year under report, one circulation meeting and two regular meetings of Board of Management were held under the chairmanship of Dr. R. V. Vyas, I/c. Vice Chancellor (From 01-09-2019 to 03-03-2021 before noon); and Dr. K. B. Kathiria, Vice Chancellor (From 03-03-2021 after noon); Anand Agricultural University and Dr. M. M. Trivedi (From 01-06-2019 to 09-09-2020), Dr. P. R. Vaishnav (From 10-09-2020 to 20-09-2020), Dr. M. M. Trivedi (From 21-09-2020 to 24-03-2021 after noon) and Dr. Gautam R. Patel (From 25-03-2021 before noon continue) as the I/c. Registrar acted as the Member Secretary of the Board of Management.

Sr. No.	Meeting Number		Date	Place	Chairman
1	26 th	Circulation	11-08-2020	-	Dr. R. V. Vyas
2	53 rd	Regular	11-11-2020	Anand	Dr. R. V. Vyas
3	54 th	Regular	29-01-2021	Anand	Dr. R. V. Vyas

Academic Council

Academic Council has been constituted under Section-21 of GAU Act, 2004. Academic Council is responsible for the maintenance of standard of teaching and examinations in the University by controlling and regulating the quality of teaching, education and examinations in the University.

During the period of the year under report, Dr. R. V. Vyas, I/c. Vice Chancellor (From 01-09-2019 to 03-03-2021 before noon); and Dr. K. B. Kathiria, Vice Chancellor (From 03-03-2021 after noon continue); and Dr. M. M. Trivedi (From 01-06-2019 to 09-09-2020), Dr. P. R. Vaishnav (From 10-09-

2020 to 20-09-2020), Dr. M. M. Trivedi (From 21-09-2020 to 24-03-2021 after noon) and Dr. Gautam R. Patel (From 25-03-2021 before noon continue) as the I/c. Registrar acted as the Member Secretary of the Academic Council. The list of members of the Academic Council is given in Annexure-3.

During the period of the year under report, two regular meetings of Academic Council were held to consider various issues pertaining to improvement of education, course curricula, course credits and recruitment rules for teachers and such other matters/concerns. Besides making recommendations to the Board of Management as mentioned above, the Academic Council also took various important decisions.

Sr. No.	Meeting Number		Date	Place	Chairman
1	54 th	Regular	27-08-2020	Anand	Dr. R. V. Vyas
2	55 th	Regular	25-01-2021	Anand	Dr. R. V. Vyas

Meetings of the Board of Post Graduate Studies

During the period of the year under report, one regular meeting and one circulation meeting of Board of Post Graduate Studies

was held under the Chairmanship of Dr. R. V. Vyas, I/c. Director of Research & Dean, Post Graduate Studies and Dr. D. D. Parekh, I/c. Assistant Registrar (Academic) as the Member Secretary.

Sr. No.	Meeting Number		Date	Place	Chairman
1	18 th	Regular	30-06-2020	Anand	Dr. R. V. Vyas
2	1 st	Circulation	15-07-2020	-	Dr. R. V. Vyas

Faculties

As per the Section-23 of the GAU Act, 2004, faculties are the authorities within the University. As per Statute S.9.0 the following faculties in the University are constituted:

- ◆ Faculty of Agriculture
- ◆ Faculty of Veterinary Science & Animal Husbandry
- ◆ Faculty of Dairy Science
- ◆ Faculty of Food Processing Technology & Bio-energy
- ◆ Faculty of Agricultural Engineering and Technology
- ◆ Faculty of Agricultural Information Technology
- ◆ Faculty of Agri-business Management

- ◆ Faculty of Horticulture
- ◆ Faculty of Post Graduate Studies

Officers of the University, Members of Board of Management, Members of Academic Council and the Heads of Departments of various faculties are listed in Annexure-1, 2, 3 and 4 respectively.

Faculties consider all administrative and academic matters pertaining to their respective previews and make recommendations to the Academic Council. The faculty either initiates the matters on its own or receives recommendations from the Board of Studies of group of subjects of the respective faculty.

As per Statute S. 17.0, the following Boards of Studies have been constituted

- (a) Board of Studies of the Faculty of Agriculture
- (b) Board of Studies of the Faculty of Veterinary Science and Animal Husbandry
- (c) Board of Studies of the Faculty of Dairy Science
- (d) Board of Studies of the Faculty of Agricultural Engineering and Technology
- (e) Board of Studies of the Faculty of Food Processing Technology and Bio-energy
- (f) Board of Studies of the Faculty of Agri-business Management
- (g) Board of Studies of the Faculty of Agricultural Information Technology
- (h) Board of Studies of the Faculty of Post Graduate Studies

As per Statute S. 19.0, the following Constitution of Board of Studies other than Board of the Post Graduate Studies

- (a) The Dean of the Faculty
Chairman

- (b) The Heads of the Department and Professors teaching subjects assigned to that faculty
- (c) The Director of Extension Education or his representative
- (d) The Director of Research and Dean Post-graduate studies or his representative
- (e) Five Co-opted members
- (f) The Assistant Registrar (Academic)
Secretary

Board of Studies

As provided in Section-24 of the GAU Act, 2004 and as per Statute S.21.0, functions of the Board of Studies are as follows;

- (1) To propose the establishment of such departments as deemed best and the scope of work to be done by the department and various other departments and submit the plans thereof to the Academic Council through the Faculty.
- (2) To develop department course outlines to meet the degree and diploma requirements of the University.
- (3) To perform such other functions as may be assigned by the Vice Chancellor or the Dean.

As per Statute S. 22.0, the following Duties of the Board of Studies

- (1) To consider and make recommendations to the Academic Council on all the matters pertaining to academics
- (2) To propose to the Academic Council, the courses of study for the various programmes of instructions offered in respective faculty of the University
- (3) To propose to the Academic Council, the curricula of the Department and advise

in regard to all questions related to the syllabi for various under graduate courses and all other functions, referred to it by the Faculty

- (4) To recommend to Academic Council, the establishment of new Department, abolition / sub-division / or otherwise re-constitution of existing Department or Departments
- (5) To recommend text books and reference books, courses of studies relating to the subjects under the Board of Studies
- (6) To give a shape to the development of the subject or group of subjects on the Board of Studies
- (7) To report on all matters referred to it by the Faculty, Academic Council or the Board of Management

As per Statute S.24.0, the following Constitution of the Board of Post Graduate Studies

The Board of Post Graduate Studies shall comprise of the following members:

- (1) Dean of Post Graduate Studies
Chairman
- (2) The Registrar
- (3) All Deans / Principal
- (4) The Director of Extension Education
- (5) All Associate Director of Research
- (6) Three Research Scientists and three Post Graduate teachers of the University to be nominated by the Dean of Post Graduate Studies with the approval of the Vice Chancellor
- (7) The Assistant Registrar (Academic)
Secretary

As per Statute S. 27.0 Constitution of the Research Council

The Research Council shall consist of the following members:

- (1) The Vice chancellor
Chairman
- (2) The Deans of the Faculties
- (3) The Director of Extension Education
- (4) The Conveners of the Agresco sub-committees
- (5) Two Eminent Scientists outside the University nominated by the Vice Chancellor in consultation with Director of Research
- (6) Five Professors or there equivalent from the University nominated by the Vice Chancellor in consultation with Director of Research
- (7) One progressive farmer to be nominated by the Vice Chancellor in consultation with Director of Research
- (8) The Directors of Agriculture/Horticulture/Animal husbandry
- (9) All Associate Director of Research
- (10) The Director of Research
Member Secretary

As per Statute S. 29.0 Functions and duties of the Research Council

The function and duties of the Research Council shall be as under:

- (1) To monitor and determine the research priorities of the University area.
- (2) To be responsible for Agriculture and Allied Sciences Research in the University.
- (3) To advise the Board of Management on policy matters of research.

- (4) To plan, execute and manage the research activities in the University efficiently.
- (5) To organize and co-ordinate research programmes on Agriculture and Allied Sciences in the University.
- (6) To review critically ongoing research programmes and make suggestions to the Board of Management to continue or to abandon or to modify the ongoing scheme.
- (7) To approve Research Projects and consider Intellectual Property Rights (IPR) issues submitted by the Research Scientists / Institutions / Departments.
- (8) Public private partnership mode in research.
- (9) To make recommendations in respect of the following :-
- (i) transfer of research recommendations to the Scientists / Farming Community and Industry through the Extension Agencies.
 - (ii) allocation of funds to Research Schemes and Projects.
 - (iii) the terms and conditions for acceptance of the Research Projects / Consultancy Projects and funds thereof.
 - (iv) formulation of research programmes and projects under taken or to be undertaken by the University.
 - (v) physical and fixed facilities required for implementing research projects.
 - (vi) integration of research with extension education and teachings in the University and participation of research workers in teaching and extension education.
- (vii) orienting research to meet farmers' needs.
- (viii) to give advice and accept the reports of on-going / completed research schemes.
- (10) To perform such other duties and functions as may be referred to from time to time by the Board of Management and the other authorities of the University as well as the Council of State Agricultural Universities.

As per Statute S. 31.0 Constitution of the Extension Education Council

The Extension Education Council shall consist of the following members:

- (1) The Vice chancellor
Chairman
- (2) The Director of Research and Dean P.G.
- (3) Deans of the Faculties
- (4) Five Extension Education specialists to be nominated by the Vice Chancellor in consultation with Director of Extension Education from amongst the following
 - (i) Professor of Extension Education
 - (ii) Agricultural Extension Educationist, Polytechnic
 - (iii) Programme Coordinator/Senior Scientist & Head, Krushi Vigyan Kendra
 - (iv) Other Extension Specialists / Farm Manager
- (5) Three eminent Extension Education specialists concerned with farmers' training, from outside the University to be co-opted by the Organization.
- (5) The Directors of Agriculture/ Horticulture / Animal Husbandry

- (5) Two progressive farmers to be nominated by the Vice Chancellor in consultation with Director of Extension Education
- (5) The Associate Director of Extension Education
- (5) The Director of Extension Education
Member Secretary

As per Statute S.33.0 Functions and duties of Extension Education Council

In addition to the functions laid down under sub-section (3) of Section-27 of the Act, the functions and duties of the Extension Education Council shall be as under :

- (1) To formulate extension education policies and annual extension education programmes of the University
- (2) To make recommendations for preparation of extension educational material and aids.
- (3) To review critically ongoing Extension Education programme and make suggestions to Board of Management to continue or to abandon or to modify the ongoing scheme.
- (4) To impart training to college students in Extension Education.
- (5) To prepare materials for cultivators.
- (6) To formulate short term courses for rural and urban people and field extension personnel in the areas of agriculture and allied sectors.
- (7) To arrange training programmes on Agricultural Production, Processing and Marketing.
- (8) To formulate programmes for cultivators, their families and rural youth.
- (9) To recommend for:

- (a) Co-ordination of extension education programmes and projects of the University with the other Agricultural Universities / Institutions.
 - (b) Coordination and co-operation of extension educational activities of various agencies.
 - (c) Development of farmers' education, training and advisory services for identification and resolution of field problems and transfer of information.
 - (d) Methodology of extension education activities of the University area.
 - (e) Integration of extension education with teaching and research in the University and participation of extension workers teachers in the field of research programmes and education for their work.
- (10) To perform such other duties and functions as may be referred to from time to time by the Board of Management and the other authorities of the University and Council of State Agricultural Universities.

2.2 Administration

Anand Agricultural University was formed from erstwhile Gujarat Agricultural University during May 2004 with three colleges for Under Graduate & Post Graduate programme and for imparting education in agricultural and allied sciences. Presently, Anand Agricultural University has 11 degree colleges, 5 Polytechnics and 1 Post-graduate Institute imparting education in agricultural and allied sciences. The University has a total of **1655** sanctioned posts, out of which **923** are filled and remaining **732** posts are vacant.

Technical personnel included the staff at the main campus as well as 48 research stations, who carried different activities like crop improvement, crop protection,

crop production, live stock management and improvement practices etc. under their domain of work. Our research endeavors have not only targeted excellence in agriculture but also other allied sectors like dairy science, veterinary science and animal husbandry, agricultural engineering and food processing technology etc.

AAU organizes various programmes and activities to expand knowledge of its scientists, faculty and students. During the year under report, various programmes including conferences/trainings/workshops/seminars/winter schools/

group meetings were organized by the University.

Human Resource Development at Anand Agricultural University receives top priority. Managerial trainings taken by Anand Agricultural University employees are given in the following table. The changing global scenario demands traditional research be sharpened based on market driven economy. Therefore, AAU scientists are encouraged to update their knowledge and improve their skills. Need of the day is search for newer technologies with cutting edge research so that new generation young farmers and women are enlightened.

Managerial Training during the period 01/04/2020 to 31/03/2021

No	Name of Training	Place	Duration period	Total Participants
Nil				

Human Resources :

The Staff position as on **31-03-2021** in the Anand Agricultural University is given as under :

Sr. No.	Cadres	Sanctioned post	Filled up post	Vacant post
1.	University Officers			
	Director of Research & Dean P.G.	1	0	1
	Director of Extension Education	1	1	0
	Director (I.T.)	1	0	1
	Registrar	1	0	1
	Comptroller	1	1	0
	Total :	5	2	3
2.	Teaching/Research/Extension- Class-I & II			
	Principal	9	2	7
	Associate Director of Research	2	2	0
	Professor & its equivalent	60	34	26
	Associate Professor & its equivalent	168	109	59
	Assistant Professor & its equivalent	342	260	82
	Total :	581	407	174
3.	Administration Group No. 1			
	Assistant Registrar (Academic/ Administration)	2	1	1
	Account Officer (Cash)	1	0	1
	Account Officer (PF/Cash)	1	0	1
	<i>Assistant Administrative Officer</i>	6	2	4
	Audit Officer	1	0	1
	Office Superintendent	9	4	5
4.	Head Clerk	17	10	07
	Senior Clerk	86	49	37
	Junior Clerk	135	51	84

Sr. No.	Cadres	Sanctioned post	Filled up post	Vacant post
	Hostel Assistant Warden	7	7	0
	Hostel Warden	1	0	1
	Total :	266	124	142
5.	Administration Group No. 2			
	Steno Grade-I	3	3	0
	Steno Grade-II	6	4	2
	Steno Grade-III	4	1	3
	Total :	13	8	5
6.	Engineering Group			
	Executive Engineer	1	1	0
	Deputy Engineer	1	1	0
	Junior Engineer (Civil/Electric)	3	1	2
	Total :	5	3	2
7.	Technical Group No. 1			
	Agri. Officer/SRA (Agri.) & its equivalent	87	33	54
	Senior Research Assistant (Agri. Engg.)	11	10	1
	Senior Technician	1	1	0
	Agril. Supervisor & its equivalent	12	6	6
	Agril. Asstt. & its equivalent	166	97	69
	Foreman Instructor	2	2	0
	Supervisor Instructor	1	1	0
	Total :	280	150	130
8.	Technical Group No. 2			
	Programme Assistant (KVK)	9	7	2
	Programmer	3	3	0
	Computer / Computer Operator	1	0	1
	Data Entry-cum-Disk Librarian	1	0	1
	Total :	14	10	4
9.	Technical Group No. 3			
	Wireman	1	0	1
	Junior Wireman/Sr. Wireman	2	0	2
	Total :	3	0	3
10.	Isolated Group (Details given separately)	167	72	95
11.	Class- IV Group (Regular)	219	45	174
12.	Supernumary Posts (Class-III & IV)			
	Class-III (Jr.Clerk/Agri.Asstt./Driver/Tractor Driver)	6	6	0
	Class-IV	96	96	0
	Total :	102	102	0
	Grand Total :	1655	923	732

Sr. No.	Cadres	Sanctioned post	Filled up post	Vacant post
Details of Isolated Group (As mentioned at Sr. No.10 above)				
1	Senior Research Assistant (Dairy) / Dairy Supervisor	14	2	12
2	Veterinary Officer & its equivalent	8	1	7
3	Instructor (Baking/Science)	3	0	3
4	Assistant Instructor	1	0	1
5	Lab Technician & its equivalent	48	30	18
6	X-ray Technician	1	1	0
7	Junior Instructor	2	0	2
8	Mechanic-cum-Draftsman	1	1	0
9	Stockman/Livestock Assistant	7	7	0
10	Black Smith	2	0	2
11	Carpenter	1	0	1
12	Compounder	2	0	2
13	Junior Mechanic-cum-Wireman	1	0	1
14	Mechanic/Sr.Mechanic/Jr. Mechanic	4	3	1
15	Boiler Attendant	2	1	1
16	Compressor Attendant	2	0	2
17	Fitter	1	0	1
18	Bakery Operator	1	1	0
19	Balwadi Teacher	1	1	0
20	Sewing Teacher	1	0	1
21	Driver	42	14	28
22	Tractor Driver	14	3	11
23	Plumber	1	1	0
24	Tracer/Draftsman Tracer	2	2	0
25	Craftsman(Welder,Fitter,Turner,Electrician)	4	4	0
26	Junior Research Assistant (Dairy)	1	0	1
Total :		167	72	95

New Appointments / Promotion :

During the year under report, following posts were filled up by direct recruitment/promotion under various cadres.

Appointments during the year (01-04-2020 to 31-03-2021)

Sr. No.	Cadre	Promotion	Total
1.	Steno Grade-1	01	01

Retirement :

Following Teaching & Non-teaching staff retired from the University by Superannuation/

Voluntarily / Resignation / Death / Appointed in other University during the period under report.

Teaching & Non-teaching staff retired by Superannuation/Voluntarily/Resignation/ Death/ Appointed in other University during the year (01-04-2020 to 31-03-2021).

Sr. No	Cadre	No. of persons					
		Super-annuation	Voluntarily	Resign-ation	Death	Appointed in other University	Total
1	Director of Extension Education	01	0	0	0	0	01
2	Principal	01	0	0	0	0	01
3	Professor	09	0	0	0	0	09
4	Associate Professor	02	0	0	01	0	03
5	Assistant Professor	04	0	03	01	0	08
6	Office Supdt	02	0	0	0	0	02
7	Head Clerk	07	0	0	0	0	07
8	Senior Clerk	03	0	0	0	0	03
9	Junior Clerk	01	0	0	0	0	01
10	Agri. Supervisor	02	0	0	0	0	02
11	Agri. Assistant	02	0	0	0	0	02
12	Driver/Tractor Driver	04	02	0	0	0	06
13	Steno Grade-1	01	0	0	0	0	01
14	Computer	01	0	0	0	0	01
15	Wiremen	01	0	0	0	0	01
16	Black Smith	01	0	0	0	0	01
17	Class-IV (Regular)	11	0	0	02	0	13
18	Class-IV(Supreme)	10	0	0	0	0	10
	Total :	62	02	03	04	0	71

2.3 Finance & Accounts

Anand Agricultural University has established the University Fund since 01/05/2004 as per the provisions given in the “**Gujarat Agricultural Universities Act, 2004**”. The ‘**Anand Agricultural University Fund**’ consists of (a) Contribution or Grant by the State Government, (b) The income of the University from all the sources including the income from fees and charges, (c) Bequest, Donations, Endowments and Other Grants. The State Government, in each

year after due appropriation made by the State Legislature by law in this behalf, making the provision of grants for the Anand Agricultural University consists of (a) a grant of an amount not less than the estimated net expenditure on Pay and Allowances of the Staff, Contingencies, and Services of the University; (b) a grant to meet such additional items of expenditure, recurring and non-recurring as the State Government may deem necessary for the proper functioning of the University.

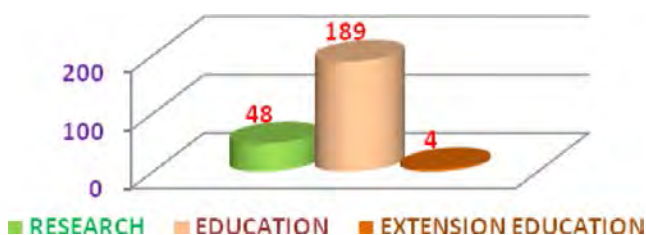
The Annual Accounts and the Financial Estimates shall be considered by the Board at its annual meeting and pass a resolution adopting the accounts and financial estimates. The annual accounts so adopted shall be submitted to the State Government for audit. The Board shall, after the accounts are audited, Submit a copy thereof along with a copy of audit report and the statement of the action taken by the University on the audit report, to the State Government. The State Government shall cause the copy of the accounts and the audit report along with the statement of action taken by the University on the audit report to be laid before the State Legislature.

The Comptroller act as Financial Adviser to the Vice Chancellor regarding all financial matters of the University and keep the Vice Chancellor informed from time to time about the financial position of the university. The Comptroller is responsible for supervising the quality of accounting and financial reporting to the Vice Chancellor of the University, Board of Management and State Government. The Comptroller prepares the Financial Plans / Estimates for Development of the University and also prepares the Annual Accounts of the University in consultation with the concerned officers of the University and under the guidance of the Vice Chancellor.

The Budgetary Provisions Made by Government of Gujarat for the F.Y. 2020-21:-

(Rupees in Crore)

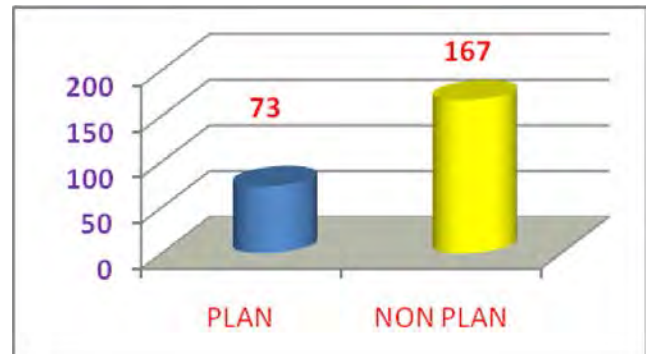
SCHEME	Amount
RESEARCH	47.56
EDUCATION	188.62
EXTENSION EDUCATION	3.87
TOTAL	240.05



The Budgetary Provisions Made by Government of Gujarat for the F.Y. 2020-21:-

(Rupees in Crore)

SCHEME	Amount
PLAN	72.64
NON PLAN	167.41
TOTAL	240.05

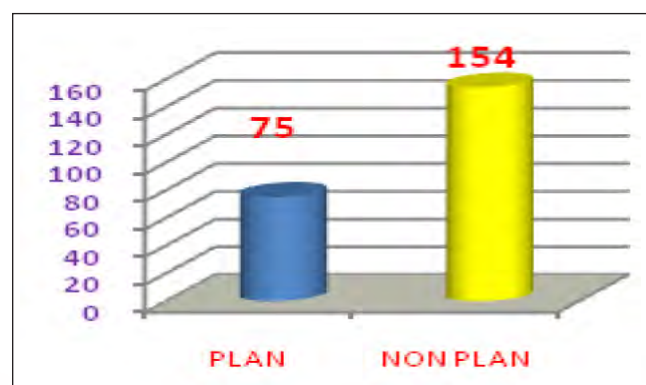


The Comptroller ensures the grants are received in time from the Government of India, State Government and Other aid-granting Agencies. The Comptroller ensures that the University Fund is maintained and that a detailed and proper account of all credits into and withdrawals from the said fund is kept by the all Offices of University.

The Expenditure Under State Government Schemes for the F.Y. 2020-21 :-

(Rupees in Crore)

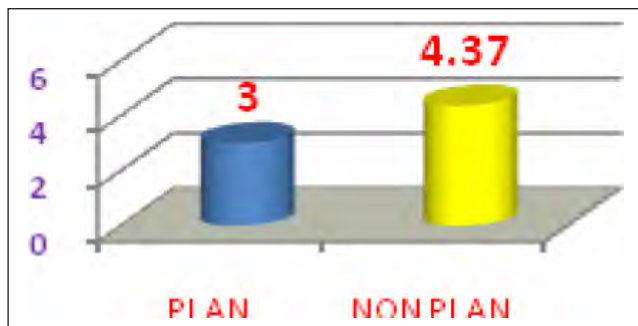
SCHEME	Amount
PLAN	74.63
Non Plan	154.01
TOTAL	228.64



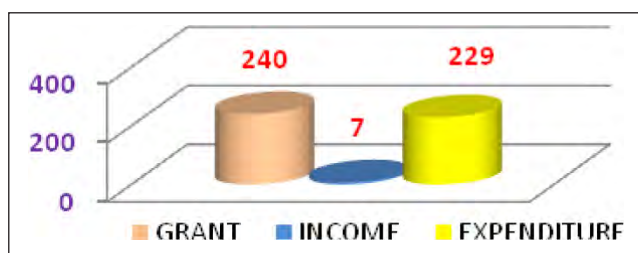
The Income Under State Government Schemes For The F.Y. 2020-21 :-

(Rupees in Crore)

SCHEME	Amount
PLAN	3
Non Plan	4.37
TOTAL	7.37



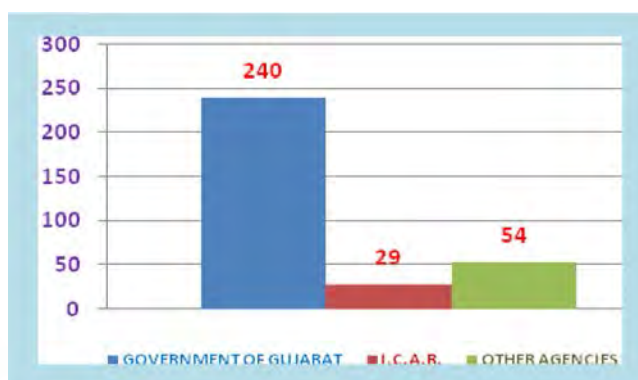
The Chart Showing the State Government Grant, Receipt & Expenditure :.....



The Total Grant Received During F.Y. 2020-21 by Anand Agricultural University :

(Rupees in Crore)

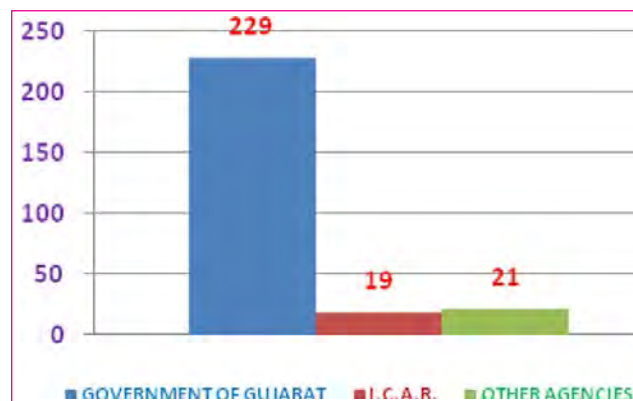
SCHEME	Amount
Government of Gujarat	240.05
I.C.A.R., New Delhi	29.34
Other Agencies	53.9
TOTAL	323.29



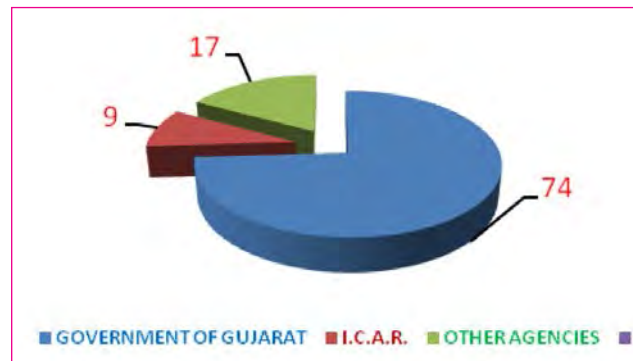
The Total Grant Received During F.Y. 2020-21 by Anand Agricultural University :

(Rupees in Crore)

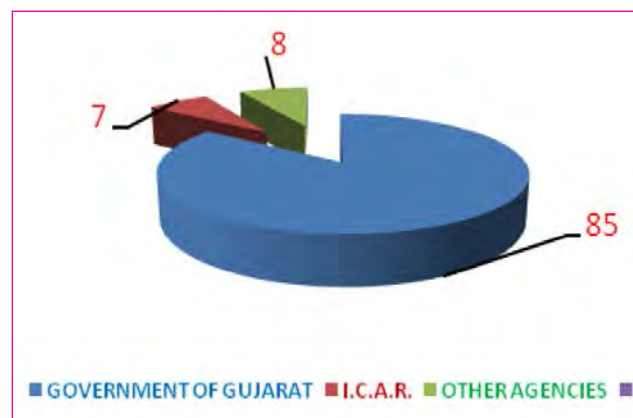
FUNDING AGENCY	EXPENDITURE
Government of Gujarat	228.64
I.C.A.R., New Delhi	18.7
Other Agencies	20.94
TOTAL	268.28



Percentage of Grant Received Under Various Schemes



Percentage of Expenditure Under Various Schemes



Status of Man Power & Pensioner of Anand Agricultural University (AAU), Anand - Gujarat as on 31/03/2021

(1) Implementation of seventh pay commission for regular employee :

(A) The seventh pay commission for regular non teaching staff is being implemented from 01/08/2017. The arrears of six to seventh pay from 01/01/2016 to 31/07/2017 (19 months) is due.

(B) The seventh pay commission for regular teaching staff is being implemented from 01/04/2019. The arrears of six to seventh pay from 01/01/2016 to 31/03/2019 (39 months) is due (50 % - ICAR share & 50 % - state share).

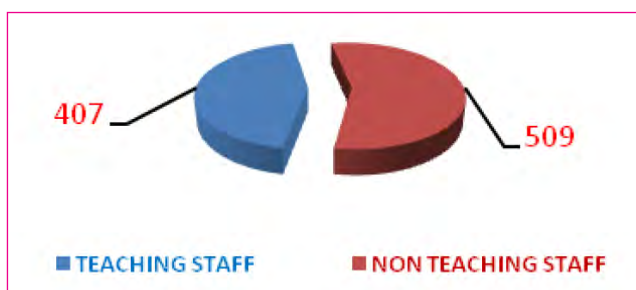
(2) Implementation of seventh pay commission for retired employee :-.....

(A) The seventh pay commission for retired non teaching staff is being implemented from 01/10/2016. The arrears of six to seventh pay from 01/01/2016 to 30/09/2016 (9 months) is due.

(B) The seventh pay commission for retired teaching staff is being implemented from 01/12/2019. The arrears of six to seventh pay from 01/01/2016 to 30/11/2019 (47 months) is due.

Classification of regular employee in AAU :

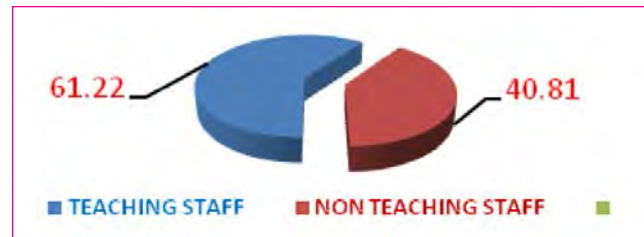
SR. NO.	DETAILS	NUMBERS
1	Teaching staff	407
2	Non teaching staff	509
Total regular employee		916



Classification of pay & allowances expenditure for regular employees for the F.Y. 2020-21

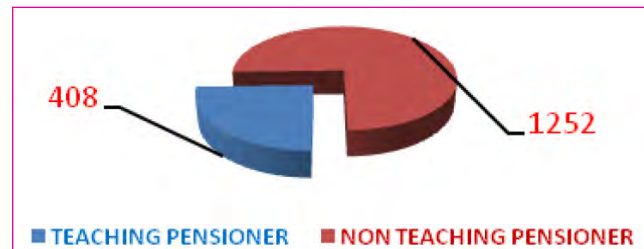
(Rupees in Crore)

SR. NO.	DETAILS	AMOUNT
1	Teaching staff	61.22
2	Non teaching staff	40.81
TOTAL		102.03



Number of pensioners of aaau for the F.Y. 2020-21

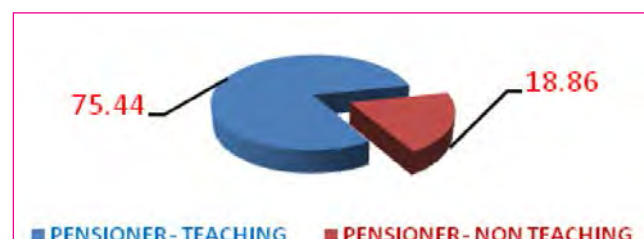
SR. NO.	DETAILS	AMOUNT
1	Pensioner - Teaching	408
2	Pensioner - Non Teaching	1252
TOTAL PENSIONERS		1660



Classification of expenditure under pension for the F.Y. 2020-21

(Rupees in Crore)

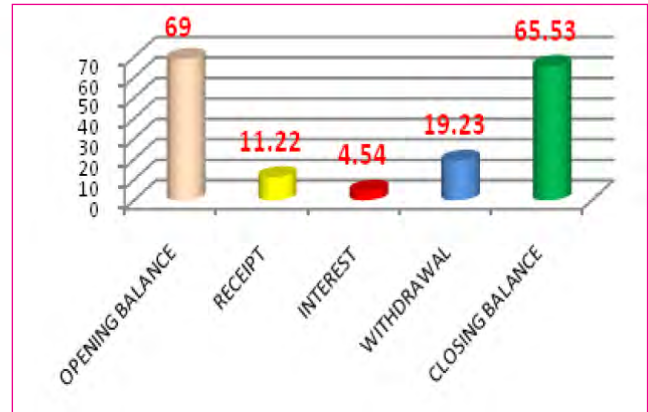
SR. NO.	DETAILS	AMOUNT
1	Pensioner - Teaching	75.44
2	Pensioner - Non Teaching	18.86
TOTAL		94.30



Status of general provident fund of AAU for the F.Y. 2020-21

(Rupees in Crore)

Detail	Amount
Opening balance	69.00
+ Receipt	11.22
+ Interest	4.54
- Withdrawal - part final - advance	9.70
- Withdrawal - final payment	9.53
Closing balance	65.53



College of Agriculture, Vaso



College of Food Processing Technology & Bio-Energy

Annexure-1

Officers of the University (01-04-2020 to 31-03-2021)

<p style="text-align: center;">Hon'ble Governor Shri Acharya Devvrat</p>	
<p style="text-align: center;">I/c. Vice Chancellor Dr. R. V. Vyas (From 01-09-2019 to 15-02-2021) Dr. R. M. Chauhan (From 16-02-2021 to 03-03-2021) Vice Chancellor Dr. K. B. Kathiria (From 03-03-2021 to continue)</p>	
<p style="text-align: center;">I/c. Director of Research & Dean, P. G. Studies Dr. R. V. Vyas (From 01-09-2019 to 04-03-2021) Dr. M. K. Jhala (From 05-03-2021 to continue)</p>	<p style="text-align: center;">Director of Extension Education Dr. Arun A. Patel (From 01-09-2019 to 31-07-2020) I/c. Director of Extension Education Dr. H. B. Patel (From 01-08-2020 to continue)</p>
<p style="text-align: center;">I/c. Dean B. A. College of Agriculture Dr. M. V. Patel (From 01-10-2019 to 30-06-2020) Dr. P. R. Vaishnav (From 01-07-2020 to 31-12-2020) Dr. Y. M. Shukla (From 01-01-2021 to continue)</p>	<p style="text-align: center;">I/c. Dean Veterinary Science & Animal Husbandry Dr. M. N. Brahmhatt (From 01-06-2019 to continue)</p>
<p style="text-align: center;">Dean Sheth M. C. College of Dairy Science Dr. J. B. Prajapati (From 27-07-2016 to 31-10-2020) I/c. Dean Sheth M. C. College of Dairy Science Dr. J. B. Upadhyay (From 01-11-2020 to continue)</p>	<p style="text-align: center;">Dean Food Processing Technology & Bio-energy Dr. K. B. Kathiria (From 18-09-2019 to 17-09-2020 Contractual service for one year) I/c. Dean Food Processing Technology & Bio-energy Dr. R. F. Sutar (From 18-09-2020 to continue)</p>
<p style="text-align: center;">Dean Agricultural Engineering & Technology Dr. R. Subbaiah (From 01-10-2016 to continue)</p>	<p style="text-align: center;">Dean Agricultural Information Technology Dr. Y. R. Ghodasara (From 01-10-2019 to 31-03-2021)</p>

<p style="text-align: center;">Dean International Agri-business Management Institute Dr. Y. C. Zala (From 01-03-2017 to Retd. 30-07-2021)</p>	<p style="text-align: center;">I/c. Dean Horticulture Dr. H. C. Patel (From 01-10-2019 to 31-08-2020) Dr. N. I. Shah (From 01-09-2020 to continue)</p>
<p style="text-align: center;">I/c. Director Information Technology Dr. Y. R. Ghodasara (From 01-10-2019 to 31-03-2021)</p>	<p style="text-align: center;">I/c. Director of Students' Welfare Dr. D. H. Patel (From 01-06-2019 to continue)</p>
<p style="text-align: center;">I/c. Comptroller Shri R. H. Gondaliya (From 01-03-2018 to continue)</p>	<p style="text-align: center;">I/c. Librarian Dr. Y. R. Ghodasara (From 26-04-2012 to continue)</p>
<p style="text-align: center;">I/c. Executive Engineer Shri H. R. Patel (From 01-07-2019 to continue)</p>	<p style="text-align: center;">I/c. Registrar & Member Secretary Dr. M. M. Trivedi (From 01-06-2019 to 09-09-2020) Dr. P. R. Vaishnav (From 10-09-2020 to 20-09-2020) Dr. M. M. Trivedi (From 21-09-2020 to 24-03-2021) Dr. Gautam R. Patel (From 25-03-2021 to continue)</p>

Annexure-2

Members of the Board of Management (01-04-2020 to 31-03-2021)

<p>I/c. Vice Chancellor Dr. R. V. Vyas (From 01-09-2019 to 15-02-2021) Dr. R. M. Chauhan (From 16-02-2021 to 03-03-2021) Vice Chancellor Dr. K. B. Kathiria (From 03-03-2021 to continue)</p>
<p>Secretary Agriculture, Farmer Welfare & Co-operation Department Shri Manish Bhardwaj Nava Sachivalaya, Gujarat State, Gandhinagar</p>
<p>Deputy Secretary Education Department Shri Ronak M. Mehta (Higher Education) Shri Manoj Vagh (Technical Education) Nava Sachivalaya, Gujarat State, Gandhinagar</p>
<p>Secretary Finance Department Shri Roopwant Singh (I.A.S.) Nava Sachivalaya, Gujarat State, Gandhinagar</p>
<p>Director of Agriculture Shri B. M. Modi Krushi Bhavan, Sector-10/A, Gujarat State, Gandhinagar</p>
<p>Director of Animal Husbandry Dr. F. S. Thaker Krushi Bhavan, Sector-10/A, Gujarat State, Gandhinagar</p>
<p>Director of Horticulture Dr. P. M. Vaghasiya Krushi Bhavan, Sector-10/A, Gujarat State, Gandhinagar</p>
<p>Director, Agricultural Technology Management Agency (ATMA) & Sameti Shri K. D. Panchal P-7, M-Floor, Krishi Bhavan, Sector-10/A, Gujarat State, Gandhinagar</p>
<p>One Director, to be nominated by the Vice Chancellor from amongst the Director of Research and Dean of Post-graduate Studies or the Director of Extension Education</p>
<p>Nominated by Vice Chancellor Director of Extension Education Dr. Arun A. Patel (From 01-09-2019 to 31-07-2020) I/c. Director of Extension Education Dr. H. B. Patel Anand Agricultural University, Anand (From 01-08-2020 to 31-08-2022)</p>
<p>Two Agricultural Scientist having background of Agricultural Research or Education Nominated by the State Government</p>

<p style="text-align: center;">Former Vice Chancellor Dr. A. M. Shekh Anand Agricultural University, Anand (From 31-12-2019 to 30-12-2022)</p>
<p style="text-align: center;">Retd. Associate Director of Research (Ani.Sci.) Dr. K. S. Patel Gujarat Agricultural University, Ahmedabad (From 31-12-2019 to 30-12-2022) (Retired Date 08-03-2021)</p> <p style="text-align: center;">Retd. Principal & Dean Dr. K. P. Patel B. A. College of Agriculture, Anand Agricultural University, Anand (From 09-03-2021 to 08-03-2024)</p>
<p style="text-align: center;">One farmer nominated by the State Government</p>
<p style="text-align: center;">One Farmer Shri Dilipkumar Pratapsinh Dhanga Village: Moti Bandibar (From 16-10-2019 to 15-10-2022)</p>
<p style="text-align: center;">One eminent women social worker having experience in rural development</p>
<p style="text-align: center;">Smt. Shruti A. Shroff Managing Trustee, Shroff's Foundation Trust, At. Kalali, (From 01-10-2019 to 30-09-2022)</p>
<p style="text-align: center;">One distinguished agro-industrialist</p>
<p style="text-align: center;">Shri Chandreshbhai A. Shah Managing Director, Madhav Agro Foods Pvt. Ltd., At. Dabhasa (From 01-10-2019 to 30-09-2022)</p>
<p style="text-align: center;">One representative Nominated by the Director General of Indian Council of Agricultural Research</p>
<p style="text-align: center;">Nominated by Indian Council of Agricultural Research Dr. Kanchan K. Singh Assistant Director General (Farm Engg.) Indian Council of Agricultural Research, New Delhi (From 03-10-2017 to 02-10-2020)</p> <p style="text-align: center;">Dr. Kanchan K. Singh Assistant Director General (Farm Engg.) Engineering Division, Indian Council of Agricultural Research, Krishi Anusandhan Bhavan-II, New Delhi (From 23-12-2020 to 22-12-2023)</p>
<p style="text-align: center;">I/c. Registrar & Member Secretary Dr. M. M. Trivedi (From 01-06-2019 to 09-09-2020) Dr. P. R. Vaishnav (From 10-09-2020 to 20-09-2020) Dr. M. M. Trivedi (From 21-09-2020 to 24-03-2021) Dr. Gautam R. Patel (From 25-03-2021 to continue)</p>

Annexure-3

Members of the Academic Council (01-04-2020 to 31-03-2021)

<p>I/c. Vice Chancellor Dr. R. V. Vyas (From 01-09-2019 to 15-02-2021) Dr. R. M. Chauhan (From 16-02-2021 to 03-03-2021) Vice Chancellor Dr. K. B. Kathiria (From 03-03-2021 to continue)</p>	
<p>I/c. Director of Research & Dean, P. G. Studies Dr. R. V. Vyas (From 01-09-2019 to 04-03-2021 after noon) Dr. M. K. Jhala (From 05-03-2021 Upto before noon)</p>	<p>Director of Extension Education Dr. Arun A. Patel (From 01-09-2019 to 31-07-2020) I/c. Director of Extension Education Dr. H. B. Patel (From 01-08-2020 to 31-08-2022)</p>
<p>I/c. Dean B. A. College of Agriculture Dr. M. V. Patel (From 01-10-2019 to 30-06-2020) Dr. P. R. Vaishnav (From 01-07-2020 to 31-12-2020) Dr. Y. M. Shukla (From 01-01-2021 to 31-12-2023)</p>	<p>I/c. Dean Veterinary Science & Animal Husbandry Dr. M. N. Brahmhatt (From 01-10-2019 to 30-09-2022)</p>
<p>Dean Sheth M. C. College of Dairy Science Dr. J. B. Prajapati (From 01-10-2019 to 31-10-2020) I/c. Dean Sheth M. C. College of Dairy Science Dr. J. B. Upadhyay (From 01-11-2020 to 30-09-2022)</p>	<p>Dean Food Processing Technology & Bio-energy Dr. K. B. Kathiria (From 18-09-2019 to 17-09-2020 Contractual service for one year) I/c. Dean Food Processing Technology & Bio-energy Dr. R. F. Sutar (From 18-09-2020 to 17-09-2023)</p>
<p>Dean Agricultural Engineering & Technology Dr. R. Subbaiah (From 01-10-2019 to 30-09-2022)</p>	<p>Dean Agricultural Information Technology Dr. Y. R. Ghodasara (From 01-10-2019 to 30-09-2022)</p>
<p>Dean International Agri-business Management Institute Dr. Y. C. Zala (From 01-10-2019 to 30-09-2022) (Retd. 30-07-2021)</p>	<p>I/c. Dean Horticulture Dr. H. C. Patel (From 01-10-2019 to 31-08-2020) Dr. N. I. Shah (From 01-09-2020 to 30-09-2022)</p>

<p>Nominated Professor & Head Dr. R. F. Sutar (Dept. of Post-Harvest Engg. & Technology) Food Processing Technology & Bio-Energy, Anand (From 01-01-2018 to 31-12-2020)</p> <p>Associate Professor & Head Dr. S. H. Akbari (Dept. of Food Plant Operations) Food Processing Technology & Bio-Energy, Anand (From 01-01-2021 to 31-12-2023)</p>	<p>Nominated Professor (P) Dr. M. S. Kulshreshtha (Dept. of Basic Science and Humanities) B. A. College of Agriculture, Anand (From 01-03-2020 to 28-02-2023)</p>
<p>Nominated Professor & Head Dr. M. M. Trivedi (Dept. of Animal Science) B. A. College of Agriculture, Anand (From 01-03-2019 to 30-02-2022)</p>	<p>Nominated Professor & Head Dr. N. B. Chauhan (Dept. of Extension Education) B. A. College of Agriculture, Anand (From 01-10-2018 to 30-06-2021)</p>
<p>Nominated Professor Dr. K. M. Panchal (Dept. of Veterinary Anatomy) Veterinary Science & A. H., Anand (From 01-06-2017 to 31-05-2020)</p> <p>Research Scientist Dr. P. R. Pandya (Dept. of Animal Nutrition) Veterinary Science & A. H., Anand (From 01-06-2020 to 31-05-2023)</p>	<p>Nominated Professor (Horti.) & I/c. Principal Dr. H. C. Patel (Dept. of Fruit Science) College of Horticulture, Anand (From 01-06-2018 to 31-08-2020)</p> <p>Professor (P) Dr. R. S. Pundir (Dept. of Agri-business Management Institute) International Agri-business Management Institute, Anand (From 01-09-2020 to 31-08-2023)</p>
<p>Co-opt I/c. Director of Students' Welfare Dr. D. H. Patel (From 01-12-2019 to 30-11-2022)</p>	<p>Co-opt I/c. Librarian Dr. Y. R. Ghodasara (From 01-12-2019 to 30-11-2022)</p>
<p>Co-opt Principal, Professor & Dean Dr. Atul M. Patel Smt. Chandaben Mohanbhai Patel, Institute of Computer Application, Charotar Uni. of Science & Tech., Charusat Campus, Changa (From 01-12-2019 to 30-11-2022)</p>	<p>Co-opt Director Dr. Gaurav Mishra Sardar Patel Renewable Energy Research Institute, Near B. V. M. Engineering College, Vallabh Vidyanagar (From 01-12-2019 to 30-11-2022)</p>

<p style="text-align: center;">Co-opt Retd. Professor & Head Dr. K. S. Prajapati (Dept. of Pathology) 19, Himalaya Retrit, 100 ft. Road, Near Indira Gandhi Statue, Anand (From 01-12-2019 to 30-11-2022)</p>	<p style="text-align: center;">Co-opt Former Dean (Agril. Engg.) & Director Dr. R. C. Purohit (Dept. of Planning & Monitoring) Maharana Pratap University Agriculture & Technology, Udaipur (Rajasthan) (From 01-02-2019 to 31-01-2022)</p>
<p style="text-align: center;">Co-opt Retd. Principal & Dean Dr. B. P. Shah (Sheth M.C. College of Dairy Science) 101, Radha Swami, 'Suman' Flat, Patel Sadi Centre Beside, Near Gamdi Vad, Anand (From 01-06-2017 to 31-05-2020)</p> <p style="text-align: center;">Retd. Principal & Dean Dr. B. P. Shah (Sheth M.C. College of Dairy Science) 101, Radha Swami, 'Suman' Flat, Patel Sadi Centre Beside, Near Gamdi Vad, Anand (From 01-06-2020 to 31-05-2023)</p>	<p style="text-align: center;">Co-opt Retd. Principal Dr. Jivanbhai G. Patel C. P. College of Agriculture, S. K. Nagar, At. & Po. Anand (From 15-09-2017 to 14-09-2020)</p> <p style="text-align: center;">Retd. Associate Director of Research(Agri.) Dr. D. M. Korat Office of the Director of Research Anand Agricultural University 4, Rajvi Park, Opp. Vidya Dairy, Anand (From 15-09-2020 to 14-09-2023)</p>
<p style="text-align: center;">Co-opt Retd. Professor & Head Dr. C. K. Dixit (Dept. of Horticulture) At. & Post: Himmatnagar (From 01-06-2017 to 31-05-2020)</p> <p style="text-align: center;">Professor & Head Dr. N. I. Shah (Dept. of Horticulture) B. A. College of Agriculture, Anand Agricultural University, Anand (From 01-06-2020 to 31-05-2023)</p>	<p style="text-align: center;">Co-opt Retd. Principal Dr. Ghanshyambhai M. Patel (Dept. of Basic Science & Humanities) S.D.A.U., S. K. Nagar, At. & Post: Ghatlodia, Ahmedabad (From 01-06-2017 to 31-05-2020)</p> <p style="text-align: center;">Retd. Research Scientist Dr. A. D. Patel Regional Research Station B-19, Shreeji Co-operative Housing Society, Near Arunoday Society, Bavis Gam Road, Vidyanagar-388120, Anand (From 01-06-2020 to 31-05-2023)</p>
<p style="text-align: center;">I/c. Registrar & Member Secretary Dr. M. M. Trivedi (From 01-06-2019 to 09-09-2020) Dr. P. R. Vaishnav (From 10-09-2020 to 20-09-2020) Dr. M. M. Trivedi (From 21-09-2020 to 24-03-2021) Dr. Gautam R. Patel (From 25-03-2021 to continue)</p>	

Annexure-4
Heads of the Departments
(01-04-2020 to 31-03-2021)

[1] FACULTY OF AGRICULTURE, ANAND

I/c. Principal & Dean, Dr. M. V. Patel (01-10-2019 to 30-09-2022) (Retd. 30-06-2020)

I/c. Principal & Dean, Dr. P. R. Vaishnav (01-07-2020 to 30-09-2022) (Retd. 31-12-2020)

I/c. Principal & Dean, Dr. Y. M. Shukla (01-01-2021 to 31-12-2023)

Sr. No.	Name and Designation of the Teacher		Department
1.	Dr. N. J. Jadav	Professor (P)	Soil Science & Agricultural Chemistry (01-06-2018 to 31-05-2021)
2.	Dr. J. J. Dhruve	Associate Professor	Bio-chemistry (01-10-2018 to 30-09-2021)
3.	Dr. D. A. Patel	Associate Professor	Genetics & Plant Breeding (01-07-2018 to 30-06-2021)
4.	Dr. M. V. Patel	Professor	Agronomy (01-07-2017 to 30-06-2020) Retd. 30/06/2020
	Dr. B. D. Patel	Professor (P) & Agronomist in AICRP on Weed Control Management	Agronomy (01-11-2018 to 31-10-2021)
5.	Dr. M. S. Kulshreshtha	Professor (P) (Mathematics)	Basic Science and Humanities (01-01-2019 to 31-12-2022)
6.	Dr. R. V. Vyas	Professor (P)	Agricultural Microbiology (01-07-2017 to 30-06-2020)
	Dr. R. V. Vyas	Professor (P)	Agricultural Microbiology (01/07/2020 to 30/06/2023)
7.	Dr. N. B. Chauhan	Professor	Extension Education (01-07-2017 to 30-06-2020) Retd. 30-06-2021
	Dr. J. B. Patel	Associate Professor	Extension Education (01/07/2021 to 30/06/2024)
8.	Dr. K. S. Jadav	Associate Professor	Agricultural Economics (01-07-2017 to 30-06-2020)
	Dr. K. S. Jadav	Associate Professor	Agricultural Economics (01/07/2020 to 30/06/2023)
9.	Dr. V. B. Bhalodiya	Associate Professor	Agricultural Engineering (15-02-2019 to 14-02-2022)
10.	Dr. A.B.Brahmbhatt	Associate Professor	Plant Pathology (01-04-2018 to 31-03-2021) Retd. 31/12/2019
	Dr. R. G. Parmar	Associate Professor	Plant Pathology (01/01/2020 to 31/12/2022)

Sr. No.	Name and Designation of the Teacher		Department
11.	Dr. P. K. Borad	Professor (P)	Agricultural Entomology (01-07-2017 to 30-06-2020) Retd. 30/04/2020
	Dr. D. B. Sisodiya	Associate Professor	Agricultural Entomology (01/05/2020 to 30/04/2023)
12.	Dr. B. A. Patel	Professor (P)	Nematology (01-07-2017 to 30-06-2020) Retd. 31/05/2020
	Dr. R. K. Thumar	Associate Professor	Nematology (01/06/2020 to 31/05/2023)
13.	Dr. P. R. Vaishnav	Professor	Agricultural Statistics (01-07-2017 to 30-06-2020) Retd. 31/12/2020
	Dr. A. D. Kalola	Associate Professor	Agricultural Statistics (01/01/2021 to 31/12/2023)
14.	Dr. V. J. Patel	Associate Professor	Polytechnic in Agriculture, Anand (01-07-2017 to 30-06-2020)
	Dr. V. J. Patel	Associate Professor	Polytechnic in Agriculture, Anand (01/07/2020 to 30/06/2023)
15.	Dr. N. I. Shah	Professor	(Ten Co-opted Mem. by Academic Council) (01-06-2020 to 31-05-2023) Horticulture (Dean) (01-09-2020 to 30-09-2022) Principal (Horti. Date: 31-08-2020)
	Dr. M. J. Patel	Associate Professor	Horticulture (01/09/2020 to 31/08/2023)
16.	Dr. Kalyanrao Patil	Assistant Professor	Seed Science & Technology (01-11-2017 to 31-10-2020)
	Dr. Kalyanrao Patil	Assistant Professor	Seed Science & Technology (01/11/2020 to 31/10/2023)
17.	Dr. S. J. Macwan	Assistant Professor	Plant Physiology (01-10-2018 to 30-09-2021)
18.	Dr. M. M. Lunagaria	Associate Professor	Agricultural Meteorology (15-02-2019 to 14-02-2022)
19.	Dr. M. M. Trivedi	Professor (P)	Animal Science (01-11-2017 to 31-10-2020) (HOD) (Six Nominated Member by Academic Council) (01-03-2019 to 30-02-2022) (બી.એ.સી.એ. ની અવેજી સેવામાંથી મુક્ત તા. ૩૧.૦૩.૨૦૨૧)
	Dr. R. M. Rajpura	Assistant Professor	Animal Science (01/04/2021 to 31/03/2024)

[2] FACULTY OF DAIRY SCIENCE, ANAND

Principal & Dean, Dr. J. B. Prajapati (01-10-2019 to 30-09-2022) (Retd. 31-10-2020)

I/c. Principal & Dean, Dr. J. B. Upadhyay (01-11-2020 to 30-09-2022)

Sr. No.	Name and Designation of the Teacher	Department
1.	Dr. J. B. Prajapati Professor	Dairy Microbiology (01-07-2017 to 30-06-2020) Retd. 31-10-2020
	Dr. Sreeja V. Assistant Professor	Dairy Microbiology (01-07-2020 to 30-06-2023)
2.	Dr. J. B. Upadhyay Professor	Dairy Engineering (01-07-2017 to 30-06-2020)
	Dr. J. B. Upadhyay Professor	Dairy Engineering (01-07-2020 to 30-06-2023)
3.	Dr. A. K. Makwana Associate Professor	Dairy Business Management (01-07-2017 to 30-06-2020)
	Dr. A. K. Makwana Associate Professor	Dairy Business Management (01-07-2020 to 30-06-2023)
4.	Dr. Sunita V. Pinto Professor (P)	Dairy Technology (01-08-2018 to 31-07-2021)
5.	Dr. Atanu Jana Professor	Dairy Processing & Operations (01-08-2018 to 31-07-2021)
6.	Dr. B. M. Mehta Associate Professor	Dairy Chemistry (01-07-2018 to 30-06-2021)

[3] FACULTY OF VETERINARY SCIENCE & ANIMAL HUSBANDRY, ANAND

I/c. Principal & Dean, Dr. M. N. Brahmhatt (01-10-2019 to 30-09-2022)

Sr. No.	Name and Designation of the Teacher	Department
1.	Dr. D. M. Bhayani Professor (P)	Veterinary Anatomy (01-11-2018 to 31-10-2021)
2.	Dr. A. M. Pandey Professor	Veterinary Physiology & Biochemistry (01-07-2017 to 30-06-2020)
	Dr. S. P. Mudhira Assistant Professor	Veterinary Physiology & Biochemistry (01-01-2020 to 31-12-2022)
3.	Dr. S. K. Bhavsar Professor	Veterinary Pharmacology & Toxicology (01-10-2017 to 30-09-2020)
4.	Dr. B. C. Parmar Associate Professor	Livestock Products Technology (01-10-2017 to 30-09-2020)

Sr. No.	Name and Designation of the Teacher		Department
5.	Dr. J. B. Nayak	Associate Professor	Veterinary Public Health & Epidemiology (01-10-2017 to 30-09-2020)
6.	Dr. D. J. Ghodasara	Professor (P)	Veterinary Pathology (01-11-2018 to 31-10-2021)
7.	Dr. J. J. Hasnani	Professor (P)	Veterinary Parasitology (01-07-2017 to 30-06-2020)
	Dr. J. J. Hasnani	Professor (P)	Veterinary Parasitology (01-07-2020 to 30-06-2023)
8.	Dr. S. K. Raval	Professor	Veterinary Medicine (01-07-2017 to 30-06-2020)
	Dr. S. K. Raval	Professor	Veterinary Medicine (01-07-2020 to 30-06-2023)
9.	Dr. P. V. Parikh	Professor	Veterinary Surgery & Radiology (01-11-2018 to 31-10-2021)
10.	Dr. A. J. Dhami	Professor (P)	Veterinary Gynecology & Obstetrics (01-07-2015 to 31-05-2018)
	Dr. A. J. Dhami	Professor (P)	Veterinary Gynecology & Obstetrics (01-07-2020 to 30-06-2023)
11.	Dr. S. V. Shah	Professor (P)	Livestock Production & Management (15-11-2018 to 14-11-2021)
12.	Dr. D. N. Rank	Professor (P)	Animal Genetics & Breeding (01-07-2017 to 30-06-2020)
	Dr. D. N. Rank	Professor (P)	Animal Genetics & Breeding (01-07-2020 to 30-06-2023)
13.	Dr. C. G. Joshi	Professor	Animal Bio-technology (Ani. Sci.) (01-07-2017 to 30-06-2020) (Deputation Date : 07-08-2018 Director, GBRC, Gandhinagar)
	Dr. R. S. Joshi	Professor (P)	Animal Bio-technology (01-07-2020 to 30-06-2023)
14.	Dr. D. M. Patel	Professor (P)	Veterinary Clinic Complex (VCC) (01-07-2017 to 30-06-2020)
	Dr. D. M. Patel	Professor (P)	Veterinary Clinic Complex (VCC) (01-07-2020 to 30-06-2023)
15.	Dr. N. P. Sarvaiya	Professor (P)	Reproductive Biology Research Unit (01-02-2018 to 31-01-2021)
16.	Dr. S. V. Shah	Professor (P)	Livestock Research Station (01-07-2017 to 30-06-2020)
	Dr. K. N. Wadhvani	Professor (P)	Livestock Research Station (15-01-2020 to 14-01-2023)

17.	Dr. F. P. Savaliya	Associate Professor	Poultry Research Station (01-07-2017 to 30-06-2020)
	Dr. F. P. Savaliya	Professor (P)	Poultry Research Station (01-07-2020 to 30-06-2023)
18.	Dr. V. P. Belsare	Research Scientist	Kapila Go Sanshodhan Kendra, Minawada / Ramna Muvada (01-07-2017 to 30-06-2020)
	Dr. D. S. Nauriyal	Professor (P)	Kapila Go Sanshodhan Kendra, Minawada / Ramna Muvada (01-10-2018 to 30-09-2021)
19.	Dr. B. B. Bhanderi	Assistant Professor	Veterinary Microbiology (01-07-2019 to 30-06-2022)
20.	Dr. A. C. Vaidya	Associate Professor	Veterinary and Animal Husbandry Extension Education (01-07-2017 to 30-06-2020) (Transfer by Dahod Date: 22-07-2019)
	Dr. U. M. Patel	Associate Professor	Veterinary and Animal Husbandry Extension Education (23-07-2019 to 22-07-2022)
21.	Dr. P. R. Pandya	Professor (P)	Animal Nutrition (01-05-2017 to 30-04-2020)
	Dr. P. R. Pandya	Professor (P)	Animal Nutrition (01-05-2020 to 30-04-2023)
22.	Dr. K. N. Wadhvani	Professor (P)	Livestock Farm Complex (01-07-2017 to 30-06-2020)
	Dr. V. P. Belsare	Professor (P)	Livestock Farm Complex (01-10-2018 to 30-09-2021) Retd. 30-11-2020

[4] FACULTY OF FOOD PROCESSING TECHNOLOGY & BIO-ENERGY, ANAND

Dean, Dr. K. B. Kathiria (18-09-2019 to 17-09-2020)

I/c. Principal & Dean, Dr. R. F. Sutar (18-09-2020 to 17-09-2023)

Sr. No.	Name and Designation of the Teacher		Department
1.	Dr. R. F. Sutar	Professor	Post-Harvest Engineering & Technology (01-07-2017 to 30-06-2020)
	Dr. R. F. Sutar	Professor	Post-Harvest Engineering & Technology (01-07-2020 to 30-06-2023)
2.	Dr. S. S. Kapdi	Professor	Bio-Energy (01-07-2017 to 30-06-2020)
	Dr. S. S. Kapdi	Professor	Bio-Energy (01-07-2020 to 30-06-2023)
3.	Dr. R. V. Prasad	Professor	Food Quality Assurance (01-07-2017 to 30-06-2020)
	Dr. R. V. Prasad	Professor	Food Quality Assurance (01-07-2020 to 30-06-2023) Retd. 30-06-2021

Sr. No.	Name and Designation of the Teacher		Department
4.	Dr. A. K. Sharma	Associate Professor	Food Engineering (01-07-2017 to 30-06-2020)
	Dr. A. K. Sharma	Professor (P)	Food Engineering (01-07-2020 to 30-06-2023)
5.	Dr. H. G. Bhatt	Associate Professor	Food Safety and Testing (01-07-2017 to 30-06-2020)
	Dr. H. G. Bhatt	Associate Professor	Food Safety and Testing (01-07-2020 to 30-06-2023)
6.	Er. H. Pandey	Associate Professor	Food Processing Technology (01-07-2017 to 30-06-2020)
	Dr. H. Pandey	Associate Professor	Food Processing Technology (01-07-2020 to 30-06-2023)
7.	Dr. Samip Dutta	Associate Professor	Food Business Management (01-07-2017 to 30-06-2020)
	Dr. Samip Dutta	Associate Professor	Food Business Management (01-07-2020 to 30-06-2023)
8.	Dr. S. H. Akbari	Associate Professor	Food Plant Operations (01-02-2019 to 31-01-2022)

[5] FACULTY OF AGRICULTURAL ENGINEERING & TECHNOLOGY, GODHRA
Principal & Dean, Dr. R. Subbaiah (01-10-2019 to 30-09-2022)

Sr. No.	Name and Designation of the Teacher		Department
1.	Dr. R. Swarnkar	Professor	Farm Machinery and Power (01-07-2017 to 30-06-2020)
	Dr. Pankaj Gupta	Professor (P)	Farm Machinery and Power Engineering (01-07-2020 to 30-06-2023)
2.	Dr. Navneet Kumar	Associate Professor	Processing & Food Engineering (01-07-2017 to 30-06-2020)
	Dr. Navneet Kumar	Associate Professor	Processing and Food Engineering (01-07-2020 to 30-06-2023)
3.	Dr. Kapil Mandloi	Associate Professor	Basic Engineering and Applied Science (01-07-2017 to 30-06-2020)
	Er. Kapil Mandloi	Assistant Professor	Basic Engineering and Applied Science (01-07-2020 to 30-06-2023)
4.	Dr. Mukesh Tiwari	Associate Professor	Irrigation and Drainage Engineering (01-07-2017 to 30-06-2020)
	Dr. Mukesh Tiwari	Assistant Professor	Irrigation and Drainage Engineering (01-07-2020 to 30-06-2023)

5.	Dr. Pankaj Gupta	Professor (P)	Soil & Water Conservation Engineering (01-12-2019 to 30-11-2022)
6.	Dr. D. K. Vyas	Associate Professor	Renewable Energy Engineering (01-12-2019 to 30-11-2022)

[6] FACULTY OF AGRICULTURAL INFORMATION TECHNOLOGY, ANAND

Dean, Dr. Y. R. Ghodasara (01-10-2019 to 30-09-2022)

Sr. No.	Name and Designation of the Teacher	Department
1.	Dr. Y. R. Ghodasara Professor (P)	Agricultural Information Technology (01-07-2018 to 30-06-2021)
2.	Dr. V. B. Darji Professor (P)	Agricultural Science (01-07-2017 to 30-06-2020)
	Dr. V. B. Darji Professor (P)	Agricultural Science (01-07-2020 to 30-06-2023)

[7] FACULTY OF INTERNATIONAL AGRI-BUSINESS MANAGEMENT INSTITUTE, ANAND

Principal & Dean, Dr. Y. C. Zala (01-10-2019 to 30-09-2022)

Sr. No.	Name and Designation of the Teacher	Department
1.	Dr. Y. A. Lad Associate Professor	HRD & Personnel Management (01-07-2017 to 30-06-2020)
2.	Dr. M. R. Prajapati Assistant Professor	Financial Management (01-07-2017 to 30-06-2020)
3.	Dr. D. R. Vahoniya Assistant Professor	Project Management (01-07-2017 to 30-06-2020)
4.	Dr. R. S. Pundir Professor (P)	Agri-business Economics & Policies (01-04-2018 to 31-03-2021)
5.	Dr. S. R. Panigarhy Assistant Professor	Production Management (01-04-2018 to 31-03-2021)
6.	Dr. Chetan Dudhagara Assistant Professor	Communication & Information Technology (01-04-2018 to 31-03-2021)
7.	Dr. Ashish B. Mahera Assistant Professor	Marketing Management (10-01-2017 to 09-01-2020)

[8] **FACULTY OF HORTICULTURE, ANAND**

5th Deans New HOD Period (01-03-2020 to 28-02-2023)

I/c. Principal & Dean, Dr. H. C. Patel (01-10-2019 to 30-09-2022) (Retd. 31-08-2020)

I/c. Principal & Dean, Dr. N. I. Shah (01-09-2020 to 30-09-2022)

Sr. No.	Name and Designation of the Teacher		Department
1.	Dr. D. D. Parekh	Assistant Professor	Fruit Science (01-03-2020 to 28-02-2023) Assistant Registrar (Academic) (Additional Charge Dated.16.05.2020)
	Dr. A. V. Kotecha	Assistant Professor	Fruit Science (01-07-2020 to 30-06-2023)
2.	Dr. B. N. Satodia	Associate Professor	Vegetable Science (01-03-2020 to 28-02-2023)
3.	Dr. R. R. Gajera	Associate Professor	Post-Harvest Technology (01-03-2020 to 28-02-2023)
4.	Dr. D. R. Paradva	Assistant Professor	Floriculture and Landscape Architecture (01-03-2020 to 28-02-2023)
	Dr. Amita B. Parmar	Assistant Professor	Floriculture and Landscape Architecture (01-07-2020 to 30-06-2023) Seniority A. P.
5.	Dr. A. H. Barad	Assistant Professor	Plant Protection (01-03-2020 to 28-02-2023)
6.	Dr. C. H. Raval	Assistant Professor	Natural Resources Management (01-03-2020 to 28-02-2023)
7.	Dr. Prity Kumari	Assistant Professor	Basic Science (01-03-2020 to 28-02-2023)
8.	Dr. B. L. Dudhat	Assistant Professor	Social Science (01-03-2020 to 28-02-2023)

[9] **FACULTY OF AGRICULTURE, VASO**

New HOD Period (01-07-2018 to 30-06-2021)

I/c. Principal & Dean, Dr. M. V. Patel (01-03-2019 to 30-09-2019) (Retd. 30-06-2020)

I/c. Principal, Dr. Y. M. Shukla

Sr. No.	Name and Designation of the Teacher		Department
1.	Dr. Y. M. Shukla	Professor (P)	Biochemistry / Plant Physiology / Plant Molecular Biology (01-07-2018 to 30-06-2021)
2.	Dr. S. B. Patel	Associate Professor	Soil Science & Agricultural Chemistry + (Agricultural Meteorology) (01-05-2019 to 30-04-2022)
3.	Dr. N. B. Patel	Associate Professor	Entomology (08-03-2019 to 07-03-2022)
4.	Dr. G. R. Patel	Associate Professor	Agricultural Engineering (01-07-2018 to 30-06-2021)
5.	Dr. B. C. Patel	Associate Professor	Genetics & Plant Breeding + Seed Science & Technology (01-07-2018 to 30-06-2021)
6.	Dr. Kurjibhai M. Patel	Associate Professor	Horticulture (01-07-2018 to 30-06-2021)
7.	Dr. Manoj Dohat	Assistant Professor	Agronomy (01-07-2018 to 30-06-2021)
8.	Dr. Nilesh B. Pawar	Assistant Professor	Plant Pathology / Nematology / Microbiology (01-07-2018 to 30-06-2021)
9.	Dr. Bindu M. Christian	Assistant Professor	Agricultural Extension & Communication + English (01-07-2018 to 30-06-2021)
10.	Dr. M. N. Jegoda	Assistant Professor	Animal Science (01-07-2018 to 30-06-2021)

Chart-1

ORGANIZATIONAL SET-UP

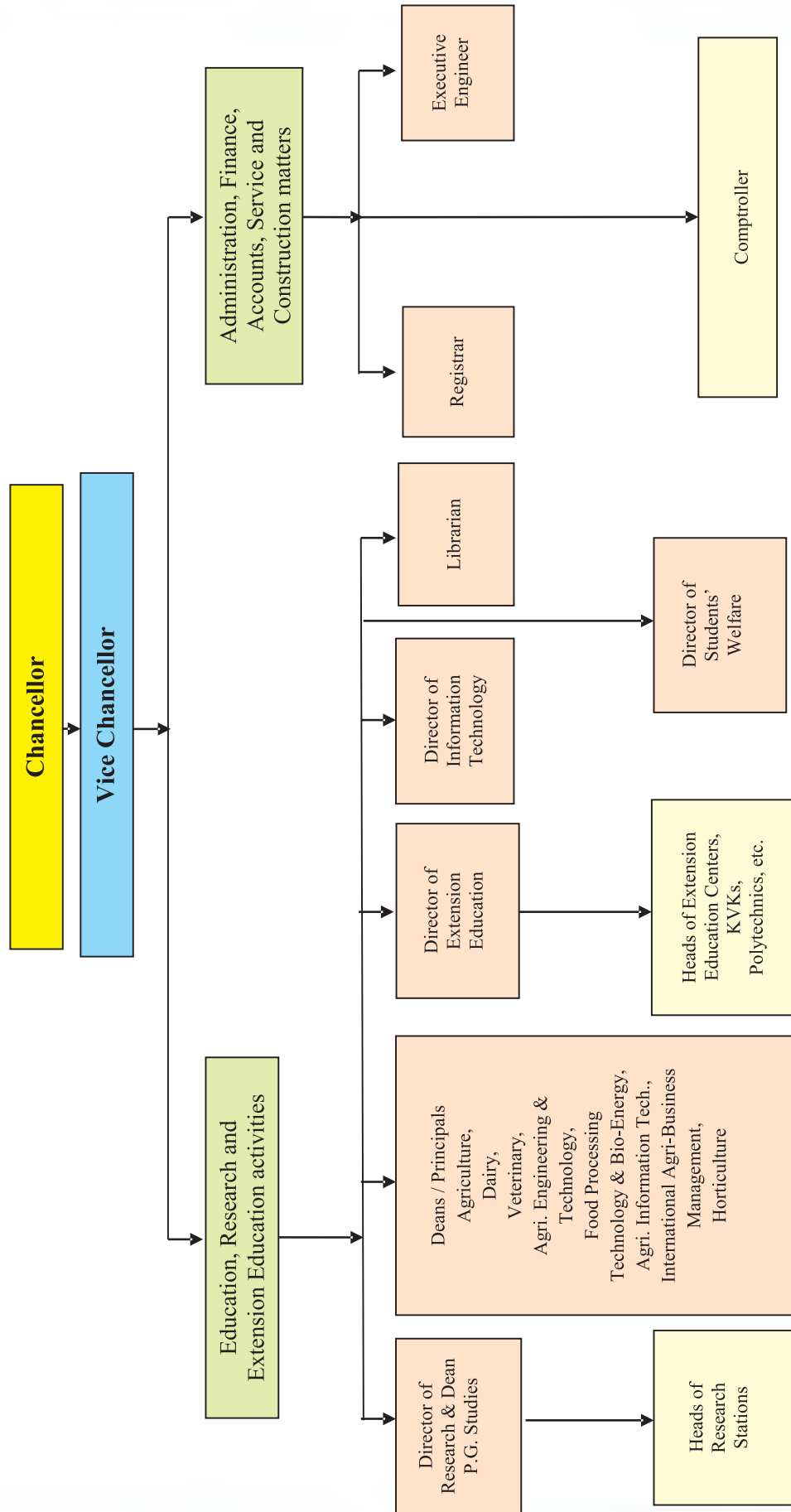
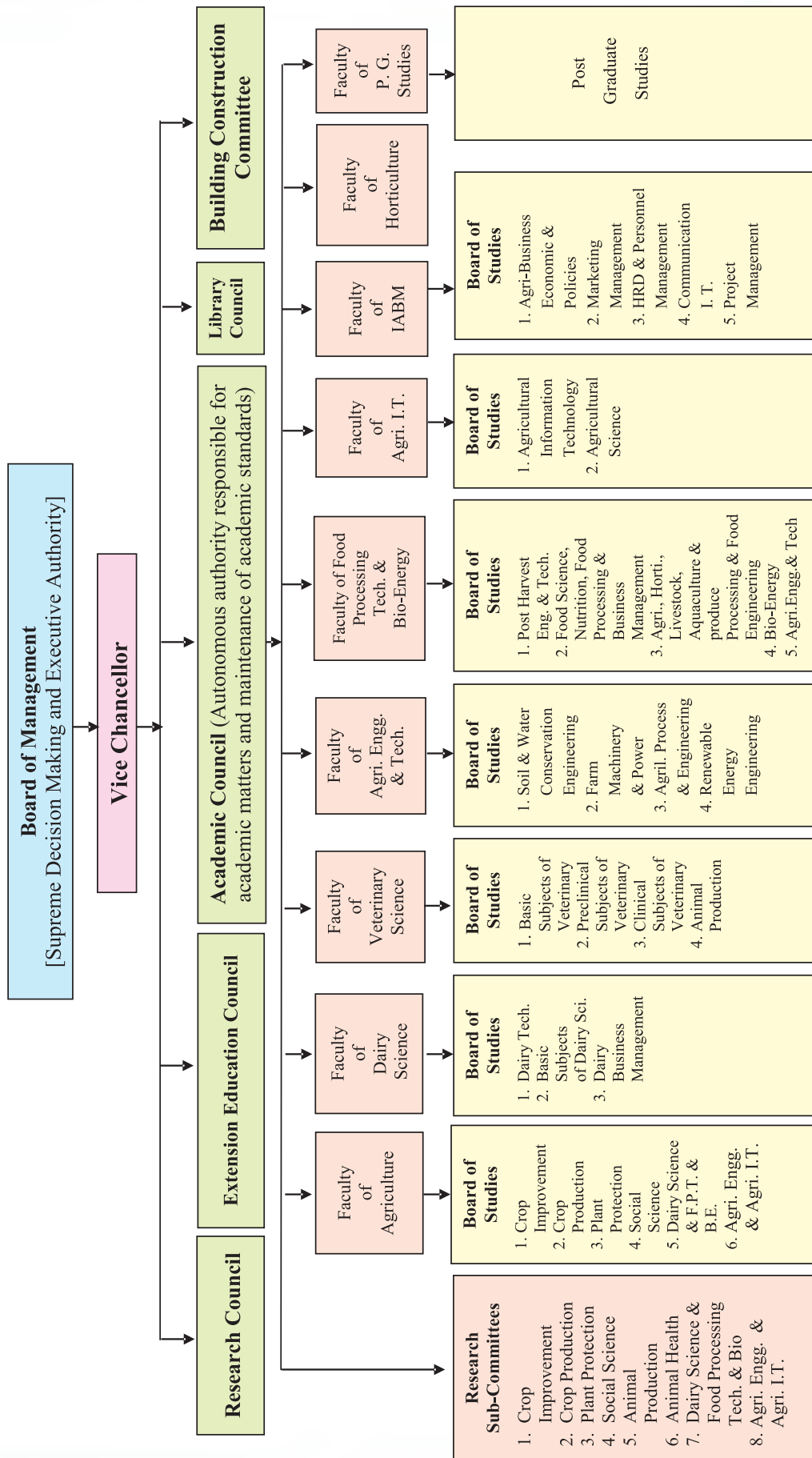


Chart-2
Organizational Chart & Decision making channels



Chapter 3

EDUCATION

Centralized Admission Process

Under Section 25 (7) (g) of the GAU Act, 2004, the function of supervising and coordinating the centralized admission to various degree courses at the University has been assigned to the Council of State Agricultural Universities. The Council has nominated Vice Chancellor of Anand Agricultural University as the Nodal Officer for carrying out function of the centralized admission for all SAUs of Gujarat.

Nodal Officer

As a Nodal Officer for Academic and Examination, Vice Chancellor Dr. R.V.Vyas, successfully conducted an important exercise of centralized admissions at Diploma, UG and PG levels for four State Agricultural Universities of Gujarat. As the Nodal Officer, he convened meeting of the Registrars and Deans of four SAUs and arranged for smooth conduct of examinations and paper evaluation.

3.1 Under Graduate Courses

Admission Procedure

AAU is a residential university and follows semester system. Courses of B.Sc. (Hons.) Agriculture, B.Sc. (Hons.) Horticulture, B.Tech. (Agricultural Engineering), B.Tech. (Food Technology), B.Tech. (Agricultural Information Technology) are of four years duration divided into eight semesters. The medium of instruction is English. The University imparts resident instruction for the graduate programmes at their constituent colleges with the eligibility and admission requirements as given in Table 3.1. Under the semester system of education, all students are compulsorily required to stay in a University hostel, except otherwise permitted. Through online receipt of applications, a common merit list is prepared on the basis of Academic Regulations. Girl students are exempted from tuition and hostel fees.

Table 3.1 Eligibility criteria for admission in various degree programmes

Name of the graduate programme	Category wise minimum % requirement of marks in theory subjects in Physics, Chemistry and Biology of HSSCE examination			
	Category			
	General	SC	ST	SEBC
B.Sc. (Hons.) Agriculture	40	35	35	40
B.Sc.(Hons.) Horticulture	40	35	35	40
B.Tech. (Agricultural Information Technology)	40	35	35	40
Name of the graduate programme	Category wise minimum % requirement of marks in theory subjects in Physics, Chemistry and Mathematics of HSSCE examination			
	Category			
	General	SC	ST	SEBC
B.Tech. (Agricultural Engineering)	40	35	35	40
B.Tech. (Agricultural Information Technology)	40	35	35	40
B.Tech. (Food Technology)	40	35	35	40

Admission is considered on the merit basis of 60% of PCM/PCB theory and 40 % of GUJCET marks.

The college wise details i.e., number of seats and actual admitted students for the academic year 2020-21 are given in Table 3.2.

Table 3.2 Students intake and admitted in different graduation programmes (2020-21)

Degree	Name of the College	Admission Capacity		No of students
		Total Seat	ICAR/VCI	Admitted
B.Sc. Hons. (Agri.)	B. A. College of Agriculture, Anand	149	20	118
	College of Agriculture, Vaso	66	-	66
	College of Agriculture, Jabugam	44	-	44
B.Sc. Hons. (Horti.)	College of Horticulture, Anand	77	-	61
B.Tech. (Agril. Engg.)	College of Agril. Engineering & Technology, Godhra	50	08	30
B.Tech. (AIT)	College of Agricultural Information Technology, Anand	40	-	34
B.Tech. (FT)	Food Processing Technology & Bio-Energy, Anand	50	08	43

3.1.1 Diploma to Degree Programme (D to D)

Admission Procedure

10% seats of degree programme are kept reserved in Agriculture, Horticulture, Agricultural Engineering & Food Processing Technology for Diploma to Degree programme. Based on the common entrance test, the qualifying students are admitted directly in the third semester of the concerned degree programme.

3.1.2 Polytechnic Programme

Admission Procedure

Students who have passed Secondary School Certificate Examination with English as compulsory subject are eligible for admission to three years (six semesters) Diploma programme in various subjects run at the Polytechnics of the University. The medium of instruction is English.

The details of number of seats and actual admitted students from different polytechnics are given in Table 3.3.

Table 3.3 : Students intake and admitted in different Diploma Programmes for academic year 2020-21

Name of the Diploma Programme	Name of the Polytechnic College	Admission capacity	No. of students
		Total Seat	Admitted
Agriculture	Sheth M.C. Polytechnic College of Agriculture, Anand	44	44
	Polytechnic College of Agriculture, Vaso	44	44
Agricultural Engineering	Polytechnic College of Agricultural Engineering, Dahod	44	38
Nutrition & Dietetics	Polytechnic College of Food Science & Home Economics, Anand	44	39
Horticulture	Polytechnic College of Horticulture, Vadodara	44	43

3.2 Post Graduate courses

Admission Procedure

A candidate aspiring to get admission in PG studies should have a graduate degree of the related field with an OGPA of not less than 6.00/10.00. Entrance test and counselling are conducted and admission is given on the basis of merit and as per the intake capacity.

For admission in International Agri. Business Management Institute, graduates of Agriculture and its allied science are eligible. Selection is made on the basis of merit in Entrance Test.

Two academic years (four semesters)

are required for the course work, research and thesis preparation and examination leading to the Master's Degree. A minimum period of three academic years (six semesters) are required for the Ph.D. degree.

Intake Capacity

Intake capacity for Post Graduate programmes in a particular discipline is fixed on the basis of infrastructure of the concerned department and the availability of experts / recognized teachers in the department. On the basis of the decision taken by the Admission Committee, the intake capacity was fixed as shown in Table 3.4.

Table 3.4 Intake capacity in different faculties for the year 2020-21

Agriculture Faculty

Sr. No.	Subject	M. Sc. (Agri.)	Doctorate	Total
		Regular + ICAR	Regular + ICAR	
1.	Agronomy	13+2	5+1	21
2.	Soil Science & Agril. Chemistry	8+2	2+1	13
3.	Biochemistry	3+1	2+0	6
4.	Genetics & Plant Breeding	15+3	4+1	23
5.	Agril. Entomology	12+2	2+1	17
6.	Agril. Statistics	3+1	1+0	5
7.	Plant Pathology	8+1	2+0	11
8.	Agril. Economics	4+1	1+0	6
9.	Agricultural Extension & Communication	5+1	2+1	9
10.	Crop/Plant Physiology	2+0	1+0	3
11.	Agril. Meteorology	2+0	1+0	3
12.	Nematology	2+0	0+0	2
13.	Agril. Microbiology	4+1	1+0	6
14.	Plant Molecular Biology & Biotechnology	3+1	1+1	6
15.	Seed Science & Technology	2+0	1+0	3
Total		86+16	26+6	134

Horticulture Faculty

Sr. No.	Subject	M. Sc. (Horti.)	Doctorate	Total
		Regular + ICAR	Regular + ICAR	
1.	Fruit Science	5+1	1+0	7
2.	Vegetable Science	5+0	3+0	8
Total		10+1	4+0	15

Food Processing Technology

Sr. No.	Subject	M. Tech. (FT)	Doctorate	Total
		Regular + ICAR	Regular + ICAR	
1.	Food Processing Technology	14+4	1+1	20
2.	Food Processing Engineering	8+0	2+0	10
3.	Food Safety and Quality Assurance	10+0	2+0	12
Total		32+4	5+1	42

Agri-Business Management Faculty

Sr. No.	Subject	MBA	Doctorate	Total
		Regular + ICAR	Regular + ICAR	
1.	International Agribusiness	35+10	5+0	50
Total		35+10	5+0	50

Agricultural Engineering & Technology Faculty

Sr. No.	Subject	M.Tech. (Agril. Engg.)	Doctorate	Total
		Regular + ICAR	Regular + ICAR	
1.	Farm Machinery & Power Engineering	7+1	1+1	10
2.	Soil & Water Engineering	0+0	0+0	0
3.	Processing & Food Engineering	2+1	2+0	5
4.	Irrigation and Drainage Engineering	0+0	0+0	0
5.	Renewable Energy Engineering	1+0	0+0	1
Total		10+2	3+1	16

Admission and Output

The advertisement was published in leading daily news papers for the admission. The applications were processed and entrance tests were conducted through online system and merit

list was prepared and declared on website to call candidates for counselling.

Details of students passed out in different faculties at Graduate, Masters and Doctorate levels are given in Table 3.5.

Table 3.5 Passed out students (Graduates and Post Graduates) of AAU (2019-20)

Sr. No.	Degree	First Class with Distinction	First Class	Second Class	Pass Class	Total
1.	B.Sc. (Hons.) Agri.	97	91	9	-	197
2.	B. Sc. (Hons) Horti.	33	19	-	-	52
3.	B.V.Sc.& A.H.	3	18	38	4	63

Sr. No.	Degree	First Class with Distinction	First Class	Second Class	Pass Class	Total
4.	B.Tech. (DT)	21	35	8	3	67
5.	B.Tech. (Agri.Engg)	10	18	2	-	30
6.	B.Tech. (FPT)	10	15	11	1	37
7.	B.Tech. (AIT)	6	18	9	1	34
UG Total						480
8.	M.Sc. (Agri)	19	30	3	-	52
9.	M.Sc. (Horti)	1	9	-	-	10
10.	M.V.Sc.	18	23	2	-	43
11.	M.Tech. (DT)	4	10	-	-	14
12.	M.Tech. (FT)	-	1	-	-	1
13.	MBA-ABM	7	16	1	-	24
14.	M.Tech. (Agri. Engg.)	3	6	-	-	9
15.	M.Sc. Agri.(Journalism)	-	4	-	-	4
16.	M.Sc Agri. (Marketing)	-	3	2	-	5
17.	Ph.D.	-	-	-	-	44
Master & Ph.D. Total						206
Grand Total						686

Annual Convocation

17th Annual Convocation of AAU was held on 04th February 2021, in the presence of Hon'ble Governorshri of Gujarat and the Chancellor of this University, Shri Acharya Devvrat; the Hon'ble Chief Guest of Convocation Dr. R.S.Sodhi, Managing Director, Gujarat Cooperative Milk Marketing Federation (GCMMF), Anand; Vice Chancellors of other State Agricultural Universities.

Nukasani Sagarika, a Ph. D. student of Faculty of College of Food Processing Technology & Bio Energy; Vadee Dhruvinkumar Naveenbhai, a M.Sc.(Agri.). student of B.A. College of Agriculture and Bhavsar Maitri Yogeshkumar, a M.V.Sc. student of Faculty of College of Veterinary Science & Animal Husbandry, were awarded Chancellor's Gold Medals.

Ghetiya Radhika Lalitkumar, a student

of B. A. College of Agriculture; Anjaria Pranav Ashok, a student of College of Veterinary Science & Animal Husbandry; Yash A Rupala, a student of SMC College of Dairy Science; Sutariya Sachinkumar Jashrajbhai, a student of College of Agricultural Engineering & Technology; Patel Ansh Sunilkumar, a student of College of Food Processing Technology & Bio-Energy; Rathod Divya, a student of College of Agricultural Information Technology; Sharma Zeel, a student of College of Horticulture were awarded Vice Chancellor's Gold Medals. The details of medals and prizes are shown in Annexure-A and Annexure-B.

Hon'ble Governorshri of Gujarat and Chancellor of AAU, Anand, Shri Acharya Devvrat conferred the degrees to the graduates and post-graduates in person and in absentia. Total **480** graduate and **206** post-graduate candidates received the degrees at the Convocation.



Shri. Acharya Devvrat, Hon'ble Chancellor & Governer Shri of Gujarat State addressing the audience during convocation



Dr. R.S. Sodhi, Managing Director, Gujarat Cooperative Milk Marketing Federation (GCMMF), Anand addressing the audience during convocation



Address by Dr. R.V.Vyas, Hon'ble Vice Chancellor of Anand Agricultural University during convocation

Annexure-A

**List of PG Gold Medals/Gold Plated Medals/Cash Prizes
Awards for 17th Annual Convocation**

Sr. No.	Name of Medal	Gold Medal	Gold Plated Medal	Cash Prize	Name of Student
1	Chancellor's Gold Medal Ph.D. (FT)	1	-	-	Nukasani Sagarika
2	Chancellor's Gold Medal M.Sc.(Agri.)	1	-	-	Vadee Dhruvinkumar Naveenbhai
3	Chancellor's Gold Medal M.V.Sc.	1	-	-	Bhavsar Maitri Yogeshkumar
4	Late Shri S.V. Desai Medal	-	1	-	Chaudhari Keyurkumar Bhikhabhai
5	Dr. C.B. Shah Medal	-	1	-	Patel Bharatkumar Karsanbhai
6	Late Dr. Diwaker R. Patel Medal	-	1	-	Savani Khyati Rasikbhai
7	Dr. C.A. Patel Cash Prize	-	-	1	Prem Kumar B.
8	PG Student of Dr. K.P. Kikani sponsored Dr. K.P. Kikani Gold Plated Silver Medal	-	1	-	Vedha Venkappa Bhandi
9	Param Pujya Pramukh Swami Maharaj Prerit Dr. K.P. Kikani Gold Plated Silver Medal	-	1	-	Patel Hirenkumar Thakorabhai
10	Golden Jubilee Medal	-	1	-	Momin Sohilabbas Gulamakbar
11	Late Shri K.K. Shukla Medal	-	1	-	Anjana Ruchikkumar Rajendrabhai
12	Amul Gold Plated Silver Medal (Dairy Micro.)	-	1	-	Chaudhari Hiralben Mansinhbhai
13	Shri. K.C. Vasavada Memorial Medal (Dairy Micro.)	-	1	-	
14	Dr. J.M. Dave Gold Plated Silver Medal (Dairy Micro.)	-	1	-	
15	Amul Gold Plated Silver Medal (Dairy Tech.)	-	1	-	Sourabh Suresh Kale
16	Dr. R.S. Sharma Gold Medal	1	-	-	Chaudhari Nileshkumar Dahyabhai
17	Amul Gold Plated Silver Medal (Dairy Chem.)	-	1	-	
18	Shri. K.C. Vasavada Memorial Medal (Dairy Tech.)	-	1	-	Zala Dharmendrasinh Anopsinh
19	Ms. Preeti Paul Gold Medal	1	-	-	
20	Devidayal (Sales) Limited Medal	-	1	-	Vempalli Thanuja
21	Arun Iyer Gold Plated Silver Medal	-	1	-	Abhishek Mishra
22	Smt. Venkata Seethmma Siripurapu Memorial Gold Medal	-	1	-	Rathod Devalba Jaydeepsinh
	Total	5	16	1	

Annexure-B

List of UG Gold Medals/Gold Plated Medals/Cash Prizes Awards for 17th Annual Convocation

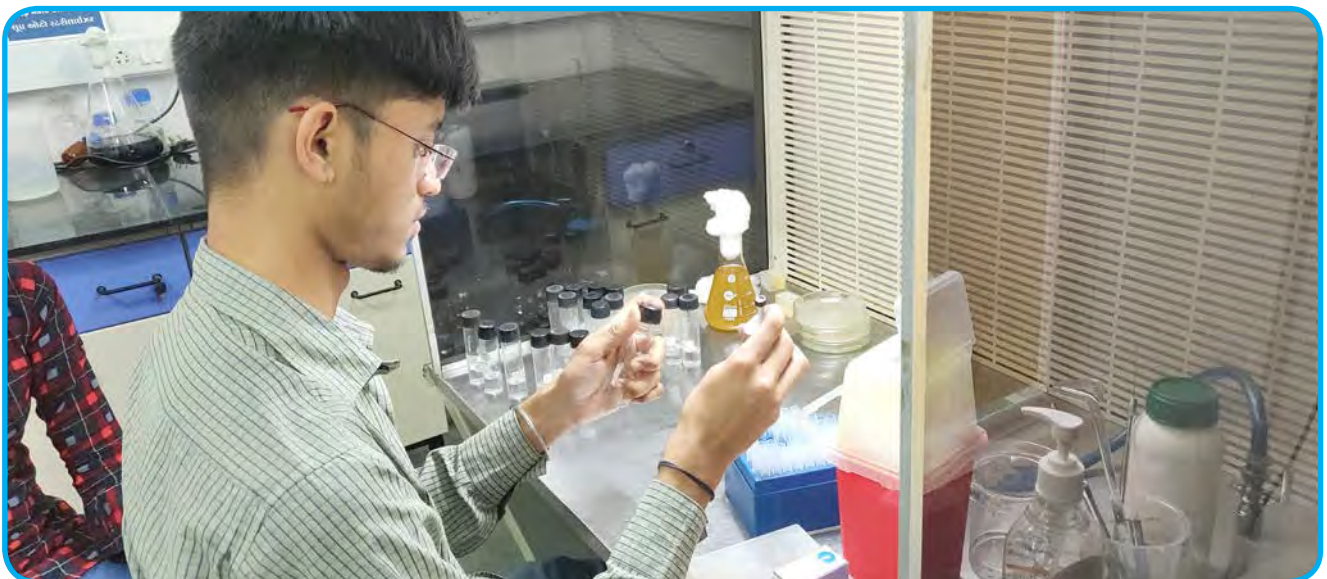
Sr. No.	Name of Medal	Gold Medal	Gold Plated Medal	Cash Prize	Name of Student
B.Sc.(Hons.) Agriculture					
1	VC Gold Medal	1	-	-	Ghetiya Radhika Lalitkumar
2	Dr. M.V. Desai Medal	-	1	-	
3	Dr. Z.B. Patel Medal	-	1	-	
4	Gujarat State First Batch Agricultural Graduates Golden Jubilee (1960-2010) Memorial Gold Medal	1	-	-	
5	Shri Satyendrabhai K. Patel of Dabhau Gold Medal	1	-	-	
6	Smt. Surajben Jethabhai Patel Gold Plated Silver Medal	-	1	-	
7	Dr. B.V. Mehta Medal with cash price	-	1	1	
8	Dr. Ravjibhai Chhotabhai Patel Medal	-	1	-	
9	Prof. H.N. Patel Memorial Medal	-	1	-	
10	Dr. Sureshbhai N. Patel Memorial Medal	-	1	-	
11	Dr. C.A. Patel Gold Plated Silver Medal	-	1	-	
12	Memon Trust Dr. M.D. Patel Cash Prize	-	-	1	
13	American Spring and Pressing Works Pvt. Ltd. Cash Prize	-	-	1	
14	Dr. Harikaka Medal	-	1	-	
15	Late Smt. Sumitraben Rambhai Patel Gold Plated Silver Medal	-	1	-	Jadeja Siddharajsinh Kishorsinh
16	Shri. Natwarbhai Bababhai Patel Gold Plated Silver Medal	-	1	-	Panchal Sumitkumar Dineshbhai
17	Dr. Ramjibhai M. Patel	-	1	-	Patel Jalpaa Dharmeshbhai
18	Late Shri Dahyabhai Ambalal Patel Gold Medal	1	-	-	Patel Kinalbahen Mukeshbhai
19	Shri Babubhai Jashbhai Patel Shashtipurti Smruti Gold Medal	1	-	-	
20	Dr. Ranchhodbhai M. Patel Gold Medal	1	-	-	
21	Late Shri Jashbhai J. Patel Medal	-	1	-	
22	Dr. Mrinal Kanti Chakraborty Medal	-	1	-	
23	Dr. Purachand D. Mistry Medal	-	1	-	
24	EX. VC, NAU & JAU, Dr. A.R. Pathak's Late Parents Taraben & Ramkrishna Pathak Memorial Gold Plated Silver Medal	-	1	-	
25	Shri Jethabhai Dayaljibhai Patel Gold Plated Silver Medal	-	1	-	Patel Sunilbhai Kantibhai
Total		6	17	3	

Sr. No.	Name of Medal	Gold Medal	Gold Plated Medal	Cash Prize	Name of Student
B.V.Sc. & A.H.					
1	VC Gold Medal	1	-	-	Anjaria Pranav Ashok
2	Dr. K. Jankiraman Gold Plated Silver Medal	-	1	-	
3	Prof. M.R. Varia Gold Plated Silver Medal	-	1	-	Gopa Ram
4	Late Shri Shailesh Rameshbhai Patel Shakti Group Sarsa Gold Medal	1	-	-	
5	Dr. S.B. Kodagali Gold Plated Silver Medal	-	1	-	
6	IX th ISVPT Anand Medal	-	1	-	
7	Dr. J.H. Purohit Gold Plated Silver Medal	-	1	-	Maniya Jayesh Mithalal
8	Dr. R.K. Shukla Medal	-	1	-	
9	S.J.C. Veterinary College Anand Medal (Anatomy, Biochemistry, Physiology & Pharmacology)	-	1	-	
10	V.C. Desai Charities Medal	-	1	-	
11	Dr. A.D. Dave Medal	-	1	-	
12	Dr. K.N. Vyas, Gold Plated Silver Medal	-	1	-	
13	S.J.C. Veterinary College Anand Medal (Surgery, Medicine, Gynaecology And Veterinary Public Health)	-	1	-	
14	Dr. M.N. Mannari Gold Medal	1	-	-	
15	Poshak Poultry & Cattle Feed Pvt. Ltd. Sarsa Medal	-	1	-	
16	Dr. B.P. Pandya Cash Prize	-	-	1	
17	Dr. Smt. Ramaben B. Awasthi Gold Plated Silver Medal	-	1	-	Patel Nidhibahen Jigneshbhai
18	Shri Jivanlal G. Parmar Gold Plated Silver Medal Only For Girls	-	1	-	
19	Dr. M.M. Jani and Mrs. Manjula M. Jani Gold Plated Silver Medal	-	1	-	
20	Memon Trust Dr. N.C. Buch Cash Prize	-	-	1	
21	Memon Trust Dr. T.N. Vaishnav Cash Prize	-	-	1	
Total		03	15	03	

Sr. No.	Name of Medal	Gold Medal	Gold Plated Medal	Cash Prize	Name of Student
B.Tech. (DT)					
1	VC Gold Medal	1	-	-	Yash A. Rupala
2	Sheth Mansukhlal C. Desai Medal (Dairy Engg.)	-	1	-	
3	Late Smt.Kapilaben Babubhai Patel Medal	-	1	-	
4	Shri Indubhai R. Patel Medal	-	1	-	Shivani R. Mishra
5	Sheth Mansukhlal C. Desai Medal (Dairy Micro.)	-	1	-	
6	Late Shri Shankarlal Ratilal Shah Medal	-	1	-	Prajapati Priyanshu Arvindbhai
7	Shri Ramanbhai Dahyabhai Patel of Vaghasi Cash Prize	-	-	1	
8	Late Dr. Jashbhai Ranchhodhbhai Patel	-	1	-	Neha Chauhan
9	Sheth Mansukhlal C. Desai Medal (Dairy Tech.)	-	1	-	
10	Sheth Mansukhlal C. Desai Medal (Dairy Chem.)	-	1	-	
11	Smt. Taraben Maganlal Khatri Medal	-	1	-	
12	Shreshth Milk Gamdiwala Dairy Medal	-	1	-	
13	B.Tech. (DT)-1995 Batch Gold Plated Silver Medal	-	1	-	
14	Late Shri Kanubhai Chhotabhai Patel Medal	-	1	-	
15	Memon Trust Dr. B.M. Patel Cash Prize	-	-	1	
16	Memon Trust Dr. V. Kurien Cash Prize	-	-	1	
17	Late Shri R.J. Patel Medal	-	1	-	Makwana Ankitkumar Rajeshbhai
18	Late Bhogibhai V. Patel Medal	-	1	-	Kulshrestha Umang Sanjeev
	Total	1	14	3	
B.Tech. (FPT)					
1	VC Gold Medal	1	-	-	Patel Ansh Sunilkumar
2	Professor S.C. Bose Siripurapu Gold Medal	1	-	-	
3	Sia & Rhea Siddhartha Bhesaniya Medal	-	1	-	
4	Memon Trust Dr. K.M. Munshi Cash Prize	-	-	1	Desai Ritika
	Total	02	01	01	

Sr. No.	Name of Medal	Gold Medal	Gold Plated Medal	Cash Prize	Name of Student
B.Tech.(Agri.Engg.)					
1.	VC Gold Medal	1	-	-	Sutariya Sachinkumar Jashrajbhai
2.	Shri Venkata Subbaiah Siripurapu Memorial Gold Medal	1	-	-	Vohra Sahil Rafikbhai
3.	Late Bhagwan Harji Bhesania Medal	-	1	-	
4.	Ornate Godhra Cash Prize (PFE Subject)	-	-	1	
5.	Indian Trading Cash Prize (FMP Subject)	-	-	1	
6.	Ornate Godhra Cash Prize (SWE Subject)	-	-	1	
Total		02	01	03	
B.Tech. (AIT)					
1.	VC Gold Medal	1	-	-	Rathod Divya
2.	Designtech Systems Gold Medal	1	-	-	
Total		02	-	-	
B.Sc.(Hons.) Horticulture					
1.	VC Gold Medal	1	-	-	Sharma Zeel
2.	Gujarat Bagayat Vikash Parishad Gold Plated Silver Medal	-	1	-	
3.	Dr. N.S. Parekh Gold Plated Silver Medal	-	1	-	Goswami Priyankaben Bachugiri
Total		01	02	-	







Chapter 4

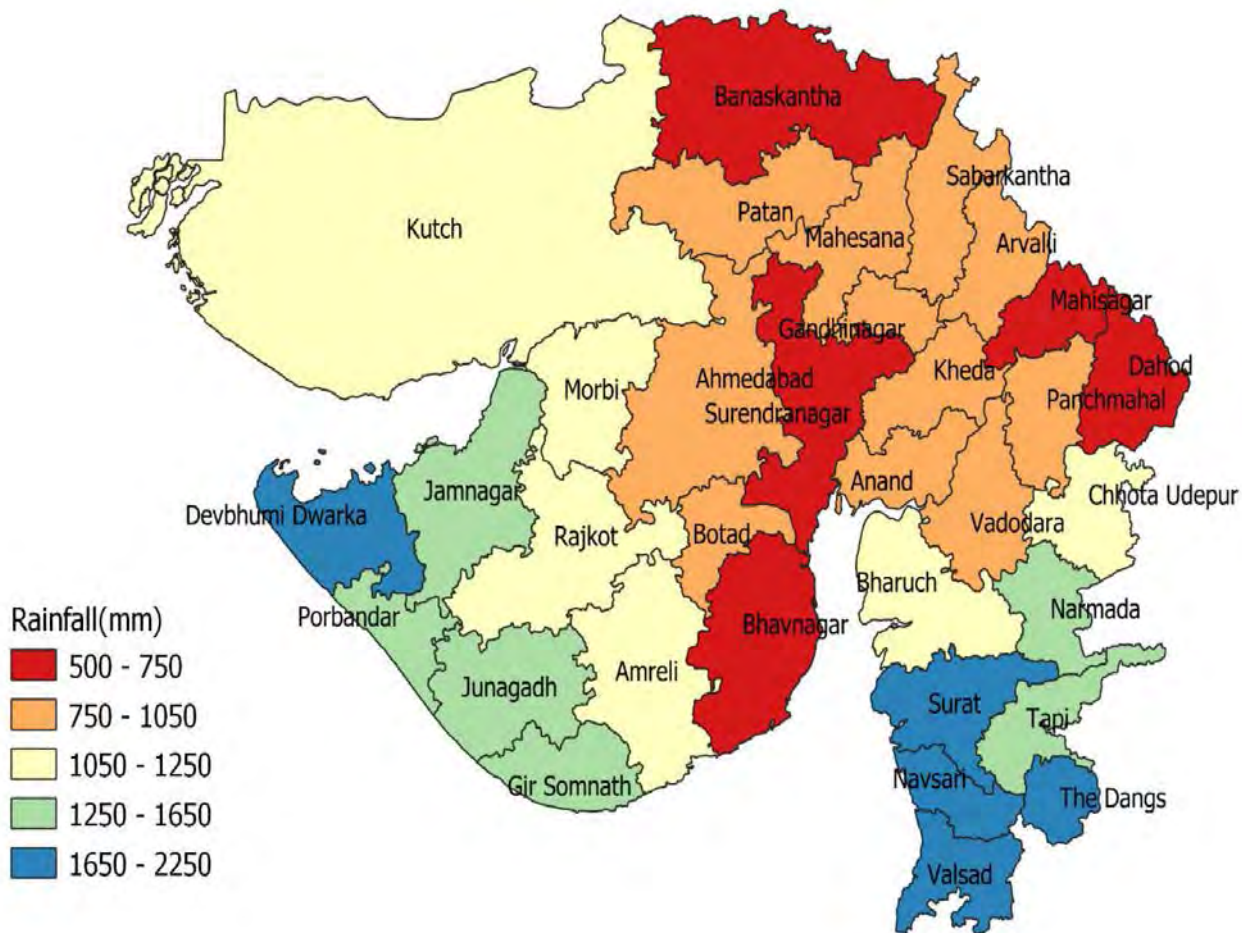
RESEARCH

The Anand Agricultural University has been making incessant efforts since its inception to achieve excellence in pursuit of its mission to provide teaching; research and extension education services related to agriculture and allied sciences to develop excellent human resources and innovative technologies for services to the farming community with the motto of making Gujarat and India agriculturally prosperous. The University has developed large number of agro-technologies for farmers/animal keepers/dairy industries / entrepreneurs to enhance the productivity of agricultural and allied sectors in the state. Since its inception in 2004, the university has generated around 900 technologies for farmers and entrepreneurs as well as around 500 technologies as scientific information. To cop-up with changing environment and demand, the university has been updating its research activities. Considering the tribal area, *Bhal* and coastal area (rainfed) and area under *desi* cotton besides normal rainfall area in the jurisdiction of the university, the efforts has been made for management of various insect-pests by using bio-control agents, increasing water use efficiency through adaptation of micro irrigation system and developing low cost technologies for *in situ* moisture conservation, nutrient management through use of farm waste and microbial strains, weed management, animal husbandary, post harvest technologies for various vegetable and food crops, various dairy products, farm tools and small scale machinery for filed operations besides developemnet of new 5 varieties in different crops.

The numbers of research projects funded by GoI / GoG / ICAR / RKVY / SSNL and private agencies are functioned at AAU to address the emerging new challenges and opportunities in agriculture related sectors. This chapter includes the research activities carried out by the scientists /teachers of the university during the year 2020-21.

Seasonal weather features of year 2020

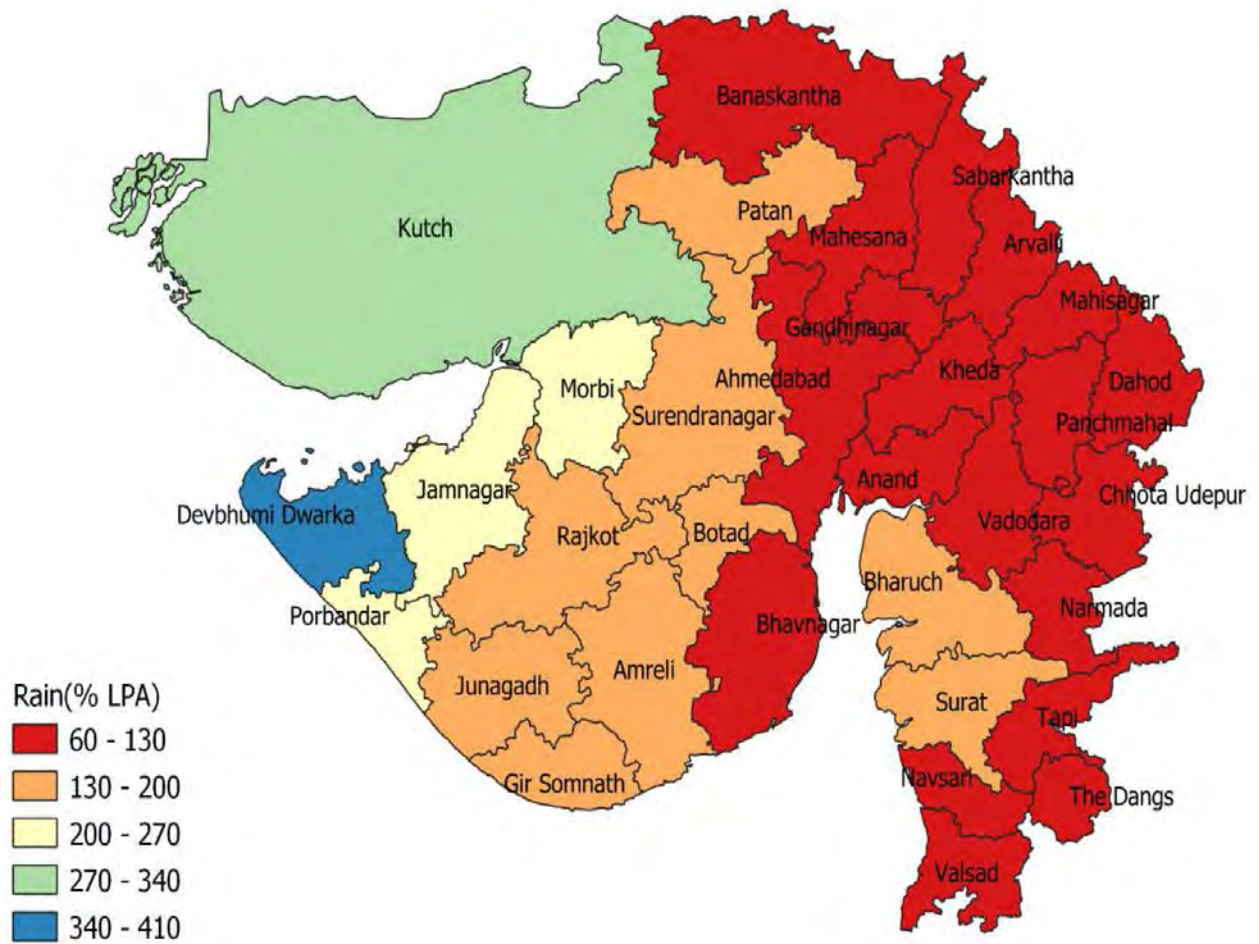
Gujarat state has received 1137 mm rainfall during monsoon of year 2020 which have 137% deviations from long period averages (LPA). Only 9 out of 251 talukas of the state had less than 500 mm rainfall. Onset of monsoon was during mid-June. The rainy period was active up to third week of October at some places in the state. District wise rainfall received and percent against long period average (LPA) is depicted in Map 1 and Map 2, respectively. Most districts of Saurashtra, Kachchh and South Gujarat received more than 1050 mm rainfall. North Gujarat, East Saurashtra and Middle Gujarat had rainfall in the range of 500 mm to 1050 mm. High rainfall (1650-2250 mm) receipt was in Devbhumi Dwarka district of west Saurashtra and southern most four districts (Surat, Navsari, Valsad and Tapi) of South Gujarat. Sourashtra- Kachchh region had above normal rainfall (more than 130% of LPA). While, Gujrat region had relatively low rainfall against its long period average (less than 130% of LPA). Many parts of Gujarat state experienced rainfall activities also during October month at maturity which led to post-harvest damage to *kharif* crops.



Map 1: Rainfall received during monsoon 2020

Onset of SW monsoon at Anand took place during the 24th standard meteorological week (SMW) with 70.2 mm rainfall (Table 1), followed by a dry spell in subsequent week. The onset was a week early from its normal. During the month of June total rainfall was 95.0 mm in only 6 rainy days against normal of 109 mm. During July month rainfall receipt was 59.6 mm in 10 rainy days against the normal of 319 mm. Rainfall receipt during August month was 723.6 mm compared to 252 mm of normal in 20 rainy days. The rainfall temporal distribution was good during July and August months (26-35 SMW). During September, rainfall amount was 69.2 mm in temporally well distributed 4 days. The comparison between normal and actual of

rainfall, temperature, sunshine hours, evaporation and relative humidity are presented in Fig. 1. The weekly maximum temperature varied close to normal during most weeks of the year. Minimum temperature was slightly higher than normal during most weeks of the year. Morning relative humidity varied near to normal during the year. During winter and post monsoon seasons, after noon relative humidity was slightly higher than normal. Sunshine hours and evaporation rate were also lower than normal during post monsoon and winter seasons. Evaporation observed to follow similar variation pattern of sunshine hours during the year. In general, some weather variables prevailed during post monsoon and winter seasons were deviated from their normal during year 2020.



Map 2: Percentage of rainfall received against normal during monsoon 2020

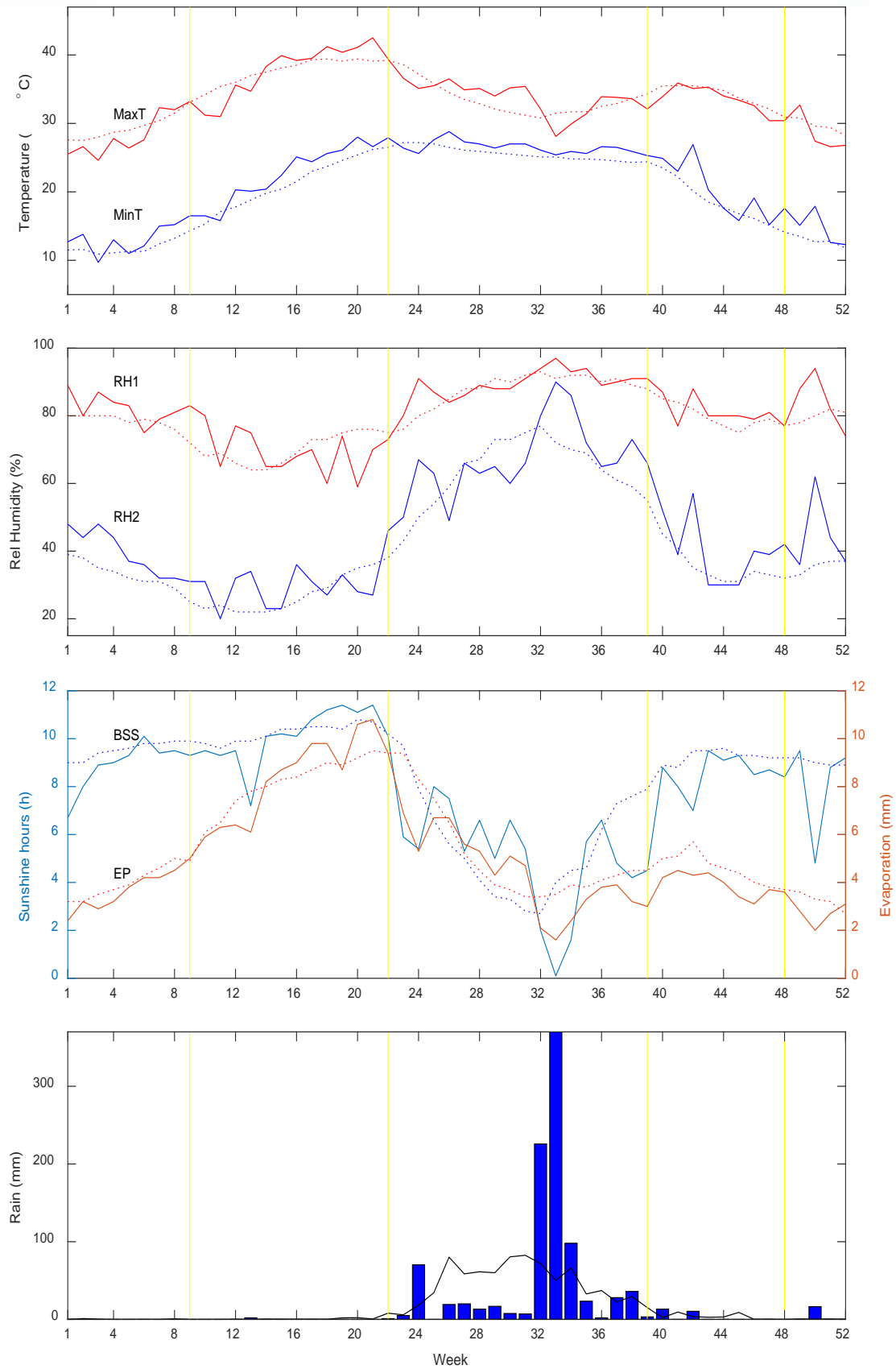


Fig. 1: Normal and actual weekly weather parameters prevailed during 2020 at Anand

Table 1: Daily rainfall distribution during Monsoon - 2020 at Anand

Date	June	July	August	September	October
1	0.0	0.4	0.0	0.0	13.2
2	0.0	0.0	0.0	0.0	0.0
3	1.0	0.0	0.0	0.0	0.0
4	0.0	0.0	0.0	0.0	0.0
5	0.0	0.0	5.4	0.0	0.0
6	5.0	9.6	2.8	2.0	0.0
7	0.0	10.4	1.2	0.0	0.0
8	0.0	0.0	1.2	0.0	0.0
9	0.0	1.4	96.2	0.0	0.0
10	0.0	0.0	83.0	0.0	0.0
11	10.6	3.8	0.0	0.0	0.0
12	1.4	0.0	41.4	28.0	0.0
13	22.0	4.2	24.2	0.0	0.0
14	17.0	0.0	225.2	0.0	0.0
15	19.2	3.8	32.6	0.0	0.0
16	0.0	4.4	10.4	0.0	0.0
17	0.0	0.0	46.0	5.8	0.0
18	0.0	2.0	24.8	1.0	10.4
19	0.0	0.0	7.8	0.0	0.0
20	0.0	6.2	16.2	29.2	0.0
21	0.0	4.2	0.0	0.0	0.0
22	0.0	0.0	40.6	0.0	0.0
23	0.0	0.0	16.2	0.0	0.0
24	0.0	0.0	8.8	3.2	0.0
25	18.8	0.0	15.8	0.0	0.0
26	0.0	5.0	0.4	0.0	0.0
27	0.0	2.6	0.0	0.0	0.0
28	0.0	0.0	0.6	0.0	0.0
29	0.0	0.0	2.6	0.0	0.0
30	0.0	0.0	4.0	0.0	0.0
31	-	1.6	16.2	-	0.0
Total	95.0	59.6	723.6	69.2	23.6
Rainy Days	6	10	20	4	2

RESEARCH COUNCIL

The Research Council (as per following table) has been constituted as per the provision of Gujarat Agricultural Universities

Act-5 of 2004, under section-26 and Common Statutes for Agricultural Universities of Gujarat 2011, Section -26, S-27.

Sr. No.	Name, Designation & Address	
1.	Dr. R. V. Vyas, Vice Chancellor, AAU, Anand (From 1-04-2020 to 02-03-2021) Dr. K.B. Kathiria, Vice Chancellor, AAU, Anand (From 03-03-2021 onwards)	Chairman
2.	Deans of the Faculties	
i.	Dr. M. V. Patel, Dean, Faculty of Agriculture, AAU, Anand (01-04-2020 to 30-06-2020) Dr. P. R. Vaishnav, Dean, Faculty of Agriculture, AAU, Anand (01-07-2020 to 31-12-2020) Dr. Y. M. Shukla, Dean, Faculty of Agriculture, AAU, Anand (01-01-2021 onwards)	Member
ii.	Dr. J. B. Prajapati, Dean, Faculty of Dairy Science, AAU, Anand (01-04-2020 to 31-10-2020) Dr. J. B. Upadhyay, Dean, Faculty of Dairy Science, AAU, Anand (01-11-2020 onwards)	Member
iii.	Dr. M. N. Bhrahmbhatt, Dean, Faculty of Vety. Science, AAU, Anand	Member
iv.	Dr. K.B. Kathiria, Dean, Faculty of Food Processing Tech. & Bio-energy, AAU, Anand (From 01-04-2020 to 17-09-2020) Dr. R. F. Sutar, Dean, Faculty of Food Processing Tech. & Bio-energy, AAU, Anand (From 18-09-2020 onwards)	Member
v.	Dr. R. Subbaiah, Dean, Faculty of Agril. Engineering and Technology AAU, Godhra	Member
vi.	Dr. Y. R. Ghodasara, Dean, Faculty of Agril. Information Technology, AAU, Anand	Member
vii.	Dr. Y. C. Zala, Dean, IABMI, AAU, Anand	Member
viii.	Dr. H. C. Patel, Dean, Faculty of Horticulture, AAU, Anand (From 01-04-2020 to 31-08-2020) Dr. N. I. Shah, Dean, Faculty of Horticulture, AAU, Anand (From 01-09- 2020 onwards)	Member
3.	Dr. Arun Patel, Director of Extension Education, AAU, Anand (From 01-04-2020 to 31-07-2020) Dr. H. B. Patel, Director of Extension Education, AAU, Anand (From 01-08-2020 onwards)	Member
4.	The Conveners of the AGRESCO Sub-committees	
i.	Dr. R. S. Parmar, Convener of Agricultural Engineering & Technology and Agricultural Information Technology Research Sub Committee and Professor, College of Agricultural Information Technology, AAU, Anand	Member
ii.	Dr. J. N. Patel, Convener of Crop Improvement Research Sub Committee and Associate Research Scientist & Head, BTRS, AAU, Anand	Member

Sr. No.	Name, Designation & Address		
	iii.	Dr. S. N. Shah, Convener of Crop Production Research Sub Committee and Associate Professor, Dept. of Agronomy, BACA, AAU, Anand	Member
	iv.	Dr. R. G. Parmar, Convener of Plant Protection Research Sub Committee and Associate Professor & Head, Dept. of Plant Pathology, BACA, AAU, Anand	Member
	v.	Dr. K. S. Jadav, Convener of Social Science Research Sub Committee and Professor & Head, Dept. of Ag. Economics, BACA, AAU, Anand	Member
	vi.	Dr. S. S. Kapdi, Convener of Dairy Science and Food Processing Technology & Bio-energy Research Sub Committee and Professor and Head, Dept. of Bio Energy, College of FPT&BE, AAU, Anand	Member
	vii.	Dr. D. M. Bhayani, Convener of Animal Health Research Sub Committee and Professor, Dept. of Anatomy, Veterinary College, AAU, Anand	Member
	viii.	Dr. P. R. Pandya, Convener of Animal Production and Fisheries Research Sub Committee and Research Scientist, ANRS, Veterinary College, AAU, Anand	Member
5.	Two Eminent Scientists outside the university nominated by the Vice Chancellor in consultation with Director of Research		
	i.	Head, ICAR-Indian Institute of Soil and Water Conservation, Research Centre, Vasad	Member
	ii.	Dr. H. R. Patel, Retd. Associate Director of Research, AAU, Anand	Member
6.	Five Professors or their equivalent from the university nominated by the Vice Chancellor in consultation with Director of Research		
	i.	Dr. B. D. Patel, Agronomist, AICRP on Weed Control, BACA, AAU, Anand	Member
	ii.	Dr. K. N. Wadhvani, Research Scientist, TRTC, AAU, Devagadh Baia	Member
	iii.	Dr. Atanu Jana, Prof. & Head, Dept. of Dairy Productions and Operations, DSC, AAU, Anand	Member
	iv.	Dr. R. V. Prasad, Prof. & Head, Dept. of Food quality Assurance, College of FPT & BE, AAU, Anand	Member
	v.	Dr. R. Swarnkar, Prof. & Head, Dept. of FMPE, College of Agril. Engg., AAU, Godhra	Member
7.	One Progressive Farmer nominated by the Vice Chancellor in consultation with Director of Research		
	i.	Shri. Ravat Rupsingbhai Ratansingbhai, At. Agara, Ta. Limkheda, Dist. Dahod	Member
8.	The Director of Agriculture/Horticulture/Animal Husbandry		Member
9.	The Associate Directors of Research (Agriculture and Animal Science)		
	i.	Dr. V. P. Ramani, Associate Director of Research, (Agriculture), AAU, Anand	Members
	ii.	Dr. M. K. Jhala, Associate Director of Research (Animal Science), AAU, Anand	Member
10.	Dr. R. V. Vyas, Director of Research & Dean, PG Studies, AAU, Anand (From 1-04-2020 to 04-03-2021) Dr. M. K. Jhala, Director of Research & Dean, PG Studies, AAU, Anand (From 05-03-2021 onwards)		Member Secretary

RESEARCH SUB-COMMITTEES

To evaluate the research work carried out and to finalize the technical programmes for future research, the research areas of different subjects have been sub-grouped in 8 research sub-committees, as follows.

Faculty of Agriculture/Horticulture

- 1. Crop Improvement Research Sub-Committee :** Genetics & Plant Breeding, Plant Biotechnology, Nanotechnology, Plant Physiology, Seed science and technology and Biochemistry
- 2. Crop Production Research Sub-Committee:** Agronomy, Soil Science, Horticulture, Meteorology and Agril. Microbiology
- 3. Plant Protection Research Sub-Committee:** Entomology, Plant Pathology and Nematology
- 4. Social Science Research sub-committee:** Agril. Statistics, Agril. Economics, Extension Education and International Agril. Business Management

Faculty of Veterinary Science

- 5. Animal Production Research Sub-Committee:** Animal Biotechnology, Animal Breeding and Genetics, Animal Physiology & Bio-chemistry, Livestock Production and Management, Animal Nutrition, Reproductive Biology, Poultry Science and Anatomy
- 6. Animal Health Research Sub-Committee:** Vet. Medicine, Vet. Microbiology, Vet.

Pharmacology, Vet. Parasitology, Vet. Surgery, Vet. Pathology, Gynaecology & Obstetrics, Veterinary Public Health, Vet. Clinics

Faculty of Dairy Science and Food Processing Technolgy & Bio-Energy

- 7. Dairy Science and Food Processing Technolgy & Bio-Energy Research Sub Committeee :** Dairy Microbiology, Dairy Engineering, Dairy Technology, Dairy Business Management, Food Bio-technology, Dairy Chemistry
Post Harvest Technology, Food Processing Technology and Bio-Energy

Faculty of Agril. Engineering and Agril. Information Technology

- 8. Agril. Engineering and Agril. Information Technology Research Sub Committee:** Soil and Water Conservation, Farm Power Machinery, Agril. Product Processing and Renewable Energy, Agril. Information Technology

4.1 NEW CROP VARIETIES, FARM IMPLEMENTS AND VARIOUS AGRICULTURAL AND ALLIED SCIENCE TECHNOLOGIES DEVELOPED

Research Sub-Committees met and finalized different research programmes considering the feedback received from farmers through extension machinery and educational needs as per the requirement. As a result of sincere efforts of the scientists, the research accomplishments made are given below.

Name of the sub-committee	Date of Meeting	No. of recommendations finalized	
		For farmers	For scientific community
Crop Improvement	03-04 March, 2020		
• Genetics & Plant Breeding		05	01
• Basic Science		-	01
Crop Production	28-29 Feb., 2020		
• Cultural Practices		03	-
• Nutrient Management		09	-
• Weed Management		02	01
Plant Protection	25-26 Feb., 2020		
• Insect Pest Management		11	12
• Disease Management		04	01
Dairy Science, Food Processing	17-18 Feb., 2020	24	09
Agril. Engineering & Agril. IT	20 Feb., 2020	03	05
Animal Health	12-13 Feb., 2020	-	06
Animal Production & Fisheries		09	02
Social Science	06-07 Feb., 2020	01	03
Joint AGRESCO, AAU, Anand	12-13, March, 2020	71	41
Combined AGRESCO of SAU's at AAU, Anand	June-July, 2020	71	41

The details of recommendations of AAU, Anand approved in the combined AGRESCO meeting of SAUs of Gujarat held at AAU, Anand are given below.

4.1.1 RECOMMENDATIONS FOR FARMING COMMUNITY

4.1.1.1 CROP IMPROVEMENT

I CROP IMPROVEMENT

Varieties Released

1. Crop : Guar

Variety : Gujarat Vegetable Guar 11
(GVG 11: Anand Bahar)



This vegetable guar variety (GVG 11) registered 148.15 q/ha green pod yield and showed 27.10 per cent higher than the national check variety Pusa Navbahar (116.56 q/ha) over the locations. This variety has dark green pod colour with sparse serration of leaf, long pod with usually non branching pattern and prominent pod construction in cluster. This variety has less prevalence of alternaria blight and BCMV diseases as well as low infestation of jassid, aphid and whitefly than the national check Pusa Navbahar. This variety contains higher fibre (0.513%), crude protein (4.121%), phenol (0.228%) and flavanoid (0.171%) as compared to the national check Pusa Navbahar. This variety is released in Gujarat for Late *Kharif* season under irrigated condition.

2 Crop : Pigeon Pea

Variety : Gujarat Tur-106 (GT-106: Mahi)



The average yield of pigeon pea variety AAUVT-13-20 (GT-106) is 1842 kg/ha. It

exhibited overall yield advantage of 50.72, 21.44, 23.63 and 12.68 per cent over the checks BDN 2, AGT 2, Vaishali and GJP 1, respectively under middle Gujarat. Under north Gujarat, average yield of this genotype is AAUVT-13-20 (GT-106) is 1853 kg/ha. It exhibited 23.16, 25.37, 20.73, and 22.33 per cent higher yield over the checks BDN 2, AGT 2, Vaishali and GJP1, respectively. The variety GT-106 mature within 170 (165-175) days (Medium group) with semi-spreading in nature, yellow flower colour, green pod, 4-6 seeded with cream colour. It has high yield potential and resistant against wilt & moderately resistance against SMD under field condition. The pigeon pea variety GT-106 is recommended for *kharif* season under Middle & North Gujarat.

3. Crop : Desi Cotton

Variety: Gujarat Anand Desi Cotton 4 (GADC 4: Wagad Resham)



This variety gave higher seed cotton yield (1313 kg/ha) over check varieties G Cot 21

(1232 kg/ha) and GADC 2 (1144 kg/ha), which is higher by 19.8 per cent and 17.3 per cent, respectively. It has recorded average ginning out turn 34.3 percent, upper half mean length 29.4 mm, micronaire value 4.5 and tenacity 30.6 g/tex in HVI mode. This desi cotton variety GADC 4 is recommended for cultivation in North West Agro climatic Zone - V and Bhal and Coastal Agro climatic Zone-VIII.

4. Crop : Kodo millet

Variety: Gujarat Kodo millet 4 (GK 4 : Dahod Kodra 4)



This variety of Gujarat Kodo millet 4 (GK 4: Dahod Kodra 4) revealed an average grain yield of 2738 kg/ha which is 28.90, 12.91 and 35.54 per cent higher than the check varieties GK2, GAK3 and GPUK3, respectively in the Gujarat state. In middle Gujarat, it exhibited 31.59, 14.08 and 35.21 per cent higher grain yield over the check varieties GK 2, GAK 3 and GPUK 3, respectively whereas in south Gujarat it recorded 21.90, 10.79 and 36.40 per cent increase in grain yield over the check varieties GK 2, GAK 3 and GPUK 3, respectively. The variety is nutritionally superior to the check varieties and also exhibited moderate resistance to pests and diseases as compared to the

checks. The variety of Gujarat Kodo millet 4 (GK 4: Dahod Kodra 4) is recommended for release in the Kodo millet growing regions of Gujarat state.

5. Crop : Guava

Variety: Gujarat Anand Red Flesh Guava 1 (GARFG 1: Lal Bahadur)



This variety Gujarat Anand Red Flash Guava 1 (GARFG 1) at Anand, 4 to 6 years old plants gave 35.85 kg/plant (14.34 t/ha) fruit yield, which exhibited 91.1 and 57.8 per cent higher than the red flesh check Lalit (18.76 kg/plant) and white flesh check Dholka Local (22.72 kg/plant), respectively. Fruit has oval shape, medium size, cluster fruiting habit and pale green to yellowish colour pericarp when mature with pinkish red flesh. The fruit of this variety contains higher carotenoid (19.41 mg/100g pulp) and TSS (14.33 °Brix) as compared to both

the checks Lalit and Dholka Local. It also contains higher micronutrients like Zn and Mn as compared to both the checks Lalit and Dholka Local. The Guava variety GARFG 1 is recommended for *mrigbahar* (June-July) cultivation under middle Gujarat.

II BASIC SCIENCE

---NIL---

4.1.1.2 CROP PRODUCTION

I CULTURAL PRACTICES

1. Effect of different date of transplanting and spacing on herbage yield and quality of Basil (*Ocimum basilicum* L.)

The farmers of Middle Gujarat Agro-climatic Zone cultivating sweet basil (*Ocimum basilicum* L.) (GAB 1) in *Kharif* season are recommended to transplant 30-35 days old seedling of basil during 3rd week of July with spacing of 60 x 45 cm for securing higher dry herbage yield and net return.



Planting of basil during 3rd week of July with spacing of 60 x 45 cm

2. Response of new castor variety to different sowing time and spacing in late *kharif* under irrigated condition

The farmers of Middle Gujarat Agro-climatic Zone growing castor are recommended

to grow either Gujarat Castor Hybrid 7 or Gujarat Anand Castor 11 during 1st week of September and sow Gujarat Castor Hybrid 7 at 120 cm x 60 cm for securing higher yield and net return.

3. Evaluation of the possibility of pulse based inter-cropping system with banana cultivation in tribal area following drip irrigation system

The farmers of middle Gujarat agro-climatic zone growing banana (cv. Grand Nain) at 1.8 X 1.8 m spacing under drip irrigation are recommended to adopt intercropping system involving black gram (1:3 row ratio) or green gram (1:4 row ratio) as an intercrop to get the additional income without affecting the yield of banana (black gram and green gram sowing during third week of September at the spacing of 45 X 10 cm and 30 X 10 cm, respectively).

II NUTRIENT MANAGEMENT

4. Efficacy testing of native Rhizobium isolates in summer groundnut (*Arachis hypogaea* L.)

The farmers of Middle Gujarat Agro-climatic Zone cultivating organically summer groundnut are recommended to apply FYM 5 t/ha along with seed treatment of Rhizobium culture (AAUGNR 2) 5 ml/kg seed for getting higher yield and net return.

OR

The farmers of Middle Gujarat Agro-climatic Zone cultivating summer groundnut are recommended to apply 12.5 kg N and 50 kg P₂O₅ as basal dose as well as seed treatment of Rhizobium culture (AAUGNR 2) 5 ml/kg seed for getting higher yield and net return.



**FYM 5 t/ha + Native Rhizobium 2
(AAUGNR-2)**



**12.5 kg N and 50 kg P₂O₅ + Native Rhizobium 2
(AAUGNR-2)**

5. Nutrient management through organic sources in summer green gram (*Vigna radiata* L.) var. GAM 5

The farmers of Middle Gujarat Agro-Climatic Zone growing summer green gram organically are recommended to apply either FYM 4.0 t/ha or FYM 2.0 t/ha + vermicompost 0.5 t/ha or FYM 2.0 t/ha + castor cake 0.25 t/ha for getting higher yield and net return.

6. Nutrient management through organic sources in summer green gram (*Vigna radiata* L.)

The farmers of Middle Gujarat Agro-climatic Zone growing summer green gram (GAM 5) through organic sources are recommended to apply either FYM 2.0 t/ha + Bio NP 1 L/ha or vermicompost 0.50 t/ha + Bio NP 1 L/ha or FYM 2.0 t/ha + vermicompost 0.50 t/ha for getting higher yield and net return.



Vermicompost 0.5 t/ha + Bio NP

FYM 2.0 t/ ha + Bio NP

7. Nutrient management through organic source in grain Amaranthus (*Amaranthus hypochondriacus* L.) under middle Gujarat conditions

The farmers of Middle Gujarat Agro-climatic Zone growing grain amaranthus through organic sources are recommended to apply FYM 4.0 t/ha or vermicompost 1.0 t/ha for getting higher yield and net return.

8. Nitrogen management in early rice varieties of middle Gujarat

The farmers of AES-V (Nawagam area) and AES-II (Thasra area) of Middle Gujarat Agro-climatic Zone are recommended to apply FYM 10 t/ha along with 100 kg N/ha (40% basal, 40% tillering and 20% panicle initiation stage) in early maturing rice varieties either Gurjari or Mahisagar for getting higher yield and net return. Whereas, the farmers of AES-XI (Dabhoi area) growing early maturing rice variety Gurjari are recommended to apply FYM 10 t/ha along with 120 kg N/ha (40% basal, 40% tillering and 20% panicle initiation stage) for getting higher yield and net return.

9. Effect of rooting media on propagation of African marigold (*Tagetes erecta* L.) cv. Calcutta Selection through herbaceous shoot tip cutting under net house

Farmers/Nurserymen cultivating marigold in middle Gujarat agro climatic zone are recommended to propagate 4-5 cm long herbaceous shoot tip cuttings of African marigold cv. Calcutta Selection in plug tray media of Sandy loam soil + FYM (1:1) OR FYM alone OR Sandy loam soil + Vermicompost (1:1) OR Vermicompost alone for getting higher survival of plants/cuttings and net profit.

Note: Cuttings of marigold are to be planted into the plug tray after dipping them in 150 mg/l IBA solution for 10 min. under 50% green shade net condition.

10. Nutrient management through organics in onion (*Allium cepa* L.) as intercrop in sapota orchard

The farmers of middle Gujarat agro-climatic zone growing onion organically in sapota orchard during initial 10-12 years are recommended to apply either 75 kg N/ha through FYM (10.7 t containing 0.7 % N) + bio NPK consortium 1 l/ha in soil or 75 kg N/ha through vermicompost (5.7 t containing 1.3 % N) + bio NPK consortium 1 l/ha in soil for getting higher yield and net return and maintaining soil health.

11. Effect of bunch feeding on yield of banana cultivation (cv. Grand Nain) in tribal area of Chhotaudepur Region of middle Gujarat

The farmers of middle Gujarat agro climatic zone growing banana (cv. Grand Nain) are recommended for bunch feeding after de-navelling with 500 g Cow dung slurry + 7.5 g Urea + 7.5 g Sulphate of Potash or 500 g Cow dung slurry + 15 g Ammonium Sulphate + 7.5 g Sulphate of Potash to get higher yield with quality and net return.

12. Nitrogen management through fertigation on green fruit yield of chilli (*Capsicum annum* L.) under middle Gujarat conditions

The farmers of middle Gujarat agro climatic zone growing *rabi* chilli hybrid (GAVCH-1) in paired row (60 × 45 × 120 cm) through drip irrigation system are recommended to fertilize the crop with 160 N kg/ha (20

kg in basal and remaining 140 kg in four equal splits at 20, 30, 40, 50 DAT) through fertigation to get higher green fruit yield and net return.

System details:

Lateral spacing 180 cm

Dripper spacing 45 cm

Dripper discharge 4 litre per hour

Operating pressure 1.2 kg/cm²

Operating frequency Alternate day

Operating time 1 Hour 27 Minutes

III WEED MANAGEMENT

13. Integrated weed management in summer groundnut (*Arachis hypogaea* L.)

The farmers of Middle Gujarat Agro-climatic Zone growing summer groundnut are recommended to adopt pre-emergence (2-3 DAS) application of oxyfluorfen 23.5% EC 180 g a.i./ha (15.3 ml/10 litre of water) fb post-emergence (25-30 DAS) application of imazethapyr 10% SL 100 g a.i./ha (20 ml/10 litre of water) or pre-emergence (2-3 DAS) application of oxyfluorfen 23.5% EC

180 g a.i./ha (15.3 ml/10 litre of water) fb post-emergence (25-30 DAS) application of imazethapyr 35% + imazamox 35% WG (premix) 70 g a.i./ha (2 g/10 litre of water) or pre-emergence (2-3 DAS) application of oxyfluorfen 23.5% EC 180 g a.i./ha (15.3 ml/10 litre of water) fb interculturing and hand weeding at 40 DAS or early post-emergence (10-15 DAS) application of imazethapyr 10% SL 100 g a.i./ha (20 ml/10 litre of water) fb interculturing and hand weeding at 40 DAS or early post-emergence (10-15 DAS) application of fluazifop-p-butyl 11.1% w/w + fomesafen 11.1w/w SL (premix) 250 g a.i./ha (20 ml/10 litre of water) fb interculturing and hand weeding at 40 DAS or interculturing and hand weeding at 20 and 40 DAS for effective management of complex weed flora and higher net return without any herbicide residues in produce and soil. There was no adverse effect of herbicides applied in summer groundnut on succeeding crops viz., cotton, maize and green gram.

Recommendation for PHI as per CIB guidelines:

Year	Crop	Pest	Pesticides with formulation	Dosage			Dilution in water	Application schedule	Waiting period/ PHI (days)	Re-remarks
				g a.i./ ha	Quantity of formulation (g or ml) / ha	Conc. (%)				
2020	Summer groundnut	Complex weed flora	Oxyfluorfen 23.5% EC fb	180	765	0.036	500 litres	Pre-emergence (2-3 DAS) fb post-emergence (25-30 DAS)	-	102
			Imazethapyr 10% SL	100	1000	fb 0.02				
			Oxyfluorfen 23.5% EC fb imazethapyr 35% + imazamox 35% WG (premix)	180 fb 70	765 fb 100	0.036 fb 0.014				
			Oxyfluorfen 23.5% EC fb interculturing and hand weeding at 40 DAS	180	765	0.036		Pre-emergence (2-3 DAS)	-	

Recommendation for PHI as per CIB guidelines:

Year	Crop	Pest	Pesticides with formulation	Dosage			Dilution in water	Application schedule	Waiting period/ PHI (days)	Remarks
				g a.i./ ha	Quantity of formulation (g or ml) / ha	Conc. (%)				
			Imazethapyr 10% SL <i>fb</i> interculturing and hand weeding at 40 DAS	100	1000	0.02		Early post-emergence (10-15 DAS)	102	
			Fluazifop-p-butyl 11.1% w/w + fomesafen 11.1w/w SL (premix) <i>fb</i> interculturing and hand weeding at 40 DAS	250	1000	0.05		Early post-emergence (10-15 DAS)	71	
			Interculturing and hand weeding at 20 and 40 DAS	-	-	-		-	-	



Oxyfluorfen 180 g/ha PE *fb* imazethapyr 100 g/ha PoE



Oxyfluorfen 180 g/ha PE *fb* imazethapyr + imazamox 70 g/ha PoE (PM)



Oxyfluorfen 180 g/ha PE *fb* IC + HW at 40 DAS



Weedy check

14. Integrated weed management in black gram (*Vigna mungo* L.)

The farmers of Middle Gujarat Agro-climatic Zone growing *kharif* blackgram are recommended to adopt post-emergence (20-25 DAS) application of propaquizafop 10% EC 75 g a.i./ha (15 ml/10 liter of water) fb IC + HW at 30 DAS or post-emergence (20-25 DAS) application of fenoxaprop-p-ethyl 9% EC 67.5 g a.i./ha (15 ml/10 liter of water)

fb IC + HW at 30 DAS or post-emergence (20-25 DAS) application of quizalofop-ethyl 5% EC 50 g a.i./ha (20 ml/10 liter of water) fb IC + HW at 30 DAS for effective weed management of complex weed flora and higher net return without any herbicide residues in produce and soil. There was no any adverse effect of herbicides applied in blackgram on succeeding maize, chickpea and wheat crops.

Table: Recommendation for PHI as per CIB guidelines

Year	Crop	Pest	Pesticides with formulation	Dosage			Dilution in water	Application schedule	Waiting period/ PHI (days)
				g a.i./ ha	Quantity of formulation (g or ml) /ha	Conc. (%)			
2020	Kharif Black gram	Complex weed flora	Propaquizafop 10% EC 75 g a.i./ha fb IC + HW	75	750	0.015	500 litres	Post-emergence (20-25 DAS)	21
			Fenoxaprop-p-ethyl 9% EC 67.5 g a.i./ha fb IC + HW	67.5	750	0.014		post-emergence (20-25DAS)	43
			Quizalofop-ethyl 5% EC 50 g a.i./ha fb IC + HW	50	1000	0.01		post-emergence (20-25 DAS)	52



Quizalofop-ethyl 5% EC 50 g a.i./ha PoE fb IC + HW at 30 DAS



Propaquizafop 10% EC 75 g a.i./ha PoE fb IC + HW at 30 DAS



Fenoxaprop-p-ethyl 9% EC 67.5 g a.i./ha PoE fb IC + HW at 30 DAS



Weedy check

4.1.1.3 PLANT PROTECTION

I AGRICULTURAL ENTOMOLOGY

1. Bio-efficacy of insecticides against thrips, *Scirtothrips dorsalis* Hood in pomegranate

The pomegranate growers of middle Gujarat

Agro-climatic zone are advised to apply cyantraniliprole 10.26 OD, 0.008% (7.50 ml/10 litre water) during *hasta* bahar when thrips population attain 5 thrips/10 cm shoot and second after 15 days for effective control of thrips. PHI of 5 days should be kept.

Recommendation for PHI as per CIB guidelines:										
Year	Crop	Pest	Insecticide	Dosage				Application schedule	Waiting period/ PHI (days)	Remarks
				g a.i./ ha	Conc. (%)	Quantity of formulation (ml/ha)	Dilution in water (Litre/ ha)			
2020	Pomegranate	Thrips	Cyantraniliprole 10.26 OD	76.9	0.008	750	1000	First spray at thrips population reach to 5/10 cm shoot and second after 15 days	05	---

2. Efficacy of insecticides against fall armyworm, *Spodoptera frugiperda* (J. E. Smith) infesting maize

The farmers of middle Gujarat Agro-climatic zone growing maize in *kharif* are advised to spray spinetoram 11.7 SC, 0.0117% (10 mL/ 10 L of water) or emamectin benzoate

5 SG, 0.0025% (5 g/ 10 L of water) or chlorantraniliprole 18.5 SC, 0.006% (3 mL/ 10 L of water) or thiodicarb 75 WP, 0.11% (15 g/ 10 L of water) first at initiation of pest and second after 15 days for effective and economical control of fall armyworm, *Spodoptera frugiperda* infesting maize. PHI of 30 days should be kept.

Recommendation for PHI as per CIB guidelines:										
Year	Crop	Pest	Pesticides with formulation	Dosage				Application schedule	Waiting period/ PHI (days)	Remarks
				g a.i./ ha	Quantity of formulation (g or mL) /ha	Conc. (%)	Dilution in water (Litre/ ha)			
2020	Maize	Fall army worm	Spinetoram 11.7 SC	58.5	500	0.0117	500	First at initiation of pest and second at 15 days interval	30	Vide office memorandum No. 42/2019 dated-27 th November, 2019
			Emamectin benzoate 5 SG	12.5	250	0.0025				
			Chlorantraniliprole 18.5 SC	30.0	150	0.006				
			Thiodicarb 75 WP	563	750	0.11				

3. Efficacy of granular insecticides against fall armyworm, *Spodoptera frugiperda* (J. E. Smith) in maize

The farmers of middle Gujarat Agro-climatic zone growing maize in *kharif* are advised to

give whorl application of chlorantraniliprole 0.4% GR, 20 kg/ha, first at appearance of pest and second after 15 days for effective and economical control of fall armyworm. PHI of 30 days should be kept.

Recommendation for PHI as per CIB guidelines:										
Year	Crop	Pest	Pesticide	Dosage				Application schedule	Waiting period/ PHI (days)	Remarks
				g a.i./ ha	Quantity of formulation (kg/ha)	Conc. (%)	Water requirement/ ha			
2020	Maize	Fall army worm	Chlorantrani-liprole 0.4 % GR	80	20	-	-	First application at appearance of pest and second after 15 days	30	-

4. Evaluation of bio-pesticides against fall armyworm, *Spodoptera frugiperda* (J. E. Smith) in maize

The farmers of middle Gujarat Agro-climatic zone are advised to spray *Bacillus*

thuringiensis var. *kurstaki* 1% WG @ 20 g/10 litre water first at initiation of pest and subsequent two sprays at 10 days interval for effective and economical control of fall armyworm, *Spodoptera frugiperda* infesting maize.

Recommendation for PHI as per CIB guidelines:										
Year	Crop	Pest	Insecticide	Dosage				Application schedule	Waiting period/ PHI (days)	Remarks
				Conc. (%)	Dose (g/10 litre)	Quantity of formulation (kg/ha)	Dilution in water (Litre/ha)			
2020	Maize	Fall army worm	<i>Bacillus thuringiensis</i> var. <i>kurstaki</i> 1 % WG	-	20	1	500	First spray at initiation of pest and subsequent two sprays at 10 days interval	---	---

5. Efficacy of poison baits against fall armyworm, *Spodoptera frugiperda* (J. E. Smith) infesting maize

The farmers of middle Gujarat Agro-climatic zone growing maize in *kharif* are advised to apply poison baits

Rice bran 25 kg + jaggery 5 kg + thiodicarb 75 WP 250 g/ha

or

Maize flour 25 kg + jaggery 5 kg + thiodicarb 75 WP 250 g/ha

or

Rice bran 25 kg + jaggery 5 kg + emamectin benzoate 5 SG 125 g/ha

First at initiation of pest and second after 15 days for effective and economical control of fall armyworm in leaf whorl in maize.

Note: Dissolve 5 kg jaggery in 5 litres of water, mix 25 kg of bran/flour in to it and keep it overnight, next day add insecticide in bait before application.

Recommendation for PHI as per CIB guidelines:									
Year	Crop	Pest	Insecticide	Dosage			Application schedule	Waiting period/ PHI (days)	Remarks
				Conc. (%)	Quantity of formulation (g/ha)	Carrier /ha			
2020	Maize	Fall armyworm	Thiodicarb 75 WP	-	250	25 kg rice bran/maize flour+5 kg jaggery+5 litre of water	First application at initiation of pest and second after 15 days	30	---
			Emamectin benzoate 5 SG	-	125				

6. Efficacy of biocontrol agents for the management of shoot and fruit borer, *Earias vittella* Fab. on okra

The farmers of middle Gujarat Agro-climatic zone growing okra are advised to spray *Bacillus thuringiensis* var. *kurstaki* 1% WP

@ 50 g/10 litre water or NSKE 5% @ 500 g/10 litre water at fifteen days interval for three times or six releases of *Trichogramma chilonis* @ 50,000/ha at weekly interval starting from the initiation of shoot and fruit borer (*Earias vittella*) for the effective control.

Recommendation for PHI as per CIB guidelines:									
Year	Crop	Pest	Microbial insecticide/ bio-agent	Dosage			Application schedule	Waiting period/ PHI (days)	Remarks
				Conc. (%)	Quantity of formulation (kg/ha)	Dilution in water (litre/ha)			
2020	Okra	Fruit borer (<i>Earias vittella</i>)	<i>Bacillus thuringiensis</i> var. <i>kurstaki</i> 1% WP (2x10 ⁸ cfu/g)	-	2.5	500	Foliar spray at fifteen days interval for three times with the initiation of pest	--	--
			Neem seed kernel extract (NSKE)	5	25				
			<i>Trichogramma chilonis</i>	-	50,000 parasitized eggs/ ha	--	Six releases @ 50000/ha at weekly interval with the initiation of pest		

7. Evaluation of spraying schedule of insecticides for the management of leaf eating caterpillar, *Spodoptera litura* (F.) in bidi tobacco nursery

In tobacco nursery, use of neem seed kernel

extract 5% (500 g/ 10 litre water) at the age of 30-35 days of seeding and after 15 days apply chlorpyrifos 20 EC, 0.04% (20 ml/10 litre water, 200 g a.i/ha) to delay the development of resistance in *Spodoptera litura*.

Recommendation for PHI as per CIB guidelines :									
Year	Crop	Pest	Dosage				Appli. schedule	Waiting period/ PHI	Remark
			Pesticide with formulation	g a.i./ ha	.Conc (%)	Dilution in 10 litre water			
2020	Tobacco ((Nursery	<i>Spodoptera litura</i> (F)	Neem seed kernel extract	-	5	gm 500	at 30 DAS	-	-
			Cholrpyrifos 20 EC	200	0.04	ml 20	at 45 DAS	-	-

8. Evaluation of insecticides against plant hopper infesting rice

The rice growers of middle Gujarat Agro-climatic zone are advised to apply two sprays of pymetrozine 50 WG, 0.037% (7.5 g/10

litre of water), first at the initiation of white backed plant hopper (WBPH) and second after 15 days for effective management of WBPH in rice. Interval between last spray and harvest should be minimum 19 days.

Recommendation for PHI as per CIB guidelines:										
Year	Crop	Pest	Insecticide with formulation	Dosage				Appl. Schedule	Waiting period/ PHI (Days)	Remarks
				g a.i./ ha	Conc. (%)	Quantity of formulation (g/ha)	Water			
2020	Rice	White backed plant hoppers (WBPH)	Pymetrozine 50% WG	187.5	0.037	375	500 litre	First spray at initiation of WBPH and second after 15 days	19	-

9. Determination of Economic Threshold Level for gram pod borer in chickpea

The farmers of middle Gujarat Agro-climatic zone growing chickpea are advised to initiate control measures when population of gram pod borer, *Helicoverpa armigera* crosses the economic threshold level as 13 larvae per 20 plants.

10. Evaluation of insecticides for the control of stem borer and wireworm infesting un-irrigated wheat

The farmers of *Bhal* and Coastal Agro-climatic zone growing un-irrigated wheat are advised to treat seeds with thiamethoxam 30 FS or imidacloprid 600 FS @ 8 ml/kg seeds using equal quantity of water and dried under shade for effective control of stem borer and wireworm.

Recommendation for PHI as per CIB guidelines:										
Year	Crop	Pest	Insecticides	Dosage				Application schedule	Waiting period/ PHI (days)	Remarks
				g a.i./ kg seed	Quantity of formulation/ kg seed	Conc. (%)	Dilution in water			
2020	Un-irrigated wheat	Stem borer and wire-worm	Thiamethoxam 30 FS	2.4	8 ml	-	-	Before sowing seed treatment with thiamethoxam 30 FS or imidacloprid 600 FS @ 8 ml/kg seeds	Being a seed treatment not required	-
			imidacloprid 600 FS	4.8	8 ml	-	-			

11. Evaluation of insecticides for the control of major lepidopteran pests of rice

The rice growers of middle Gujarat agro-climatic zone are advised to spray flubendiamide 20 WG, 0.005% (2.5 g per

10 litre of water) at 30 and 45 days after transplanting for effective and economical control of leaf folder, *Cnaphalocrosis medinalis* infesting rice. PHI of 30 days should be kept.

Recommendation for PHI as per CIB guidelines:									
Year	Crop	Pest	Insecticide	Dosage			Application schedule	Waiting period/ PHI (days)	Remarks
				Conc. (%)	Quantity of formulation (g/ha)	Dilution in water (g/ 10 litre)			
2020	Rice	Leaf folder	Flubendiamide 20 WG	0.005	125	2.5	Spray application at 30 and 45 days after transplanting	30	---

II PLANT PATHOLOGY AND NEMATOLOGY

12. Bio-efficacy of agrochemicals against bacterial canker (*Xanthomonas axonopodis* pv. *citri*) in citrus

The farmers of middle Gujarat Agro-climatic zone are advised to spray tank mixed solution

of streptomycin sulphate 90% + tetracycline hydrochloride 10% SP, 1 g/10 litre of water and copper oxychloride 50 WP, 20 g/10 litre of water first at initiation of disease and subsequent three sprays at 20 days interval for effective and economical management of bacterial canker in citrus.

Year	Crop	Disease	Agrochemicals	Dosage				Application schedule	Waiting period/ PHI (days)	Remarks
				Conc. (%)	Dose/ 10 lit (g/ml)	Quantity of formulation/ ha (g/kg)	Dilution in water			
2020	Citrus	Canker	Streptomycin sulphate 90% + tetracycline hydrochloride 10% SP (streptocycline), and copper oxychloride 50 WP	100 ppm and 0.1%	1 g and 20 g	100 g and 2 kg	1000 lit	First spray at initiation of disease and remaining three sprays at interval of 20 days of first spray	---	---

13. Effect of manures in management of nematodes in bidi tobacco nursery

The farmers of middle Gujarat Agro-climatic zone growing bidi tobacco nursery are advised to apply recommended dose of 180 kg N/ha, out of which 45 kg N/ha in form of FYM (*i.e.* 90 kg FYM/100 m²) coupled with poultry manure (PM) 90 kg N/ha (*i.e.* 24 kg PM/100 m²) one month before seeding, remaining 45 kg N/ha from ammonium

sulphate (AS) 25 kg N/ha as a basal dose (*i.e.* 1.25 kg AS/100 m²) and remaining 20 kg N/ha as a split dose from urea (*i.e.* 0.43 kg urea/100 m²) and drenching with rose can (100 g diluted in 10 litre water) after 30 days of germination to manage disease caused by nematodes and increase number of healthy transplantable seedlings. **Requirements of manures and fertilizer to different plot size.**

Plot size	FYM (kg)	Poultry manure (kg)	Ammonium sulphate (kg)	Urea (kg)
1 m ²	0.9	0.24	0.0125	0.0043
10 m ²	9	2.4	0.125	0.043
100 m ²	90	24	1.25	0.43
1000 m ²	900	240	12.5	4.3
10000 m ²	9000	2400	125	43

14. Effect of transplanting date of rice and nitrogen levels on incidence of pests and diseases

The farmers of middle Gujarat Agro-climatic zone growing paddy variety GR-11 are advised to transplant seedlings during 2nd to 4th week of July with application of 80 kg N/ha (32 kg as basal dose, 32 kg at tillering stage and 16 kg at one week before panicle initiation stage) to reduce the intensity of diseases (bacterial leaf blight and sheath rot) and infestation of insects (leaf hopper, leaf folder and rice stem borer).

15. Effect of salicylic acid against foliar diseases of maize

The farmers of middle Gujarat Agro-climate zone growing *kharif* maize are recommended to soak the seeds in salicylic acid @ 0.75 mM concentration (104 mg/lit) for 18 hours followed by shade drying for 48 hours and apply two sprays of salicylic acid @ 3 mM concentration (4.14 g/10 lit.), first at 20 days after germination and second at 15 days after first spray for effective and economical management of foliar diseases viz., Maydis leaf blight, Turcicum leaf blight and Curvularia leaf spot.

Dissolved the salicylic acid in minimum quantity of ethanol to ensure complete solubility followed by dilution with required water.

Year	Crop	Pest	Pesticides with formulation	Dose			Application schedule	Waiting/ PHI (Days)	Remarks	
				a.i./ ha	Quantity of formulation/ ha	Concentration (%)				Dilution in water (10 lit.)
2020	Maize (<i>kharif</i>)	Foliar maize diseases such as maydis leaf blight, turcicum leaf blight and curvularia leaf spot	Seed priming with 0.75 mM + foliar spray of salicylic acid (3 mM)	-	2.08 g/20 kg seed /20 lit. + 207 g for two foliar spray	3 mM	4.14 g	Seed priming with salicylic acid before sowing after that two foliar spray of salicylic acid, one at 20 DAG and another at 15 days interval after first spray.	Not require	-

4.1.1.4 DAIRY SCIENCE / FPT&BE

I DAIRY SCIENCE

1. Evaluating Mango Leather as a Natural Adjunct Flavouring for 'Mango Tid-Bits Ice Cream'

A technology for preparing 'Mango Tid-Bits' ice cream utilizing Alphonso mango pulp and mango leather as an adjunct flavouring has been developed at Anand Agricultural University, Anand. The presence of mango leather particulates in mango based ice cream enhances the acceptability of the resultant ice cream.



2. Value addition to Mozzarella Cheese Analogue through incorporation of Whey Protein and Vitamin A

A satisfactory quality Mozzarella cheese analogue utilizing palm oil based fat, enriched with whey protein and vitamin A, having desired baking qualities as pizza topping can be prepared adopting the formulation and process developed by Anand Agricultural University, Anand.

Carrot rabri

3. Process Optimization for Manufacture of

Ready-To-Reconstitute Kheer

A technology developed by Anand Agricultural University for manufacture of Ready-To-Reconstitute (RTR) kheer by employing vacuum tray drying for quick cooking rice and spray drying for pre-mix formulation is recommended. The developed RTR kheer has a shelf life of up to 6 months at $37\pm 2^{\circ}\text{C}$ when packaged in Met-PET/PE pouches.



Ready-To-Reconstitute Kheer

4. Development of Nitrogen Distribution Based Approach to Detect Adulteration of Milk with Non-Protein Nitrogenous Compounds

Methodology developed by Anand Agricultural University for detection of adulteration of non-protein nitrogenous compounds viz. urea, melamine and

ammonium sulphate in milk based on ratios of nitrogen fractions (TPN/NPN and CN/NPN) is recommended.

5. Evaluation of Selected Herbs as Natural Antioxidant for Ghee

Anand Agricultural University recommends addition of dried coarse particles of betel leaves @ 0.3% of the expected yield of ghee at the final stage of heat clarification process during the preparation of ghee for reducing oxidative deterioration of ghee.

6. Evaluating Selected Spices for Extending Shelf Life of Cultured Buttermilk

Anand Agricultural University has developed a cultured buttermilk by blending 60 per cent dahi with 40 per cent paneer whey (fermented by *L. helveticus* MTCC 5463) and added with 1 per cent cumin powder and 0.02 per cent cumin oleoresin. It can be stored up to 7 days at refrigerated temperature ($7\pm 1^\circ\text{C}$) in PET bottles.

7. Utilization of Whey in Common Bakery Products

Anand Agricultural University recommends use of whey in place of water in making the dough/batter for the bakery products. Cheddar cheese whey can be used upto 50% for toast and cake, 75% for bun and 100% for pizza base, while paneer whey upto 50% for khari and 100% for biscuits. Incorporation of whey improved the sensory attributes of these bakery products without affecting their keeping quality.

8. Evaluation of antiobesity effect of probiotic fermented milk enriched with Finger Millet (*Eleusine coracana*)

Probiotic fermented milk product enriched with finger millet, prepared by fermented

toned milk using *Streptococcus thermophilus* MTCC 5460 and probiotic *Lactobacillus helveticus* MTCC 5463, developed by Anand Agricultural University is found to possess antiobesity effect as confirmed by *in vitro* tests and *in vivo* study in Wistar rat model.

9. Bioprospecting of oxalate degrading lactic acid bacteria to develop a functional product with potential in preventing kidney stone disease

A method for preparing barley enriched probiotic fermented milk product has been standardized at Anand Agricultural University, Anand. The product can be made using toned milk, adding 4% of barley flour and fermenting with starter culture [*Lactobacillus rhamnosus* MTCC 5945 + *Lactobacillus rhamnosus* MTCC 25062 + *Lactobacillus helveticus* MTCC5463 + *Lactobacillus plantarum* M11] at $37\pm 1^\circ\text{C}$ till the desired acidity of 0.65 to 0.7% LA. The product showed good antimicrobial activity against selected test pathogens and showed promising antioxidant, ACE Inhibitory, antidiabetic and oxalate degradation activity. The probiotic count in the product at the end of shelf life at 7°C of 21 days was $>8 \log$ cfu/ml. Further, *in vivo* animal study results revealed that barley enriched probiotic fermented milk product exhibited anti-urolithiatic activity in ethylene glycol ammonium chloride challenged Wistar rats.

II FOOD PROCESSING TECHNOLOGY

10. Standardization of Process Parameters for the Development of Partially Defatted Peanut

The entrepreneurs and oilseeds processors, interested in production of partially defatted

whole peanut are recommended to use the technology developed by Anand Agricultural University. Defatted peanut so produced has 31% fat and 36% protein content. The process involves roasting after defatting for removal of unpleasant odor and can be stored upto 21 days in HDPE zip pouch.

11. Effect of Low Frequency Ohmic Heating on Recovery of Carrot Juice

The entrepreneurs and food processors interested in the production of carrot juice are advised to use ohmic heating processing technology developed by Anand Agricultural University, Anand. The ohmically processed carrot juice can be stable and acceptable upto 28 days of storage under refrigerated condition at 7 ± 2 °C **as compared to conventionally heated carrot juice which can be stable and acceptable** upto 14 days under the same refrigerated condition.



Ohmically processed carrot juice

12. Production of Premium Quality Powder with Maximum Retention of Essential Oil Using Cryogenic Grinding of Cinnamon

Entrepreneurs and agro-processing units involved in grinding of spices are advised to use the technology of cryogenic grinding developed by Anand Agricultural University for superior quality cinnamon powder with higher retention of essential oil. For higher

retention of essential oil, the cryogenic grinding of cinnamon at temperature of -80 °C, **sieve size of 0.8 mm and feed rate of 10 kg/h is recommended.**

13. Osmotic drying of mango slice

The entrepreneurs and fruit processors interested in production of osmotically dehydrated mango slices are advised to use processing technology developed by Anand Agricultural University. The technology involves processing steps including selection of ripe Kesar and Rajapuri mangoes, washing, peeling, slicing, steeping in sugar syrup, followed by vacuum drying up to 15% (wb) moisture content. The product so prepared is acceptable and can be stored upto 180 days in 200-gauge HDPE pouches at ambient (30 ± 2 °C) **temperature.**



Osmotic drying of mango slice

14. Technology for Development of Ready-to-Rehydrate Type of Kidney bean

The entrepreneurs and food processors interested in production of ready-to-eat and rehydrate type kidney beans are advised to adopt the production technology developed by Anand Agricultural University, Anand. The technology involves various processing steps including soaking, cooking and dehydration. The product so prepared is

acceptable and can be stored upto 184 days in aluminum laminated pouches at ambient (30 ± 2 °C) **temperature.**

15. Production Technology for Clarified Wood Apple Juice

Thermally treated clarified wood apple juice

The entrepreneurs and food processors interested in production of thermally treated clarified juice from wood apple fruit are recommended to use the technology developed by Anand Agricultural University, Anand. This technology involves clarification using centrifugation and bentonite treatment with thermal processing of wood apple juice at 85 °C temperature for 4 minutes for preservation. Clarified wood apple juice (Thermally treated) can be stored up to 135 and 165 days at ambient (30 ± 2 °C) and refrigerated (7 ± 2 °C) temperature, respectively.

Non-thermally treated clarified wood apple juice

The entrepreneurs and food processors interested in production of non-thermally treated clarified juice from wood apple fruit are recommended to use the technology developed by Anand Agricultural University, Anand. This technology involves clarification using centrifugation and bentonite treatment with gamma irradiation processing of wood apple juice at 1 kGy dose for preservation. Clarified wood apple juice (Gamma irradiated) can be stored up to 150 and 195 days at ambient (30 ± 2 °C) and refrigerated (7 ± 2 °C) temperature, respectively.

16. Development of Fruit Beverage with Lactose Hydrolyzed Milk Solids

The entrepreneurs and food processors

interested in production of fruit beverage with lactose hydrolyzed milk solids are advised to adopt the production technology developed by Anand Agricultural University, Anand. The technology involves blending of milk:whey ratio 4:1 (80% milk, 20% whey) with addition of Beta D-galactosidase enzyme concentration 5.01 U/g of lactose, incubating it at 34 °C for 203 min and then heating at 65 °C for 10 min. This is followed by addition of sapota pulp 8% and sugar at 9.5% and the beverage is heated at 72 °C for 15s and then packing in glass bottles. The product so prepared is having highly sensory acceptable quality. The product can be stored in glass bottles for 12 days at 7 ± 2 °C.

17. Cold Milling of Flax seed for extraction of Omega-3 Rich Oil

The entrepreneurs and oil seed processors interested in production of superior quality flax seed oil are advised to use technology developed by Anand Agricultural University, Anand. The technology for production of omega-3 fatty acid rich flaxseed oil involves steps like moisture conditioning of flax seeds, followed by microwave roasting, oil extraction using hydraulic press extractor. Flaxseed oil can be stored for 120 days in amber colour HDPE bottle at ambient temperature (30 ± 2 °C).

18. Production Technologies for Value Added Products from Pumpkin Seeds

The entrepreneurs and food processors interested to prepare pumpkin seed spread are advised to adopt the production technology developed by Anand Agricultural University, Anand. The technology involves dehulling of whole pumpkin seed, roasting, addition of salt, hydrogenated vegetable oil, sugar, spice

(cinnamon, ginger powder) mix and packing in glass jars. The product so prepared has high sensory score, good consistency, optimum adhesiveness and cohesiveness. The product can be stored up to 90 days at 30 ± 2 °C.

19. Technology for Production of Superior Quality Cinnamon Essential Oil Using Super Critical Fluid Extraction

Entrepreneurs and Agro-processing units involved in production of superior quality of cinnamon essential oil are advised to use the supercritical fluid extraction technology developed by Anand Agricultural University. This technology involves use of carbon dioxide supercritical fluid extraction at controlled pressure of 283 bar and temperature of 70 °C which yields 8.72% cinnamon essential oil. The process also yields 11.7% cinnamaldehyde and 0.19% Eugenol in the essential oil

20. Design and development of two-stage evaporative cooling system for transport of fruits and vegetables

The design of two stage evaporative cooling system developed by Anand Agricultural University, Anand for fixing on vehicle for transport of fruits and vegetables is recommended for scientific community and entrepreneurs. This system maintains 25 ± 2 °C temperature and relative humidity above 60% inside the enclosed vehicle body during transit.

21. Study on co-digestion of potato processing effluent with cattle dung for biogas production.

Effluent of potato flakes producing industry can be used for biogas production as per the study conducted at Anand Agricultural University, Anand. After 10 days HRT

period for co-digestion of the effluent with cattle dung, biogas is produced which contains 59.67% methane. The digested slurry contains 1.99% N, 1.43% P and 1.34% K. Treatment of the effluent not only gives good quality fuel in one fourth time in comparison to only cattle dung digestion but also produce the best quality manure for crop production.

22. Development of high fiber cookies using tomato pomace

A satisfactory high fiber cookie can be prepared by adding 10% Tomato Pomace Powder (replacing Maida) using technology developed by Anand Agricultural University. The technology involves addition of Oregano, Chilli flakes and Garlic powder @ 1%, while Black Pepper Powder @ 0.5% in the “Sweet and Salty Biscuit” formula and preparation of cookies using “Creaming Method”. The product duly packed in aluminium foil will have safe storage life up to 75 days. The bakery industry and entrepreneurs interested in production of high fiber cookies are advised to follow the same.

23. Development of high fiber bakery products viz. bun, cookie, bread, cake and cupcake using *Madhuka indica* flower

- ◆ A satisfactory high fiber cookie can be prepared by adding 17.5% *Madhuka indica* flowers (replacing Maida) using technology developed by Anand Agricultural University. The technology involves crushing *Madhuka indica* flowers with Maida at 1:1 ratio for 3 minutes in mixer and prepares the cookies using “Creaming Method”. The product duly packed in aluminium foil will have safe storage life up to 75 days. The developed cookie contains about 3½ times more fiber as compared to control. The bakery industry

and entrepreneurs interested in production of high fiber cookies are advised to follow the same.

- ◆ A satisfactory high fiber cupcake can be prepared by adding 15% *Madhuka indica* flowers (replacing Maida) using technology developed by Anand Agricultural University. The technology involves crushing *Madhuka indica* flowers with Maida at 1:1 ratio for 3 minutes in mixer, reduction in sugar by 15%, preparation of batter using “Creaming Method” and reduction in baking temperature by 10 °C and increase in baking time by 2 minutes. The developed cupcake contains about 4¼ times more fiber as compared to control. The bakery industry and entrepreneurs interested in production of high fiber cupcake are advised to follow the same.
- ◆ A satisfactory high fiber bread can be prepared by adding 5% *Madhuka indica* flowers (replacing Maida) using technology developed by Anand Agricultural University. The technology involves addition of *Madhuka indica* flowers in the form of paste (prepared in luke warm water in 1:2 ratio) along with water while dough preparation, reduction proofing time by 10 minutes and baking at 210 °C temperature for 22 minutes using “No Dough Time Method” of bread production. The developed bread contains about 1½ times more fiber as compared to control. The bakery industry and entrepreneurs interested in production of high fiber bread are advised to follow the same.
- ◆ A satisfactory high fiber cake can be prepared by adding 10% *Madhuka indica* flowers (replacing Maida) using technology developed by Anand Agricultural University. The technology involves crushing *Madhuka*

indica flowers with Maida at 1:1 ratio for 3 minutes in mixer, reduction in sugar by 10% and replacement of essence with Cardamom-Nutmeg powder @ 1.25% in the formula, preparation of better using creaming method and reduction in baking temperature by 10 °C and increase baking time by 3 minutes. The developed cake contains about 3½ times more fiber as compared to control. The bakery industry and entrepreneurs interested in production of high fiber cake are advised to follow the same.

- ◆ A satisfactory high fiber bun can be prepared by adding 7% *Madhuka indica* flowers (replacing Maida) using technology developed by Anand Agricultural University. The technology involves addition of *Madhuka indica* flowers in the form of paste (prepared in luke warm water in 1:2 ratio) along with water while dough preparation followed by proofing dough pieces at 50 °C for 30 minutes with hand pressing after 10 minutes and baking at 220 °C temperature for 17 minutes using “No Dough Time Method” of bun production. The developed bun contains about 2¼ times more fiber as compared to control. The bakery industry and entrepreneurs interested in production of high fiber bun are advised to follow the same.

24. Development of value added product containing Green Wheat (Ponk) and Chickpea ola (Ponk)

- ◆ A satisfactory tender roasted wheat ponk can be prepared by roasting wheat earhead in oven at 200 °C for 20 minutes followed by drying under shadow for 30 minutes. The ponk dully filled in food grade airtight plastic container will have storage life of about six months. The farmers, entrepreneurs and agro

processing units interested in production of green wheat ponk are advised to use the technology developed by Anand Agricultural University.

- ◆ A satisfactory Chickpea olaponk can be prepared by roasting green Chickpea ola pods in oven at 200 °C for 20 minutes followed by drying in oven at 100 °C for 1 hour. The Chickpea olaponk dully filled in food grade airtight plastic container will have storage life of about four months. The farmers, entrepreneurs and agro processing units interested in production of Chickpea olaponk are advised to use the technology developed by Anand Agricultural University.
- ◆ A healthy value added Jadariyu can be prepared by using 35% wheat ponk flour, 15% Chickpea ola ponk flour, 25% ghee, 20% sugar and 5% milk. The Jadariyu dully packed in food grade airtight plastic container will have storage life of about fifteen days. The farmers, entrepreneurs and agro processing units interested in production of Jadariyu are advised to use the technology developed by Anand Agricultural University.
- ◆ The farmers, entrepreneurs and agro processing units interested in production of satisfactory value added ponk khakhara are advised to use the technology developed by Anand Agricultural University.
- ◆ Wheat ponk khakhara can be prepared by incorporating 70% wheat ponk flour with wheat flour. The product dully packed in aluminum foil will have storage life of about 75 days.
- ◆ Chickpea ola ponk khakhara can be prepared by incorporating 35% Chickpea ola ponk flour with wheat flour. The product dully packed in aluminium foil will have storage life of about 45 days.

4.1.1.5 AGRICULTURAL ENGINEERING AND AIT

I AGRICULTURAL ENGINEERING

1. Development of tractor drawn simple and low cost combined tillage tool

A tractor drawn combined tillage tool has been developed by Anand Agricultural University, which is useful for seedbed preparation in a single run in vasma condition of sandy loam soil with required tilth which not only saves time but also manipulate more soil volume as compared to cultivator therefore it is recommended for the use of farmers for seedbed preparation.



Combine tillage tool with clod crusher and wooden planker

2. Modification of bullock drawn indigenous wooden plough for tribal region of middle Gujarat

The farmers are using bullock drawn indigenous plough are recommended to attach triangular shear blade developed by Anand Agricultural University at bottom of the plough boot to reduce time of ploughing (50%) and increase soil volume manipulation (100%) as compared to traditional indigenous wooden plough. The modified plough opens bigger width furrow than the traditional plough and hence it requires less time and less walk behind the plough to cover unit area for ploughing operation.



Traditional wooden plough



Modified wooden plough

3. Conjugate assessment of drip lateral spacing and irrigation regimes on productivity of *Rabi* maize

The farmers of middle Gujarat Agro-Climatic Zone are recommended to install drip irrigation system in *Rabi* Maize (GAYMH1) at 60 cm row to row spacing having 40 cm emitter spacing with 4 lph emitter discharge and to operate drip system at 3 day interval as per following table results 56.8 % higher grain yield and 68.35% fodder yield with 27.8 % water saving than flood irrigated maize.

Month	No. of irrigation	Irrigation time (minutes)
November	6	40
December	10	45
January	10	45
February	6	50

II. AGRICULTURAL INFORMATION TECHNOLOGY

---NIL---

4.1.1.6 ANIMAL PRODUCTION AND FISHERIES

1. The effect of feeding protected choline on milk and production efficiency in dairy cows.

Supplemental feeding of rumen protected choline (33.5%) in total mixed ration @ 40 g/day during 21 pre-calving to 120 post-calving days to lactating cows economize milk production by 29.18%, reduce dry matter intake for milk production by 36.14% and total digestible nutrients/kg milk by 34.69%.

2. Performance of Crossbred Cows under Different Feeding Regimes.

Dairy farmers are recommended that in comparison to sole paddy straw feeding to crossbred cows, feeding of concentrate mixture @ 1 kg/d during dry period and 50% of milk production during lactation, 10 kg hybrid napier green fodder, mixture of cereal and legume straw (50% paddy straw: 50% pigeon pea straw) on ad lib basis and 30 g mineral mixture/day increases net profit by 29.21%.

3. Effect of tryptophan supplementation at two levels of crude protein in layer ration on production performance of White Leghorn birds.

To achieve maximum egg production with lowest feed cost per egg produced during 21-40 week of age in White Leghorn birds, poultry feed manufacturers and poultry farmers are recommended to maintain 14%

crude protein and 0.19% tryptophan (amino acid) level in layer feed.

4. Study on the growth, production and carcass evaluation of Kadaknath, Rhode Island Red and their crosses.

- ◆ Poultry farmers are recommended to rear the crossbred males of Kadaknath X RIR for attaining higher body weight (Average 1534 g) at marketing age of 16 weeks with acceptable chicken meat on the basis of sensory evaluation like appearance, smell, palatability *etc.* Moreover, poultry farmers are also recommended to rear the crossbred females of Kadaknath X RIR for attaining higher average egg production (Average 97 eggs) and body weight (Average 1810 g) at 40 weeks of age.
- ◆ Poultry farmers are recommended to rear the crossbred males of Kadaknath X RIR for attaining higher body weight (Average 1534 g) at marketing age of 16 weeks and acceptable chicken meat on the basis of sensory evaluation like appearance, smell, palatability *etc.*
- ◆ Poultry farmers are recommended to rear the crossbred females of Kadaknath X RIR for attaining higher average egg production (Average 97 eggs) and body weight (Average 1810 g) at 40 weeks of age.

5. Supplementation of bypass fat for fattening of Surti male goats.

The Surti goat keepers are recommended to feed TMR with 25 g bypass fat daily from 22 to 24 months of age to Surti male goats for 70 days to increase body weight and feed conversion efficiency with 38.6% reduction in feed cost per kg gain.

6. In-vitro evaluation of different variety of paddy straw of Main Rice Research Station, Nawagam.

Livestock owners are recommended that compared to paddy straw of other varieties, paddy straw of GAR-14 variety developed by Anand Agricultural University has very good nutritional quality, contains higher crude protein with low crude fibre.

7. Methane mitigation in crossbred cows under different feeding regimes

Dairy farmers are recommended that in comparison to sole paddy straw based feeding of crossbred cows, feeding of concentrate mixture daily @ 1 kg during dry period and 50% of milk production during lactation, 10 kg green fodder (Hybrid Napier), mixture of cereal and legume straw (50% paddy straw : 50% pigeon pea straw) on ad lib basis and 30 g mineral mixture/day reduce daily methane emission and dietary energy loss through methane emission by 21.5% which is reflected by increase in milk yield (37.4%) of animals.

8. Estimation of methane emission in bullock and dietary interventions for its mitigation.

Livestock owners are recommended that crossbred bullocks fed TMR with 30% concentrate mixture, 35% wheat straw and 35% Lucerne gotar reduces daily methane emission by 17.7%.

9. Performance of Adult Surti Goats on Different Floor Types Under Asbestos Roofed House.

On the basis of behavioural studies of goats, intensive goat keepers of middle Gujarat

are recommended to construct goat shed comprising of pucca floor under covered area in order to increase comfort.

4.1.1.7 ANIMAL HEALTH

---NIL--

4.1.1.8 SOCIAL SCIENCE

1. An Economic Analysis of Turmeric Production in Middle Gujarat: A Comparative Study of Processed and non-processed

It is recommended that farmers cultivating the turmeric are advised to sale their produce after processing in powder form to get the maximum income and profit as compared to non-processed turmeric.

4.1.2 RECOMMENDATIONS FOR SCIENTIFIC COMMUNITY

4.1.2.1 CROP IMPROVEMENT

I. CROP IMPROVEMENT

1. Study the effect of storage container, polymer film coating, fungicide and insecticides on storability of green gram var. GAM 5

It is recommended that seeds should be treated with imidacloprid 48% FS @ 2.5 mL/kg seeds, thiram 75% WS @ 3g/kg seed and polymer seed coating @ 5 mL/kg seeds followed by storage in polythene bag (700 gauge) or Double lined poly bags or non-woven bag for retaining higher seed germination per cent in Green gram seeds at the end of nine months of storage period.

II. BASIC SCIENCE

2. Effect of harvesting stage on morpho-physiological and essential oil constituents of *Ocimum* spp.

It is advised to harvest the sweet basil (Gujarat Anand Basil 1; *Ocimum basilicum*) variety at seed setting stage (110-115 DAS) to get higher number of leaves per plant (4949) and methyl chevicol (8.0%) content in oil and to harvest at flowering stage (90-95 DAS) can get higher industrial value in terms of linalool (48.0%) content in oil. Further, it is advised to harvest Closimum (*Ocimum gratissimum*) species at flowering stage (105-110 DAS) in order to obtain the highest oil yield (0.5%) with 85.8% eugenol content in oil.

4.1.2.2 CROP PRODUCTION

1. Integrated weed management in black gram (*Vigna mungo* L.)

It is for the information of scientific community that pendimethalin 30% EC 1000 g a.i./ha PE fb quizalofop-ethyl 5% EC 50 g a.i./ha PoE provide effective weed management of complex weed flora and higher net return in black gram without any herbicide residues in produce and soil. There was no any adverse effect of herbicide applied in black gram on succeeding maize, chickpea and wheat crops.

4.1.2.3 PLANT PROTECTION

I AGRICULTURAL ENTOMOLOGY

1. Bio-efficacy of insecticides against thrips, *Scirtothrips dorsalis* Hood in pomegranate

Application of spinosad 45 SC, 0.01% (2.20 mL/10 litre water, 100 g a.i./ha) or buprofezin 15% + acephate 35% (50 WP),

0.063% (12.5 g/10 L water, 625 g a.i./ha) when thrips population attain 5 thrips/10 cm shoot and second after 15 days for effective control of thrips in pomegranate.

2. Evaluation of insecticides against leaf eating caterpillar in drumstick

Chlorantraniliprole 18.5% SC, 0.006% (3.00 mL/10 L water, 30 g a.i./ha) or emamectin benzoate 5% SG, 0.0019% (3.80 g/10 L water, 9.50 g a.i./ha), first at appearance of pest and second after 15 days proved effective against drumstick leaf eating caterpillar.

3. Efficacy of granular insecticides against fall armyworm, *Spodoptera frugiperda* (J. E. Smith) in maize

Whorl application of fipronil 0.6% GR, 20 kg/ha (120 g a.i./ha) first at appearance of pest and second after 15 days for effective control of fall armyworm, *Spodoptera frugiperda* in maize.

4. Evaluation of bio-pesticides against fall armyworm, *Spodoptera frugiperda* (J. E. Smith) in maize

Application of *Nomuraea rileyi* 1% WP (2 x 10⁸ cfu/g) @ 40 g/10 litre water first at initiation of pest and subsequent two sprays at 10 days interval for effective and economical control of fall armyworm, *Spodoptera frugiperda* infesting maize.

5. Decontamination study of water by ozone treatment for about 100 pesticides

Ozone treatment to pond/river/ground water for 15 min @ 500 mg/hr in 15 mL water can result in > 70% degradation of the listed 99 pesticides. Out of these, 71 pesticides showed degradation > 90%. Pesticides viz., thiacloprid, tricyclazole, phosphamidon,

fenamiphos-sulfone, propoxure, finamiphos-sulfone, simazin, atrazine, chlorantraniliprole and fluopicolide did not degrade by ozone treatment.

List of pesticide degraded more than 90% are metoxuron, diuron, demeton, azoxystrobin, malathion, dimethomorph, triazophos, fenamiphos, phenthoate, quinalphos, anilophos, fenthion, pyraclostrobin, phosalone, spinosyn A & D, emamectin B1a, buprofezin, pyriproxyfen, chlorpyrifos, spiromesifen, propargite, tridemorph, fenpyroximate, fenazaquin, carbosulfan, fipronil-sulfone, temephos, methiocarb, ethiofencarb, butocarboxim, chlorotoluron, chloroxuron, diethofencarb, forchlorfenuron, isoproturon, neburon, pirimicarb, siduron, butafenacil, cyprodinil, fenhexamid, flutolanil, furulaxyl, imazalil, mepanipyrim, mepronil, picoxystrobin, piperonyl-butoxide, prochloraz, pyracarbolid, pyrimethanil, rotenone, spiroxamine, bupirimate, carboxin, clethodim, ethiprole, fenamidone, methoprotryne, prometryn, terbutryn, triflumizole, diniconazole, fenpropimorph, mexacarbate, aminocarb, pencycuron and fluazinam.

6. Multi-residue analysis of 100 pesticides in water using QuEChERS method and detection by LC-MS/MS and/or GC-MS/MS

A new innovative QuEChERS method for multi-residue analysis of 130 pesticide compounds in water is developed with LOQ 0.5 ppb. This method can reduce the analysis time, use fewer reagents in small amounts and provide high recovery for routine monitoring of pesticides residue from water. The method can very well match the requirements for WHO and BIS standards for most pesticides.

7. Multi-residue analysis of 100 pesticides in cumin seeds using QuEChERS method and detection by LC-MS/MS and/or GC-MS/MS

Multiresidue analysis of cumin seeds by LC-MS/MS showed acceptable performance of 98 pesticides when fortified at 0.1 µg/g.

List of pesticides showed acceptable performance are aldicarb, aldicarb-sulfone, aldicarb-sulfoxide, anilofos, bendiocarb, carbaryl, carbofuran, cymoxanil, dichlorvos, diniconazole, edifenphos, etaconazole, fenamidone, fenamiphos, fenamiphos-sulfone, fenamiphos-sulfoxide, fenarimol, fenobucarb, fenthion, flonicamid, fluopicolide, flusilazole, indoxacarb, isoproturon, linuron, malaoxon, metoxuron, metribuzin, oxycarboxin, penconazole, pencycuron, pretilachlor, propanil, propaquizafop, propoxur, quizalofop-ethyl, simazine, demeton-S-methyl sulphoxide, demeton-S-methyl-sulfone, carboxin, demeton-O, demeton-S, triadimefon, fenpyroximate, abamectin, carbosulfan, acephate, acetamiprid, atrazine, azoxystrobin, buprofezin, carbendazim, carbofuran, carbofuran-3-hydroxy, carbofuran-3-keto, clothianidin, dimethoate, dimethomorph, diuron, fenazaquin, imidacloprid, iprobenfos, metalaxyl, methamidophos, methomyl, monocrotophos, myclobutanil, omethoate, phenthoate, phorate-sulfone, phorate-sulfoxide, phosalone, phosphamidon, profenofos, propargite, propiconazole, pyraclostrobin, pyriproxyfen, tebuconazole, thiacloprid, thiamethoxam, triazophos, chlorfenvinphos, chlorantraniliprole, difenoconazole, fipronil, fipronil-sulfide, fipronil-sulfone, thiophanate-methyl, malathion, tricyclazole, alachlor,

chlorpyrifos, ethion, fenpropathrin, thiodicarb, trifloxystrobin, dicofol.

8. Evaluation of insecticides against plant hopper infesting rice

Two sprays of sulfoxaflor 24 SC, 0.043% (18.2 ml/10 litre of water, 218.7 g a.i./ha), first spray at the initiation of white backed plant hopper (WBPH) and second after 15 days for effective management of WBPH in rice.

9. Screening of mungbean genotypes against insect pests and diseases under natural conditions

Out of 17 greengram genotypes/cultivars screened in summer season, VMG-03 found resistant against insect pests viz., whitefly, jassid, thrips and yellow mosaic disease while moderately resistant to aphid and spotted pod borer, *Maruca vitrata*. This can be used in breeding for developing resistant varieties.

10. Screening of black gram genotypes against insect pests and diseases under natural conditions

Out of 20 black gram genotypes/cultivars screened in summer season, VUG-33 and VUG-31 found resistant against insect pests viz., whitefly, jassid, thrips and yellow mosaic disease while moderately resistant to aphid and spotted pod borer, *Maruca vitrata*. This can be used in breeding programme for developing resistant varieties.

11. Population dynamics of major lepidopterous insect pests through sex pheromone traps

Relatively higher male moth catches of tobacco leaf eating caterpillar, *Spodoptera*

litura, gram pod borer, *Helicoverpa armigera* and rice stem borer, *Scirpophaga incertulas* in pheromone traps were found during July to December, September to December and August to October, respectively with peak in month of October.

12. Evaluation of insecticides for the control of major lepidopteran pests of rice

Application of thiodicarb 75 WP, 0.15% (20 g/10 L water, 783.33 g a.i./ha) at 30 and 45 days after transplanting found effective against leaf folder, *Cnaphalocrocis medinalis* infesting rice.

II NEMATOLOGY

13. Management of root-knot nematodes (*Meloidogyne* sp./ race) in pulses by crop rotation

For effective management of root-knot nematode, *Meloidogyne incognita* and *M. javanica* in root-knot infested field, adopt the following crop rotation for three years.

Khariif: Cowpea (AVCP 1), Rabi: Onion and Summer: cowpea (AVCP 1) vegetable

4.1.2.4 DAIRY SCIENCE and FPT & BE

I DAIRY SCIENCE

1. Evaluation of antimicrobial activity of Lactic Acid Bacteria strains against mastitic milk isolates of *Staphylococcus aureus* and *Escherichia coli*

Anand Agricultural University Lactic Acid Bacterial strains *L. rhamnosus* MTCC5462, *Lactobacillus brevis* N9, *Lactobacillus paracasei* N26 and *Lactobacillus rhamnosus* NN3 are found to possess promising antimicrobial action against antibiotic resistant mastitic milk isolates *Staphylococcus aureus* 72 and *E.coli* 6.

2. In-vitro evaluation of selected probiotic cultures for oral health benefits

Anand Agricultural University probiotic culture *Weissella cibaria* MTCC 5947 was found to possess properties which can be explored to use it for oral health applications. It possesses antimicrobial ability towards oral pathogens, *Streptococcus mutans* MTCC 890 and *Candida albicans* MTCC 3017. It also possess high antioxidant and anti-carcinogenic activity helpful for potential plaques removal and better oral health.

3. Purification and characterization of ACE-inhibitory peptides derived from fermented Surti Goat milk

A protocol is developed by Anand Agricultural University, Anand for the production of antihypertensive peptides viz., IELEDWKDK, LPKMAQLAGPAHNISR and ASASETNTAQVTSTEV peptides from surti goat milk by fermenting it for 48h at 37°C using *L. casei* NK9 and *L. fermentum* LF.

4. Development of Technology for the preparation of Fermented Rice Beverage in Meghalaya and evaluation of its functional properties

The fermented rice beverage developed at Anand Agricultural University, Anand is found to have potential in preventing the antibiotic associated diarrhea. The group of wistar rats fed at the rate of 2 ml/g for 15 days helped to control diarrhea as estimated by parameters like maintenance of body weight, fecal water content, fecal consistency score and histopathological analysis.

II FOOD PROCESSING TECHNOLOGY

5. Study on decontamination of pesticides in selected spices, vegetable and fruits using γ -irradiation, UV radiation and Ozonation Techniques

The scientific community interested in degradation of pesticide in green chili are advised to use ozonized water for 15 minutes @ 30 g/hr. This enables reduction in Ethion (93%), Profenophos (91.10%), Quinalphos (91.02%), Imidacloprid (76%) and Acetamidrid (63%).

6. Metagenomic based microbial diversity study of dairy effluent treatment plants

The samples from dairy effluent plants collected from various sources like influent, anaerobic digester, aeration tank and final treated effluent showed significant differences in the type of microbiota. The predominant phyla in dairy effluent samples are Firmicutes, Proteobacteria, Planctomycetes, Bacteroidetes, and Chloroflexi. The *Streptococcus*, *Veillonella*, *Blastopirellula*, and *Thauera* were found to be the core microbiome at the genus level.

7. Evaluation of combined effect of gamma irradiation and edible coating on shelf-life of sapota fruit

Scientists interested in enhancement of shelf-life of sapota fruits Cv. Kalipatti are advised to use the combination of irradiation and edible coating technology developed by Anand Agricultural University. This technology enables the shelf life of 13 days with minimum physiological weight loss (19.85%), retention of the firmness of fruits (0.20 N) and ascorbic acid (8.82 mg/100).

8. Performance evaluation of feed forward neural network for detection of boric acid adulteration in wheat flour using FTIR spectra

Feed forward artificial neural networks (learning rate 0.02, momentum 0.9) can be successfully used to detect boric acid adulteration in wheat flour at 2% and above levels using FTIR spectra with 90% correct identification.

9. (1) Decontamination effect of DBD plasma on selected microorganisms

The scientific community interested in non-thermal decontamination techniques is recommended to adopt DBD plasma treatment to decontaminate food born micro-organisms *S. typhi*, *E.coli*, *E. aerogens* and *S. aureus*. At 5 kV power for 24 minutes treatment of atmospheric cold plasma, the decontamination effect can be 2 to 3 log reductions (log CFU/g).

(2) Decontamination effect of UV-C on selected microorganisms :

The scientific community interested in non-thermal decontamination techniques is recommended to adopt UV-C treatment to decontaminate food born micro-organisms *S. typhi*, *E.coli*, *E. aerogens* and *S. aureus*. At 3 cm distance and 60 minutes of UV-C exposure treatment, the decontamination effect can be 3 to 5 log reduction (log CFU/g).

4.1.2.5 AGRICULTURAL ENGINEERING AND AIT

I AGRICULTURAL ENGINEERING

1. Estimation of evapotranspiration using MODIS and Landsat-8 dataset in selected semiarid region of middle Gujarat

Field engineers, scientists, and policy makers

of Panam canal command are advised to use Landsat 8 (spatial resolution: 30 m × 30 m) derived LST and crop coefficient (Kc) based algorithm than Mod16 (spatial resolution: 1 km × 1 km) algorithm to estimate actual evapotranspiration (ETc) in *Rabi* season up to 0.5 acre area. Further, the non-linearity between Mod16/Landsat 8 derived ETc with field-based FAO-56 can be reduced using ANN.

2. Evaluation of different types of ground wheel for sowing and planting machine

Anand Agricultural University has optimized dimensions of ground wheel of tractor drawn sowing machines. The optimized ground wheel was 30 % lighter than the original ground wheel. It is recommended to the scientific community to use this type of design for ground wheels with 12 cm peg length for different sowing machines to reduce the weight without affecting the functionality of ground wheel.

3. Effect of magnetic field of germination and seedling growth of onion

It is recommended that exposure of 20 mT magnetic field for 60 minutes to onion seeds improve the germination and seedling growth of onion.

II AGRICULTURAL INFORMATION TECHNOLOGY

4. Breeder seed management system for Government of Gujarat

Web-based online Breeder Seed Management System developed as per the need of the Department of Agriculture, Farmers Welfare and Co-operation, Government of Gujarat by Anand Agricultural University, which

provides the platform for online purchasing of seed for indenters and dealers. It is recommended to be used by the indenters and dealers of Gujarat state.

5. Online repository and analysis of Fall Army Worm (FAW) for Government of Gujarat

Online Repository and Analysis of Fall Armyworm (FAW) developed as per the need of the Department of Agriculture, Farmers Welfare and Co-operation, Government of Gujarat by Anand Agricultural University, which provides platform for submitting fall armyworm details using the mobile-based application by registered/authorized farmers. It is recommended to be used by the farmers of Gujarat state.

4.1.2.6 ANIMAL PRODUCTION AND FISHERIES

1. Identification of “Molecular Portraits” in squamous cell carcinoma of horn in Kankrej (*Bos indicus*) bullocks.

- ◆ It is recommended to use ‘Keratins’ and ‘Interleukins’ groups of genes as potential biomarkers for prognosis of squamous cell carcinoma of horn in Kankrej bullocks.
- ◆ It is recommended to use 28 missense variants distributed across 19 genes namely BOLA, CARF, EI24, FABP2, FOXN3, HIST3H2A, JSP.1, KLK4, KNG1, KRT8 [displayed 7 missense variants (including stop-lost variant i.e. chr10:75129445A>G (T>C)], LOC616948, MDH1B, PERM1, PPP1R15A, SAP18, SLC25A36, STON2, TTC16, and YME1L1KRT8 as panel of SNVs having prognostic values in horn cancer in Kankrej Bullocks.

2. Identification of “Molecular Portraits” in squamous cell carcinoma of horn in Kankrej (*Bos indicus*) bullocks.

The seven upregulated (XLOC_000016, XLOC_002198, XLOC_002851, XLOC_007383, XLOC_010701, XLOC_010272 and XLOC_011517) and one down regulated (XLOC_011302) long non-coding RNAs (lncRNAs) are associated with eleven genes having established role in squamous cell carcinoma of horn in Kankrej bullocks. These lncRNAs are recommended to be used as ‘Molecular Portraits’ of squamous cell carcinomas of horn in Kankrej bullocks.

4.1.2.7 ANIMAL HEALTH

1. Studies on sub-acute toxicity of clove oil (*Syzygium aromaticum*) in rats.

Repeated oral administration of clove oil up to 200 mg/kg body weight for 28 days did not reveal any toxic effects in wistar rats.

2. Evaluation of reproductive metabiota in various patho-physiological conditions in dairy animals

The genital microflora explored metagenomically in 50 vaginal aspirates from 35 buffaloes of different reproductive status together with plasma progesterone and estradiol profile revealed a rich bacterial diversity, comprising 33 Phyla, 779 genera and 2859 species. The most abundant phyla being higher in pregnant and endometritic than cyclic and acyclic buffaloes were Proteobacteria, Actinobacteria, Bacteroidetes and Firmicutes. The most abundant genera being found higher in acyclic and/or endometritic than pregnant and cyclic buffaloes were *Kocuria*, *Rhizobium*, *Enterobacter*, *Salmonella*, *Acinetobacter*,

Sphingomonas and *Bacillus*. Phylum Bacteroidetes and the genera *Kocuria*, *Rhizobium*, *Sphingomonas* and *Bacillus* had significant ($p < 0.01$) positive correlations and genus *Enterobacter* had negative correlation with plasma progesterone levels, whereas phyla Bacteroidetes, Firmicutes and Fusobacteria had negative correlations ($p < 0.01$) with plasma estradiol levels, indicating their selective role on growth/inhibition of specific organisms in the genital tract.

3. Differential diagnosis and therapeutic management of cystic ovarian degeneration in crossbred cattle

Cystic ovarian degeneration (COD) occurred chiefly at the prime age of 5-7 years (62%) during 3rd or 4th lactation (70%), with higher prevalence of luteal cyst than the follicular cyst (64% vs. 36%) and greater involvement of right ovary in crossbred cows. Hence, the practicing field vets should pay more attention to diagnose and handle the COD cases accordingly.

4. Differential diagnosis and therapeutic management of cystic ovarian degeneration in crossbred cattle

Differential diagnosis of ovarian cyst as follicular vs. luteal cyst was the most accurate based on plasma progesterone assay (21 vs. 79%) followed by ultrasound examination (28 vs. 72 %) and rectal palpation (36 vs. 64%). The agreement of USG with rectal palpation findings for follicular cyst was higher as compared to luteal cyst (94 vs. 86%). It is therefore advised to use USG in combination with rectal palpation to correctly diagnose the type of ovarian cysts under field conditions.

5. Differential diagnosis and therapeutic management of cystic ovarian degeneration in crossbred cattle

Ovsynch + CIDR protocol was promising over Ovsynch alone (70 vs. 60% CR) for effective treatment of follicular cysts, and Modified Ovsynch protocol was found promising than Double PG protocol (69 vs. 56% CR) for treatment of luteal cysts, and hence are recommended for use by practicing field veterinarians.

6. Effect of heat stress (microclimate) on sperm production of cattle and buffalo bulls.

Significantly greater correlations of micro (on-farm) ambient temperature, relative humidity and THI with fresh and frozen semen production of bulls of different breeds of cattle and buffalo as compared to distant macro-climatic (observatory) parameters suggest that the micro-climatic conditions should be obtained from on-farm measurements rather than macro-climatic data of distant observatory to evaluate potential heat stress and to develop effective measures to abate heat stress of bulls on semen station.

4.1.2.8 SOCIAL SCIENCE

1. An economic analysis of turmeric production in middle Gujarat: A comparative study of processed and non-processed

The farmers those who are interested in the value addition of turmeric should be given the required infrastructural and financial support to reduce the operational cost of processing for adoption of the advanced mechanized technologies.

2. A study of problems and prospects of entrepreneurship development through Students Start-up and Innovation Policy

Entrepreneurial qualities among the students can be developed by more interaction with entrepreneurs, specialization in programmes like entrepreneurship development, inclusion of business games, case studies and industry academic interaction during degree programme.

3. Evaluation and development of yardstick of CV% for maize crop experiments for Godhra center

The yard stick of CV% for accepting the results of Maize crop experiment conducted at Main Maize Research Station, Godhra is 17 per cent for yield character.

4.2 AGRICULTURAL CROPS

4.2.1 CEREALS

4.2.1.1 Rice

MRRS, AAU, Nawagam is considered as an Excellent AICRIP Centre: The QRT team has categorized all AICRIP centres in A (Excellent), B (Very Good), C (Good) and D (Poor) on the basis of their performance from 2012 to 2020. The QRT team has selected total 11 centres including MRRS, AAU, Nawagam under A Category AICRIP Centre for their excellent performance.

Crop Improvement

- ◆ Rice is the predominant cereal crop of central Gujarat. A large number of varieties have been developed by the Main Rice Research Station, Nawagam, Gujarat. Presently, the centre is working for the development of new varieties/hybrids in rice. In addition, various breeding activities like development

of fresh crosses, handling of segregating generations, screening of germplasm and different categories of varietal trials are regularly conducted at the station.

- ◆ A total of 57 different paddy trials (State, AICRIP and IRRI and others agencies) 57 trials were successfully conducted and coordinated, total 785 genotypes were evaluated during *kharif*-2021.
- ◆ During the year 2020-21 a total of 43 trials were successfully conducted in Crop Improvement department *viz*; transplanted trials, AICRIP trials, IRRI Nursery, AICRIP hybrid rice trials and other agency trials.
- ◆ Eight entries were nominated from the department of Crop Improvement, MRRS, AAU, Nawagam to the ICAR-IIRR, Rajendranagar, Hyderabad during *kharif* 2020 for multilocation trials in different IVT trials.

State Transplanted Trials

During *Kharif*-2020, 15 transplanted trials were conducted at Nawagam, Dabhoi, Navsari and Vyara centers of Middle Gujarat.

AICRIP Trials

During *Kharif*-2020, 09 AICRIP trials at Nawagam and Dabhoi centres were conducted. Likewise, under AICRIP, hybrid rice 4 trials were conducted at Nawagam and Dabhoi locations.

State Drilled Rice Trials

A total of 06 trials at Derol, Dabhoi and Thasra were successfully undertaken during *Kharif*-2020.

Rice Trials: (ARS, Derol)

- ◆ In LSVT-E, total 18 genotypes including five checks were evaluated. Out of this, genotype NWGR-2011 gave significantly higher yield as compared to best check AAUDR 1.
- ◆ In LSVT-Aerobic, the total 16 genotypes and two checks were evaluated in this trial. Out of the 16 genotypes, three genotypes *i.e.*, NVSR-2865, NVSR-2729 and NVSR- 3093 gave significantly higher yield as compared to best check GNR 8.
- ◆ 7 genotypes and five checks were evaluated in SSVT- Aerobic trial, out of them NWGR -13031 and NWGR -13065 found significantly superior over best check AAUDR 1.
- ◆ In SSVT- E, 23 genotypes including five checks were evaluated. NWGD-1803 and NWGD-1804 found significantly superior over best check AAUDR 1.
- ◆ In PET Aerobic, 35 genotypes evaluated including five checks. Out of 35 genotypes, five genotypes *i.e.*, NWGR-18056, NWGR-18097, NWGR-18112, NWGR-18184 and NWGR-18135 recorded significantly higher yield as compared to best check Gurjari.
- ◆ In PET – Drilled of paddy, total 28 genotypes were evaluated. Out of these, genotype NWGR-18157, NWGR-18185, NWGR-18156 and NWGR-18200 gave significantly higher yield as compared to check GR 16.
- ◆ AVT 1 E DS tested with 22 entries tested, none of the entry found significantly superior over best check GR 9.
- ◆ Total 29 entries including one check were evaluated in *kharif* 2020 in AVT 1 Aerobic, none of the entry found significantly superior over best check GR 9.

Rice Trials: (ARS, Dabhoi)

At Dabhoi, following experiments on transplanted paddy were conducted under state and AICRP trials.

State Trials

- ◆ In LSVT-E-CO-I transplanted paddy NWGR 13041, NWGR 16035, NWGR 15019 genotypes produced significantly higher yield as compared to best check.
- ◆ In LSVT- E-CO-II transplanted paddy NWGR NVSR 6228, NVSR 546, NVSR 2819 genotypes produced significantly higher yield as compared to best check.
- ◆ In LSVT-E-F-II transplanted paddy NVSR 329, NVSR 2949, NVSR 555 genotypes produced significantly higher yield as compared to best check.
- ◆ In LSVT- E- M transplanted paddy NVSR 355, NWGR 8001, NVSR 3090 genotypes produced significantly higher yield as compared to best check.
- ◆ In LSVT-E-F-I transplanted paddy NWGR 15022, NWGR 16050, NWGR 16024 genotypes produced significantly higher yield as compared to best check.
- ◆ In LSVT-ML-F-I transplanted paddy NWGR 16023, NVSR 16026, NVSR 555 genotypes produced significantly higher yield as compared to best check.
- ◆ In LSVT-ML-F-II transplanted paddy NVSR 331, NVSR 335, NVSR 2968 genotypes produced significantly higher yield as compared to best check.
- ◆ In LSVT-ML-C transplanted paddy NVSR 2115, NVSR 2102, NWGR 15036 genotypes produced significantly higher yield as compared to best check.

- ◆ In LSVT-ML-M-I transplanted paddy NWGR 16057, NWGR 16019, NWGR 15057 genotypes produced significantly higher yield as compared to best check.
- ◆ In LSVT-ML-M-II transplanted paddy NVSR 2980, NVSR 2115, NVSR 2115 genotypes produced significantly higher yield as compared to best check
- ◆ In SSVT-E transplanted paddy NWGR 17075, NWGR 17076, NWGR 17045 genotypes produced significantly higher yield as compared to best check.
- ◆ In SSVT-ML-I transplanted paddy NWGR 17143, NWGR 17053, NWGR 17057 genotypes produced significantly higher yield as compared to best check.
- ◆ In PET-E-I transplanted paddy NWGR 17143, NWGR 17053, NWGR 17057 genotypes produced significantly higher yield as compared to best check.
- ◆ In PET-E-II transplanted paddy NWGR 18161, NWGR 18152, NWGR 18172 genotypes produced significantly higher yield as compared to best check.
- ◆ In PET-ML-III transplanted paddy 3125, 3120, 3118 genotypes produced significantly higher yield as compared to best check
- ◆ In IHRT-ME transplanted paddy IHRT-ME 3125, IHRT-ME 3120, IHRT-ME 3108 genotypes produced significantly higher yield as compared to best check

AICRP trials

- ◆ In AVT-E-TP transplanted paddy AVT-E-TP 35011, AVT-E-TP 3501 genotypes produced significantly higher yield as compared to best check.

- ◆ In AVT-1 MS transplanted paddy AVT-1MS 5607, AVT-1MS 5612 genotypes produced significantly higher yield as compared to best check
- ◆ In IHRT-M transplanted paddy IHRT-M 3206, IHRT-M 3221 genotypes produced significantly higher yield as compared to best check.
- ◆ In IHRT-MS transplanted paddy IHRT-MS 3303, IHRT-MS 3301 genotypes produced significantly higher yield as compared to best check.
- ◆ In SSVT-ML-II transplanted paddy NWGR 17035, NWGR 17056, NWGR 17098 genotypes produced significantly higher yield as compared to best check.
- ◆ In SSVT-ARO transplanted paddy NWGR 17087, NWGR 17135, NWGR 17136 genotypes produced significantly higher yield as compared to best check.
- ◆ In PET-ML-I transplanted paddy NWGR-18076(7554), NWGR-18054(6699) genotypes produced significantly higher yield as compared to best check.
- ◆ In PET-ML-II transplanted paddy NWGR 18118, NWGR 18084, NWGR 18023 genotypes produced significantly higher yield as compared to best check.
- ◆ In IHRT-E transplanted paddy IHRT-E 3011, IHRT-E 3016, IHRT-E 3004 genotypes produced significantly higher yield as compared to best check

Crop Production

- ◆ Apart from Main Rice Research Station, Nawagam, two other centres Dabhoi and Thasra also conducted research experiments on transplanted and drilled paddy.

- ◆ During the reporting period, total 10 experiments (AICRP 7 + State 3) were conducted on different agronomical aspects.

AICRP trials

- ◆ Nutrient response trials on selected AVT-2 IME rice cultures under high and low input management
- ◆ Nutrient response trials on selected AVT-2 Aerobic rice cultures under high and low input management
- ◆ Nutrient response trials on selected AVT-2 ASG rice cultures under high and low input management
- ◆ Developing suitable package of practices for dry DSR.
- ◆ Developing suitable package of practices for WET dry DSR.
- ◆ Water management for enhancing water use efficiency in different rice establishments methods (transplanted rice, mechanized TP, wet direct seeded rice using Drum seeders (puddled soil), aerobic rice and semi-dry rice (un-puddled soil)
- ◆ Long term trial on weed dynamics in mono or double cropped rice system under different establishment methods

State trials

- ◆ Integrated Nutrient Management in Rice under Middle Gujarat
- ◆ Integrated Nutrient Management for rice residual wheat crop sequence
- ◆ Nursery management in summer rice

Plant protection

For plant protection in rice, 14 experiments (State as well as AICRIP) were successfully conducted by Entomology department and 20 experiments (State as well as AICRIP trials) were conducted by Pathology department.

- ◆ A total of 401 genotypes at Nawagam and 287 genotypes at Navsari including local checks were screened for their reactions against important insect-pests of rice. Among all the tested genotypes, total 157 genotypes at Navsari were found promising (0 DS), while 40 at Nawagam and 56 genotypes at Navsari found resistance against yellow stem borer (1 DS). There were, 46 genotypes at Navsari found superiorly and most promising (0 DS), while 3 at Nawagam and 32 at Navsari found promising (1 DS) against leaf folder. Moreover, total 284 genotypes at Nawagam found superior against WBPH (1 DS) and 180 genotypes were found promising (0 DS) against sheath mite at Navsari.
- ◆ A total of 48 private hybrid genotypes including local checks *viz.*, GNRH-1, GRH-2, US-314, Gurjari, Mahisagar, GAR-13 and GR-101 were screened for their reactions against major insect-pests of rice. Among all the tested private genotypes only one hybrid genotype showed resistant (1 DS) against yellow stem borer and 32 genotypes were found moderately resistant (3 DS) against leaf folder, while 8 private hybrid genotypes found promising against WBPH (1 DS).
- ◆ A total of 604 entries from ICAR-IIRR, Hyderabad were screened for their reactions against leaf blast, neck blast, bacterial blight, sheath rot and grain discolouration in the field under AICRP as well as in State trials.

4.2.1.2 Maize

Crop Improvement

Rabi 2019-20

Testing of experimental hybrids/varieties:

Testing of hybrid/varieties developed by different centers of AICRP on Maize and Private sectors across the country. The trials and its allocation were decided by Director (Maize), Indian Institute of Maize Research, (ICAR), Ludhiana. Total 7 trials were conducted successfully to test 132 hybrids of different maturity groups and speciality corn and results were submitted on online automation system.

Station (Location specific) programme

Research programme was conducted for testing station developed hybrids. Trials were taken at Godhra, Dahod, Jabugam and Bhiloda center for evaluation of single cross hybrids of Normal maize and Specialty corn. Total 25 trials were conducted successfully at four locations to test 64 single cross hybrids in normal and specialty corn like pop corn and sweet corn.

Total 303 inbred lines in yellow maize were maintained, multiplied in winter maize nursery programme and these lines were used directly for developing single cross hybrids. Total 151 single cross hybrids were developed in normal yellow and white maize, 33 hybrids in QPM, 20 hybrids in sweet corn and 20 hybrids in popcorn were developed to evaluate in *kharif* and *rabi* season multi location trials.

Under project CRMA (Climate Resilience maize for Asia) total 611 hybrids were evaluated in 12 trials for identifying hybrids for drought condition.

Summer 2020

ICAR- CIMMYT Heat screening trials

Under the ICAR- CIMMYT project for identifying drought tolerant hybrids, the same set of hybrids and same trials were conducted in summer-2020 season under heat stress condition. The sowing of the trials was planned in February-2020 season, so it may come in flowering in mid May. It would be a high injurious effect of high temperature on flowering and it would reduce the yield drastically.

Kharif 2020:

Testing of experimental hybrids/varieties:

Testing of hybrids developed by AICRP on maize centers and private sectors across the country as decided in 63th Annual Maize Workshop meeting held online on zoom platform. Total 10 trials were conducted successfully comprising of normal maize and specialty corn. Total 245 hybrids were evaluated in 10 trials.

In rainfed trials, total 4 trials were conducted. Two trials were conducted by applying normal irrigation and the same set of trials were conducted under totally rainfed condition to test 40 hybrids.

Station (Location specific) programme:

Research programme was conducted on Heterotic breeding programme and trials were conducted for testing hybrids developed by this center. Trials were taken at Godhra, Dahod, Khedbrahma, Bhiloda, Derol, Deesa, Ladol and Jabugam center for multilocation evaluation. Total 16 trials were conducted successfully at different locations of Anand Agricultural University and SDAU including MMRS, Godhra to test 43 hybrids.

White Breeding materials

- ◆ Total 45 inbred lines were maintained. Moreover, 42 fresh crosses were made for White Normal Maize, 16 fresh crosses were made for White Quality Protein Maize and 03 composite culture were maintained by seed matting.

Yellow Breeding materials

- ◆ Total 303 inbred lines were maintained. Moreover, 41 fresh crosses were made for White Normal Maize, 29 fresh crosses were made for White Quality Protein Maize, 16 crosses were made for sweet corn and 23 crosses were made for pop corn. Total 177 germplasm were maintained.

Crop production:

The experiment of pre-released baby corn hybrids and early maturing hybrids and agro-ecological options for FAW management were tested with different nutrients and density experiment was allotted to this station under AICRP (ICAR) on Maize project by IIMR, Ludhiana. While in station research, the experiments of baby corn in *kharif* and *rabi* on spacing, nutrients and bio fertilizer were also taken at the station. The other experiment on effect of organic manure, Bio NPK consortium and chemical fertilizer on yield of hybrid maize in *kharif* and *rabi* season were also taken during 2020-21. Front line demonstrations on bio fertilizers were also taken on farmer's field of Panchmahal, Dahod and Mahisagar districts. Thus new technology demonstrated to the farmers for more production of maize crop. The recommendations of nutrient management (60:20:0 NPK kg/ha) and INM in *kharif* hybrid maize (160:20:00 NPK kg/ha) with 5 ton FYM was approved in 17th Agresco meeting.

Plant Protection

Plant Pathology

- ◆ Seed treatment with carbendazim 50% WP @ 3 g/kg seeds followed by soil drenching, first application before sowing with ready-mix fungicides, tebuconazole 50% + trifloxystrobin 25% WG (7.5 g/10 litre of water) **OR** azoxystrobin 18.2% + difenoconazole 11.4% SC (10 ml/10 litre of water) and second at 30 days after sowing near root zone found effective for management of charcoal rot of maize in *rabi* season under pot culture study.
- ◆ Seed treatment with Thiram 75%WP 3g/kg could able to reduce the seedling infection and gave effective control of late wilt of maize. Seed treatment with *T. viride* + *P. fluorescens* + *B. subtilis* @ 3g/kg each and soil application in furrow with *T. viride* + *P. fluorescens* + *B. subtilis* @ 10 kg/ha fortified with 1 tonne FYM was the lowest stalk rot of 16.56 per cent followed by seed treatment with *T. viride* + *P. fluorescens* + *B. subtilis* @ 3g/kg each with disease severity (18.59%). The treatment was statistically significant over other treatments which also recorded the highest grain and dry fodder yield 4839 and 5829 kg/ha, respectively. Whereas, among all, the control treatment was recorded the highest stalk rot severity of 48.39 per cent and the lowest grain and fodder yield 3998 and 4920 kg/ha, respectively.
- ◆ Out of 86 entries, 72 and 82 entries were found resistant whereas, fourteen and only four entries were found moderately resistant against turcicum leaf blight and late wilt, respectively in *rabi* 2019-20.
- ◆ Among the treatments IDM module (Seed treatment with *T. viride* @ 10g/kg seed and Thiram 75% WP @ 3g/kg seed; one foliar application of *T. viride* @ 10g/100g FYM/m²; One foliar application of Azadirachtin 1500 ppm @ 4ml/lit of water @ 35 DAS; and One foliar application Azoxystrobin 18.2% + Difenoconazole 11.4% (29.6% SC) @ 1 ml/litre of water @ 50 DAS) was observed best in checking banded leaf and sheath blight (BLSB) disease severity (21.68%) resulted in highest grain (5277 kg/ha) and fodder yield (5965 kg/ha) over unprotected inorganic check.
- ◆ Out of 19 entries of white inbreds/hybrids, 16 entries were found resistant and two moderately resistant whereas, out of 27 entries of yellow inbreds/hybrids, 19 entries were found resistant, seven moderately resistant and 1 moderately susceptible against turcicum leaf blight of maize disease in *kharif* 2020.
- ◆ The disease incidence was recorded 2-7 rating scales on different maize inbred lines grown at MMRS Godhra. The different inbred lines were exhibited low to high incidence as per their genetic ability to tolerant and resistant against different pathogen. The disease severity of MLB, TLB, CLS and BLSB on rating scale.
- ◆ Among the treatments Azoxystrobin 18.2 w/w + Difenoconazole 11.4% w/w SC @ 0.10% sprayed at 3 days and 18 days after inoculation was observed best in checking turcicum leaf blight (TLB) disease severity (21.68%) resulted in highest grain (56.85 q/ha) with 41.21% yield increase over untreated control.
- ◆ Among the treatments IDM module (Seed treatment with *T. viride* @ 10g/kg seed and Thiram 75% WP @ 3g/kg seed; one foliar

application of Nimbicidine 5ml/litre of water @ 35 DAS and one foliar application Azoxystrobin 18.2% + Difenoconazole 11.4% (29.6 SC) @ 1 ml/litre of water @ 50 DAS) was observed best in checking curvularia leaf spot (CLS) disease severity (29.03%) resulted in the highest grain (51.58 q/ha) with 41.51% yield increase over unprotected organic check.

- ◆ Out of 56 entries, 49, 44, 55 and 46 entries were found resistant whereas, 7, 12, 1 and 10 entries were found moderately resistant against maydis leaf blight, turicum leaf blight, curvularia leaf spot and banded leaf and sheath blight, respectively in *kharif* 2020.

Entomology

- ◆ Among 24 maize inbreds, hybrids and varieties screened, GAYMH-1, GAYMH-3 found less susceptible, whereas GSCH-918 found susceptible against fall armyworm, *Spodoptera frugiperda* under natural condition of middle Gujarat region.
- ◆ Farmers of middle Gujarat Agro-climatic zone growing maize and interested in non-chemical management are recommended to apply soil or sand 5 g/plant in whorl at 30 and 45 days after sowing for effective management of fall armyworm.
- ◆ Cyantraniliprole 19.8% + Thiomethoxam 19.8% FS (6 ml/kg seed) found effective up to 17 to 20 days after sowing in checking the damage caused by *S. frugiperda* in maize which was followed by imidacloprid 600 FS at 10 ml/kg.

4.2.1.3 Wheat

Crop Improvement

Triticum aestivum

RRS, Anand

Total seven trials were conducted at the centre

- ◆ In AVT-RI-TS-TAD, eight entries were evaluated with three check varieties. The yield of different genotypes showed significant differences for yield. None of the entries exhibited significant difference over the best check HI-1544.
- ◆ Total six genotypes including four check varieties evaluated under AVT-RI-LS-TAD. The yield of different genotypes showed significant differences for yield. None of the entries significantly yielded over the best check MP 3336.
- ◆ Under LST-TS-A, total 9 genotypes including five checks were evaluated. The yield of different genotypes showed significant differences for yield. None of the genotype observed significant difference over the best check variety GW 451.
- ◆ Total six entries were evaluated with three check varieties under LST-TS-D. The yield of different genotypes showed significant differences for yield. None of the genotype noted significant differences over than the best check variety HI 8498.
- ◆ Under SST-TS-A, total 21 genotypes including five checks were evaluated. The genotypes difference was found significant for their yield performance. None of the entry significantly superior over the best check GW 451.

- ◆ The experiment was conducted with 8 genotypes including 5 checks under LST-LS-A. The yield of different genotypes showed significant differences for yield. None of the genotype noted significant differences over than the best check variety HD 2932.

Triticum durum

- ◆ At ARS Dhandhuka, 360 Germplasm lines of durum wheat were maintained. 152 new crosses were attempted for development of high yielding varieties suitable under rainfed conditions. Out of 728 progenies, 695 IPS were selected.
- ◆ At ARS Dhandhuka, total 12 different trials viz. AVT (RI) A+D, NIVT-5B (RI) A+D, LST(RF)d, LST(RI)d, SST(RF)d, SST(RI)d, PYT(RF)d, PET(RF)d, PYT (RI)d, PET(RI) d, SST-RI-TS-A & Row trial on Pro. Bulks d on Durum Wheat were allotted and conducted successfully.
- ◆ At ARS, Arnej, 6 experiments viz., LST(RF) *Triticum durum*, SST(RF) *T durum*, SST(RI) *T durum*, PYT(RF) *T durum*, PYT(RI) *T durum*, and PET(RI) *T durum* were conducted successfully.

Crop Production

At ARS, Arnej, following research experiments for production technology in wheat were conducted during the reporting period.

- ◆ Nutrient management through organic sources in wheat (GW-496) in *Bhal* region.
- ◆ Nutrient management through organic sources in wheat (GW-1) in *Bhal* region.

4.2.1.4 Bajra

Crop Improvement

RRS, Anand

Summer - 2020

- ◆ In LSHT, 21 hybrids including seven checks were evaluated and hybrids, GHB-1278 and GHB 1286 gave significantly higher yield than the best private check Pioneer 86M11.
- ◆ In the coordinated hybrid trial, out of 17 hybrids were evaluated nine hybrids viz., SHT-101, SHT 116, SHT 115, SHT 112, SHT-103, SHT-109, SHT 105, SHT 111 and SHT-108 gave significantly higher yield than the check hybrid GHB-1129.
- ◆ In the station PHT, total 67 hybrids were evaluated and hybrid GHB 1714 was recorded significantly higher yield over the best check hybrid pioneer 86M11.

Kharif-2020

- ◆ Total 21 hybrids including five checks were evaluated in LSHT. None of the hybrids showed significant difference than the best check hybrid GHB 1129.
- ◆ In SSHT, total 24 hybrids were tested. Four hybrids viz., GDBH 20, GHB 1331, GHB 1315 and GHB 1325 recorded higher yield over the best state check hybrid GHB-1129.
- ◆ Total four EDV hybrids were evaluated and the genotypic differences for grain yield were found non-significant.
- ◆ Total 4 hybrids were evaluated in AHT (M) against local check GHB- 1129. Three hybrids AHT-402 A, AHT 401 A and AHT 403-A were recorded significantly higher yield over the check hybrid GHB-1129.

- ◆ Nine hybrids were evaluated against check hybrid 1129 in AHT (L). Three hybrids AHT 507 A, AHT 504 A and AHT 501 A were statistically superior to the best check GHB-1129.
- ◆ In IHT-M, total 16 hybrids including one check GHB-1129 were evaluated. Four hybrids viz., IHT-201, IHT-205, IHT-207 and IHT-208 were recorded statistically higher grain yield than the check GHB-1129.
- ◆ Out of 17 hybrids were evaluated in IHT (L), only one hybrid IHT 308 were statistically superior to the best check GHB-1129.

Crop Protection

- ◆ In population dynamics trial of different insect pest in pearl millet, population of dipteran pest viz., shoot fly, lepidopteron pest viz. stem borer, coleopteran pest viz. flea beetle, blister beetle, chaffer beetle and orthopteran pest grass hopper found throughout crop period.
- ◆ In survey of insect-pests of bajra, blister beetle, grass hopper, grey weevil, leaf binder, lady bird beetle and *Helicoverpa armigera* were found in the entire surveyed villages. Maximum insects-pest incidence was observed observed of *Helicoverpa armigera*. Fall armyworm incidence was not observed.
- ◆ Total 312 pearl millet hybrids were screened against downy mildew (DM) disease in compiled experiment of four AICRP trials, one state trial and one ICRISAT trial. Out of which, 164 were highly resistant from DM disease. The disease occurrence was 100% in infector and indicator rows. In collaboration trial of AICRP and ICRISAT against blast disease, out of 51 entries, none of the entries were found disease free. In survey of pearl

millet disease on 20 farmers fields, DM ranged from 05 to 10 per cent and blast rating was ranged from 3 to 5.

4.2.1.5 Finger Millet and Kodo Millet

Crop Improvement

Kharif-2020

- ◆ At Hill Millet Research Station, Dahod, six experiments of finger millet were conducted under AICRP, state and station trials. Total 50 genotypes of finger millet were evaluated. Out of these, 07 genotypes viz., WN 591, WN 559, WN 550, WN 586, WN 587, DN 13 and DN 14 were found promising for grain yield.
- ◆ Five varietal trials were conducted under AICRP, state and station trials in kodo millet and 53 genotypes were tested. Out of these, 08 genotypes viz., GAK 3, GK 4, DK151, DK 124, DK 165, DK 160, DK 176 and DK 178 were found promising for grain yield.
- ◆ 50 germplasm materials each of finger millet and kodo millet were maintained

4.2.2 PULSES

4.2.2.1 Mungbean

Crop Improvement

RRS, Anand

Summer 2020

- ◆ In ZVT, total twelve genotypes were evaluated including four check varieties. None of the genotypes recorded the significant superior yield over the best check variety.
- ◆ In PVT trial with eleven genotypes including three check varieties, none of the genotypes recorded the significant superior yield over the best check variety Meha.

Kharif 2020

- ◆ In LSVT, total seven genotypes including checks were evaluated. Only SKNM 1705 exhibited significant superiority than best check variety GM 6.
- ◆ In ZVT, out of thirteen genotypes evaluated, genotypes ANDGG 1801, VMG 62 and VMG 30 were found superior than the check variety GM 7.
- ◆ Total 182 germplasm lines were maintained and 04 fresh crosses were made.

Pulse Research Station, Vadodara

Summer- 2020

- ◆ In Zonal Varietal Trial, total 08 promising genotypes along with four check varieties were tested. Test entry ANDGG 1801 was found promising.
- ◆ In summer 2020, 10 new crosses were attempted for development of high yielding varieties. Total 44 plant progenies of various generations were raised.

Kharif-2020

- ◆ In PET trial, total 24 promising genotypes along with five check varieties were tested., the genotype AAUVT 18-01 was found promising.
- ◆ In ZVT trial, total 13 promising genotypes along with four check varieties were tested. the genotype None of the genotype was found promising.
- ◆ In SSVT trial, among the tested 10 genotypes including four checks of mungbean, the genotypes SKNM 1904, SKNM 1901, SKNM 1910 and SKNM 1911 were found promising.

- ◆ In LSVT trial, three elite genotypes along with four checks were tested and none of the genotypes were found promising.
- ◆ In *kharif*2020, 9 new crosses were attempted for development of high yielding varieties. Total 35 plant progenies of various generations were raised.

ARS, Derol

Summer-2020

- ◆ In ZVT, 12 genotypes were evaluated including five checks, none of the genotype was found promising

Kharif-2020

- ◆ In LSVT, 3 genotypes along with checks were evaluated. None of the genotype was found promising.
- ◆ In SSVT, 13 genotypes including five checks were evaluated. Genotype GJG 1913 was found promising.

TRTC, Devagadh Baria

Summer-2020

- ◆ Under ZVT, total 12 genotypes including four check varieties viz., GM-4, GAM-5, GM-6 and GM-7 were evaluated for their seed yield performance. None of the genotype was found promising.

Crop Protection

Pulse Research Station, Vadodara

Kharif-2020

- ◆ **Screening of mungbean genotypes against insect pests and diseases.**

Among the 7 tested genotypes / varieties, genotype LKM-202 recorded lowest

incidence of whitefly, aphid, thrips and pod borer at harvest. Yellow mosaic diseases was found very low in most of the experiments.

4.2.2.2 Pigeon Pea

Crop Improvement

Pulse Research Station, Vadodara

- ◆ In PET trial, total 18 genotypes including five checks were tested, the entries VPG 288, VPG 665 and VPG 354 were found promising.
- ◆ In PET(EE) trial, total 10 genotypes including three checks were tested. None of the genotype was found promising.
- ◆ In ZVT trial, total 13 genotypes including four checks were tested, the entries AAUVT 17-02, AAUVT 13-20, AAUVT 09-24 and AAUVT 15-08 were found promising.
- ◆ In SSVT-M trial, total 16 genotypes including four check varieties were tested, the entries GJP 1820, AAUVT 17-02 and BP 16-273 were found promising.
- ◆ In LSVT-ME trial, total 12 genotypes including three check varieties were tested, the entries SKNP 1701, SKNP 1408 and SKNP 1406 were found promising.
- ◆ In IVT-Midlate Pigeon pea trial, total 11 genotypes including four check varieties were tested, the entries WRG 369, IBTDRG 8 and SKNP 1614 were found promising.

ARS, Derol

- ◆ In LSVT (M) 11 genotypes including checks were evaluated. Among them, PLM 402 was found promising.
- ◆ In SSVT (M), total 14 genotypes including checks were tested, among which PSM 306

was found promising.

HMS, Dahod

- ◆ Three experiment on pigeonpea were conducted under state trial. Total 38 genotypes of pigeonpea were evaluated. Out of these, 6 genotypes viz., PLME 211, PLME 210, PLME 212, AAUVT 17-02 and AAUVT 13-20 were found promising.

Crop Production

Pulse Research Station, Vadodara

- ◆ **Study of pigeonpea based relay cropping system**

Greengram + Pigeonpea variety AGT-2 recorded higher pods/ plant and seed index of pigeonpea. Green gram + Pigeonpea variety AGT-2 recorded higher seed and straw yield of pigeonpea and pigeonpea equivalent yield. Soybean + Pigeonpea variety AGT-2 recorded significantly higher seed yield of inter crop but, Soybean + Pigeonpea variety Vaishali recorded significantly higher straw yield of inter crop.

Crop Protection

ARS, Derol

- ◆ **Surveillance programme of *H. armigera* in pigeonpea**

H. armigera first appeared in the 45th standard week (13th-19th Nov.) in both the protected and unprotected plots. Under unprotected conditions, its population increased rapidly and reached the maximum value in the 48th standard week (23rd to 29th Nov.). The larval population was above Economic Threshold Level (ETL) from 47th to 50th standard week (16th Nov. to 13th Dec.). The larval population was below ETL from 51st standard week (14th-20th Dec).

Grain damage due to pod fly under un-protected condition was 13.30 per cent in 50th standard week (7th-13th Dec.). Then it showed increasing trend up to 2nd standard week (4th-10th Dec.). Maximum grain damage (26.45 %) was observed in the 2nd standard week (4th-10th Dec.).

- ◆ **Screening of pigeonpea genotypes against sterility mosaic disease**

The sterility mosaic disease was found non-significant in all the genotypes. Per cent incidence of sterility mosaic disease was very low ranged from 0.00 to 2.50.

- ◆ **Efficacy of different botanicals against pod borer complex of pigeonpea**

Azadirachtin 0.15 EC (1500 ppm) 0.0006% and neem seed kernel extract @ 5 per cent were found more effective for managing *Helicoverpa armigera*, *Exelastis atomosa* and *Melangromyza obtusa* in pigeonpea which reflected on grain yield.

- ◆ **Screening of pigeonpea genotypes against insect pests and diseases under natural conditions**

The lower larval population of *H. armigera* recorded in VPG-39 (0.94 larva/plant). Overall, the damage due to *H. armigera* at harvest ranged from 2.92 to 9.79 per cent, Whereas, per cent grain damage due to pod fly at harvest ranged from 12.87 to 40.10. The range of per cent grain weight loss was found from 5.30 to 20.13. Lower per cent grain weight loss was recorded in Vaishali (5.30%).

4.2.2.3 Chickpea

Crop Improvement

ARS, Derol

- ◆ In LSVT, genotypes GJG 1801, 1805 and 1813 recorded significantly higher yield than the best check GG-5.
- ◆ In SSVT, 13 genotypes with five check tested. Among all the genotypes, GJG 1913 genotype recorded significantly higher yield than the best check GG-5.
- ◆ In chickpea, total 118 entries including checks were tested in different seven trials including co-ordinated, state and station trial. Among them, 23 genotypes /entries of Arnej centre were found promising and will be promoted in respective trial

HMS, Dahod

- ◆ 6 experiments of chickpea were conducted under state trial. Total 73 genotypes were evaluated. Out of these, 15 genotypes viz., GAG 1620, GAG 1830, GJG 1721, GJG 1603, GJG 1506, GJG 1814, GJG 1830, GJG 1810, GJG 1816, GJG 1805, GJG 1913, GJG 1915, GJG 1912, GJG 1909 and GJG 1818 were found promising.

PRS, Vadodara

- ◆ A Station Trial (Rainfed) of Chickpea consisted twenty-two promising rainfed chickpea genotypes along with two check varieties viz., GG 2 and GJG 6. Out of these, best three entries ACP 1106, ACP 1116 and ACP 1107 had yield increment over best check GJG 6 by 32.0, 27.6 and 24.5 per cent.
- ◆ Large Scale Varietal Trial (Irrigated) of Chickpea consisted ten promising irrigated chickpea genotypes along with six check varieties. None of the genotype was shown yield superiority over best check GG 5.

4.2.2.4 Soybean

Crop Improvement

TRTC, Devgadh Baria

Kharif 2020

- ◆ 152 germplasm lines were evaluated and maintained.
- ◆ Under LSVT (early group), total ten varieties including checks were evaluated. Significantly maximum seed yield was recorded in the variety NRC-37 in middle maturity group, while that of variety JS 20-34 was recorded in early maturity group.
- ◆ Under LSVT, total ten varieties including four checks viz., JS 335, G. Soy.-1, G.Soy.-2 and G.Soy.-3 were evaluated. Genotype AS-15 was found promising
- ◆ Under PET, total fourteen promising entries along with one check variety NRC-37 were tested. Genotype DBSGP-91 and DBSGP-63 were found promising
- ◆ Under SSVT, total eleven promising entries along with four check variety JS 335, G. Soy.-1, G.Soy.-2 and G.Soy.-3 were tested. Genotype AS-40 and DBSGP-63 was found promising
- ◆ Under IVT, total forty-one genotypes were evaluated for their seed yield performance. The significantly maximum seed yield was recorded under coded variety IVT-20-14.
- ◆ Under IVT (early), total twenty-six genotypes were evaluated for their seed yield performance. The significantly maximum seed yield was recorded under coded variety IVT-E-20-16.
- ◆ Under AVT-I and II, total thirteen genotypes along with five checks were evaluated for

their seed yield performance. Among which, genotype RVSM 2011-35 found promising.

Crop Production

TRTC, Devgadh Baria

◆ Evaluation of partial factor productivity for soybean

Among all the treatments, Full Package- (Seed treatment, seed inoculation, RDF, weed management, insecticide, Ridge furrow showed best in growth parameters (branches per plant and pods per plant) and also yield and yield parameters (seed index, seed yield and straw index) highest soybean yield and highest net returns and B: C ratio.

◆ System intensification for soybean productivity augmentation under Ridge Furrow Planting

Among all the treatments, treatment Variety JS 20-34 with spacing of 10 cm between plants showed highest soybean yield and net return.

◆ Drought alleviation in soybean through foliar application of Thio-urea

Among all the treatments, treatment Thio – urea @ 750 ppm spray at 20-25 and 50-55 days after sowing (DAS) + NRC 86 showed highest soybean yield 1802 kg ha⁻¹ and net return at par with treatment Thio – urea @ 500 ppm spray at 20-25 and 50-55 days after sowing (DAS) + NRC 86 1709 kg ha⁻¹.

4.2.2.5 Clusterbean

Crop Improvement

ARS, Derol

- ◆ In SSVT/LSVT of gum guar, total 12 genotypes including two checks were

evaluated in *kharif* 2020. Among all the entries total 2 entries *i.e.*, DRLGG 13-23 and DRLGG 13-28 recorded significantly higher yield as compare to check GG 2.

- ◆ In *Kharif* 2020 ZVT (Single stem) of cluster bean with total 10 genotypes including two checks were evaluated. DRLGG 13-28, DRLGG 13-39 and DRLGG 13-23 were found significantly superior to best check GG 1.
- ◆ In summer 2020 ZVT (Single stem) of cluster bean with total 10 genotypes including two checks were evaluated. DRLGG 13-28, DRLGG 13-28 and DRLGG 13-39 kg/ha) were observed numerically superior to best check GG 2.

ARS, Sansoli

Summer 2020

- ◆ In ZVT trial of cluster bean (single stem), eight entries against two checks were evaluated for their seed yield. The genotype DRLGG 16-7 was found promising.

Kharif 2020

- ◆ In ZVT trial of cluster bean (single stem), eight genotypes of single stem type cluster bean against two checks were evaluated. The entry DRLGG 13-39 was found promising.

4.2.2.6 Blackgram

Crop Improvement

PRS, Vadodara

Summer 2020

- ◆ In ZVT, the trial was consisted with 05 promising genotypes and three check varieties *viz.*, T 9, MASH 338 and GU 1. On overall basis, best three genotypes JAUG 2,

DBUGP 6-1 and DBUGP 2-2 were exhibited yield superiority by 14.0, 8.3 and 5.3 per cent yield improvement over best check MASH 338.

Kharif 2020

- ◆ In SSVT + LSVT trial, the trial consists eight promising genotypes against two check varieties GU 1 and T 9. On average performance of the genotypes *viz.*, SKNU 1806, JAUG-2, SKNU 1801, NUK-17-01, and SKNU 1810 were exhibited > 25 % per cent yield advantage over best check GU-1

ARS, Derol

- ◆ In ZVT (Summer 2020) evaluated 8 genotypes, the genotypes JAUG 2 was found higher yield as compared to best check T-9.
- ◆ In ZVT (*kharif* 2020) evaluated 8 genotypes, the genotype JAUG 2 entry found higher yield as compared to best check T-9 (684 kg/ha).

Dept. of Genetics and Plant Breeding, BACA,

- ◆ Total 144 genotypes were screened, out of 144 genotypes, none of the genotype showed immune reaction during the year 2020-21. 35 genotypes had resistant and 51 genotypes had moderately resistant reaction. Rest of the genotypes was found susceptible to Yellow Mosaic Disease. Based on the two years' data the highly resistant and susceptible genotypes have been selected for crossing.

HMS Dahod

- ◆ During summer 2020, one experiment on black gram was conducted under state trial, wherein, total 09 genotypes were tested, of which, 1 genotype *viz.*, JAUG 2 was found promising.

- ◆ During *kharif* 2020, two experiments on blackgram was conducted under state trial, wherein, total 18 genotypes were tested, of which, 8 genotypes *viz.*, SLKU 310, SLKU 311, SLKU 309 & JAUG 2 were found promising.

Devgadh Baria

- ◆ Under Zonal Varietal Trial, total eight genotype including four checks MASH-338, PU-31, T-9 and GU-1 were evaluated for their seed yield performance. The genotype PANT U 31 at par with JAUG-2 and YVM resistance genotype during summer 2020.
- ◆ Under Zonal Varietal Trial, total eight genotype including two checks T-9 and GU-1 were evaluated for their seed yield performance. The genotype DBUGP 16-1 and JAUG-2 found promising with yield and YVM resistance during the *Kharif*-2020.
- ◆ Under SSVT+LSVT trial, total ten genotypes were evaluated. The genotypes SLKU-311 and SLKU-309 found promising during the *Kharif* 2020.

Crop Protection

PRS, Vadodara

- ◆ **Pest pressure in different plant breeding experiments during Summer, 2020**

LSVT, SSVT and ZVT were screened. Whitefly population / 5 plant was found varied from 8.0 (SLKU-311) to 14.0 (T-9 and GU-1) under different experiments. Aphid population / 5 plant was found varied from 9.0 (SLKU-311 and DBUGP-2-2) to 15.0 (GU-1) under different experiments. Thrips population / 5 flower was found varied from 10.0 (SKLU-311 and DBUGP-2-2) to 15.0 (SLKU-307 and SLKU-301) under different

experiments. The range of pod damage was found to vary from 7.0 (DBUGP-2-2 and JAUG-2) to 11.0 % (SLKU-308 and GU-1) under different experiments.

- ◆ ZVT and SSVT, LSVT were screened. No incidence of Yellow mosaic diseases occurred during *kharif*-2020.

4.2.3 OILSEEDS

4.2.3.1 Castor

Crop Improvement

RRS Anand

Kharif 2020

- ◆ Total 228 lines were maintained and used for breeding work. 59 new crosses were made during the year.
- ◆ Five experiments including coordinated, state and station trials on castor were conducted.
- ◆ In AVHT trial, 9 hybrids/varieties including two check hybrids/ varieties were tested for their yield performance in irrigated condition at Anand. None of the hybrids recorded significantly higher seed yield than the best check GCH-8.
- ◆ In IVHT irrigated trial 16 test entries along with two checks were tested. Hybrid, ANDCH 1512 recorded significantly higher yield than best check GCH 8.
- ◆ In LSHT trial, five hybrids were evaluated against three check hybrids *viz.*, GCH 7, GCH 8 and GCH 9. None of the hybrids showed significantly higher seed yield than the best check GCH 8.
- ◆ Zonal hybrid trial of castor was conducted with inclusion of thirteen hybrids and four checks at Anand, Sansoli and Derol under

irrigated conditions. At Anand, hybrid ANDCH 1702 and ANDCH 1735 recorded significantly higher yield than the best check GCH-9. At Sansoli, ANDCH 1735 and SCH 127 recorded numerically higher yield than the best check hybrid GCH 8. Four hybrids viz., ANDCH 1735, SCH 127, SCH 123 and ANDCH 1507 recorded the significantly higher yield over the best check hybrid GCH 10 at Derol centre. On an average basis, ANDCH 1735, SCH 127, ANDCH 1733 and ANDCH 1501 recorded higher seed yield than the check GCH 10.

- ◆ In station PHT Trial, out of 47 hybrids tested, hybrid ANDCH 1814 recorded significantly higher yield than the best check GCH 8.
- ◆ In LSHT of castor (Irrigated), eight genotypes were evaluated among them LSHT 2004 recorded higher yield.

ARS, Sansoli

- ◆ Total 15 new crosses were made using three pistillate lines
- ◆ In castor, total 65 entries were tested in different state/PHT trials.
- ◆ Sixty germplasm lines of castor were evaluated and maintained.
- ◆ Five stable inbreds identified and were grown for IPS. Four stable Pistillate lines were grown for IPS.
- ◆ In LSHT trial, 7 castor genotypes were evaluated against three checks. The hybrid SHB 1045 recorded highest seed yield. The yield superiority of this hybrid was 25.16%, 3.66% and 18.15% over GCHb 7, GCH 8 and GCH 9, respectively.
- ◆ The SSHT trial consisted of fourteen castor hybrids including eleven test hybrid and three

check hybrids was conducted at this station. Among test hybrid, SHB-1055 recorded higher seed yield than GCH 7, GCH 8 and GCH 9. This hybrid recorded yield increment over GCH 7, GCH 8 and GCH 9 by 3.35%, 13.17% and 1.63%, respectively.

- ◆ Twenty-one test entries and three check hybrids of castor were evaluated under PHT trial. Among all the new castor test hybrid, SHB 1062 was significantly superior over check hybrids GCH 7, GCH 8 and GCH 9. Eleven hybrids recorded significantly higher yielded than best check GCH 8. Of these eleven hybrids, best three hybrids were SHB 1062, SHB 1059 and ANDCH 1735 recorded yield increment by 19.35%, 14.02% and 13.68% respectively over GCH 8.
- ◆ ZHT trial consisted of thirteen test hybrids excluding four check hybrids of castor. The hybrid ANDCH 1735 recorded higher seed yield over all the four check hybrids to the tune of 6.62%, 7.29%, 6.36% and 2.30% over GCH 7, GCH 8, GCH 9 and GCH 10 respectively. Whereas the hybrid SCH 127 recorded 5.30%, 5.96%, 5.05% and 1.03% over GCH 7, GCH 8, GCH 9 and GCH 10 respectively.

Crop protection

- ◆ At Anand, promising castor lines (142) were screened against wilt disease in a sick plot where 53 lines found resistance and 8 lines found highly susceptible. In in-vitro, promising 10 lines were screened in sick pot and 6 lines were found resistance.
- ◆ At Sansoli, castor crop sown during 4th week of August to 2nd week of September registered significantly lower capsule damage and significantly higher seed yield as compared to recommended sowing period *i.e.* 2nd week of August.

4.2.3.2 Mustard

Crop Improvement

RRS Anand

Rabi,-2020-21

- ◆ Total 04 new crosses were made.
- ◆ 41 germplasm lines of mustard were evaluated and maintained.
- ◆ In LSVT medium irrigated trial, total ten genotypes including two checks *i.e.*, GDM 4 and Kranti were evaluated. Among all entries at Anand center one entry *i.e.*, SKM 1620, SKM 1626 and SKM 1728 gave significantly higher seed yield than best check variety GDM 4. At Derol center, SKM 1642 gave significant higher seed yield than the best check Kranti.
- ◆ The LSVT Early was conducted at Anand and Derol station with total eight genotypes tested against two checks. Significant difference was observed among evaluated genotypes. At Anand center, SMK 1746, SKM 1630 and ANDM 14-9 showed significantly higher yield against the best check GM 1. Likewise, ANDM 14-9 gave significantly higher seed yield than the best check PM 2.
- ◆ The trial SSVT-Early was conducted at Anand center with total twelve genotypes tested against two checks. None of the entry gave significantly higher seed yield than the best check variety Kranti.

Dept. of Genetics and Plant Breeding

- ◆ Based on results obtained from year 2018-19 and 2019-20 *Brassica fruticulosa* was found highly resistant to aphid. To check the crossability of wild species of *Brassica* to *B. rapa* and *B. juncea* total 1243 different crosses were made.

4.2.3.3 Groundnut

Crop Improvement

At RRS Anand

Summer-2020

- ◆ Under Initial Varietal Trial-I, total 16 coded entries were evaluated for their pod yield performance. Among all the tested entries, one coded entry INS-I-2019-3 exhibited higher pod yield.
- ◆ Under Initial Varietal Trial- II, total 18 coded entries were evaluated in IVT-II trial. Among the tested entries, only one entry INS-I-2018-12 noted significantly higher pod yield.
- ◆ Total four coded genotypes were evaluated under Advance Varietal Trial-SB. Among four entries, AIS 2019-2 found promising.
- ◆ Total 14 genotypes were evaluated against two check varieties under large scale varietal trial-SB. J 106 and J 107 were found significant superiority in yield than best check TG 37 A.
- ◆ Total 14 genotypes including three checks were evaluated under SSVT-SB. JB 1505 and JB 1487 were found significant superior in yield than best check GG 34.
- ◆ The trial ZVT was conducted at Anand, Jabugam, Sansoli and Thasra locations with inclusion of 7 accessions including four checks. Among the tested entries at Anand station under ZVT trial, AG2015-10 and AG-2015-07 exhibited significantly higher yield than the best check GJG 31. Whereas, at Jabugam, AG-2015-07 gave significantly higher pod yield over the best check GG 34. Whereas, at Sansoli and Thasra none of the genotypes gave significantly higher pod

yield over the best check GJG 31 and GG 6, respectively.

- ◆ Total 16 genotypes including three checks were evaluated at Anand under PET. None of the entry exhibited significantly superior in yield than best check GG 34.

Kharif 2020

At Anand

- ◆ The LSVT trial was conducted at Anand center with total nineteen genotypes tested against four checks. At Anand, five entries were found significantly superior in yield than best check TG 37A.
- ◆ Total 14 entries including three checks viz., GJG 9, TG 37A and GJG 32 were evaluated for their pod yield performance at Anand locations under SSVT trial. None of the entries were found to have significant superiority in yield than best check GJG-32.

At Derol

- ◆ LSVT-SB of groundnut experiment studied with 20 genotypes in *kharif* 2020, among the genotypes, J 108 recorded the highest pod yield compared to best check TG 37A.
- ◆ SSVT-SB of groundnut experiment studied with 14 genotypes in *kharif* 2020, among the genotypes, JB 1488 recorded the highest pod yield compared to best check GJG 32.

4.2.4 FIBRE CROPS

4.2.4.1 Cotton

Crop Improvement

RRS, Anand

Kharif 2020

- ◆ In interspecific hybrid trial (H x B), 9 hybrids

including checks were tested. Hybrid RHB 1623 had recorded the highest seed cotton yield.

- ◆ In CHT varietal trial of *G. barbadense* four entries were evaluated. The results revealed that the genotype CCB 51-2 yielded the highest seed cotton yield and lint yield.
- ◆ Nine entries of *G. barbadense* conducted in PVT and results revealed that the genotype DB 1901 and CCB 64B yielded significantly the highest seed cotton yield over the best check Phule Rukmai.
- ◆ Centre has maintained 54 germplasm lines of cotton.
- ◆ 90 fresh crosses has made during the year

ARS Viramgam

- ◆ During *Kharif* 2020, total 16 trials of *G. herbaceum* were conducted including national, state and station trials for yield, yield contributing characters and fibre quality evaluation under rainfed situation of Gujarat.
- ◆ Total 230 entries of cotton were evaluated among different trials.
- ◆ Total 505 progenies were sown of various generations (F_1 - F_6) and promising individual plants were selected from segregating materials.
- ◆ Two agronomical trials viz., limited irrigation and paired row planting were conducted.
- ◆ 75 new crosses were made during the year.
- ◆ Five survey trials for major pest and disease occurrence of cotton are going on.
- ◆ In *Kharif* 2020, different trials of desi cotton (*G. herbaceum*) including state and station

trials were conducted for seed cotton yield and fibre quality performance at Viramgam and five other rainfed locations of Gujarat. The result of MLT, LSVT (FQ) and LSVT trials revealed that entries viz., GVhv 845, GVhv 1014, GVhv 1028, GVhv 1084, GVhv 1172, GVhv 1073, GVhv 1111, GVhv 1128, GVhv 1229, GVhv 1239, GVhv 1243, GVhv 1150, GVhv 1170, GVhv 1171, GVhv 1175, GVhv 1179, GVhv 1194, GVhv 1211 and GVhv 1221 were found promising for seed cotton yield as well as fibre quality parameters.

- ◆ Twenty-three IPS from mixoploid populations of interspecific (*G. herbaceum* x *G. hirsutum*) cross have been identified in advanced generation (F₃) and sown during *Kharif* 2020. Number of crosses were attempted of mixoploid X diploid and tetraploid species. Among them, 12 crosses of mixoploid x diploid, 3 crosses of mixoploid x tetraploid found successful and again 35 IPS selected for generation advancement.
- ◆ Sixty new hybrids have been developed based on male sterile line of Viramgam centre and will be evaluated in next season.

Plant Protection

Studies on population dynamics of key pests of cotton, surveillance of lepidopterous pests through sex pheromone, survey of insect pests in *Bt* as well as non-*Bt* cotton and screening of *deshi* cotton varieties for their resistance to key pests under rainfed conditions were carried out at Viramgam.

Similarly, survey of diseases of *deshi* as well as *Bt* cotton and screening of *deshi* cotton varieties for resistance to various diseases under rainfed conditions were also carried out at Viramgam.

4.2.5 CASH CROPS

4.2.5.1 Bidi Tobacco

BTRS, Anand

Kharif-2020

Crop Improvement

- ◆ In IVT, ABD 198 showed significant superiority for cured leaf yield over better check.
- ◆ In AHT, none of the hybrids showed significant superiority for cured leaf yield over GABTH 2.
- ◆ In AVT-I, ABD 190 showed significant superiority for cured leaf yield over better check.
- ◆ In AVT-II, none of the entry showed significant superiority for cured leaf yield over check GT 7.
- ◆ In breeding trial for normal planting I, ABD 228 showed significant superiority for cured leaf yield over better check GT 7.
- ◆ In normal planting II, ABD 207, 211 and ABD 215 showed significant superiority for cured leaf yield over better check GT 7.
- ◆ In variety assessment trial, GABT 11 gave significant superiority for yield than rest of the varieties and hybrid. Wherein hybrids, GABTH 2 gave significantly highest yield than MRGTH 1.
- ◆ In evaluation of bidi tobacco hybrids, the cured leaf yield differences were significant among hybrids tested. Out of six test hybrids, BTH 362 recorded numerical maximum cured leaf yield.

Rustica Tobacco

- ◆ In Initial Varietal Trial, none of the entries showed significant superiority over better check.
- ◆ In Advance Varietal Trial-I, line AR 148 showed significant superiority over better checks.
- ◆ In Station Varietal Trial-II, none of the entry was showed significant superiority over better check GC 1.
- ◆ In breeding trial for normal planting I, AR 172 showed significant superiority in cured leaf yield over better check.
- ◆ In breeding trial for normal planting II, AR 147 found promising in cured leaf yield over better check.

Crop Production

- ◆ The results on “Effect of long term manuring on yield and quality of bidi tobacco and soil productivity” revealed that yield and yield attributing characters as well as root knot index of tobacco variety GABTH 2 were not changed significantly due to different treatments of bulky manures as well as manurial combinations.
- ◆ An experiment carried out on “Effect of transplanting date on yield of calcutti tobacco (*Nicotina rustica* L.) varieties” indicated that variety GCT 3 recorded significantly the highest cured leaf yield with the maximum leaf length and the tallest plants than GC 1. While, tobacco transplanted during 47th Standard week recorded significantly the highest tobacco cured leaf yield and significantly taller plants which was at par with treatment 49th Standard week. However, higher value of dry weight per unit leaf area

was recorded when *rustica* tobacco was transplanted during 43rd standard week. With regard to quality parameters, only nicotine content was observed significantly higher in variety GC 1 than GCT 3. With regard to interaction effect between variety and transplanting date, tobacco yield, yield attributes and quality parameters were not changed significantly due to interaction effect.

Crop Protection

- ◆ In IVT, none of the lines under testing was free from leaf curl and tobacco mosaic virus (except MRGTH 1) diseases.
- ◆ In AHT, none of the entry / hybrid was free from tobacco mosaic (except MR GTH 1) and leaf curl diseases.
- ◆ In AVT-I, none of the lines under testing was free from leaf curl, RKI (Except ABT 10) and tobacco mosaic virus (except MRGTH 1) diseases.
- ◆ In AVT-II, none of the genotype was free from mosaic and leaf curl (except ABD 166) diseases.
- ◆ In breeding trial for normal planting I, none of the entries was free from leaf curl, root knot and mosaic disease (except MRGTH 1).
- ◆ In normal planting II, none of the entries was free from leaf curl (except ABD 212) and mosaic (except MRGTH 1) diseases. Two entries were free from root knot disease viz., ABD 213 and ABD 217.
- ◆ In variety assessment trial, GABT 11 None of the varieties/hybrid was free from tobacco mosaic (except GT 9 and MRGTH 1), leaf curl (except GT 9) and root knot disease (except ABT 10).

- ◆ In evaluation of *bidi* tobacco hybrids, none of the hybrids was free from leaf curl and root knot diseases. None of the hybrids were free from tobacco mosaic (except MRGTH1) and leaf curl diseases.

Entomological Research

- ◆ Establishment of entomophage bio-diversity park revealed that activity of various natural enemies like spider, coccinellids, *Nesidiocoris tenuis*, *Geocoris ochropeterus* and *Rhinocoris* sp, were found on different crops raised under entomophage park. The population of spiders were present in all the crops raised under entomophage bio-diversity park. Out of various bio agents maximum activity of *N. tenuis* was found in tobacco. The activity of spider was observed in all most all crops.
- ◆ Studies on population dynamics of the important insect pest revealed that rove beetle and leaf eating caterpillar were found under nursery conditions. The population of whiteflies continued throughout the crop season in field. Under field conditions whitefly, *Spodoptera litura* and *H. armigera* established correlation with weather parameters.
- ◆ Screening of different 352 *rustica* tobacco cultures / genotypes raised under nursery conditions was carried out. The population of leaf eating caterpillar was not sufficiently build up and for the reason nursery remained free from infestation of *S. litura*.
- ◆ Screening of different 350 *bidi* tobacco cultures / genotypes raised under nursery conditions was carried out. The population of leaf eating caterpillar was not sufficiently build up and for the reason nursery remained free from infestation of *S.litura*.

- ◆ The variety GCT 3 recorded significantly the highest cured leaf yield than GC 1. Minimum incidence of leaf curl and mosaic in both the varieties *rustica* tobacco were registered when crop transplanted in 46th Standard week (5-11th November).

Plant Pathology and Nematology

- ◆ In a trial on monitoring resistance development in *Pythium aphanidermatum* to metalaxyl MZ in nursery conditions, 27 per cent damping-off disease incidence in comparison with control was recorded in the treatment of metalaxyl MZ.
- ◆ In a trial on search for resistance to damping-off and root-knot in tobacco, results revealed that out of 12 genotypes/lines, seven lines showed moderately resistant and five lines showed moderately susceptible reaction to damping-off disease in the nursery conditions.
- ◆ In a trial on monitoring resistance development in *P. aphanidermatum* to azoxystrobin in nursery conditions, 27 and 32 per cent damping-off disease incidence in comparison with control was recorded in the treatment of azoxystrobin and azoxystrobin + difenoconazole, respectively.
- ◆ In a trial on screening of advanced breeding materials for leaf curl and *Cercospora* leaf spot diseases under field conditions, results revealed that forty nine entries of advanced breeding materials /crosses of *bidi* tobacco and eleven entries of *rustica* tobacco were examined for leaf curl and *Cercospora* leaf spot diseases. Out of forty nine *bidi* tobacco entries, none of the entry was found free from leaf curl infection during 2019-20. Among the *rustica* tobacco entries, four entries were found free from leaf curl but they were found

infected in past years. During the year, leaf spot disease was noticed negligible or not noticed.

- ◆ In a trial on breeding for resistance to tobacco mosaic in *bidi* tobacco, results revealed that 68 (including twenty-four mosaic resistant cultures) entries grown in different generations were artificially inoculated with tobacco mosaic virus and evaluated for resistance to mosaic. Out of these, 62 entries including segregation materials showed resistance to the disease and these materials are maintained by plant breeding section for further breeding work.
- ◆ Efficacy of different oils for the management of damping-off disease caused by *Pythium aphanidermatum* in *bidi* tobacco nursery revealed that application of oil treatments had no any effect on seed germination, rove beetle and fresh weight. Neem oil and castor oil as such or nano particulate significantly reduced the damping-off disease, increased the transplants and total survival seedlings compared to control.

4.2.6 FORAGE CROPS

MFERS, Anand

Crop Improvement

4.2.6.1 Forage Bajra

Summer-2020

AICRP Trials

- ◆ Under Initial Varietal Trial on Summer Bajra Multicut, five entries were evaluated along with 3 checks *viz.*, Giant Bajra, Moti Bajra and BAIF Bajra-1. Total three cuts were harvested. None of the entry found superior than national check BAIF Bajra-1 in case of GF, DM and CP yield.

- ◆ In first Advance Varietal Trial on Forage Bajra (Multi Cut), total six entries were evaluated including 3 checks *viz.*, BAIF Bajra-1, Giant Bajra and Moti Bajra. Total three cuts were taken. The entry BAIF Bajra-5 ranked first for GF yield and it showed superiority by a margin of 4.34 % over the best check BAIF Bajra-1. The entry BAIF Bajra-6 ranked first for DMY, per day productivity of dry matter, plant height (189.6 cm) and leaf length (101.6 cm). The entry BAIF Bajra-5 was the best for production potential in terms of GF production in unit area as well as number of leaves per plant.
- ◆ In second Advance Varietal Trial on Forage Bajra (Multi cut), total six entries were evaluated including 3 checks *viz.*, Raj Bajra, Giant Bajra and Moti Bajra. Total three cuts were taken. The entry AFB-37 ranked first for GF and DMY yield, Moreover, it is also best for forage per day productivity for GFY along with leaf length and leaf width.
- ◆ In second Advance Varietal Trial on Forage Bajra (Multi cut) for seed, total six entries were tested including 3 checks *viz.*, Raj Bajra-1, Giant Bajra and Moti Bajra. the hybrid entry ADV0061 found promising.

Kharif-2020

AICRP Trials:

- ◆ In Initial Varietal Trial on Forage Pearl millet - Single Cut, total eight entries were tested including two Zonal Checks and one National Check. The entry FBL 4 was ranked first for green forage yield, dry matter yield and crude protein yield. The entry 16ADV0111 stood first for the characters *i.e.* per day production for green and dry matter, number of tillers per plant, number of leaves per plant, leaf stem ratio and found earliest.

- ◆ In First Advance varietal trial, seven entries were evaluated including two Zonal Checks and one National Check. None of the entry found promising.

4.2.6.2 Forage Maize

- ◆ This Advanced varietal trial comprised of total 5 entries were tested including Two National Checks and one Hybrid Check for forage yield. None of the entry found superior to the National Check J-1006 for green forage yield, dry matter yield and per day productivity for dry matter yield.

4.2.6.3 Forage Cowpea

- ◆ In Initial Varietal Trial of Forage Cowpea, total five entries were evaluated with two national checks and one zonal check. The National Check Bundel Lobia-1 was the best for green forage yield, dry matter yield, crude protein yield, green forage per day productivity and dry fodder per day productivity. The entry MFC-16-7 was found the tallest. The entry MFC-16-2 and MFC-16-8 were the best performer for the earliness in terms of days to 50% flowering and crude protein content, respectively.

4.2.6.4 Dhaman grass (Yellow)

- ◆ This perennial varietal trial comprised of total nine entries. During the season under report, total 6 cuts *i.e.* (1st to 6th) were taken within a period of 469 days in the second year of trial. The entry VTCC-19-5 recorded higher yield for GFY, DMY & CPY. The same entry also ranked on top for per day productivity of GF and DM yield. Moreover, the entry VTCC-19-2 had the highest crude protein content as well as found the tallest. Maximum number of tillers per plant and leaf stem ratio were recorded by the entry VTCC-19-1.

4.2.6.5 Dhaman Grass (Black)

- ◆ This perennial varietal trial was established in 2019 with 7 entries evaluated against a local check GAAG-1. During the season under report, total 6 cuts *i.e.* (1st to 6th) were taken within a period of 469 days in the second year of trial. None of the entry could surpassed the local check variety GAAG-1 in terms of GFY, DMY, CPY, per day yield productivity for GF & DM and plant height (103.1). The entry VTCS-19-5 had ranked on top for the crude protein content. The entries VTCS-19-3 and VTCS-19-4 found superior for number of tillers per plant and leaf stem ratio, respectively.

4.2.6.6 Bajra Napier hybrid

- In this perennial varietal trial, total sixteen entries were evaluated. During the second year, total 6 cut (1st to 6th) were taken in period of 510 days. The entry VTBN-19-10 ranked first for GFY, DMY yield, per day productivity for GF and DM yield. The entry VTBN-19-7 stood first for the crude protein yield as well as it was found the tallest. The entry VTBN-19-14 contained the highest crude protein content.

4.2.6.7 Forage Sorghum –Multicut

- ◆ The Initial Advanced Varietal Hybrid Trial on Forage Sorghum –Multicut was conducted to check multicut efficiency of the given entries. Total two cuts were harvested. In this trial, 22 coded entries were tested, all entries were coded, hence analysis was not carried out. In first replication, entry 1008 produced the highest GFY and entry 1018 ranked first for both DMY and CPY. The entry 1069 ranked first for GFY, the entry 1066 produced DMY and the entry 1072 possesses the highest CPY in second replication. In third replication, the

entry 1114 gave the highest yield for GF, DM and CP.

- ◆ In Advanced Varietal Hybrid Trial on Forage Sorghum – Single Cut, total thirteen entries were tested. In first replication, the entry 4004 produced the highest GFY, it also observed as the tallest. The entry 4013 and 4005 yielded the highest dry matter yield and crude protein yield, respectively. In Second replication, the entry 4051 produced the highest GF. The entry 4060 ranked first for DM as well as CP yield. In third replication, entry 4103 found best for GFY, CPY and CP content. The entry 4109 stood first for dry fodder yield.
- ◆ In Advanced Varietal Hybrid (single cut) Trial, total thirteen entries were tested. All entries were coded; hence analysis was not carried out. In first replication, the entry 4004 produced the highest GFY, it also observed as the tallest. The entry 4013 and 4005 yielded the highest dry matter yield and crude protein yield, respectively. In Second replication, the entry 4051 produced the highest GF. The entry 4060 ranked first for DM as well as CP yield. In third replication, entry 4103 found best for GFY, CPY and CP content. The entry 4109 stood first for dry fodder yield.

State trials:

Forage Sorghum (Single cut) – Surat

- ◆ Large Scale Varietal Trial on Forage Sorghum (Single cut) – Surat

The genotypic differences were found significant for GFY, DMY and CPY. None of the entry produced significantly higher forage yield over the best check variety GFS 6.

- ◆ Small Scale Varietal Trial on Forage Sorghum (Single cut) – Surat

The genotypic differences were found significant for GFY, DMY and CPY. None of the entry produced higher forage yield over the best check variety GFS-6.

- ◆ Large Scale Varietal Trial on Forage Sorghum (Single cut)–Anand

This trial comprised of eight entries including three check varieties and evaluated for forage yield. The yield difference for GF and DM were found non-significant. None of the entry found superior to the best check variety GAFS-11 for GFY, DMY and CPY.

- ◆ Small Scale Varietal Trial on Forage Sorghum (Single cut) – Anand

Total 8 entries were evaluated along with two checks viz., GAFS-11 and GAFS-12. None of the entry found significantly superior than the respective best check for forage yield.

- ◆ Large Scale Varietal Trial on Forage Bajra (Single cut) – Zonal Trial

This trial was conducted at four locations of middle Gujarat, viz., Anand, Dhandhuka, Arnej & Minawada. At Minawada, this trial was vitiated due to very poor germination of different entries even after re-sowing of trial. Also, this trial was vitiated at Arnej. At Anand, the experimental results showed non-significant differences for GFY and DMY. At Dhandhuka, the yield difference for GF and DM yield were found significant. None of the entry found significantly superior than the best check variety Giant bajra.

- ◆ Large Scale Varietal Trial on Forage Maize

This trial comprised of twelve entries including one check variety African Tall.

The entry AFM-22 recorded the highest yield viz. GFY and DMY over the check variety African tall.

- ◆ Preliminary Yield Trial on *Dichanthium* (4th Year)

This perennial trial comprised of total eight entries including 3 check varieties viz., GMG-1, GMG-2 as a local check and VTD-1 as national check. Total three cuts i.e. (11th to 13th) were taken during the 4th year of trial. None of the entry found superior than the best check variety VTD-1 (Marvel 1-8) for yield and per day production potential.

This trial was started in *kharif*-2017. On the basis of pooled mean data over three years i.e. 2018, 2019 and 2020, none of the entry found superior than the best check variety VTD-1 for forage yield.

Rabi-2020-21

4.2.6.8 Oat (AICRP Trials)

During the season under report, total twelve experiments were conducted, which include seven experiments of Oat and four of Lucerne. All the experiments were conducted successfully at Anand centre.

- ◆ Under IVT (single cut), total sixteen entries were tested, the entry IVTOSC-13 gave significantly higher GF yield, per day GF and CP yield.
- ◆ Under First Advance Varietal Trial (Single cut)-1, seven entries were evaluated in this trial. The entry AVTO1SC-4 recorded the highest GF yield, whereas the entry AVTO1SC-1 ranked on top for DMY, CPY, per day GF, DM and plant height. The leaf stem ratio was recorded the highest in entry AVTO1SC-6.
- ◆ Under Second Advance Varietal Trial (Single cut)-2, total 10 coded entries were tested. The entry AVTO2SC-6, AVTO2SC-4, AVTO2SC-10 and AVTO2SC-2 found promising.
- ◆ Under Second Advance Varietal Trial (Single cut) (Seed). In this, trial 10 entries were evaluated. The entry AVTO2SCS-2 ranked on top for seed yield and per day seed yield. The entry AVTO2SCS-6 stood first for straw yield and per day straw yield, entry AVTO2SCS-6 was found the best for No. of tillers/m. row and plant height.
- ◆ Under Initial Varietal Trial (Multicut), total 11 entries were evaluated in this trial. The entry IVTOMC-7 ranked first for GF, DM, per day GF yield and per day DM yield. Whereas, the crude protein yield and average CP % was the highest in the entry IVTOMC-9.
- ◆ Under First Advanced Varietal Trial on Forage Oat (Multi cut). The trial was comprised of eight entries. The entry AVTO1MC-3 stood on top for green forage yield and per day GF yield. While, the entry AVTO1MC-1 ranked first for DM yield, CP yield and per day DM yield. The entry AVTO1MC-7 had the highest CP content. The entry AVTO1MC-5, AVTO1MC-4 and AVTO1MC-8 was the best for plant height, leaf stem ratio and number of tiller/m. row length, respectively.
- ◆ In Initial Varietal Trial (Dual purpose), total four entries including two national checks were tested. The entry IVTOD-2 was found on top for GF yield and DM yield, per day productivity of GF and DM. The entry IVTOD-7 ranked first for CP yield whereas, the entry IVTOD-4 and IVTOD-2 showed

the highest CP content and plant height, respectively. In case of leaf stem ratio, the entry AVTOD-4 was the best. The entry IVTOD-4 ranked on top for seed yield and straw yield.

4.2.6.9 Lucerne

State Trials

- ◆ In LSVT trial, twelve entries were evaluated along with three checks. None of the entries were found promising
- ◆ In SSVT trial, twelve entries were evaluated along with three checks. None of the entries were found promising
- ◆ In PYT trial, newly developed 21 entries were evaluated along with three checks. None of the entry was found promising.

Crop Production

Kharif season

AICRP trials

- ◆ Biofortification of annual cereal fodder crops for enhancing zinc and iron content (Fodder Sorghum: GAFS 12)
- ◆ Biofortification of annual cereal fodder crops for enhancing zinc and iron content (Fodder Maize: African tall)

State trials

- ◆ Response to nitrogen application by different varieties of marvel grass

Rabi: 2020-21

AICRP trials

- ◆ Enhancement of seed setting in lucerne through foliar spray
- ◆ Nutrient management for productivity enhancement in dual purpose oat

- ◆ Effect of N levels on forage yield of promising entries of Single cut oat (Dual)
- ◆ Effect of N levels on forage yield of promising entries of Multi cut oat
- ◆ Effect of Nitrogen levels on forage yield of promising entries of dual-purposed oat
- ◆ Effect of different potassic fertilizer sources on green fodder production and quality of fodder maize

State trials

- ◆ Performance of dual purpose barley under different nitrogen levels and cutting management

Summer 2020

- ◆ Green fodder yield and quality of fodder maize as influenced by in-situ wheat straw incorporation and nitrogen levels

4.3 HORTICULTURAL CROPS

4.3.1 VEGETABLES

Kharif – Rabi: 2020-21

4.3.1.1 Brinjal

Crop Improvement

- ◆ In brinjal crop, 11 trials were conducted (six trials of state and five trials of AICRP) during *kharif* and *rabi* seasons. So far as evaluation of germplasm is concerned, 229 germplasms were maintained and 43 new germplasms were collected.
- ◆ For heterosis breeding, 08 fresh crosses were made as well as 11 crosses were made for ongoing programmes. Total 272 germplasms were evaluated and maintained. Moreover, 488 segregating progenies were evaluated and individual plant selection was made for the next year.

4.3.1.2 Chilli

Crop Improvement

- ◆ Seven trials (Four trials of state and three trials of AICRP) were conducted during *kharif* and *rabi* seasons. So far as evaluation of germplasm is concerned, 103 germplasms were maintained and 05 new germplasms were collected.
- ◆ For heterosis breeding, 30 fresh crosses were made as well as 06 crosses were made for ongoing programme. Total 108 germplasm lines were maintained. Ten back crosses were made for conversion of CMS line. Total 379 segregating progenies were evaluated and individual plant selection was made for the next year, out of which 05 CMS lines was maintained.

4.3.1.3 Tomato

Crop Improvement

- ◆ In tomato, 07 experiments were conducted, which include five state trials and two AICRP trials.
- ◆ Total 62 germplasm lines were maintained and evaluated and 05 new germplasms were collected. 06 fresh crosses were made as well as 08 crosses were made for ongoing programme. In all 395 progenies of segregating materials were evaluated and individual plant selection was made for the next year.

4.3.1.4 Onion

- ◆ One state trial was conducted during *rabi* season.
- ◆ Total 18 germplasm lines were maintained and evaluated including 02 new collected germplasm.

Summer and *Kharif*-2020

4.3.1.5 Bottle gourd:

- ◆ Total 325 germplasm lines were maintained including five new collections and evaluated including three varieties.

4.3.1.6 Muskmelon:

- ◆ Total 107 germplasm lines were maintained and evaluated including one variety.

4.3.1.7 Ridge gourd:

- ◆ In Ridge gourd, 03 experiments were conducted, which include one state trial and two AICRP trial.
- ◆ Total 223 germplasm lines were maintained and evaluated including 01 variety.

4.3.1.8 Sponge gourd:

- ◆ Eight trials were conducted including two state trials and six AICRP trials during *kharif* and summer season.
- ◆ Total 137 germplasm lines were maintained and evaluated. Four new crosses have made during the year

4.3.1.9 Cucumber:

- ◆ Three trials were conducted including two state trials and one AICRP trials during summer season.
- ◆ Total 116 germplasm lines were maintained and evaluated including 01 variety.

4.3.1.9 Pumpkin

- ◆ Total 108 germplasm lines were maintained and evaluated including 01 variety.

4.3.1.11 Okra :

- ◆ Ten trials were conducted including seven state trials and three AICRP trials during *kharif* and summer season.

- ◆ Total 374 germplasm lines were maintained and evaluated including 30 new collected germplasm. 33 crosses were made for hybrid evaluation including 20 new crosses. Total 691 segregating progenies were evaluated and individual plant selection was made for the next year.

4.3.1.12 Pulses :

- ◆ Two state trials of cluster bean were conducted during *kharif* season.
- ◆ Two state trials of cow pea were conducted during *kharif* season.
- ◆ Three state trials of indian bean were conducted during *rabi* season
- ◆ Total 77 germplasm lines of cow pea were maintained during *kharif* season, where as 35 and 36 germplasm lines of Indian bean and valor respectively were maintained and evaluated during *rabi* 2019-20.

At Khambholaj

4.3.1.13 Potato

Rabi 2020-21

- ◆ Under PET, total 09 test entries along with three check varieties were evaluated. Among test entries, P-42, P-25 and P 22 found promising.
- ◆ Twenty-eight segregating generation material were received from AICRP CPRI RS, Modipuram, Meerut, UP. The materials were sown at AHRS, Khambholaj and data were collected in replicated manner in three different dates i.e. 75, 90 and 100 DAS. At 75 DAS, among test entries, P 42 (24410 kg/ha), C 18 (18681 kg/ha) P 30 (17604 kg/ha) were gave 43.47, 9.80 and 3.47 per cent higher yield over best check K Pukhraj

(17014 kg/ha). At 90 DAS, Among test entries, P 42, C18, P 14, C 28, P34, P 25, P 35, and C 20 were found 134.67, 61.33, 58.40, 51.46, 47.20, 45.70, and 35.75 per cent higher yield over check varieties K. Pukhraj (13020 kg/ha). At 100 DAS, Almost all test entries yield potential reduced except P 25 which indicated that all test entries except P 25 are suitable for harvesting within 90 days.

4.3.2 MEDICINAL AND AROMATIC PLANTS

Crop Improvement

4.3.2.1 Isabgol

State trial

- ◆ SSVT on Evaluation of early maturing isabgol genotypes

4.3.2.2 Safed musali

- ◆ **Comparative field study of growth of Safed musli planting materials generated through conventional and tissue culture method**

The luxurious vegetative growth was attained at the stage of 60 DATP. Significantly maximum plant height was obtained in conventional planting materials at 30, 60 and 90 DATP i.e., 22.64, 27.10 and 26.14 cm, respectively. In comparison among the planting materials, significantly maximum no. of leaves per plant was observed in conventional planting materials in all the growth stages (30, 60 and 90 DATP). In case of chlorophyll content (CC), highest CC was found during the 30 DATP and significantly maximum CC was depicted in conventional planting materials i.e., 25.52, 24.0 and 22.91 SPAD at 30, 60 and 90 DATP, respectively. Maximum leaf area (24.92 cm²) was recorded in conventional

planting materials at 30 DATP as compared to tissue culture raised plants (18.32 cm²). However, it was non-significant at 60 and 90 DATP. Days to flower initiation parameter showed the highly significant difference and took minimum days for flower initiation (19 days) in conventional planting materials as compared to the plants raised from the tissue culture (31 days).

With respect to the yield and yield related parameters, significant difference was witnessed among the planting materials. Significantly higher number of fasciculated root per plant was getting in conventional planting materials (11.88). Similarly, maximum fasciculated root length (10.01 cm) and girth (2.25 cm) was also found in conventional planting materials. Maximum fresh and dried root weight was observed in conventional planting materials *i.e.*, 20.39 and 3.98 g respectively. However, there was a non-significant difference in case of quality parameters. While, numerically maximum saponin (2.19 %) and crude fibre content (2.40 %) was obtained in conventional planting materials.

4.3.2.3 Turmeric

- ◆ Under PET, Evaluation of Turmeric genotypes for yield and quality was conducted.

4.3.2.4 Asalio

State trials

- ◆ LSVT trial on LSVT Evaluation of promising lines of Asalio was conducted.

4.3.2.5 Basil

AICRP trials

- ◆ AVT-II: Evaluation of promising lines of

Basil for high yield and quality (AB-1 to AB-20)

- ◆ AVT-I: Evaluation of promising lines of Tulsi(AB1-AB20)

Station trials

During the year 2020-21, one experiments were taken.

- ◆ AVT-III: Evaluation of promising lines of Basil for high yield, quality and DUS characters.

4.3.2.6 Charoli

Collection, conservation and establishment of Charoli (*Buchanania lanzan* Spreng) genotypes at Anand

- ◆ **Enhancement of seed germination in Charoli (*Buchanania lanzan*)**

Significant differences were observed among the different physical and chemical treatments on various seed germination parameters of charoli. Significantly the highest germination percentage (57.5%), germination index (1.83), root length (8.90 cm), vigour index-I (1026.4) and vigour index-II (3192.7) was observed in the treatment T₁₂ [Alternate wetting (24 hrs.) and drying (24 hrs.)]. Whereas, the treatment T₂₁ (Dipping in GA₃ @900 mg/l for 24 hrs.) exhibited significantly higher shoot length (10.20 cm) and shoot dry weight (53.48 mg).

4.3.2.7 Stevia

- ◆ **Standardization of soil less culture in Stevia *rebaudianabertoni***

Significantly highest plant height was observed in half MS media during the 1st (24.36 cm) and 2nd harvesting (32.47 cm). Full Hoagland solution exhibited

significantly maximum number of leaves per plant *i.e.*, 19.43 at 1st harvesting but during 2nd harvesting significantly higher value was found in half MS media (64.0). At 1st harvesting, there were a limited number of primary branches in all the nutrient media, while at 2nd harvesting time it started developing of primary branches in all the nutrient solution. In case of chlorophyll content, significantly maximum chlorophyll content was recorded in full Hoagland solution (32.66 SPAD value) during 1st harvesting while in 2nd harvesting stage half MS media (39.48 SPAD value) was observed maximum chlorophyll content. Significantly maximum leaf area was observed in half MS (13.12 cm²). With respect to the fresh and dried leaves weight per plant, half MS media exhibited significantly higher fresh weight (13.77 and 48.15 g) and dried weight (3.18 and 11.25 g) during the 1st and 2nd harvesting stage, respectively.

In terms of quality, 2nd harvesting stage gave maximum stevioside content as compared to others harvesting stages except half MS media. Among the nutrient media, half MS media recorded significantly maximum stevioside content (11.22, 11.28 and 11.57 %) at 1st, 2nd and 3rd harvesting stage respectively during the year 2018-19. While in the year 2019-20, 1st harvesting stage observed maximum stevioside content and maximum was recorded in half Hoagland solution (7.21 %). During the 2nd harvesting stage, half MS media was found maximum stevioside content (4.79 %). A non-significant difference was observed during the 1st and 2nd harvesting stage with respect to Rebaudioside A content while in 3rd harvesting stage, it was found significantly maximum in half Hoagland solution (4.19

%) during the year 2018-19. While in the year 2019-20, half MS media was depicted significantly maximum Rebaudioside A content (3.59 %) at 1st harvesting stage while in 2nd harvesting stage it was found non-significant.

Crop production

◆ Effect of different organic manures and Bio NPK consortium on yield and quality of Asalio (*Lepidium sativum*L.):

Significantly higher seed yield was found with application of FYM @ 10 t/ha along with Seed treatment of Bio NPK @ 5 ml/kg seeds (M1B1) on pooled basis.

◆ Effect of different organic manures and Bio NPK consortium on dry biomass yield and quality of Kalmegh (*Andrographis paniculata*L.) and its residual effect on Kalijiri [*Baccharoides anthelmintica* (L.) Moench:

Significantly higher dry biomass yield in both the year as well as on pooled basis was recorded with FYM 5 t/ha + RDF (50 + 25 + 0 NPK kg/ha). Whereas significantly higher seed yield of Succeeding crop *kalijiri* was recorded with treatment 100 % RDN from Neem cake (Succeeding crop *kalijiri* -2nd year data analysis under process)

4.3.3 FRUIT CROPS

Department of Horticulture, BACA

In research front efforts are being made to concentrate on Hi-Tech recent advances in the field of horticulture including basic and applied research. These are being carried out separately by the department and with the collaboration of other departments. The department having about 25-hectare land

for research and demonstration activities for fruit, vegetable and flower crops.

Following ten field trials were conducted successfully during the year 2020-21 on different horticultural crops. Out of these, two trials were on flower crops.

- ◆ High density plantation and canopy management in mango cv. Kesar
- ◆ High density plantation and pruning in guava cv. Allahabad Safeda
- ◆ Effect of transplanting time and spacing on growth and yield of summer African marigold (*Tagets erecta* L.) cv. Punjab Genda-1
- ◆ Standardization of suitable time of softwood grafting guava cv. Allahabad Safeda
- ◆ Evaluation of red flesh guava hybrids
- ◆ Evaluation of white flesh guava hybrids

College of Horticulture

Fruit Science Dept.

- ◆ Effect of different organic manures and PGPR consortium on growth, yield and quality of sapota (*Manilkara achras* L.) cv. Kallipatti

Vegetable Science Dept.

- ◆ Evaluation of vegetables during different season under different shade net condition

Floriculture and Landscape Architecture Dept.

- ◆ Effect of spacing and nitrogen on growth, flowering, yield and shelf life of desi rose under middle Gujarat conditions
- ◆ Evaluation of different chrysanthemum

genotypes (loose flower) for yield and growth parameters

- ◆ Feasibility of use of Reverse Osmosis (RO) waste water in gaillardia

Post Harvest Technology Dept.

- ◆ Technology for production of Indian gooseberry (aonla) murabba
- ◆ Development of production technology for vegetable based juice from carrot and tomato

Plant Protection Dept.

- ◆ Bio-efficacy of botanicals against powdery mildew of fenugreek.
- ◆ Evaluation of insecticides against aphid infesting in chrysanthemum
- ◆ IPM technology for brinjal crop
- ◆ Management of aphid in coriander through insecticidal seed treatments and bio-pesticides
- ◆ Survey and identification of causal organism of Mango malformation
- ◆ Bio-efficacy of ready mix fungicides against powdery mildew of fenugreek

Natural Resource Management Dept.

- ◆ Nutrient management through organics in broccoli
- ◆ Evaluation of nutrient management modules in okra + cowpea - cabbage + fenugreek intercropping system

Basic Science Dept.

- ◆ Comparison of different statistical models to

forecast the area, production and productivity of major fruit crops of Gujarat

- ♦ Modeling of area, production and productivity of castor crop for Anand/Kheda district using statistical data mining techniques

Crop Protection

- ♦ Bio-efficacy of botanicals against powdery mildew of fenugreek.
- ♦ Evaluation of insecticides against aphid infesting in chrysanthemum
- ♦ Validation and promotion of sustainable and adaptable IPM technology for brinjal crop
- ♦ Management of aphid in coriander through insecticidal seed treatments and bio-pesticides
- ♦ Survey and identification of causal organism of Mango malformation

Crop Improvement:

- ♦ Induction of mutation in rose and lilly

Post Harvest Technology

- ♦ Technology for production of Indian gooseberry (aonla) murabba
- ♦ Development of production technology for vegetable based juice from carrot and tomato
- ♦ Standardization of moringa pulping technique using brush type pulper

4.4 FORESTRY

--NA--

4.5 CENTRE FOR PLANT MOLECULAR BIOLOGY AND BIOTECHNOLOGY

Okra, Brinjal, Chilli, Guar, Desi Cotton,

Custard apple, Ocimum, Tomato, Cucumber, Castor, Cowpea, Mustard, Rice and Watermelon are the crops in which research was carried out. The planning was done to carry out crop based research for improvement of yield and quality. The work pertaining to breeding varieties/hybrids for resistance to various biotic (disease and insect resistance) and abiotic stresses (drought and salinity resistance), identification and molecular characterization. Crop-wise research activities carried out at this department under various schemes are given below:

Desi Cotton

- ♦ Determination of ploidy of different cotton samples.
- ♦ Phenotypic and molecular characterization of 48 diploid cotton genotypes.
- ♦ DNA was isolated from 306 cotton germplasm maintained at Viramgam research station.
- ♦ Fifteen SRAP markers were screened on germplasm, of which 5 were identified reproducible and polymorphic.
- ♦ Development of colchiploid in *desi* Cotton
- ♦ Interspecific hybridization in Cotton
- ♦ Total Eleven interspecific lines of cotton having fiber length more than 28 mm have been included in PET trial at Dhandhuka and Viramgam.

Okra

- ♦ In *summer*, total 156F₆, 22F₇, 01F₈, 03F₉, 15F₁₀ and 08F₁₁ were sown during the season, while 33F₅, 14F₆, 07F₇, 01F₈, 08F₉, 16F₁₁ were resown, which were not successfully performed during previous *khari* season.

There was no YVMV infestation in most of segregating populations. The YVMV ranged from 0 to 33.50%. Many lines did not show germination and there were few promising lines showing no incidence of YVMV.

- ◆ Total 87 lines of diverse 08 germplasm lines of Okra were screened and evaluated for nematode resistance.

Tomato

- ◆ Total 11 direct crosses were attempted utilizing tomato lines imported from TGRC, California and AVRDC, Taiwan and GAT-5 and DHT selection during *Kharif-Rabi-2020-21*.
- ◆ In tomato, a total of 72 entries involving 37 parents (11 cultivated, 17 wild species and 9 cherry type), 16 selections, 11 TGRC lines and 8 AVRDC improved lines were evaluated for TLCV and other yield and related attributes.
- ◆ In the different generations of tomato, total 14F3 IPS, 15BC1F3 IPS, 10Three-way F3 IPS, 20F4 IPS, 1F5 IPS, F5 IPS, 4F6 IPS, and 23F7 IPS were made in the cherry and cultivated type.
- ◆ F2 seedlings of cross LA-4440 X ATL-10-7 were raised in *Kharif-Rabi-2019-20* followed by raising of F2:3 seedlings in *Kharif 2020-21* for identification of linked markers associated with shelf life and lycopene content in tomato.
- ◆ A total of 250 F2:3 lines were transplanted in field plots where each line had 10 plants.
- ◆ From F2 population, leaf samples were collected from individual plant for DNA

extraction.

- ◆ DNA of good quality was isolated successfully in the sufficient quantity from 250 plants.
- ◆ F2:3 population of a cross LA-4440 X SL-120 was raised in *Kharif-Rabi-2019* in nursery for Identification of a QTL (Quantity Trait Loci) conferring nematode resistance in tomato.
- ◆ SSR markers of tobacco were screened on both parental lines for parental polymorphism and polymorphic primers were used for population genotyping.

Maize

- ◆ Mature seeds of maize were germinated on MS media containing GA₃ (80 mg/l).
- ◆ Different tissues such as leaf, roots and hypocotyl were used as explant for callus induction.
- ◆ To induce callusing, different treatment combinations of 2-4D, picloram, BAP and NAA were attempted.
- ◆ Callus induction was observed on MS media containing 2-4D (0.5%), Picloram (2.2 mg/l), proline (1.38 mg/l), casein hydrolysate (500 mg/l) and silver nitrate (3.4 mg/l) in root and hypocotyl except leaf which showed very less and late response.
- ◆ Optimization of media for regeneration of plantlets from callus is under process.
- ◆ Transformation was carried out in total of 400 seeds of maize, of which 163 were survived in kanamycin selection



Putative maize transformants in greenhouse

Pearl millet

- ◆ A set of 48 pearl millet genotypes were collected from ICRISAT, Hyderabad and AICMIP, Jodhpur.
- ◆ All genotypes were planted in field for phenotypic and molecular characterization.
- ◆ All the genotypes of pearl millet raised in two replications in field
- ◆ Days to 50% flowering ranged from 42 to 72 days with a mean of 55 days.



Field view of pearl millet genotypes

Wheat

- ◆ The effect of priming treatments at five salt levels in different varieties viz., Lok 1,

GW 496, KRL 210 and Kharchia 65 was conducted.

- ◆ The genotoxic effect of salinity stress was evaluated through RAPD primers by comparing presence and absence of DNA bands in control and treated genotypes.

Custard apple (*Annona species*)

- ◆ In the *Annona* species, new crosses were made in custard apple taking five combinations viz., *A.atimoya* X *A.reticulata*, *A.reticulata* X *A.atimoya*, *A.reticulata* X *A.cherimoya*, *A.reticulata* X Balanagar (*A.squamosa*), Balanagar (*A.squamosa*) X *A.reticulata* and Red (*A.squamosa*) X *A.reticulata*.
- ◆ Interspecific hybrids of custard apple will be evaluated at morphological level during the *kharif* 2021.

Castor

- ◆ Morpho-physico-biochemical characterization of 30 genotypes was carried out.
- ◆ SSR and SRAP marker based molecular diversity analysis was carried out.
- ◆ In QTL mapping for wilt resistance, F₂ seeds were harvested from single F₁ plant

obtained through crossing between JI-35 (wilt susceptible) and 48-1 (wilt resistant).

- ◆ For genome wide association study, 96 genotypes were analyzed using 100 SSR markers.
- ◆ In an experiment pertaining to development of male sterile line in castor through intergeneric hybridization in castor and *Jatropha*, new crosses were attempted and ovules were kept for embryo rescue but no success achieved.

Rice

- ◆ A set of 196 F₃ lines were screened for BLB resistance through artificial inoculation of



bacterium using leaf clipping method.

- ◆ A total of 196 F₃ lines were transplanted in field in two replications in 196 plots where each plot was having 10 plants.
- ◆ The BLB score in population was between 3-7 and merely three groups were observed.
- ◆ For BLB reaction study, artificial inoculation was done using leaf clipping method.
- ◆ For artificial inoculation, leaf clipping method enables crosscut veins to be exposed to Xoo suspension by cutting off leaf tips with Xoo suspension infected scissors (Fig 33).



Artificial inoculation of population for Xoo by Leaf clipping method

Mustard

- ◆ Evaluation of interspecific inbreds developed through *B. napus*, *B. carinata*, *B. rapa* and *B. juncea*, and private hybrids along with 3 local checks GM-2, GM-3 and GM-4 in mustard was done in a replicated trial.
- ◆ Six promising entries were sown during Rabi-2020 as a PET trial as well as seed multiplication for the SSVT trial.

Cucumber

- ◆ Different interspecific generations viz., F₁₃,

BC₁F₁₂ and BC₁F₁₁ were raised and five lines were found promising.

- ◆ Three promising interspecific lines of cucumber were included under SSVT trial at MVRS, AAU, Anand and Potato Research Station, SDAU, Deesa.

Cowpea and yard long bean (*Vigna unguiculata* subsp. *sesquipedalis*)

- ◆ In *kahrif*, F₁₂ and BC₁F₁₁, while in summer F₁₁ and BC₁F₁₀ lines were raised and 5 lines were found promising for YVMV and yield

in both seasons, while seed of 27 yard long bean lines procured from NBPGR, Thrissur were multiplied successfully and new crosses were attempted between Cowpea and Yard long bean.

- ◆ Five promising lines of Cowpea were included under PET at MVRS, AAU, Anand.

Tobacco

- ◆ 1500 SSR markers were screened on both parents for identification of polymorphism.
- ◆ Out of 1500 SSR markers, 33 were found reproducible and polymorphic.
- ◆ These polymorphic SSR markers were amplified in F_2 mapping individuals.
- ◆ The Allelic data were recorded from amplification profile of F_2 mapping individuals.
- ◆ Phenotypic observation was recorded for all 10 plants from each $F_{2,3}$ line for both leaf thickness and RKN resistance index.
- ◆ 100 leaf discs from each plants were made and weighed. The leaf thickness for each plant was recorded.
- ◆ Association of leaf thickness and RKN



resistant index with genotypic data was evaluated using single marker analysis.

- ◆ Out of 33 SSR markers, three namely PT20149, PT30346 and TM11008 found linked with leaf thickness trait and four namely TM10083, TM10820, PT20213 and TM10816 found linked with RKN resistance trait.

Chilli

- ◆ Out of 617 SSR markers, 44 were found reproducible, robust and polymorphic between parents of F_2 mapping population (AVNPC-131 X P-08-11).
- ◆ Ten plants of each F_3 line was raised in field.
- ◆ Phenotypic observations for chilli leaf curl virus resistance and other morphological traits were collected.
- ◆ Forty nine F_6 interspecific lines of chilli and capsicum (*Capsicum* X GVC 131) were raised and IPS was made.
- ◆ Segregation for various phenotypic traits like plant height, flowering time and LCV reaction were observed in $F_{2,3}$ mapping population



Plant infected with LCV



Plant showed resistance for LCV

Stevia

- ◆ Samples were collected from hydroponically grown plants at different harvesting stages.
- ◆ Leaves were dried and powdered for extraction of major bioactive compounds such as steviosides, rebaudioside A, B, C and D.
- ◆ Quantification of these major bioactive compounds was carried out through LC/MSMS analysis.

Flow cytometry and ploidy analysis

- ◆ Ploidy and DNA content analysis of 15 different *brassica* species were carried out.
- ◆ Out of 15 samples, 7 were found diploid and remaining were tetraploid.

Summary of DNA fingerprint profile generated in various crops in the year 2020-21

Crops	Number of varieties	DNA Markers	
		SRAP	Gene specific primer
Year 2020-21			
Pigeonpea	6	2	-
Okra	4	2	-
Mungbean	6	2	-
Chilli	5	2	-
Brinjal	6	2	-
Tomato	3	2	-
Wheat	26	-	2
Rice	4	2	-
Total	60	14	2

- ◆ Ploidy analysis of 8 marigold genotypes was carried out.

Germplasm collection

- ◆ Germplasm collection of different citrus crops including Malta, Orange & Mosambi was done from different nurseries of Anand and Vadodara. Different crops *i.e.* guava, mango, sapota, custard apple and jasud plants were also done.

DNA fingerprinting

- ◆ Total 235 DNA fingerprints were generated, out of which 60 have been generated in current year in pigeonpea, okra, tomato, mungbean, chilli, wheat, rice and Brinjal (Table 6 and Fig 35).

Distant hybridization

Okra

- ◆ In summer, total 15F₆, 22F₇, 01F₈, 03F₉, 15F₁₀ and 08F₁₁ were sown during the season, while 33F₅, 14F₆, 07F₇, 01F₈, 08F₉, 16F₁₁ were resown. There was no YVMV infestation in most of segregating populations. The YVMV percentage ranged from 00.00 to 33.50. Many lines did not showed germination and promising lines showed 0% YVMV incidence.
- ◆ In *kharif*, total 80 germplasms were sown. Out of total 80 germplasms, 07 did not germinate. As a whole, there was very less incidence of YVMV in this season, so most of the accessions showed no symptoms of YVMV due to insufficient selection pressure. Out of 19 parents, 17 parents showed 0% YVMV incidence, while two parents, AOL 12-52 and Arka anamika showed YVMV incidence of 10 and 14.2, respectively. In the current season, total 11 inbred lines and 15 parents were sown for the purpose of PVT trial. The evaluation of okra lines and parents under replicated trial showed no symptoms of YVMV, only one parent GO 2 showed YVMV symptoms at the level of 20%.
- ◆ In *Kharif*, different advanced lines including 81F₇, 10F₈, 1F₉, 1F₁₀, 8F₁₁ and 3F₁₂, were sown. All lines showed good germination. There was very less incidence of YVMV in the *kharif* season and all the advanced materials showed very less symptoms of YVMV due to very low selection pressure. While in the same season 16F₆, 9F₇, 1F₈ and 2F₁₂ lines were resown and these all lines showed 100% germination. The resown lines showed

very low incidence of YVMV. The YVMV percentage ranged from 00.00 to 33.50. There were selected 85F₈, 10F₉, 2F₁₁, 8F₁₂ and 3F₁₃, & 16F₇, 8F₈, 1F₉ and 3F₁₃ (For resown) lines of okra.

- ◆ Total 87 germplasm of okra were screened for resistance against root-knot nematodes during 2019-20 all the germplasm/entries were found highly susceptible (HS) to susceptible (S) against *M. incognita* and *M. javanica* pt-1 except eight germplasm entries [IC90364, IC90478, IC90504, IC90522, IC140996, IC141019, AMA02 & *Abelmoschus manihot* var. *tetraphyllus* (Canal)] against *M. incognita*, one germplasm (*i.e.*, IC140996) was found moderately resistant (MR) against *M. javanica* pt-1. Whereas, 13 germplasm (IC90499, IC90515, II90518, IC90519, IC90524, IC140952, IC140967, IC140972, IC140006, IC141022, U.G. Hostel & GO2) were found moderately resistant against *M. incognita*. Seven genotypes (IC141025, IC90410, IC140972, IC140006, IC141019, IC141021 & *Abelmoschus manihot* var. *tetraphyllus* (Canal)) were found moderately susceptible (MS) against *M. javanica* pt-1.

Tomato

- ◆ A total of 72 entries involving 37 parents (11 cultivated, 17 wild species and 9 cherry type), 16 selections, 11 TGRC lines and 8 AVRDC improved lines were evaluated for TLCV and other yield and related attributes.
- ◆ Total 25 F₁'s were sown during *kharif-rabi*-2019-20. Out of total, there were only 18 entries having plant stand, while remaining 07 entries did not show germination. Out of total 18 entries, only 16 entries having plant stand equal to 5 or above, hence, only those

were considered for TLCV observation. While, 02 entries having plant stand less than five. Total 2BC₁F₁ were sown. There were 22 three way F₁ sown in *kharif-rabi-2019-20*, out of which 05 entries did not show germination. While, in case of 7 double cross F₁'s sown, 6 entries had plant stand equal to 8 more than 5 except (F₄-8 TOLCV RES-3 X IIHR-1966) X (F₂-3 H-86 X LA4440).

- ◆ Total 3F₂, 24BC₁F₂, 7Three-way F₂, 80F₃, 7F₄, 18BC₁F₄, 1Three-way F₄, 20F₅, 68BC₁F₅ and 39F₆ were raised. On the basis of observation for TLCV resistance, intensity of fruit bearing, plant growth habit, early maturity, number of fruits per cluster and fruit characters (size, shape, color and taste), there were 14F₃ IPS, 15BC₁F₃ IPS, 10Three-way F₃ IPS, 20F₄ IPS, 1F₅ IPS, 0BC₁F₅ IPS, 0Three-way F₅ IPS, 4F₆ IPS, 0BC₁F₆ IPS and 23F₇ IPS selected from 3F₂, 24BC₁F₂, 7Three-way F₂, 80F₃, 7F₄, 18BC₁F₄, 1Three-way F₄, 20F₅, 68BC₁F₅ and 39F₆ respectively.
- ◆ Total 11 direct crosses were attempted utilizing tomato lines imported from TGRC, California, AVRDC, Taiwan, GAT-5 and DHT selection during *kharif-rabi* : 2020-21.

QTL for Nematode

- ◆ F_{2:3} population of a cross LA-4440 X SL-120 was raised in *kharif-rabi-2019* in nursery. Total 156 F_{2:3} lines were transplanted in field in two replications where each line was having 10 plants. The phenotypic data of root knot nematode were collected at maturity stage. The SSR markers of tobacco were screened on both parental lines for parental polymorphism and polymorphic primers were used for population genotyping. A total of 78 SSR primers have been screened, out of

which 14 primers were found polymorphic between parents. Out of 14, ten primers have been used for genotyping of F₂ population. But, amplification was non locus specific and as a result multiple amplicons were observed in population. This suggested that amplification of cross genera primers is not feasible in tomato and further crop specific primers need to be developed.

Identification of linked markers (shelf life and lycopene content)

- ◆ F₂ seedlings of cross LA-4440 X ATL-10-7 were raised in *kharif-rabi-2019-20* followed by raising of F_{2:3} seedlings in *kharif* 2020-21. A total of 250 F_{2:3} lines were transplanted in field plots where each line had 10 plants. The quality and quantity of DNA was confirmed through gel electrophoresis and nanoquant from 250 samples. While, phenotypic characterization of raised F_{2:3} populations for the shelf life and lycopene content is in progress.

Cotton

- ◆ Out of the total 41 parents, the minimum days to flowering was 81 days and was reported by AKA-7 and G.Cot.16. The maximum bolls producing top five (5) lines were **Gvhv 280 (82.6)**, 4011 (80.4), Gvhv-721 (72.8), V-797 (69.0) and Phule anmol (68.4) with 181, 172, 168, 160 and 145 gm yield per plant, respectively. The top four high yielders (in gm) were found to be **Gbhv-280 (181)**, 4011 (172), Gvhv-602 (168) and Gvhv-721 (160).
- ◆ Out of the total 07 three way F₆ lines selected, single (01) line exhibited fiber length of 28 mm. Total number of lines selected to be advanced as BC₁F₆ from BC₁F₅ was 30, while in the case of F₇ generation total 2 lines were

having fiber length more than 28 mm. There were two cross combinations *i.e* Phule anmol X 4011 and AKA-8401 X ALF-1027 in the F₈ generation lines. Whereas, 16 lines found to have fiber length more than 29 mm

- ◆ Total 40 parents involving 21 *G. herbaceum* 12 *G. arboreum*, 3 *G. hirsutum* and 4 *G. barbadense* are sown. There are 1 three way F₆, 9BC₁F₆, 8F₇ and 42F₈ were sown. In the different generation 1 three-way F₆ line from one cross combinations, 9BC₁F₆ lines from 02 cross combinations, 8F₇ lines from 03 cross combinations and 42F₈ lines from 03 cross combinations were sown. Eleven (11) promising lines (DHC-1 to DHC-11) were contributed in the PET trail, conducted at Viramgam and Dhandhuka through Associate Research Scientist, RCRS, Viramgam.

Colchiploid in Cotton

- ◆ In the cytological characterization, there was found induction of tetraploidy in 4011 at 0.2% colchicine concentration in seed soaking method. After the application of colchicine treatment, the chromosome number of 4011 genotype was found to be 2n=52. In genotype 4011, mitosis was abnormal. Metaphase revealed 52 chromosomes including univalents, bivalenteticulativalemts. While in case of genotype V-797 at 0.2% colchicine concentration in seed soaking method, the chromosome number was found as 2n=52. In V-797 genotype, mitosis was abnormal and the metaphase revealed 52 chromosomes including univalents, bivalent eticulativalemts.

Custard apple

- ◆ Total 403 new crosses were attempted in custard apple taking five combinations viz.,

A. atimoya X *A. reticulata*, *A. reticulata* X *A. atimoya*, *A. reticulata* X *A. cherimoya*, *A. reticulata* X Balanagar (*A. squamosa*), Balanagar (*A. squamosa*) X *A. reticulata* and Red (*A. squamosa*) X *A. reticulata*.

- ◆ Total 14 interspecific hybrids and their parents have been analyzed through the morphological and physiological character viz., fruit weight, fruit pulp weight, seed weight and number of seeds per fruit. According to quantitative character, entry B-8 showed promising performance in terms of bearing. This entry produced maximum number of fruits (181).

Castor

- ◆ The female line (SKP-84) of castor hybrid GCH-7, variety GAC-11 and cultivated genotype of jatropha were used as parents for intergeneric hybridization. All the lines of castor and Jatropha were grown at the farm under net house. The male flowers from castor plant were eliminated every day, if found on the plant to avoid any chance of pollination with the castor pollen.
- ◆ After the 7-10 days of pollination the ovule were kept for embryo rescue but none of the ovule further germinated. There were few seeds obtained through hand pollination were kept for the germination but, later found to be untrue crosses.

Germplasm collection

Germplasm collection of different crops was done from Anand district's different nursery [Citrus (Malta & Mosambi), Guava, Mango, Sapota, Custard Apple and Jasud plants



Germplasm collection by “Research Centre for Distant Hybridization in Field and Fruit crops” under department of Agril. Biotechnology (2020-21)

Tissue culture work carried out during the year 2020-21 is summarized below:

- ◆ Optimization of tissue culture protocol in Oil palm (*Elaeis guineensis*)
- ◆ Development of micropropagation protocol for large scale multiplication of Guava (*Psidium guajava* L.)
- ◆ Studies on anther culture in tomato (*Solanum lycopersicum* L.)
- ◆ Development of gender specific SCAR (Sequence Characterized Amplified Region) marker in date palm.
- ◆ Development of regeneration protocol for large scale production of Coconut (*Cocos nucifera* L.).
- ◆ Refinement of date palm micropropagation protocol for early callus induction and for other stages.
- ◆ Technology development for micropropagation of Indian sandalwood (*Santalum album* L.).

- ◆ Technology development for mass multiplication using tissue culture and sex determination using molecular markers in papaya.
- ◆ Development of cell lines resistant to Alternaria blight (*Alternaria burnsii* var. *cumini*) of cumin (*Cuminum cyminum* L.) using in vitro techniques.

Nanotechnology

Nanotechnology is a quickly rising invigorating multidisciplinary field of science, endowed with several potentialities and multiple applications. Nanotechnology has emerged as a technological advancement that could develop and transform the entire agri-food sector, with the potential to increase agricultural productivity, food security and economic growth for industries. The development of nanobiotechnology provides a novel method and protocol for life science. Nanoparticles as gene carriers become popular in the mammalian cultured cells, whereas its application in plant cells is still very limited. Minimizing the evaporation of soil water by using special matrix based material which will retain the water inside the soil and also do not interfering with the other physiological activity forming a permeable membrane. The water loss due to transpiration can also be minimize using such biological activity permeable membrane. Formulating novel nanoparticle hybrid materials to control spoilage-related microflora can significantly have decreased the loss due to spoilage generally take place during long distance transportations of nutritive goods.

Nanotechnology work carried out during the year 2020-21 summarized below:

- ◆ Green synthesis of metallic nanoparticles and their antimicrobial activity against plant pathogens.
- ◆ Synthesis and characterization of hydroxyapatite nanoparticles and its potential applications as phosphorous fertilizers.
- ◆ Characterization of zinc and iron oxide nanoparticles and its effect on artificially aged soybean seeds.
- ◆ Synthesis and characterization of sulphur nanoparticles and study of its anti-fungal activity against phytopathogens.
- ◆ Evaluation of efficacy of zinc nanoparticles for its enhancement of growth of groundnut crop.
- ◆ Stabilization and characterization of Multiwalled Carbon Nanotubes (MWCNTs) and its effects on maize, tomato, Soybean seeds.
- ◆ Green synthesis of silver nanoparticles and assessment of its anti-fungal activity against early blight disease causing *Alternaria solani* in tomato
- ◆ Synthesis, stability analysis of nano-thymol and evaluation of its anti-microbial activity for development of axenic cultures in black ginger, date palm and tobacco.

4.6 PLANNING AND MONITORING

Planning and development committee was constituted as per Common Statutes for Agricultural University of Gujarat, 2011 under section-III of statutes No. 48 to 51.

Agricultural Research and Education:

- ◆ The financial provision proposed by project-in-charge was scrutinized, compiled and prepared plan budget. This budget proposal was put up in planning and development Committee, Finance committee and Board of Management. Thereafter, it was submitted to Government of Gujarat for provision in budget for the year 2020-21.
- ◆ A provision plan of ₹ 7519.73 Lakhs was approved by Government of Gujarat for Agricultural Research and Education whereas, revised budget of ₹ 7263.49 Lakhs was approved and released the grant accordingly by state Government during the year 2020-21. The detail provision of plan projects is as follow.

Head	Provision (₹ In Lakhs)	Revised Provision (₹ In Lakhs)
Education	4184.88	4039.88
Extension Education	431.61	343.60
Research	2903.24	2880.01
Total	7519.73	7263.49

- ◆ A correspondence review meetings were conducted in July 2020, February, 2021 and March, 2021 with concern scheme-in-charge. After that, grant was reallocated as per the demand, utility and availability of fund for in the project.
- ◆ Monthly, quarterly and annual progress reports of plan schemes were prepared and submitted to Government of Gujarat.
- ◆ Liasoning work for Legislative Assembly Question (LAQ), Rajysabha Starred Question (RSQ) and Loksabha Starred Question (LSQ) raised during the year were taken up.

Indian council of Agricultural Research (ICAR) Development Grant:

“Strengthening and Development of Agricultural Education in SAUs

- ◆ The demand of ₹ 858.03 Lakhs for “Strengthening and Development of Agricultural Education in SAUs” was submitted to the Indian Council of Agricultural Research (ICAR) after scrutinized the demand received from the University Officers and Principal/Deans of the different Colleges.
- ◆ The grant of ₹ 1,46,36,298/- was released by the ICAR for “Strengthening and Development of Higher Agricultural Education in India”.
- ◆ Annual Progress Report of ICAR Development Grant for the year 2020-21 were uploaded on ICAR portal as per the activities carried out during the year.
- ◆ Review meeting for progress of ICAR Development grant were conducted in November, 2020 and February, 2021 during the year 2020-21.

“Student READY”

- ◆ The demand of ₹ 63.63 Lakhs for “Student READY” was uploaded in the educational portal of Indian Council of Agricultural Research (ICAR) as per the demand received from Dean’s of various faculties. The grant of ₹ 63.63 lakhs was released by ICAR for “Student READY”. Annual Utilization Certificate (AUC) of said grant was also uploaded in the portal of ICAR, New Delhi for the financial year 2020-21.

“National Talent Scholarship”

- ◆ The demand of ₹ 62.37 Lakhs for “National

Talent Scholarship” was uploaded in the portal of Indian Council of Agricultural Research (ICAR) as per the demand received from Director of Student Welfare. The grant of ₹ 62.37 lakhs was released by ICAR for “National Talent Scholarship”. Annual Utilization Certificate (AUC) of said grant was uploaded in the portal of ICAR, New Delhi for the financial year 2020-21.

“ICAR- PG Scholarship”

- ◆ The demand of ₹ 33.24 Lakh for “ICAR-PG Scholarship” were uploaded in the portal of Indian Council of Agriculture Research (ICAR) as per the demand received from the Comptroller. The grant of ₹ 33.24 Lakhs was released by ICAR for “ICAR PG Scholarship” Annual Utilization certificate (AUC) of said grant was uploaded in the portal of ICAR, New Delhi for the financial year 2020-21.

“ICAR- JRF/SRF”

- ◆ The demand of ₹ 80.76 Lakh for “ICAR-JRF/SRF” were uploaded in the portal of Indian Council of Agriculture Research (ICAR) as per the demand received from the Comptroller. The grant of ₹ 80.76 Lakhs was released by ICAR for “ICAR- JRF/SRF” Annual Utilization certificate (AUC) of said grant was uploaded in the portal of ICAR, New Delhi for the financial year 2020-21.

“ICAR- Fellowship/Internship for Veterinary Graduates”

- ◆ The demand of ₹ 14.04 Lakh for “ICAR-Fellowship/Internship for Veterinary Graduates” were uploaded in the portal of Indian Council of Agriculture Research (ICAR) as per the demand received from Principal and Dean, College of Veterinary

Science & Animal Husbandry, AAU, Anand. The grant of ₹ 14.04 Lakhs was released by ICAR for “ICAR- Fellowship/Internship for Veterinary Graduates” Annual Utilization certificate (AUC) of said grant was uploaded in the portal of ICAR, New Delhi for the financial year 2020-21.

4.7 WATER TECHNOLOGY

Considering the importance of irrigation in Agriculture, Agricultural Research Station for irrigated crops, Thasra, conducted some experiments as listed below:

- ◆ **Nitrogen management in Tomato (*Lycopersicon esculentum* L.) under drip irrigation system in goradu soil of Middle Gujarat conditions**

Significantly higher no. of fruits and weight of fruits (47.5 and 85.8 g, respectively) were recorded in treatment I₃ (1.0 PEF) but it was at par with treatment I₂ (0.8 PEF). Treatment I₂ (0.8 PEF) being at par with treatment I₃ (1.0 PEF) recorded higher tomato fruit yield. Significantly higher no. of fruits, weight of fruits and fruit yield of tomato yield (47.6, 84.2 g and 40007 kg/ha, respectively) were recorded in treatment N₁ (100% RDN) but it was at par with treatment N₂ (80% RDN).

- ◆ **Efficacy of fertigation on yield, chemical composition and nutrients availability in root zone of cabbage**

Treatment T₂ (75% WS 19-19-19 + remaining N through Urea) recorded significantly higher head weight (1.15 g) which was at par with treatments T₃ and T₄. Significantly the highest weight of leaves was recorded in treatment T₁.

Treatment T₂ (75% WS 17-44-00 + remaining N & K through Urea & MOP,

respectively) being at par with treatments T₃ and T₁ recorded significantly higher cabbage head yield (30324 kg/ha) over treatment T₅.

- ◆ Extension and demonstration schemes for irrigation funded by Sardar Sarovar Narmada Nigam Limited at sub center of Anand Agricultural University viz. Thasra, Dhandhuka, Dabhoi and Khandha, organized 57 training programmes on campus and off campus on the subject of irrigation scheduling, method of irrigation and related aspects. In all 1792 farmers attended the training programme.

4.8 AGRICULTURAL RURAL DEVELOPMENT STUDIES

Rural development programme revolves around raising economic and social level of the rural people as the main objective.

Research in context with the above said objectives can throw some light in the direction of bringing rural development. Keeping this in view, research in extension education was conducted in the broad areas of: Adoption and diffusion of innovations, transfer of technology, role of mass media in dissemination of technology, impact of different programmes and centres on rural development, communication behavior of rural people/farmers, bench mark surveys etc.

4.9 AGRI-BUSINESS DEVELOPMENT ---NA---

4.10 VETERINARY SCIENCE AND ANIMAL HUSBANDRY

Research endeavor of various research projects under Veterinary Science & Animal Husbandry faculty has focused on two broad

areas viz. Animal Production and Animal Health.

Animal Production Group

Animal Genetics & Breeding:

The department is known at national level for its contribution in molecular characterization of indigenous livestock breeds. The department is actively engaged since 1995 in molecular analysis of various livestock species by microsatellite and SNP genotyping and its association with the milk production and reproduction traits related to fertility and infertility.

As per the request from Department Animal Husbandry, Gujarat State (Gujarat Livestock Development Board), Co-operative dairies (AMUL, Dudhsagar, Banas dairies), NGOs and progressive farmers, the department is doing cytogenetic screening for chromosomal aberration, molecular screening of breeding bulls for genetic diseases viz. BLAD, Bovine Citrulinaemia, DUMP, CVM and Factor XI deficiency and also doing A1A2 genotyping using PCR-RFLP.

Work carried out during the year 2019-20

- ◆ 35 animals (21 cattle/bulls + 14 buffalo/calves/buffalo bulls) including breeding bulls screened through chromosomal analysis (Karyotyping).
- ◆ A total of 140 blood samples (including cattle, bulls, buffalo, buffalo bulls) of indigenous as well as crossbreds screened for genetic defects (BLAD, Citrulinaemia, Factor – XI, DUMP and CVM).
- ◆ Carried out A1A2 screening for 193 samples of Gir and Kankrej cattle.

Department of Animal Biotechnology,

Department of Animal Biotechnology, College of Veterinary Science and Animal Husbandry, AAU, Anand has carried our research work under following area;

- ◆ Evaluation of carbohydrate active enzymes obtained from rumen through metagenomic analysis
- ◆ One Health Poultry Hub
- ◆ Assessing the effect of Herbal material/compounds on semen quality with respect to percentage motility and viability of X- and Y-bearing spermatozoa
- ◆ Identification of “Molecular Portraits” in Squamous Cell Carcinoma of Horn in Kankrej (Bos indicus) Bullocks.
- ◆ Functional metagenomics of camel rumen microbiome for novel key glycoside hydrolases (GH) to benefit animal nutrition and biofuels
- ◆ Microsatellite and SNP Genotyping of elite Gir animals of Gujarat

Poultry Research Station:

Poultry Research Station was established during the year 1964 under Institute of Agriculture. Since then the centre is actively engaged in Poultry Research, Extension and Education activities. Apart from this the centre is having poultry feed manufacturing unit which caters the need of experimental feed required for Anand centre. The centre is also imparting Poultry Training to unemployed youth for self employment. Poultry training centre is conducting three courses of 10 weeks duration in a year starting from first Monday of July, October & January. Since 1978 the activities of the

research station have increased tremendously on account of establishment of ICAR project on AICRP on Poultry Breeding. Now, the centre is able to cater the need of the poultry farmers of Gujarat State on various aspects of poultry farming through Poultry Training Centre, correspondence and advisory services provided to the farmers when they visit to the centre. The research station is also providing facilities and technical guidance for under graduate & post graduate students of various departments of the college and other Agricultural University of the State.

Following research work was carried out during the year

- ◆ Evaluation of physical and economical characteristics of inbred stock of native chicken (Concluded).
- ◆ Optimization of dietary energy and protein level of native chicken of North Gujarat (*Aravali*) (Continued).
- ◆ Optimization of dietary protein and energy level of Ankaleshwar breed of chicken.
- ◆ Determination of optimum body weight at housing (16 week) of native chicken of North Gujarat (*Aravali*) for obtaining maximum production performance.

Reproductive Biology Research Unit:

The Reproductive Biology Research Unit, College of Veterinary Science and Animal Husbandry, Anand carried out research on farm animal reproduction through the following schemes.

- ◆ Reproductive Biology Research Unit, Non-Plan Scheme (B.H.5311)
- ◆ Research in Embryo Transfer in Buffaloes, Plan Scheme (B.H.12303-6)

- ◆ Strengthening of Reproductive Biology Research Unit, Plan Scheme (B.H.12303-10)
- ◆ *Mahila Pashupalan Talim Yojna*, Other Agency, GCMMF, Anand (B.H.18284).
- ◆ *Surti Buffalo Breeders Association*, Dept. of A.H., Govt. of Gujarat, (BH 18095)

The work carried out at *R. B. R. Unit, non-plan* scheme was pertaining to maintaining buffaloes under optimum management and nutritional status during year 2020-21

- ◆ In the *embryo transfer project*, research work on capacitation of spermatozoa using different additives in media, was carried out to reduce effect of cryocapacitation.
- ◆ In second experiment, all the biochemical, hormonal and protein fractions of uterine fluid/ secretions collected from slaughtered buffaloes, during different stages of estrous cycle and anestrus condition were studied and reported.
- ◆ In the *Strengthening of RBR unit* scheme, work regarding study on effect of bypass fat on production and reproductive performance of post-partum Surti buffaloes found beneficial effects. It also improves post-partum reproductive performance of buffaloes.
- ◆ In second study, effect of time and days post-breeding, effect of season and effect of technique (RIA vs ELISA) on milk progesterone level for early early pregnancy diagnosis in buffaloes under farm and field conditions.
- ◆ Another research experiment on the effect of feeding bypass fat and protein on age of maturity in Surti buffalo heifers is in progress.

- ◆ Study on effect on production and reproduction performance of Surti buffalo around parturition due to feeding of bypass protein will be initiated.
- ◆ Assessment of viability of oocyte by *IVM* rate on frozen –thawed oocytes by two different methods: Slow cooling vs. vitrification will be carried out.
- ◆ Under “*Mahila Pashupalan Talim Yojna*”, one-week residential training programmes were not conducted because of Covid-19 pandemic.
- ◆ Effect of feeding Ashwagandha and Shatavari roots on growth of Surti kids
- ◆ Methane mitigation in Lactating Crossbred cow under different feeding regimes
- ◆ Methane mitigation by dietary interventions and its effect on growth performance of buffalo calves
- ◆ Dietary interventions for designer milk production in dairy cattle
- ◆ Replacement of maize with wheat on performance of broilers

Animal Nutrition Research Station

The major research areas of the center are: Animal Nutrition Survey in different districts of Gujarat state, fodder production and utilization, nutrient requirements of animals, utilization of agro-industrial byproducts and waste materials, studies on evolving area specific mineral mixtures and strategies for feeding of livestock during scarcity period.

Currently the department is engaged in research work on formulation and evaluation of crop residue based total mixed rations for various categories of livestock, development of area specific mineral mixtures to correct deficiencies and Bypass Nutrient Technology, estimation of methane production and to develop feeding strategies for mitigation of methane emission in ruminants and to develop the feeding strategies to minimize the effect of heat stress in animals.

The work carried out during the year 2020-21 includes

- ◆ Effect of supplementation of Solid State Fermentation (SSF) Biomass on growth performance of crossbred heifers
- ◆ Effect of feeding *Moringa oleifera* leaves on digestibility in adult cattle
- ◆ Study on effect of different sources of Zn on performance of growing crossbred calves
- ◆ Analysis of Macro and Micro Mineral Content in Mineral Mixture marketed by different Companies
- ◆ Assessment of Quality of Compound Cattle Feed (Proximate Analysis) available in Market

Pashupalan Sanshodhan Kendra, Ramna Muvada & Kapila Gou Sanshodhan Kendra, Minawada

Pashupalan Sanshodhan Kendra, Ramna Muvada was established in the year 2011 with the objective of “Conservation & Development of Surti and Marwari breed of goats” and “Establishment of Demonstration and Research Farm of Surti buffaloes at Ramna Muvada”. The centre is located about 50 km away from Anand at Mahudha-Kathlal Road having 20 hectares of land. Pashupalan Sanshodhan Kendra, Ramna Muvada is having one non-plan and two plan projects. Various activities like research on

goat reproduction and silvipasture system, management of goats, seed production of kharif and rabi crops, green and dry fodder production etc. are carried out at this centre.

Kapila Gau Sanshodhan Kendra, Minawada was established in the year 2011 with the main objective of “Establishment of Nuclear herd of Kankrej cattle at Minawada”. It is located in Village Minawada which is about 50 km away from Anand having 43.22 ha of land. This station is having a project on Research on Silvipasture System and forage crops. Various activities like research on silvipasture system, *kharif* and *rabi* crops seed production, green and dry fodder production etc. are carried out at this centre.

Pashupalan Sanshodhan Kendra, Ramna Muvada

Following study was undertaken during the year

- ◆ **Study on applied reproduction in Surti and Marwari goats of Gujarat state**

During the year, around 300 goats of Surti and 15 goats of Marwari breed were maintained at the center. Seed and fodder production was undertaken a total of 7.64 ha land.

- ◆ **Kapila Gau Sanshodhan Kendra, Minawada has one project entitled**

- ◆ **Research on silvipasture system and forage crops.**

During the year, seed and fodder production was undertaken. A total of 14.6 hector land was cultivated. One research experiment entitled as “Preliminary Yield Trial in Forage Maize” was carried out at the centre.

Livestock Research Station:

Livestock Research Station, CVSc & AH,

Anand working on to develop crossbred dairy herd with 75% HF and 25% Kankrej inheritance, management problems of such crossbred, to generate reliable data and to supply superior genetic materials to breeding agency. Introduction of mechanization on dairy farm, Conservation and improvement of Kankrej cattle along with innate immunity, disease resistance and to identify β - casein variant (A1 & A2) in indigenous cattle of Gujarat are major area of work. Control of TB and JD diseases, adaptation of indigenous cattle to pipeline milking machine, development of mechanized dairy farm with new scheme “Mechanized dairy cattle breeding farm” under Rashtriya Krishi Vikas Yojna are salient activities of LRS.

Animal Health Group

Veterinary Parasitology:

Following work was carried out during the year

- (a) To know the important parasitic diseases prevalent in the State and to find out suitable control measures.
- (b) To provide diagnostic services to Field Veterinarians, Livestock Owners, Organized and Private farms, etc.
- (c) To assess various chemotherapeutic drugs against common parasitic diseases of livestock.

As per the Objective of the Scheme, Faecal samples/Blood Smears/Skin Scrapings /P.M. Materials/ Gross Specimens and other samples (*viz.* nasal discharge, urine samples etc.) received in the Department were processed and examined as per the Standard Procedures. In addition to this the Department provides diagnostic services to the Farmers,

Animal Owners, Field Veterinarians and Other Agencies

A total of 5318 samples have been examined. This included 1209 blood smears, 129 skin scrapings, 3884 faecal samples, 77 intestines with intestinal contents of goat, poultry and other animals as well 19 others. A total of 3996 faecal samples were received from the University Farms, Departments, Hospitals, Gaushalas, Field and from zoo and other Agencies, 862 were positive for parasitic infection.

A total of 195 faecal samples of captive wild animals and birds were received from Sayajibaug Zoo, Vadodara out of which in 16 faecal samples showed parasitic infections viz. Ova of *Ancylostoma* spp. 3 (3.61%), *Trichuris* spp. 1 (1.20%), Trichostrongyliid group 1 (1.20%), *Ascaridia galli* 1 (1.20%), *Oxyurid* spp. 1 (1.20%), *Spirometra* spp. 1 (1.20%) and Coccidia 8 (9.64%),

A total of 146 faecal samples of captive wild animals and birds were received from Rajkot Zoological Park, Rajkot out of which in 18 faecal samples showed parasitic infections viz. Ova of *Ancylostoma* spp. 2 (1.37%), Trichostrongyliid group 3 (0.68%), *Toxocara* spp. 2 (1.37%), *Spirometra* spp. 1 (10.27%), Cyst of ciliates 7 (4.79%) and Coccidia 5 (9.59%).

Department of Veterinary Microbiology

The following research work was carried out under three AAU funded Research Schemes viz., Central Disease Research Station (Bacterial), Diagnostic Centre for Mastitis and Research Centre for Viral Diseases and two other reschemes. a total of 407 samples comprised 392 for bacterial, 14 for mastitis and one for viral infection diagnosis. For

cultural isolation, 31 microbial isolates were obtained and their antibiogram was determined and staphylococci were predominant bacteria isolated while among 11 culturally positive milk samples staphylococci (6) and streptococci (5) could be isolated.

- ◆ **DBT Network programme on bovine tuberculosis control: Mycobacterial diseases in animals Network (MyDAN) programme**

During the period a total of 624 animals including 448 cattle's and 176 buffaloes of various districts were screened by Single Intra-dermal Comparative Cervical Tuberculin Test (SICCT) and 0.85% (5/624) animals found to be positive for bovine tuberculosis. Comparative study on SICCT selected 40 animal's revealed 20.00% (8/40) and 23 57.50% (23/40) positive by lateral flow assay and PCR respectively for bovine tuberculosis.

- ◆ **Pharmacokinetics of phage therapy: A step forward in the treatment of subclinical mastitis in Gir cattle**

During the period, IAEC permission was taken for 9 Gir cows (IAEC 32nd meeting project No. 325/VMC/2020). After receiving the phage lysate with herbal extract gel (in December) from Saurashtra University, Rajkot, the 9 Gir cows were screened for subclinical mastitis and were grouped into 3 groups viz. healthy group, diseased group and treatment group.

Veterinary Medicine

Work carried out during year 2020-21:

- ◆ During period of 2020-21, research work on bovine brucellosis was carried out by

i-ELISA test out of 180 samples, 4 (2.22%) samples were positive for brucellosis.

- ◆ Research work on etiological factors and haemato-biochemical changes associated with vomition in dogs were studied. Total 77 dogs were selected for study.
- ◆ The sex wise, incidence of the vomition was more in male (61.04%) than the female (38.96%).
- ◆ The breed wise, incidence of the vomition was more in Mongrel (25.97%) followed by Labrador Retriever (20.78%), German shepherd (12.99%), Spitz (10.39%), Doberman (9.09%), Pug (6.49%), Rottweiler (6.49%), Grate Dane (3.90%), Beagle (2.60%) and Lasa Aphso (1.30%).
- ◆ The age wise, incidence of the vomition was more in less than 1-year age group (49.35%) followed by 1 to 3 year age group (22.08%), 4 to 9 year age group (16.88%) and more than 9 year age group (11.69%).
- ◆ Research work on prevalence of gastrointestinal parasite was carried out. A total of 47 faecal samples of goats were found positive for helminthic infection out of 102 faecal samples collected.
- ◆ Research work on Impact of climate on epidemiology of major important diseases of cattle and buffalo in middle Gujarat was carried out. The blood samples were collected from 53 crossbreds cows. Out of 53 crossbred cows, 28 cows were positive for *Theileria spp.* on thin blood smear examination. A total 733 serum sample were collected for seroprevalence of CCHF in bovine. Serum samples were analyzed by indirect ELISA. Out of 733 samples, 106 samples were positive for CCHF. The epidemiological

data shows the majority of animal had CCHF in fair body condition score (76.41%) than good body condition score (23.59%) and no animals were found positive having poor body condition score. The CCHF was found positive in 89.62 per cent (95/106) and 10.38 per cent (11/106) animals kept in loose housing and conventional housing system, respectively.

Livestock Production Management

Department of Livestock Production Management is one of the Animal Sciences departments of Veterinary College. This department is primarily involved in undergraduate and post graduate teaching. Since its inception, offers undergraduate and post graduate courses at Veterinary College as well as other colleges of this university. Presently this department offers five undergraduate courses (including one course from Department of Veterinary Pathology and two courses from Department of Veterinary Medicine in collaboration) and twenty five post-graduate courses of Livestock Production Management. Along with teaching this department is also involved in research and extension activities. Livestock Farm Complex (LFC) is the part of this department where students get intensive skill oriented practical training apart from theory classes. This department is pioneer in India in the establishment of Livestock Farm Complex (previously known as Instructional Livestock Farm Complex) with the financial assistance from ICAR for imparting practical training to students. The farm has different livestock species and breeds viz; (a) Cattle unit (Kankrej, Gir, Sahiwal, Tharparkar, Rathi & HF x Kankrej crossbred) (b) Sheep unit (Marwari, Patanwadi, Dumma, Deccani,

Avikalin, Magra and Merino x Patanwadi crossbred) (c) Goat unit (Zalawadi, Kutchhi, Sangamneri & Surti) (d) Equine unit (Kathiawadi horses) (e) Rabbit & guinea pig unit. (f). Fodder production unit with 11 hectares of land. The LFC generates a sizeable income of 14 to 15 lacks per annum. Along with UG & PG teaching this department is involved in research activities. The department is also involved in publication of the research outcomes and other publications for scientific and farming community. Total 76 M. V. Sc. & 26 Ph.D. degree awarded under the umbrella of this department.

Veterinary Public Health:

Work carried out during year 2020-21:

- ◆ During the period under report, a total of 250 samples were processed in the department comprising of 75 Chicken meat, 75 Chevon meat and 110 commercial probiotic products. Analysis of 150 meat samples was done to study the prevalence of *Escherichia coli*, *Salmonella* spp., *Campylobacter* spp., and *Shigella* spp., while 110 commercial probiotic products were analysed for presence of *Lactobacillus* spp. by employing standard microbiological and molecular techniques.
- ◆ Chicken meat and chevon samples were collected from local meat vendors and multiplex PCR was conducted upon to simultaneously find out the presence of *Escherichia coli*, *Salmonella* spp., *Campylobacter* spp. and *Shigella* spp. Out of 75 screened chicken meat samples, 20 (26.67%) samples were found to have *E. coli*. Out of 75 chevon samples, 16 (21.33%) showed presence of *E. coli*, 4 (5.33%) samples were positive for *Salmonella* spp.

and 2 (2.67%) sample was positive for *Shigella* spp.

- ◆ The presence of *Lactobacillus* spp. was studied by standard microbial and molecular techniques. 110 commercial probiotic products of various types were obtained from local shops in and around Anand.

Veterinary Pharmacology & Toxicology:

To conduct research on following areas

- ◆ Indigenous medicinal plants
- ◆ Toxicology of xenobiotics
- ◆ Pharmacokinetics of drugs
- ◆ To provide guidance and information to field veterinarians.
- ◆ The study was conducted to evaluate safety of cinnamon oil (*Cinnamomum zeylanicum*) in male and female Wistar rats. Forty Wistar rats divided into eight groups, each group contains 5 males and 5 females. Group I & V served as vehicle control for male and female, respectively. Cinnamon oil was administered orally at dose of 50, 100 and 200 mg/kg once daily for 28 days in male rats of group II, III and IV as well as in female rats of group VI, VII and VIII, respectively. No significant difference was observed in body weight and feed consumption in cinnamon oil treated male and female rats as compared to control rats. No significant changes have been observed in hematology parameters like Hb, RBCs, PCV, TLCs, MCV, MCH and MCHC as well as no significant changes were observed in serum creatinine, BUN, bilirubin, AST, ALT, total cholesterol, total protein and albumin in cinnamon oil treated male rats of group II, III and IV and in female rats of group VI, VII and VIII as compared

to male and female control rats, respectively. Histopathology of kidney, liver, spleen and heart from cinnamon oil treated male and female rats did not show any marked gross or histopathological changes. Results of the present study suggest that cinnamon oil was found safe following repeated oral administration @ 50,10 and 200 mg/kg b.wt. for 28 days in male and female Wistar rats.

- ◆ Study on Pharmacokinetic – Pharmacodynamic (PK-PD) integration of cefpirome in sheep was carried out. Cefpirome is a fourth generation cephalosporin antibacterial drug. MIC of cefpirome was determined against bacteria viz. *Staphylococcus aureus* (MTCC 737), *Methicillin Resistant Staphylococcus aureus*, *Escherichia coli* (MTCC 1687), *Listeria monocytogenus* (MTCC 657), *Salmonella enterica serovar paratyphi* (MTCC 735) and *Bacillus cereus* (MTCC 1272) using micro-broth dilution technique. Result showed that, out of six organisms tested viz. *Staphylococcus aureus* (MTCC 737), *Escherichia coli* (MTCC 1687), *Salmonella enterica serovar paratyphi* (MTCC 735) and *Bacillus cereus* (MTCC 1272) were found to be susceptible to cefpirome with Minimum Inhibitory Concentration of 0.06, 0.12, 0.5 and 1.0 µg/mL, respectively whereas *Methicillin Resistant Staphylococcus aureus* and *Listeria monocytogenus* (MTCC 657) were found resistant to cefpirome.

Department of Animal Reproduction, Gynaecology and Obstetrics

Work carried out during year 2020-21

- ◆ Under Cattle Infertility Scheme, total of 72 cases were attended at College Clinic;

comprising of inseminations 21; RHC 40 cases and Pregnancy Diagnosis 17 cases. In other species, numbers of obstetrical/genital infection cases as well as pregnancy diagnosis were 271 and 195, respectively. The portable USG Unit was used for diagnosis of early pregnancy in cattle and buffaloes as well as for diagnosis of pregnancy/pseudo-pregnancy/pyometra in canine/goat/mares with the total of 260 cases examined. At 03 different clinical camps organized under AICRP SCSP, a total of 232 cases of infertility were diagnosed and treated/managed suitably. The findings on breeding behaviour of 124 pet canines including vaginal cytology and genital microbiology of some animals has been reported. Oocytes recovery rate, cleavage rate and thus number of embryos produced per OPU was significantly higher in HFCEB donors than Gir and Sahiwal. The cumulus present in grade 1 and 2 oocytes co-incubated with grade 3 and 4 oocytes provided the required growth factor and supported maturation of grade 3 and 4 oocytes. Cleavage rate and embryo production rate were lower in sex sorted semen as compared to conventional semen in both zebu and crossbred cattle.

- ◆ Under the scheme Imparting Education on Semenology & Frozen Semen Technology to the Students and Field Veterinarians, 09 healthy adult (4 Gir; 2 Surti and 3 Murrah buffalo) bulls were maintained. A total of 555 semen ejaculates were obtained from these bulls. Weekly 4 ejaculates of Gir bulls (One/bull) were supplied to Animal Biotechnology Dept for Semen Sexing project work of ICAR. Freezing of semen was carried out for research and demonstration purpose to

UG/PG students and trainees. The selected ejaculates were cryopreserved at ultralow temperature using split-sample technique in standard Tris fructose egg yolk glycerol extender without and with Mifepristone (RU-486) 10 µg/ml (Sigma-Aldrich, USA), Sericin (silkworm protein) 5 mg/ml (Sigma-Aldrich, USA) and Taurine 4 mg/ml (CDHL, New Delhi) as cryoprotectant capacitation inhibitor antioxidants. It revealed significantly improved sperm quality in respect of sperm motility, viability, HOS reactivity, and capacitation status through CTC assay of Gir and Murrah bulls semen with reduced oxidative stress (MDA, SOD, GPx levels), particularly in extender fortified with Mifepristone.

- ◆ Under AICRP on Nutritional and Physiological Interventions for Enhancing Reproductive Performance in Animals, for the year under report, the new research works approved include (i) nutritional management to advance age at puberty in HFxK crossbred weaned heifers and (ii) reducing inter-calving interval in Gir cows through peripartum nutritional management. Both these works have been initiated from September, 2020 and would be completed and compiled in 2021-22. As a new technical program, Kisspeptin did not show significant advantage over GnRH in modulating ovarian dynamics, endocrine profile and fertility in Surti buffalo.

Veterinary clinical complex

- ◆ To provide facility and assist for conduct research on following areas
- ◆ Various skin problems in pets

- ◆ Study related to Anemia in dog
- ◆ Other departmental collaboration
- ◆ To provide guidance and information to field veterinarians.
- ◆ The department of Veterinary Clinical Complex (VCC) serves all three objectives of our university like Education, Research and Extension. The Department with the available manpower has always thrived well to impart excellent practical aspect teaching in the discipline of Veterinary Medicine, Veterinary Surgery and Veterinary Gynecology and Obstetrics at UG and PG levels.
- ◆ Under the project Clinical Studies on affections of anal glands in dogs”
- ◆ During a year 2020-2021, total 15 dogs were screened for anal gland affections at Veterinary Clinical Complex, Anand.
- ◆ Observations recorded: as per the requirement of the project Due to COVID-19 pandemic lockdown, number of cases were very low and not sufficient for data analysis.
- ◆ Hence this project is further continuing for the next year

Veterinary Pathology

Following work carried out during the year

- ◆ Under Etiopathological studies on mortality in broilers. The scheme is aimed to identify the important prevailing diseases of broilers in the state as well as to provide guidelines to the poultry farmers for the prevention, treatment and control of diseases in broilers. During the year 2020, 2790 carcasses of broiler birds were received for the post

mortem diagnosis. These data were analyzed and major disease conditions recorded were Colisepticaemia, Low Pathogenic Avian Influenza and its concurrent infections with *E. coli* and Mycoplasma, Infectious Bursal Disease Mycotoxicosis, CCRD, Yolk sac infection, heat stroke and chilling.

- ◆ Carcass Collection Scheme During the year 2020, total 43 carcasses of animals and 1747 carcasses of layer type birds were received for post mortem examination. Disease conditions recorded were classified. During the year 304 tissue specimens from various parts of Gujarat state were received for histopathological diagnosis and the results were classified. It also provided useful material for undergraduate and postgraduate teaching for better understanding of the subject of Veterinary Pathology.

Veterinary Surgery and Radiology

- ◆ A total of **1935** major / minor surgical interventions / radiographic examinations/ Wild life/ emergency/ambulatory treatment were done in the Department of Surgery & Radiology. Three post graduate students completed their research work. 171 Surgical indoor cases were admitted for pre and post operative treatment and management at surgical indoor ward of Surgery Department. Camps and expertise services were provided to NGOs during Kite flying festival, farmers of different districts, A. H. Department, Forest department and Co-operative dairies as and when required.

Veterinary Physiology and Biochemistry:

- ◆ Since its inception with college, department offers eight under graduate and 27 post

graduate courses. This department is primarily involved in teaching, research and extension activities. This department is also engaged with analysis of various clinical samples coming from different villages of Anand district and also from college clinic and from dairy. Physiological, biochemical, hormonal and Hematological detail of animals evaluated.

Department of Veterinary Surgery and Radiology:

- ◆ Administration of Ketamine (25 mg/kg b.wt.) and Midazolam (0.5 mg/kg b.wt.) (KM) mixture intramuscularly, is recommended for induction of anaesthesia based on quality of anaesthesia produced in injured birds.
- ◆ Administration of Butorphanol (1.5 mg/kg) intramuscularly as premedication agent, is recommended for safer induction using inhalant anaesthetic agents Isoflurane and Sevoflurane in birds.
- ◆ Sevoflurane 5-7% for induction & 3-4% for maintenance has quick and smooth induction and recovery as compared to Isoflurane 3-4% for induction & 1-2% for maintenance anaesthesia in birds.

Veterinary and Animal Husbandry Extension Education:

- ◆ Department is engaged in imparting quality education to undergraduate and postgraduate students of college of veterinary science as per the VCI guidelines. It also undertakes area specific extension education based research for benefit of the regional farming community. Activities of transfer of livestock technology to livestock farming community are also carried out by the department.

4.11 DAIRY SCIENCE

Dairy Technology Department

The Dairy Technology department is involved in teaching undergraduate B.Tech. (Dairy Technology) students as well as PG courses in the subject of Dairy Technology and guiding M.Tech. (Dairy Technology) and Ph.D. (Dairying) students. The department submitted three recommendations at the 15th combined Agresco, meeting which was held at Anand from 29 April to May 1st, 2019 *viz.* Technology development for Moraiyo (*Panicum miliare*) Kheer, carrot rabdi and extended shelf life dietetic basundi. The dairy technology department has focused research on value addition to dairy products through use of fruits, vegetables and cereals and other functional ingredients and extension of shelf-life of dairy products.

The department also conducted analysis of milk and products on payment basis and provided technical assistance for manufacture of milk and milk products to industry as and when required. The department conducted trials for development of camel milk kulfi, goat milk Feta cheese and Camel and goat flavoured milk for Access Livelihoods Consulting India Limited, Hyderabad, Telangana, India. A one-day demonstration of the product recipes to the 30 members of pastoral community entrepreneurs was organized and generated revenue for the University through consultancy. The department involved in carrying out research projects funded by GOG through Plan schemes as well as for the departmental research *viz.* Development of Dairy Starter cultures and value added dairy products; Preparation of dairy/non dairy

analogue cheese of processed cheese and Mozzarella type and Enhancement of shelf life of indigenous milk products.

Output during the year 2020-21

- ◆ **Comparative appraisal of Mozzarella cheese analogues prepared using acid casein, rennet casein and their admixture**

Ingredients to prepare MCA were procured from several Companies, including milk protein ingredients. MCAs were prepared using the techniques standardized at GAU/AAU, Anand by scientists using formulation yielding MCAs with similar protein content. Chemical agents were prepared for analysis of the MCAs. The chemical composition and textural characteristics of MCAs prepared using varying casein types (rennet casein, acid casein and their admixture) were analyzed and interpreted.

- ◆ **Quality characteristics of Mozzarella cheese as influenced by dry plasticizing methods**

Preliminary trials were taken to evaluate the quality characteristics of Mozzarella cheese as influenced by selected dry plasticizing methods.

- ◆ **Development of technology for the manufacture of a protein enriched moringa fortified spread (PEMFS)**

Trials for development of a technology for preparing Moringa fortified spread were conducted.

- ◆ The base materials used in the mix formulation were Cheddar cheese, *chhana*, *chakka* and cream.

- ◆ Therefore four important factors *viz.* level of Cheddar cheese (parts) (A), *chhana* (parts)

(B), *chakka* (parts) (D) and MPP (per cent w/w of mix) (D) were utilized as variable factor for formulation of acceptable quality of PEMFS.

- ◆ The levels of Cheddar cheese (A) (35 to 42 parts), *channa* (B) (8 to 12 parts), *chakka* (C) (24 to 30 parts) and MPP (2.5 to 4.5) (per cent w/w of mix) were optimized using a central composite rotatable design (CCRD) consisting of 30 experiments and the results were compiled.
- ◆ **Development of technology for manufacture of low fat paneer**
- ◆ Trials for development of low-fat were conducted. Paneer was prepared according to method described by Aneja *et al.* (2002).
- ◆ Trials were conducted for selection of the level of fat in milk (1.0%, 1.5%, 2.0%, 2.5%, 3.0%) and optimizing certain processing parameters viz. coagulation temperature (70, 75, 80 °C) and strength of GDL (4.0%, 4.5%, 5%) for manufacture of reduced-fat paneer.
- ◆ Trials were also conducted for selection of level of WPC-70 (0.15% to 1.0%) for use in manufacture of low-fat paneer and to arrive at a refined formulation.

Dairy Chemistry Department

The Dairy Chemistry department is working on following main three research areas:

- ◆ **Developments of Methods for Detection of Adulterants in Milk and Milk Products.**

Existing qualitative tests were used for development of spectrophotometric methods for quantification of selected adulterant like urea, glucose, sucrose and starch in milk. Instead of milk, milk filtrate was used as a medium for performing the qualitative

test. Stable colour complex was observed when milk filtrate was used as a medium in qualitative test. Absorption maxima (λ_{max}) of the colour complex formed for urea, glucose, sucrose and starch were observed at 425 nm, 670 nm, 480 nm and 570 nm, respectively.

- ◆ **Evaluation of selected natural food additives for their suitability to enhance the quality of dairy products.**

Effect of selected spices on cholesterol level in ghee was evaluated. Black pepper, cardamom and ginger were able to lower down the cholesterol content of the ghee. Among the two stages (*i.e.* stage of addition), the maximum reduction in cholesterol content was observed when spices were added initially in melted butter (50°C) for ghee making.

- ◆ **Utilization of whey in dairy and food products**

Compatibility of different parts of *Moringa oleifera* in preparation of whey candy was checked. The *Moringa oleifera* pod powder was found compatible. The rate of *Moringa oleifera* pod powder in whey candy was optimized.

Dairy Microbiology Department

- ◆ Under the project “NRS on Equines including Veterinary Type Culture – Multi-centered (Sponsored by ICAR, New Delhi) National Collection of Veterinary Type Cultures (NCVTC)” 23 LAB isolates submitted to NDRI, Karnal has been assigned NCVTC accession numbers. Ten LAB isolates were studied for their functional aspects. Six LAB isolates have been characterized by 16SrRNA sequencing and submitted to NCBI.

- ◆ The GSBTM sponsored project titled “Bioprospecting of oxalate degrading lactic acid bacteria to develop a functional product with potential in preventing kidney stone disease” has been completed. The project work has resulted in following outcomes:
 - ◆ **Biosamples:** Lactic Acid bacteria (well characterized with accession numbers), LAB with probiotic potential
 - ◆ **Product:** Probiotic fermented milk enriched with barley having potential antiurolithiatic activity
 - ◆ **Process/Technology:** Technology for the preparation of probiotic fermented milk enriched with barley
- ◆ Under the DBT funded Twining project titled “Development of Technology for the preparation of Fermented Rice Beverage in Meghalaya and evaluation of its functional properties” third year objectives of the proposed work have been completed. Two Best poster awards has been awarded. Whole genome sequencing of two cultures *i.e. Lactobacillus fermentum* [Assembly ID: ASM1014v1] and *Lactobacillus rhamnosus* [Assembly ID: ASM401097v1] were carried out.
- ◆ The Dairy Microbiology Department is a partner in a collaborative project on Development of Technology for the preparation of Fermented Rice Beverage in Meghalaya and evaluation of its functional properties, DBT, GOI,. Research work carried out under this project has resulted in one recommendation for the scientific community.

Dairy Engineering Department

- ◆ Anand Agricultural University, Anand recommends process involving partial homogenization of market milk as it utilizes lower pressure and less energy with additional benefits of about 68% reduction in energy usage over use of conventional homogenization of milk.
- ◆ Anand Agricultural University, Anand recommends method for preparation of Ready-to-Reconstitute (RTR) coffee mix powder by drying the admixture of coffee decoction (70:30, Arabica: Robusta, 30 % TSS) and milk concentrate (30% TS) in the ratio of 1:5 (w/w) by vacuum tray drying method which has storage stability of 9 months at room temperature ($37 \pm 2^{\circ}\text{C}$) when packed in glass jar. Sensorial acceptable coffee beverage can be obtained on reconstitution of 25 g of such RTR coffee mix powder to 150 ml water.
- ◆ Dairy Industry and Entrepreneurs are recommended to adopt the solar based incubation room developed by Anand Agricultural University, Anand for incubation of fermented dairy products. The solar based incubation room having capacity of 100 crates (1200 litres) can work 24x7 with solar fraction of 0.81 to 1.00. The payback period of the air heating system is 3 years and 8 months.

New Research Project

- ◆ Process mechanization for production of *thabdi*
- ◆ Process mechanization for production of extended shelf life *khoa*
- ◆ Effect of heat treatment on the rheological parameters of cream with varying fat percentages

- ◆ In-container process development for extended shelf life *paneer*

4.12 ENGINEERING AND TECHNOLOGY

The six departments of the college, *i.e.*, Soil & Water Conservation Engineering (SWE), Farm Machinery & Power Engineering (FMPE), Renewable Energy Engineering (REE), Processing & Food Engineering (PFE), Irrigation & Drainage Engineering and Basic Engineering & Applied Sciences are working to develop site specific or area specific technologies for progressive farming with enhanced returns through efficient management & utilization of natural resources (land, water, vegetation and energy), agricultural mechanization, agricultural processing and post-harvest technology. During the year all the six departments carried out research work on different topics. Following implements/ technologies were developed by different departments.

- ◆ Development and evaluation of mini tractor operated strip till multi crop planter cum fertilizer applicator
- ◆ Development of battery operated cutter
- ◆ Design and development of tractor-drawn potato harvester with integrated cart elevator
- ◆ Development of electric motor operated maize cob dehusker
- ◆ Design and development of mini tractor drawn two row automatic potato planter cum fertilizer applicator
- ◆ Development of ro-procating sprayer for weedicides
- ◆ Development of rapid measurement system for angle of repose

- ◆ Evaluation & Modification of sun drying practices for maize cobs
- ◆ Development of perforated storage bin for garlic
- ◆ Optimization of Process Parameters for Protein Fortified Kesar Mango Leather
- ◆ Drying of beetroot (*Beta vulgaris* L.) and Tomatoes
- ◆ Monthly Forecasts of SPI and SPEI Drought Indices in Middle Gujarat
- ◆ Quality assessment of water samples (Pre and Post monsoon season) of open wells of CAET campus
- ◆ Development of web interface to analyze location specific rainfall data

Two following Patents were filed and published during the year 2020 - 2021

- ◆ Pneumatic seed metering device
- ◆ Apparatus and method for measuring angle of repose

4.13 FISHERIES SCIENCE

In order to create awareness among the farmers for adopting fish farming and to utilize available resources in a fruitful manner for generating employment opportunities in rural youths, a systematic full-fledged training cum demonstration centre can play a vital role in enhancement of fresh water fish production and therefore, to cover all the basic requirements of fish farming strengthening of training cum demonstration centre has been envisaged at KVK, AAU, Devataj with following objectives.

- ◆ To impart training on methods of site selection, fish pond construction and economics.

- ◆ To conduct demonstration on fresh water fish/prawn cultivation techniques.
- ◆ To organize training on Aquarium fish culture and breeding techniques.
- ◆ To impart the scientific technical knowledge on village tank fish culture through training.
- ◆ The trainings have been carried out at grass root level by identified fisheries thrust areas on the basis of Inland Fisheries Resources and fish production of middle Gujarat. It has been found out the needs of the training and encourage farmers for fish farming through Fish seed rearing at village tank, Carp breeding and hatchery management, Composite fish culture through village pond and Fresh water prawn culture management. Four training programmes were conducted in the subjects of Fish seed rearing, Composite fish culture in village pond and breeding of freshwater ornamental fishes in which total 130 farmers were trained.
- ◆ Under extension activities, celebration of National Fish farmers' Day, participation in Gosthi, one Exhibition, 27 field & diagnostic visits, 51 farmers visit to center, 3 Lectures delivered, 2 Press note and 86 Advisory Services have been carried out in this year.
- ◆ One research study on "Effect of maize feeding on growth and coloration of Molly fish, *Poecilia sphenops*" (Code Number-AP/KVK, Devataj/2019/01) was carried out. The study was carried out in glass aquariums of 30 cm x 30 cm x 30 cm size. 20 numbers of fishes were stock in each tank and a total experiment was conducted for 60 days. Four different feed was prepared from incorporating maize variety GAYMH 1 with one control. Periodical monitoring of growth

including morphometric index (weight and weight gain), survival rate and specific growth rate were recorded.

- ◆ The increase in weight of molly fed with different levels of maize variety GAYMH 1 was the highest in feed having 4% maize followed by 3% and the lowest was reported in feed having 0% maize. The initial weight of individual molly fishes was taken in all the experimental aquariums. Significantly highest weight gains were found in feed having 4% maize followed by 3% and the lowest in 0% maize. The average specific growth rate (SGR) of molly in in feed having 4% maize produced significantly ($P < 0.05$) the highest SGR, while the feed having 0% maize showed the lowest SGR.
- ◆ Higher retention of total carotenoids in molly fed with different levels of maize variety GAYMH 1 was found significant in feed having 4% maize while feed having 0% maize showed lower total carotenoids retention. The differences in total carotenoids retention among the treatments were found to be significant ($P < 0.05$).
- ◆ In conclusion, the results indicate that the molly fed with 4% maize (var. GAYMH-1) obtained a good growth rate and total carotenoids retention and thus it can be stated that the inclusion of 4% maize in feed can be optimal for enhancing coloration in molly.

4.14 HOME SCIENCE

Polytechnic in Food Science and Home Economics is actively involved in research work apart from teaching and extension. During the year, three ongoing research projects were carried out by the polytechnic as follows.

Ongoing projects

- ◆ Development of soya milk bread
- ◆ Assessment of eating attitude among AAU students residing in hostel

New projects

- ◆ Technology for development of unconventional cauliflower and beetroot leaves powder

OTHER AREAS / LABORATORIES

◆ Pesticide Residues

Following trials were conducted by Pesticide Residue Laboratory during the year 2020-21.

Work carried out during year 2020-21 (in brief)

I Other Agency Trials Routed Through ICAR

- Residue and persistence study of S-metolachlor 87.2 EC in soybean
- Residue and persistence study of tebuconazole 50% + trifloxystrobin 25% WG in green peas
- Residue and persistence study of propiconazole 10.7% + tricyclazole 34.2% in rice
- Residue and persistence study of cyantraniliprole 8% + diafenthiuron 40% w/w SC in okra
- Residue and persistence of fluopyram 200 g/L + tebuconazole 200 g/L (Luna experience) in rose
- Residue and persistence of beta-cyfluthrin 90 g/L + imidacloprid 210 g/L OD (Solomon) in cucumber
- Residue and persistence of fluopyram 400 g/L SC (Velum Prime) in chilli (1st season)
- Residue and persistence of fosetyl Al 80 % WP in banana
- Residue and persistence study of acephate 75 SP in cotton
- Residue and persistence study of tetraniliprole 200 g/L SC in maize

- Residue and persistence study of thiodicarb 75% WP in maize
- Residue and persistence study of flubendiamide 90 g/L + deltamethrin 60 g/L SC in maize
- Residue and persistence study of flupyramin 2% G in paddy
- Residue and persistence study of flupyramin 10% SC in paddy
- Residue and persistence study of mancozeb 75 WP in paddy

II. GAP Trials

- NIL -

III NABL activities (ISO/IEC 17025:2005): The NABL accreditation of the laboratory is granted up to 29-06-2021. Online application for the renewal of accreditation has been submitted with revised scope.

- Studies on the estimation of pesticide residues for agricultural commodities at Anand : Plan Project, Govt. of Gujarat
- Studies on pesticide residue analysis from food, feed, water and soil for food safety in Gujarat : Plan Project, Govt. of Gujarat
- Monitoring of pesticide residues at national level : Project Sponsored by Ministry of Agriculture & Family Welfare, Govt. of India
- Monitoring of surface and ground water for pesticide residues in the SSP command Phase-I area: Project Sponsored by SSNNL
- Monitoring of surface and ground water for pesticide residues in the SSP command Phase -II area: Project Sponsored by SSNNL

(B) Agril. Ornithology

Following research work was carried out in the project of Agril. Ornithology

- ◆ **Predation of insect pests by cattle egret in chickpea agroecosystem.**

Total 150 observations were recorded on prey

capture attempt by cattle egret from various crops grown in campus. Data were analyzed and success rate per minute were observed highest in cattle egrets foraging weed plot (4.75 strikes/min) followed by Sorghum (4.33 strikes/min). The success rate in Beet root, lucerne, musk melon crops was 4.00 strikes per minute.

- ◆ **Monitoring of bird population in wetlands of Gujarat.**

Waterfowl census was carried out on 16 important wetlands of Gujarat state in January- 2021. Total number of birds recoded from 16 sites was 206321 (Table). The birds numbers was recorded highest at Navatalav (100200 birds) followed by Wadhawana (32550 birds) and Vadala (30550). Navatalav was found important site supporting 48.57% of total birds recorded from 16 sites here.

- ◆ **Establishment of set-aside field for conservation of insectivorous birds**

The set-aside field was managed to enhance the bird activity primarily by promoting the native plant diversity. The avifaunal diversity in set-aside field was recorded during January 2020 to February 2021. The abundance of birds in set-aside filed was found fluctuating over the period. Highest abundance of birds was found on 3rd January 2020 and followed by 6th January 2020. The birds have responded to prey exposed through disturbance while agricultural operation *i.e.* irrigation, ploughing, weeding. Total 26 species of birds were recorded in set-aside field. The Rose-ringed Parakeet was found dominant in bird community with relative abundance 21.87 per cent; it was followed by Baya Weaver (14.38%) and Cattle egret (14.10%).

- ◆ **Assessment of Rose- Ringed Parakeet (*Psittacula krameri*) depredations to guava fruits**

The experiment on depredations of rose-ringed parakeet (*Psittacula krameri*) on guava in Horticulture farm, AAU, Anand was conducted during year 2020 and result is presented here. Total 44.49 mean number of birds was recorded in guava orchard during morning while it was recorded total 36.85 mean numbers of birds during evening. Difference in bird visitation during evening and morning period was found statistically significant. The fruit damage were recorded 1.08% and 0.63% in morning and evening period, respectively. Statistically significant differences were found due to parakeet depredation. The number of fruits recorded per tree over seasons was 161.80 total, 19.85 damaged and 141.95 healthy. Average 12.19 per cent damaged fruits per tree were observed while fruit yield was 87.80 per cent. Average 3.92 kg weight of damaged fruit per tree was observed while average 61.65 kg weight of healthy fruit per tree was recorded. Other birds also observed in guava orchard during study period.

- ◆ **Role of insectivorous birds in suppression of fruit borer, *Helicoverpa armigera* (Hubner) in tomato**

The highest average number of larvae (7.33) was observed in netted plot while lowest average number of larvae per ten plants (5.43) was observed in perch plot. The difference among treatment was statistically significant. The perch plot was found most effective treatment with 7.12 kg average healthy fruits and 0.65 kg damaged fruits. The house sparrow (*Passer domesticus*)

was observed highest (21.67), (12.67) while house crow (*Corvus splendens*) observed in lowest average number in open plot and Black Drongo (*Dicrurus macrocercus*) observed in higher average number (24.33), (16.67) while Pigeon (*Columba liviademestica*) observed in lowest average number perch plot.

- ◆ **Role of birds in the natural regulation of pod borer, *Helicoverpa armigera* (Hubner) in Pigeon pea**

The data on role of birds in natural regulation of pod borer showed that the number of healthy pods, damaged pods, medium and large sized larvae was found significant in netted and open plots, while the number of small sized was found non-significantly differed in both the plots. The data showed that the number of healthy (10.19 pods/plant) and damaged pods (0.53 pod/plant) was recorded least in open plot as compared to netted plot (12.29 and 0.83 pods/plant, respectively). Per cent pod damage was recorded from netted (6.33%) and open plot (3.90%). In case of larval population of pod borer, total (0.11 larvae/plant/twig) and (0.09 larvae/ twig / plant) was recorded from netted and open plot, respectively. The number of small larvae was non-significantly differed in both the plots.

- ◆ **Evaluation of nest box design for various cavity nesting birds**

The nest utilization pattern by birds over time period was evaluated by installing artificial nest boxes in year 2020. Out of 30 nests, the nesting activity of Common myna, Rose-ringed parakeet and squirrel. Out of 30 nest box, 8 nest were occupied by common myna, 4 by Rose-ringed parakeet and 2 by Squirrel. Out of total 30 nests observed 46.66% nest

were occupied in the first year of installation. The occupation of nest boxes was found increase with progress of nesting season of birds.

- ◆ **Evaluation of bird scaring device to manage bird depredations to guava fruit**

Total 4 species were found visiting the orchard for foraging on guava fruit. The relative abundance of Rose-ringed was found dominant with 88.58% RA in bird community visiting guava orchard. Also, the mean number of birds in orchard was 6.39 birds in orchard. It was also noted only parakeet is causing primary damage to the guava fruit while other bird in orchard has foraged on damaged fruit. The number of birds visiting orchard and damage to fruit was reduced on application of birds scaring device. The primary fruit damage by birds was 0.15 fruits and 0.26 fruits per tree per day was secondary damage to guava fruits. The yield loss due to bird damage to guava fruit was found reduced significantly and the bird scarer found effective in managing bird depredation by scaring the birds.

- ◆ **Estimation of losses to agricultural crops by Blue bull (*Boselaphus tragocamelus*) in Anand District**

The result of experiment on the extent of damage to agricultural crops by blue bull in Anand district was conducted during year 2020 and results is presented here. Farmers were found protecting fields against blue bull by various types of techniques. Total 21.82% farmers were used fencing as protection against blue bull around crop field area out of 110 interviewed farmers. While 13.64 % farmers were used phorate insecticide granules. Various crops *i.e.*, tobacco, chili,

banana was observed during of visit from November to January on blue bull damage. The various crops with different stages were damaged by blue bull. The chili and banana plants were uprooted by blue bull while tobacco plantation has browsing due blue bull.

- ◆ **Foraging ecology of squirrel in guava orchard**

The abundance of squirrel in vertebrate community foraging in various plantation crop was ranging from 0.002 to 0.14 per cent. The number of vertebrate species recorded foraging in crop field was ranging from 13 to 18 vertebrate species. The relative abundance of squirrel was found very low, it indicates that their impact on crop production may be negligible.

- ◆ **Bio ecology and management of purple moorhen in rice**

The experiment on deter purple moorhen visiting the paddy fields were conducted during summer 2020. The farm was located in vicinity of village pond having moorhen population more than 200 birds. The field having repeated raid on transplanted paddy was selected for study. The 1 ha area of field marked with experiment plot and allotting 0.5 ha for each treatments. The Acephate 97.00% DF @ 1.5 g/l was applied on treatment plot and control plot was sprayed with water. The observations were taken on following days until the moorhen has stopped visiting the surrounding fields; it was 12 days in this area.

- ◆ **Inventory of moths in agricultural landscape of Anand**

The diversity of moths (Lepidoptera: Heterocera) in agricultural landscape of

Anand, Gujarat, India was studied during June 2019 to May 2020. About 10,000 moth specimens were scanned and 1000 moths specimens were collected to prepare inventory using light trap. Total 318 moth species belonging to 31 different families were found occurring in the study area. The family Noctuidae was found having highest species richness (75 species) and it was followed by Crambidae (56 species), Geometridae (42 species), Erebiidae (37 species), Pyralidae (22 species), Tortricidae (17 species), Gelechiidae (10 species) and Nolidae (10 species). Species richness was less than 10 species of moth in remaining 23 families. The moth community was dominated by these 7 families represented about 85% of total species recorded in region and remaining 24 families represented only 15% of total species. There are few casual reports on checklist of moth from reserve forest and scattered records of moths reported as agricultural pests, but exhaustive list of moths of the region was unavailable. The inventory of moth prepared in this study is first of its kind in Gujarat state and one of the few studies on moth diversity in India. The photographs of all 318 moths species are presented in the catalogue form to provide ready reckoner to identify moth species of Anand.

(C) Micronutrients Research Project

Brief results of the work carried out during the period under report are given below.

- ◆ Delineate and reassess the changes in secondary and micronutrient fertility in soils of predominant cropping system based on soil and plant analyses was started to know the depletion or build up over the years and also for updating the maps for the different

micro- and secondary nutrients in soils of Gujarat. Surface soil samples were collected using GPS and following standard sampling protocol from different villages of Narmada (177) district. The status of DTPA-Fe, Mn and Cu were found sufficient whereas, DTPA-Zn and available B were found in deficient fertility status in soils of Narmada district.

- ◆ Under the study to find out micronutrients distribution in soil profiles of major soil orders of Gujarat under different land uses for a very long period (>30 years) for soils, total 14 profile soil samples has been collected from 0-20, 20-40, 40-60, 60-80, 80-100 cm depth from grazing land (2), forest land (2) and agriculture / horticulture land (10). The DTPA-extractable micronutrients (Fe, Mn, Zn & Cu) were influenced by agricultural land use. Micronutrients content in the studied soil profile were highest in the uppermost horizons and decreased sharply with depth irrespective of land-uses.
- ◆ To see the effect of different rate and frequency of foliar application of zinc on growth, yield and quality of tomato, the investigation was undertaken at Agricultural Research Station, Thasra. The compilation of the first year's data after completion of the experiment is under progress.
- ◆ Under continuous cropping sequence experiment, application of FYM @ 10 t/ha and different fertility levels significantly increased grain, straw and total yields of *bajri*, mustard and cowpea crops and improved micronutrient status in loamy sand soils of Anand
- ◆ Zinc requirement for maize – wheat cropping system were assessed in in loamy sand soil of

middle Gujarat. It was found that the effect of rate and frequency of Zn application on grain, straw and total of maize and wheat was found beneficial when 10.0 kg Zn ha⁻¹ applied every year to maize crop only.

- ◆ Similarly, to determine the rate and frequency of B application on groundnut-cabbage cropping system in loamy sand soil of middle Gujarat. It is found that application of either alternate year of application of 1.0 kg B ha⁻¹ or every year application of 0.5 kg B ha⁻¹ was recorded beneficial for groundnut crop.
- ◆ The study was initiated with the collaboration of Pramukhswami Medical College Karamsad to study the micronutrients content in Soil-Plant-Animal-Human continuum in tribal area of Gujarat state. The survey work in tribal area of Dhanpurtaluka of Dahod district has been initiated in the month of February 2020 after getting HREC approval from Pramukh Swami Medical College, Karamsad. The cluster of the Dhanpurtaluka has been refined in consultation with Health Officer, PHC, Dhanpur. Some clusters have been removed from previous list due to poor population of target group, and in place of that some new clusters have been added and finally a list of 40 (forty) clusters were made. After reformation of clusters the work had to postpone due to Corona pandemic.
- ◆ Under the study for screening of wheat genotypes/cultivars for iron (Fe) and manganese (Mn) efficiency. The second year field experiment was conducted at Micronutrient Research Farm, AAU, Anand in different selected genotypes of wheat for Fe and Mn efficiency. Statistical analysis of data of the previous year's field experiment is under progress.

- ◆ To assess the heavy metals contamination in agricultural produce in *peri* urban areas of Gujarat, food grain samples of farm produce (20), Animals feed & fodder samples (6), soil (23), tubewell water (6), medicinal plant samples (10) and vegetable samples (204) samples were collected and analyzed for heavy metals. Content of heavy metal in vegetable samples collected from different locations found below permissible limits of Indian Standard.
- ◆ To assess the effect of organic manure on crop, cropping system/pattern various crop produce and input materials have been tested for micronutrient and heavy metal contents. Application of Anubhav Bacterial Biodegradable Consortium (ABBC) to various crop residues has beneficial effect and nutrient contents in compost increased over control. The heavy metal contents found in compost were below the permissible limit of FCO standard. The effect of organic manure on various crop derived that addition of organic manure *i.e.* FYM or vermicompost increased the micronutrient and heavy metal contents in soil, grain and fodder samples.
- ◆ Front line demonstrations (FLDs) were conducted on farmer's field indicated that increase in grain yield of maize, wheat and chickpea crops when fertilized with sulphur, iron and zinc in soil. The application of sulphur @ 20 kg ha⁻¹ improved chickpea grain and stover yield as well as sulphur contents in both in all the experiments of chickpea in Narmada district. Therefore, farmers are recommended to apply sulphur @ 20 kg/ha alongwith NPK RDF as basal.
- ◆ Total 5770 soil /plant /feed /fodder /blood /effluent /fertilizers samples have been analysed and recommended/suggested to the

farmers / PG students/ entrepreneurs/ private agencies etc.

(D) Agril. Entomology, BACA, AAU, Anand.

Following research work has been carried out during the year.

- ◆ Application of soil or sand 5 g/plant in whorl at 30 and 45 days after sowing for effective management of fall armyworm in maize.
- ◆ Based on rating, GAYMH-1, GAYMH-3, CML-260, GWH- 1005, GAWMH-2, GM-6 and NARMADA MOTI emerged out as resistant while, GSCH-0918 emerged out as susceptible against fall armyworm.
- ◆ On the basis of honeybee activity, among different attractants sugar syrup 10% was found more effective in attracting honeybees which reflected seed yield of mustard.

(E) Plant Pathology, BACA, AAU, Anand

Following research work has been carried out during the year.

- ◆ **Seed borne nature of yellow mosaic in urdbean and common mosaic in munbean Grow out test - for detecting seed borne nature of MYMV:**

Grow out test was conducted in insect proof cage under protected condition using MYMV infected seeds of urdbean (T-9). Seeds from resistant variety *i.e.* Pant U 40 were also grown under the protected condition from the sown seeds. No symptoms of MYMV appeared under protected condition. At trifoliolate stage of seedlings molecular detection was conducted and no band was observed, it indicates the absence of specific virus gene that cause virus infection in the seedlings.

♦ **Grow out test - for detecting seed borne nature of BCMV:**

Grow out test was conducted in insect proof cage under protected condition using BCMV infected seeds of mungbean (GAM 5). Seeds from variety GM 4 were also grown under the protected condition from the sown seeds. Symptoms of BCMV appeared under protected condition. It indicates the seedborne nature of BCMV infecting the seeds. samples; blotter plate test revealed seed discolouration (0-10%), seed rot (0-7%), seedling rot (3-30%) and associated mycoflora (0-40%).

(F) Food processing Technology and Bio Energy

Developed production technologies/ processes of premium quality powder of carom (ajwain) and black pepper by using cryogenic grinding, process of micronutrient rich powder production, extension of shelf life of bread using suitable ingredients, functional low calorie muffins, Ready-to-Rehydrate type of rice, super critical extraction of essential oil from Ajwain (Carom seed) and Black pepper, technologies for value added products from pumpkin seeds, gamma irradiation on keeping quality of groundnut and sapota fruit, antidiabetic and antioxidant rich cookies and health drink using Garden Cress Seed. And effect edible coating on shelf-life of sapota fruit; γ -irradiation, UV radiation and Ozonation techniques were studied on decontamination of pesticides in selected crops, bio-chemical characterization of *Moringa oleifera* leaves and pods, energy use assessment in selected food processing plants and also evaluated purity of silver foil used on sweets in rural area.

Following ongoing research work has been carried out during the year.

- ♦ Technology for production of Indian gooseberry (Aonla) murabba
- ♦ Development of Production Technology for Vegetable based Juice from Carrot and Tomato
- ♦ Process development of cereals based galactagogue product enriched with garden cress for lactating women
- ♦ Standardization of moringa pulping technique using brush type pulper
- ♦ Development of high fiber cookies & muffins supplemented with pomegranate seed flour
- ♦ Studies on Quality Changes and Aging Effect in Selected Rice Varieties under Different Storage Conditions
- ♦ Development of a Portable Ripening System for Selected Fruits
- ♦ Varietal evaluation of selected fruits and vegetables for respiration rate under the steady state storage condition
- ♦ Effect of Different Pretreatments on Mature Banana for increasing shelf life.
- ♦ Screening, Characterization and Identification of Conjugated Linoleic Acid Producing Lactic Acid Bacteria
- ♦ Development of Analytical Protocol for Detection of Aflatoxins in Selected Foods
- ♦ Technology for Extraction of Carvone and Limonene rich Essential Oil from Dill Seed
- ♦ Super Critical Fluid Extraction of Essential Oil from Fennel Seed
- ♦ Technology for continuous microwave drying of *Moringa oleifera* (Drumstick leaves)

- ◆ Study of temperature and velocity distribution in a heat pump assisted dryer by computational fluid dynamics
- ◆ Study on performance of grid connected 20 kW solar Photo-Voltaic system
- ◆ Development of fuzzy logic controller for effective garden irrigation
- ◆ Osmotic Drying of Ultrasonic Pretreated Sapota

(G) Agricultural Information Technology

This institute prepares human resources in the field of Agriculture Information Technology (AIT) as a tool to sharpen the edges of the agriculture structure in the country. It takes the onus to develop and hone the sector and its changing environment. College/Faculty is equally involved in IT related agricultural research projects and carried out research as under.

- E-agriculture employability of students studying in B. tech (AIT) of AAU, Anand
- Effect of magnetic field on germination and seedling growth of cumin.
- Development of Pest and Disease Video Classification Model using Deep Learning (CNN).
- Neural Network to Estimate the Rice Yield of Kheda District Using Weather Parameters.
- OSBORNE Index Selection for Poultry
- Brassicaceae Family Ontology Development
- Feedback of farmers about the technological traits of Castor cultivar GCH-10
- Assessment of crop management modules in pearl millet + blackgram - wheat + chickpea intercropping system

Information Technology Center

The Information Technology Center caters the demand for the use of Information Technology at Anand Agricultural University. The Director, IT took the measures to carry forward the IT activities like hardware and software at various levels. During the year, substantive work was done related to the technical, administrative matters and also pertaining network problems at university.

Different online projects of AAU have been maintained and updated regularly by the IT

- ◆ **Different online projects of AAU has been maintained and updated regularly by the IT Center. Some of the projects are listed below and many more:**

- ↗ AAU web application (<http://www.aau.in/>)
- ↗ AAU web Mail (<http://mail.aau.in>)
- ↗ Online Tour programme (<http://tour.aau.in>)
- ↗ Online billing system (<http://account.aau.in/>)
- ↗ Payroll application and Tally
- ↗ Smart Classroom - Virtual classroom
- ↗ Online Examination system (<http://oes.aau.in/>)

- ◆ **Live streaming of the different event of the AAU**

(H) Agricultural Meteorology

The following research work was carried out during the reporting period.

- ◆ **Agro-climatic resource characterization**
- ↗ Climate change triggers extreme events. In

many parts of the world, drought frequency and intensity have increasing trends and projections. Meteorological drought indices are derived parameter to judge drought severity based on one or more weather parameters. Standardized Precipitation Evapotranspiration Index (SPEI) is developed by Vicente- Serrano *et al.* (2010) as suitable substitute of widely used drought indices, SPI (Standardized Precipitation Index) and PDSI (Palmer Drought Severity Index). The SPEI is designed compute on precipitation and potential evapotranspiration (PET) in determining drought. It has advantage of the PDSI in accounting evapotranspiration demand and is multi-scalar like SPI. So, in recent years it received wide acceptance for assessment of severity, trend and frequency of drought on time series. SPEI trends at Anand, Bhuj, Junagadh, Navsari and SK Nagar stations were analyzed on seasonal scale of monsoon (June-September). Stations were chosen considering representation of different climatic condition of Gujarat state and availability of long and continuous time series weather record. Daily temperatures (maximum and minimum) and rainfall data for these stations were taken, and from which monthly data series are calculated. Monthly PET was computed using Thornthwaite method. SPEI was calculated following the method described in Vicente- Serrano *et al.* (2010).

↪ Five stations (Anand, Bhuj, Junagadh, Navsari and S K Nagar) representing arid to sub humid conditions of Gujarat state showed positive trend pattern of SPEI towards wetness and less drought events during recent past. Only positive trend of Junagadh station was statistically significant which shows increasing wetness during

monsoon at the station.

◆ **Crop weather relationship and Crop growth simulation modelling of kharif pearl millet**

Crop weather relationship and simulation modelling of *kharif* pearl millet was studied using experimental data of year 2020 under rainfed condition. The experiment involves three cultivars of groundnut viz; GHB 538, GHB 558 and GHB 744 with three sowings during onset of monsoon to twenty days after monsoon onset.

↪ Sowing of pearl millet at onset of monsoon provides favourable growing environment for pearl millet crop compared to late sowings.

↪ Heat unit requirement of pearl millet crop is 1375-1436 °C day to complete its life cycle.

↪ Emergence to booting phase and grain filling to physiological maturity are longer phenophases with heat unit requirement of >676 °C day and >351°C day, respectively. Seasonal photo thermal quotient (PTQvpd) for pearl millet crop is 0.65 MJ m⁻² day⁻¹ °C⁻¹.

↪ Pearl millet crop is more sensitive to the weather experienced by crop during emergence to booting phase and night temperature is negatively associated to productivity up to 100% flowering.

↪ CERES-millet simulations were accurate for maturity period and maximum LAI. While, the simulations were poorly validated for anthesis period, grain yield, straw yield and biomass production.

◆ **Development of weather based models for predicting outbreak of mustard aphids**

Mustard aphid index and weather relation

studied using experimental data of 16 years (2002-03 to 2018-19). The field experiments were conducted on cultivar Mustard GM-2 under four sowings during period of 10 October to 10 November of year.

↪ Flowering to seed development phase is the most crucial time for aphid infestation.

↪ Aphid occurrences observed during flowering to seed development phase is might be associated with prevailing of high humidity condition for 1-5 days.

↪ High temperature may lower aphid intensity/infestation which occurs after 9-10 days in mustard.

↪ Mustard yield restricted to <1500 kg ha⁻¹ when aphid population crosses aphid index value 1.7.

◆ **Crop weather relationship of mustard**

Crop weather relationship of mustard was studied using field experimental data of *rabi* 2018-19. Three cultivars, BIO 902, GM 3 and GDM 4 were considered in experiments with four sowings during period of 10th October to 10th November in a year.

↪ Sowing of mustard on 10th October provides favourable growing environment for compared to late sowing.

↪ Cultivar GM3 perform better than Bio 902 and GDM 4 in all the growing environments under the study.

↪ Mustard requires 1516-1666 °C day heat units to complete its life cycle.

↪ Early vegetative to flowering initiation and seed development to physiological maturity

are longer phenophases with heat unit requirement of >558 °C day and >427 °C day, GDD respectively.

↪ Seasonal photothermal quotient (PTQ) for mustard crop is 1.03 MJ m⁻² day⁻¹ °C⁻¹.

AICRP- NICRA

The project circulates the weather based agromet advisory bulletins in-NICRA villages *i.e.* Manjrol and Sunderpura villages of Sankheda block, Chhotaudepur district, twice in a week (every Tuesday and Friday) using block-level weather forecast issued by IMD. The agromet advisory bulletins were prepared based on of present crop condition, crop growing stage, the past and forecasted weather conditions and its impact on crop grown as well as insect-pest/ diseases occurrences. With the help of expertise from Subject Matter Specialist (SMS) (Agronomist, Plant pathologist, Horticulturist and Veterinary expert) of KVK Mangal bharti, Young Professional-II prepares the agromet advisory bulletin. Besides email and short messaging service (mobile SMS and WhatsApp Group), bulletin boards in villages are also used. During September - 2020 to December - 2020 about 29 bulletins were prepared and dissemination to NICRA villages. Advisory given on seed rate, fertilizer dose, time of sowing, selection of cultivar (variety), time of top dressing and other intercultural operation were documented in the bulletins.

Project activities were carried out only 3 months and 19 days in NICRA villages during year 2020 due to unavailability of contractual staff.

IMD-FASAL

- ◆ **Development of yield forecasting models based on weather parameters Techniques applied for development of district wise statistical models**

↪ Cotton

The crop growth simulation model was used to predict the district wise yield at Pre-sowing (F1) and mid-season (F2) cotton crop for year 2015-16 to 2019-20 for Ahmedabad, Vadodara, Surendranagar, Jamnagar, Sabarkantha and Bharuch districts. The F2 cotton yield predicted for Ahmedabad, Vadodara, Surendranagar, Jamnagar, Sabarkantha and Bharuch were 1690 kg/ha, 2650 kg/ha, 2430 kg/ha, 2460 kg/ha, 1750 kg/ha and 2480 kg/ha, respectively for 2015-16. The F2 cotton predicted yield were 1610 kg/ha, 2530 kg/ha, 2430 kg/ha, 2310 kg/ha, 1850 kg/ha, 2710 kg/ha, respectively for 2016-17. The F2 cotton predicted yield were 1580 kg/ha, 2680 kg/ha, 2360 kg/ha, 2340 kg/ha, 1630 kg/ha, 2450 kg/ha, respectively for 2017-18. The F2 cotton predicted yield were 1710 kg/ha, 2640 kg/ha, 2630 kg/ha, 2480 kg/ha, 1990 kg/ha, 2790 kg/ha, respectively for 2018-19. The F2 cotton predicted yield were 1490 kg/ha, 2760 kg/ha, 2350 kg/ha, 2390 kg/ha, 1520 kg/ha, 2590 kg/ha, respectively for 2019-20. The predicted yield was validated with actual yield data which revealed that error per cent was within acceptable limit *i.e.* ± 10 .

↪ Mustard

The F2 stage crop yield forecasting models were developed for mustard using the weather data up to 31st January, 2020 for Banaskantha, Mehsana and Patan districts. A strong relationship was found between actual

yield and weather variables for the various districts. The coefficient of determination (R^2) for Banaskantha, Mehsana and Patan were 0.81, 0.75 and 0.72 respectively. The mustard yield predicted of *Rabi* 2019-20 for Banaskantha district is 1246 kg/ha while that for Mehsana district is 1914 kg/ha and for Patan district 1790 kg/ha.

IMD- Gramin Krishi Mausam Sewa (GKMS)

Under GKMS Project district wise weather forecast is received on every Tuesday and Friday for five days. Based on weather forecast, weather-based advisories are prepared for each districts of middle Gujarat and disseminated through various mass media *viz.* email, newspapers, AAU website /IMD website/ Farmers portal/ TV Channel / DD Girnar, Whatsapp etc.

- ◆ Forecast received: Biweekly (Tuesday and Friday)
- ◆ Times weather forecast received during the year: 104
- ◆ AAS bulletins (5 districts and 8 Blocks) prepared and disseminated: 104
- ◆ Mode of Mass communication: AIR, TV and Newspaper, web site and SMS, Whatsapp
- ◆ Number of AAS bulletins published: Total of 104 bulletins were prepared and disseminated through local newspapers like Naya Padkar, Divya Bhashkar, Sandesh, Gujarat Samachar, PratahKaal, Sardar Gurjari and through mobile via Whatsapp.
- ◆ Number of sms sent through m-kisan portal: 54
- ◆ Details of broadcast on AIR and TV:

Biweekly on Krishi Darshan program on DD Girnar, Durdarshan at 5:55 PM

(I) Seed Production

Ensuring quality of seeds to farmers, Anand Agricultural University has registered its trademark and logo of “ANUBHAV SEED” with the Trademark Registration Authority of India. All the seed producing centres/units

of Anand Agricultural University, Anand are well equipped with seed production machineries required for all operations starting from land preparation to harvesting. The total seed production of the year 2018-19 is 6313.88 quintals. The seed processes and seed testing facilities have been made available, which has boosted the efforts of seed quality assurance.

Seed production of AAU, 2020-21 (in q.)

Sr. No.	Crop	Breeder	Foundation	Certified	T/L	Total
	Cereals					
1	Paddy	178.75	969.10	845.90	487.50	2481.25
2	Maize	0.38	0.00	0.00	0.00	0.38
	Maize (Rabi)*	60.55	0.00	0.00	74.60	135.15
3	Wheat*	228.40	160.58	839.38	610.55	1838.91
	Pulses	-	-	-	-	-
4	Greengram	15.10	0.00	0.00	12.49	27.59
	Greengram(R/S)	0.00	0.00	0.00	6.50	6.50
5	Gram	30.00	0.00	17.00	139.50	186.50
6	Pigeon pea	6.00	0.00	0.00	7.95	13.95
	Oil seeds	-	-	-	-	-
7	Castor	6.25	0.00	0.00	79.42	85.67
8	Groundnut	172.68	0.00	0.00	74.91	247.59
9	Soybean	20.30	27.00	38.00	30.00	115.30
	Cash/ Other Crops					
10	Cotton (Deshi)	48.80	0.00	0.00	43.50	92.30
11	Tobacco (Bidi)	0.00	0.00	0.00	49.66	49.66
12	Tobacco (Rustica)*	0.00	0.00	0.00	17.00	17.00
13	Cluster bean (Seed)	0.00	0.00	0.00	7.90	7.90
14	Sunhemp	0.00	0.00	0.00	10.00	10.00
	Forage crops					
15	Lucerne*	1.55	0.00	0.00	21.50	23.05
16	Oat*	8.50	0.00	0.00	20.00	28.50
17	Fodder Bajra	2.00	0.00	0.00	9.65	11.65
18	Fodder Sorghum	1.00	0.00	0.00	1.97	2.97
	Vegetable crops	-	-	-	-	-
19	Brinjal	0.00	0.00	0.00	1.820	1.820
20	Tomato	0.00	0.00	0.00	0.300	0.300

Sr. No.	Crop	Breeder	Foundation	Certified	T/L	Total
21	Chilli	0.00	0.030	0.00	0.500	0.530
22	Okra	0.00	0.300	0.00	11.690	11.990
23	Cluster bean	0.00	1.500	0.00	1.050	2.550
24	Cowpea	0.00	0.00	0.00	3.000	3.000
25	Indian bean	0.00	0.00	0.00	0.750	0.750
26	Pumpkin	0.00	0.00	0.00	0.060	0.060
27	Cucumber	0.00	0.00	0.00	0.120	0.120
28	Bottle gourd	0.00	0.00	0.00	0.500	0.500
29	Musk melon	0.00	0.00	0.00	0.070	0.070
30	Onion	0.00	0.00	0.00	0.200	0.200

*Includes Rabi Provisional expected data

Seed production of AAU, 2020-21 (in q.)

Sr. No.	Crop	Breeder	Foundation	Certified	T/L	Total
	Vegetable Crops (R/S)	-	-	-	-	-
31	Brinjal	0.00	0.00	0.00	2.560	2.560
32	Tomato	0.005	0.00	0.00	0.171	0.176
33	Chilli	0.040	0.00	0.00	0.320	0.360
34	Indian bean	0.00	0.00	0.00	1.500	1.500
35	Onion	0.00	0.00	0.00	0.300	0.300
36	Pumpkin	0.00	0.00	0.00	0.130	0.130
37	Cucumber	0.00	0.00	0.00	0.180	0.180
38	Musk melon	0.00	0.00	0.00	0.070	0.070
	Spices					
39	Cumin	0.00	0.00	0.00	3.10	3.100
40	Dill seed	0.00	0.00	0.00	3.95	3.950
	M & A crop (Seeds)					
41	Isabgol	0.00	0.00	0.00	0.430	0.430
42	Asaliyo	0.00	0.00	0.00	1.040	1.040
43	Linseed	0.00	0.00	0.00	0.760	0.760
44	Ashwgandha	0.00	0.00	0.00	1.400	1.400
45	Kali jiri	0.00	0.00	0.00	0.650	0.650
46	Shankhapuspi	0.00	0.00	0.00	1.290	1.290
47	Tulsi (Varg)	0.00	0.00	0.00	0.170	0.170
48	Turmeric (Rhizome)	0.00	0.00	0.00	31.010	31.010
49	Kalmegh	0.00	0.00	0.00	19.700	19.700
50	Senna	0.00	0.00	0.00	0.410	0.410

Sr. No.	Crop	Breeder	Foundation	Certified	T/L	Total
	M & A crop (Seeds)(R/S)					0.000
51	Isabgol	0.00	0.00	0.00	0.550	0.550
52	Ashwagandha	0.00	0.00	0.00	1.700	1.700
53	Asaliyo	0.00	0.00	0.00	0.850	0.850
54	Mustard (Small)	0.00	0.00	0.00	3.580	3.580
	Grand Total	780.305	1158.510	1740.280	1800.481	5479.576

*Includes Rabi Provisional expected data

Production of Planting material at AAU (2020-21)

	Seedlings and Planting materials (Lakhs)	Nos.
1	Tobacco	1165700
2	Hybrid Napier/ Gajraj	433480
	Total	1599180
	Tissue culture plants (Nos.)	
1	Date Palm	15
2	Parvar	7150
3	Kankoda	6550
4	Stevia	1700
5	Pomegranate	4850
6	Seedless Lemon	50
	Total	20315
	Vegetable Seedlings/ Planting materials (Lakhs)	
1	Brinjal	465800
2	Chilli	235870
3	Tomato	61050
4	Onion	440000
	Total	1202720
	Horticultural Seedlings/ Planting materials (Nos.)	
	Fruit Planting material (Nos.)	
1	Sapota grafted	414
2	Mango grafted	942
3	Custard apple grafted	5887
4	Jambu/ Bijora grafted	5
5	Guava grafted	1241
6	Fig cutting	280
7	Aonla grafted/ Mulberry	1015
8	Seedless Lemon cutting	70
9	Chandan	1216
10	Kagzi Lime	15744
11	Cashewnut plants	799
12	Custard apple plants	750
13	Phalsa plants	4164

	Seedlings and Planting materials (Lakhs)	Nos.
14	Drumstick plants	15506
15	Jackfruit plants	353
16	Karmada/ Gunda plants	5814
17	Fruit plants bud sticks	382
18	Other plants of fruits	624
19	Drumstick Seeds	15 Kg
20	Lime seeds	6 Kg
21	Custard Apple Seed	14 Kg
	Total	55206

Production of Planting material at AAU, 2020-21

	Flowers and Ornamental plants	Nos.
1	Rose (Deshi)	6711
2	Mogra	4126
3	Ixora	1298
4	Bogain vellia	3219
5	Chrysanthemum	395
6	Jasud	3651
7	Palm different types	341
8	Climbers different types	1978
9	Seasonal flower seedling (In polybags)	2430
10	Plants of different types	32588
11	Trees of different types	5051
12	Potted plant (big)	594
13	Potted plant (medium)	281
14	Hanging Basket	81
15	Plastic pot (big size)	562
16	Plastic pot (medium size)	17
17	Chrysanthemum seedling	7050
18	Marigold seedling	18300
19	Seasonal flower seedlings others (Naked)	45900
20	*Seasonal seed packets	503
21	*Bouquets	120
22	*Loose flowers	64.9 (Kg)
23	*Cut flowers	38
	Total	134573

Production of Planting material at AAU, 2020-21

Medicinal & Aromatic plants' pl. material					Nos.
1	Madhunasini	73	31	Lajavanti	50
2	Jammulemon grass	1191	32	Arjun	261
3	Tulsi	1264	33	Safed Shankhavali	50
4	Parnfuti (Big & Small)	344	34	Bili	88
5	Cuttings	5	35	Alcho	1
6	Dodi	5719	36	Nagarvel	930
7	Shatavari	923	37	Radhavadi	9
8	Rajani gandha	22	38	Chanothi	371
9	Galo	709	39	Coleaus (garmar)	96
10	Kuvarpanthu	6775	40	Ashok	3
11	Hadsakal	273	41	Nagod	194
12	Putranjiva	103	42	Vetivar grass	215
13	Sindur	149	43	Dodi (Moti)	5
14	Mithi limadi	191	44	Garmado	152
15	Citronella grass	56	45	Damro (Basil)	156
16	Chaivs	218	46	Borsalli	263
17	Dam Vel	66	47	Kevado	7
18	Karmada	421	48	Lasanvel	158
19	Fudino	26	49	Ankol	3
20	Closimum	125	50	Gajpipar	32
21	Aradusi	369	51	Gundo	10
22	Riceplant	410	52	Ramfal	416
23	Safed chitrak	310	53	Kanji	7
24	Safed musali	209	54	Bijoru	85
25	Ajamapan	190	55	Bhrungraj	10
26	Lindipipar	6	56	Kanchnar	55
27	Ashwgandha	528	57	*Seed Sample Set	54
28	Brahmi	795		Total	59097
29	Kalmegh Seedling	30000			
30	Tulsi Seedling	4000			

Total number of seedlings/ planting materials and plants: 30,71,091



Micronutrient Laboratory



Hydroponics Unit

Chapter 5

EXTENSION EDUCATION

The Directorate of Extension Education has to plan, coordinate, organize and guide the extension education programmes in the University and to ensure efficient working of the extension education activities in close coordination with the development departments, voluntary and private organizations. Moreover, this Directorate encourages, guides and supports the extension education centers of the University to organize different extension education activities for the benefit of the farming community.

Extension Education Council

The Extension Education Council has

been constituted to consider and recommend the extension education programmes/activities of the University. The thirteenth meeting of the Extension Education Council was held on 17/07/2020 at Yagnyavalkya Hall, AAU, Anand under the chairmanship of Dr. R. V. Vyas, Former Vice Chancellor, AAU, Anand. The fourteenth meeting of the Extension Education Council was postponed due to COVID-19 pandemic. The following members of the Extension Education Council actively participated in the thirteenth meeting.

1	Dr. R. V. Vyas, Former Vice-Chancellor, AAU, Anand	Chairman
2	Dr. V. P. Ramani, Representative of Director of Research & Dean, PG Studies, AAU, Anand	Member
3	Dr. P. R. Vaishnav, Former Dean, Faculty of Agriculture, AAU, Anand	Member
4	Dr. M. N. Bhrambhat, Dean, Faculty of Vety. Science, AAU, Anand	Member
5	Dr. Y. C. Zala, Principal & Dean, International Agri-Business Management Institute, AAU, Anand	Member
6	Dr. J. B. Prajapati, Principal & Dean, Faculty of Dairy Science, AAU, Anand	Member
7	Dr. H. C. Patel, Principal & Dean, College of Horticulture, AAU, Anand	Member
8	Dr. R. F. Sutar, Representative of Dean, Faculty of Food Processing Tech. & Bio-energy, AAU, Anand	Member
9	Dr. R. Subaiah, Principal & Dean, College of Agricultural Engineering & Technology, AAU, Godhra	Member
10	Dr. Y. R. Ghodasara, Former Principal & Dean, Agricultural Information Technology, AAU, Anand	Member
11	Dr. N. B. Chauhan, Former Professor & Head, Agricultural Extension and Communication Department, BACA, AAU, Anand	Member
12	Dr. B. D. Patel, Representative of Director, Extension Education Institute, AAU, Anand	Member
13	Dr. Smita S. Pillai, Representative of Director of Agriculture, Gujarat State, Gandhinagar	Member
14	Dr. Snehal M. Patel, Representative of Director of Animal Husbandry, Gujarat State, Krushi Bhavan, Gandhinagar	Member
15	Dr. H. B. Patel, Former Associate Director of Extension Education, DoEE, AAU, Anand	Member

16	Dr. B. M. Mehta, Senior Scientist, KVK, Mangalbharti, Dist.Chhotaudepur	Member
17	Shri P. K. Sharma, Senior Scientist & Head, KVK, Dethali, Dist.Kheda	Member
18	Dr. Girish G. Patel, Ex. Senior Scientist & Head, KVK, Devataj	Member
19	Dr. Girish J. Patel, Training Organiser, Tribal Research cum Training Centre, AAU, Devgadbaria	Member
20	Dr. V. J. Patel, Assoc. Professor, Polytechnic in Agri., AAU, Anand	Member
21	Shri P. R. Dave, Dy. Director of Farmer Training Centre, Thasara, Dist. Kheda	Member
22	Shri Parmar Kamlsinh Chandrasinh, Progressive Farmer, Sardiya, Ta: Sankheda, Dist; Chhota Udepur	Member
23	Dr. Arun Patel, Former Director of Extension Education, DoEE, AAU, Anand	Member Secretary
24	Dr. S. D. Patel, Training Associate, DoEE, AAU, Anand	Invitee Member
25	Dr. M. R. Patel, Assistant Professor, DoEE, AAU, Anand	Invitee Member
26	Dr. D. D. Patel, Ex. Technical Officer, VC Office, AAU, Anand	Invitee Member
27	Shri P. C. Patel, Assistant Professor, DoEE, AAU, Anand	Invitee Member
28	Shri J. D. Desai, Assistant Professor, DoEE, AAU, Anand	Invitee Member
29	Shri S. A. Sipai, Assistant Professor, DoEE, AAU, Anand	Invitee Member

Zonal Research and Extension Advisory Committee (ZREAC)

The Committee consists of Director of Research, Deans of the faculty, representatives of line departments, centers of extension education, crop and subject matter specialists, co-operative sectors, industries and progressive farmers. Meetings are conducted regularly twice in a year (*kharif* and *rabi* season). The committee discusses in depth about the adoption and its feedbacks on

research recommendations and existing transfer of technology programmemes. The approved recommendations are then passed on to the concerned. The ZREAC meeting was held for *Rabi* season on 17/12/2020 & for *Kharif* season on 12/02/2021.

Centers of Extension Education

Under the aegis of Directorate of Extension Education, following centers/ activities are functioning:



Training in Baking Technology

Sr. No.	Type	Name of Centre / Training	Location
1	Certificate Courses	Training in Baking Technology	Anand
		Training in Commercial Poultry Farming / Advanced Training in Commercial Poultry Technology	
		Training in Gardening, Landscaping and Nursery Management	
2	Special Training Programmes	Training Programme on Food Processing Technology	Anand
		Training Programme on Organic Farming	
		Training Programme on Weed Management	
		Training Programme on Integrated Pest Management	
		Training Programme on Medicinal and Aromatic Plants	
		Training Programme on Seed Production	
3	Training Centres for Extension Functionaries	Extension Education Institute (EEI)	Anand
		Training and Visit Training Scheme (T&V)	
4	Training Centers for Farmers/ Farm Women/ Rural Youth	Sardar Smruti Kendra (SSK)	Anand
		Krushi Vigyan Kendra (KVK)	Arnej (Dist.Ahmedabad)
		Krushi Vigyan Kendra (KVK)	Dahod
		Krushi Vigyan Kendra (KVK)	Devataj (Dist. Anand)
		Tribal Training Centre (TTC)	Dahod
		Tribal Research cum Training Centre (TRTC)	Devgadhbaria Dist: Dahod
		Tribal Farm Women Training Centre (TFWTC)	
		Dairy Vigyan Kendra (DVK)	Vejalpur Dist:Panchamahals
		Pashu Vigyan Kendra (PVK)	Limkheda, Dist: Dahod
		Transfer of Technology Centre for Tribal (TOT)	Godhara Dist:Panchamahals
		Farm Technology Training Centre (FTTC)	Sansoli Dist: Kheda
		Training Centre (TC)	Jabugam Dist: Chhotaudepur
Demonstration cum Training Centre for Inland Fish Culture (DTCIF)	Devataj Dist: Anand		

Sr. No.	Type	Name of Centre / Training	Location
5	Advisory Services	Agricultural Technology Information Centre (ATIC)	Anand
		Transfer of Technology Centre (TOT)	Arnej Dist: Ahmedabad
		Agri Polyclinic Centre (APC)	Dahod
		Publication Unit (PU)	Anand
		Sardar Patel Agricultural Educational Museum (SPAEM)	Anand
6	Others	NARP Extension Scheme (MMRS)	Godhra Dist: Panchmahals
		NARP Extension Scheme (ARS)	Arnej Dist: Ahmedabad
		<i>Krushi Mahotsav</i>	Anand
		<i>Krushi Library</i>	Anand

Extension Education Schemes

Under the Directorate of Extension Education, Twenty two plan schemes, seven non-plan schemes, four ICAR schemes and five other agencies schemes are running and the details are given in Annexure 5.1.

Front Line Demonstrations, On-Farm Trials and Case Studies Conducted by Extension Education Centers

(i) Front Line Demonstrations (FLDs)

The FLDs are aimed to demonstrate the production potentialities of newly released and pre-released production technologies on farmers' fields. The KVKs and other extension education centers had organized total **3454 FLDs** on various crops, farm implements, livestock and fishery during *Kharif*, *Rabi* and Summer seasons. The details of FLDs conducted during the year 2020-21 are given in Tables 5.1 to 5.9.



Table 5.1 FLDs conducted by KVK, Arnej (Dist. Ahmedabad)

(A) Oilseeds/Pulses/Cereals/Horticulture Crops/Commercial Crops/Livestock/Other Enterprises

Sr. No.	Crop/Enterprise	Technology Demonstrated	Variety	No. of Farmers	Area (ha)	Average Yield of the Demo. Plot (q/ha)	Local Yield (q/ha)	Yield Increase (%)
1	Castor	Wilt resistance variety	GAC 11	10	04	24.30	19.50	24.62
2	Chickpea	Pheromone Trap	GJG 3	10	04	11.50	10.00	15.00
3	Chickpea	Seed treatment	GJG 3	10	04	11.80	10.10	16.83
4	Chickpea	Bio agent	GJG 3	10	04	12.10	10.10	19.8.0
5	Paddy	Introduction of improved variety	Mahisagar	10	04	59.00	51.00	15.69
6	Wheat	Micronutrient ZnSO4	GADW 3	10	04	14.00	12.50	12.00
7	Tomato	Introduction of improved variety	GAT 5	10	04	284.00	270.00	5.19
8	Okra	Jassid, Thiamethoxam	GAO 5	05	02	95.00	83.00	14.46
9	Okra	Introduction of improved variety	GAO 5	05	02	94.00	83.00	13.25
10	Cumin	Azoxistrobin 23 SC, 0.23 % 10 ML/ 10 Lit of Water	GC 4	10	04	6.70	6.20	8.06
11	Cumin	Introduction of improved variety	GC 4	10	04	6.60	6.10	8.20
12	Dilseed	Introduction of new crop and variety	GAD 1	10	04	8.30	7.00	18.57
Livestock								
13	Cattle	Bypass fat	-	15		8.10 (Milk yield L/ anim./day)	7.20 (Milk yield L/ anim./day)	12.50
14	Cattle	Bypass Protein	-	15		480 (gm/day)	320 (gm/day)	50.00
15	Cattle	Calf Starter	-	15		280 (gm/day)	150 (gm/day)	86.67
16	Cattle	Milk replacer	-	15		250 (gm/day)	140 (gm/day)	78.57
17	Cattle	Mineral Mixture	-	15		8.4 (Milk yield L/anim./ day)	7.5 (Milk yield L/anim./ day)	12.00

Other Enterprises							
18	Drudgery Reduction	Revolving Milking Stool and Stand	1. Time of Operation (Min)		5	6.20	8.00
			2. Psychological Parameter				
19	Paddy	Paddy Trans Planter-Manual	5	2	60 hrs & 4200.00	333 hrs & 8250.00	31.90 49.10
20	Paddy	Electric Operated Paddy Thresher	5	2	190	60.00	216.67

Table 5.2 FLDs conducted at KVK, Dahod

(A) Pulses/ Cereals/ Horticulture Crops

Sr. No.	Crop/ Enterprise	Technology Demonstrated	Variety	No. of Farmers	Area (ha)	Average Yield of the Demo. Plot (q/ha)	Local Yield (q/ha)	Yield Increase (%)
1	Maize	Introduction of new hybrid fertilizer	GAYMH 1	57	20	17.45	14.50	20.34
2	Pigeon pea	Introduction of new Variety + Bio- fertilizer	AGT 2	25	10	10.50	08.30	26.50
3	Wheat	Introduction of new Variety + Bio- fertilizer	GW 451	25	10	27.50	23.80	15.54
4	Tomato	Introduction of new Variety + Bio - fertilizer	GAT 5	20	04	305.10	242.55	25.78
5	Chilli	Introduction of new Variety + Bio - fertilizer	GVCH 1	20	04	100.12	86.49	15.75
6	Brinjal	Introduction of new Variety + Bio - fertilizer	GAOB 2	20	04	312.32	261.00	19.66
7	Okra	Introduction of new Variety + Bio - fertilizer	GAO 5	20	04	96.00	82.24	16.73
8	Gram	Choranranilliprole	-	25	10	13.50	12.10	11.57
9	Gram	Trichoderma	-	25	10	12.40	11.60	06.90
10	Green Gram	Flubendiamide	-	10	04	07.56	07.13	06.03
11	Soybean	Choranranilliprole	-	25	10	12.35	10.80	14.35
12	Maize	Carbofuran 3G	-	25	10	14.60	13.10	11.45

(B) Livestock

Sr. No.	Category	Thematic Area	Name of the technology demonstrated	No. of Farmer	No. of Units (Animal/Poultry/Birds, etc)	Major parameters			% change in major parameter	Other parameter		
						Name of Parameters	Demo	Check		Name of Parameters	Demo	Check
13	Cattle	Fertility management	Mineral mixture feeding	20	1	Fertility rate %	60	20	200.00	Successful Conception	60	-
14	Cattle	Feeding management	Probiotic feeding	20	1	kg/animal	9.84	8.07	21.93	Average body weight gain per day per calf (g)	109.35	-
15	Buffalo	Dairy management	Deworming and Disinfestation	50	1	Milk yield L/ ani./day	4.51	3.82	18.06	Fat Corrected Milk	4.51	-
16	Buffalo	Fertility Management	Ovsynch Protocol	20	1	Fertility rate %	65	15	333.33	Successful Conception	65	-
17	Poultry	Breed evaluation	Breed evaluation	20	20	kg/bird	0.94	0.91	3.30	Average body weight per bird at 5 months age (g)	940	-

(C) Performance of Cluster Frontline Demonstrations (CFLD)

Sr. No.	Crop	Technology demonstrated	Variety	No. of Farmers	Area (ha)	Average yield of the demo. Plot (q/ha)	Local yield (q/ha)	Yield increase (%)
15	Green gram	Introduction of new Variety + Bio- fertilizer	GAM 5	25	10	6.7	5.55	20.72
16	Soybean	Introduction of new Variety + Bio- fertilizer	NRC 37	50	20	14.22	12.45	14.21
17	Gram	Introduction of new Variety + Bio- fertilizer	GJG 3	50	20	12.70	10.45	21.53

Table 5.3 FLDs Conducted at KVK, Devataj (Dist. Anand)

Sr. No	Crop/ Enterprise	Technology Demonstrated	Variety/ Breed	No. of Demo.	Area (ha)	Production of Demo. plot (q/ha)	Local Production (q/ha)	Production Increase (%)
1	Paddy	Varietal Introduction	GAR 14	10	4.0	33.60	43.2	-22.22
2	Paddy	Management of Paddy leaf folder	Gurjari	10	4.0	58 (q/ha) 14 (Damage %)	54 (q/ha) 31 (Damage %)	7.41 -
3	Wheat	Varietal Introduction	GW 451	10	4.0	36.00	29.6	21.62
4	Castor (CFLD)	Seed + Trichoderma viridi + Bio fertilizers + Sulphur	GCH 10	75	30	25.60	20.80	23.07
5	Greengram (summer-2020) CFLD	YVMV resistant Variety + Biofertilizer + Sulphur + Neem oil	GAM 5	75	30	11.20	9.6	16.67
7	Chickpea	Seed Priming Treatment	GJG 5	10	4.0	19.20	15.20	26.32
8	Chickpea	Management of chickpea pod borer	GG 2	10	4.0	14.5 (q/ha) 5 (Damage %)	11.5 (q/ha) 20 (Damage %)	29.46 -
Horticultural Crops								
7	Brinjal	Management of brinjal shoot and fruit borer	Doli 5	10	4.0	299 (q/ha) 4 (Damage %)	242 (q/ha) 21 (Damage %)	23.55
Livestock & Fisheries								
8	Fodder	Sorghum	COFS 29	10	4	730	560	30.36
9	Fodder	Guinea Grass	GG 3	10	4	810	580	30.66
10	Livestock	Anubhav Chelated Mineral Mixture	Buffalo	50	-	9.1 litre/day 7.0 % Fat	8.0 litre/day 6.0 % Fat	13.75 1.00
11	Livestock	By pass fat	Buffalo	20	-	9.8 litre/day 50 % Conception rate	7.5 litre/day 25 % Conception rate	30.67 25.00
12	Fishery	Fry to fingerling production	Rohu	10	5	9.6	8.25	16.36
13	Fishery	Use of Hapa for Nursery rearing of Rohu spawn	Rohu	10	2	1.78	1.44	23.61

Table 5.4 FLDs Conducted at TRTC, Devgadhi Bariya

Sr. No.	Crop	Technology Demonstrated	Variety	No. of Demo.	Area (Ha)	Yield (kg/ha)		Yield Increase (%)
						Demo	Local	
Kharif Season								
1	Soybean-Maize	Soybean-Maize intercrop	NRC 37 and Maize: GAYMH 3	8	2	23,560/- Rs (Profit in soybean-maize intercrop)	20670/- Rs (Profit in sole soybean crop)	2890/- Rs/ha (Over sole soybean crop)
2	Soybean	Girdle beetle management	-	4	2	1285	962	33.57
3	Soybean	Sucking pest management	-	4	2	1145	872	31.30
4	Soybean	Improved variety	NRC 37	12	3	1275	910	40.10
5	Soybean	Weed management	-	4	2	1090	895	21.80
6	Soybean	Sowing distance	NRC 37	2	1	1267	1035	22.42
7	Soybean	Seed rate	NRC 37	2	1	1315	1040	26.45
8	Soybean	Residual effect of soybean on Rabi maize	NRC 37	2	1	1215	910	33.51
9	Maize	Hybrid variety	GAYMH 1	2	1	3240	2410	34.43
10	Maize	Hybrid variety	GAWMH 2	2	1	3155	2360	33.68
11	Maize	Hybrid variety	GAYMH 3	2	1	3316	2418	37.13
12	Maize	Nutrient management	GAYMH 1	2	1	3244	2380	36.30
13	Maize	Nutrient management	GAWMH 2	2	1	3245	2320	39.90
14	Cotton	Nutrient management	G.COT 8	2	1	2826	1978	42.88
Rabi Season								
15	Chick pea	Improved variety	JG 14	2	1	1930	1440	34.07
16	Wheat	Monocot and dicot weeds management in improved variety	GW 451	4	2	4590	3870	20.15
17	Maize	Hybrid variety	GAYMH 1	2	1	3470	2500	38.80
18	Maize	Hybrid variety	GAYMH 2	2	1	3510	2620	33.96

19	Maize	Hybrid variety	GAWMH 3	2	1	3495	2540	37.59
20	Maize	Nutrient management	GAYMH 1	2	1	3610	2550	41.56
21	Maize	Nutrient management	GAYMH 2	2	1	3725	2710	37.24
22	Maize	Residual effect of soybean on <i>Rabi</i> maize	GAWMH 3	2	1	3530	2550	38.43
23	Maize	Fall army worm management	-	2	1	3640	2590	40.54
Summer								
24	Mung bean	Improved variety	GAM 5	4	2	1085	860	26.16

Table 5.5 FLDs Conducted at ARS, Sansoli

Sr. No.	Crop	Technology Demonstrated	Variety	No. of Demo.	Area (ha.)	Yield of Demo. (q/ha)	Yield of check (q/ha)	Yield Increase (%)
1	Castor	Varietal Introduction	GCH 10	40	16	34.80	29.80	16.77
2	Castor	Varietal Introduction	GAC 11	100	40	28.30	27.40	03.28
3	Wheat	Varietal Introduction	GW 451	13	5.2	48.40	38.70	25.06

Table 5.6 FLDs Conducted (Area Specific Mineral Mixture) at DVK, Anand

Sr. No.	No. of Demonstrations Conducted (Area Specific Mineral Mixture)	
	No. of demonstrations	No. of beneficiaries farmers
1	1959	1959
Total	1959	1959
		3 kg mineral mixture allotted to individual farmer
		5877 kg

Table 5.7 FLDs conducted at MMRS, AAU, Godhra

Sr No.	Technology demonstrated	Variety	No.of demonstration	Area (ha)	Demo.yield (kg/ha)	Local yield (kg/ha)	Yield Increase (%)
Bio-fertilizer project							
<i>Kharif-2020</i>							
1	Bio-fertilizer technology	GAYMH 1	70	28	2056	1775	15.90
<i>Rabi-2020-21</i>							
2	Bio-fertilizer technology	GAYMH 1	50	20	3508	2899	15.07
AICRP Trails FLDs							
<i>Kharif-2020</i>							
1	Hybrid variety	GAYMH 1	12	4.8	3567	2892	23.45
<i>Rabi-2020-21</i>							
2	Bio-fertilizer technology	GAYMH 1	13	5.2	3862	3108	24.33
Adaptive Trials FLDs							
<i>Kharif-2020</i>							
1	Bio-fertilizer technology	GAYMH 1	10	4	3631	2958	22.76
<i>Rabi-2020-21</i>							
2	Bio-fertilizer technology	GAYMH 1	13	5.2	3872	3142	23.25

Table 5.8 Demonstration Conducted at Paddy Research Station, Dabhoi

Sr. No.	Crop	Technology Demonstrated	Variety	No. of Demo.	Area (ha.)	Yield of Demo. (q/ha)	Yield of check (q/ha)	Yield Increase (%)
1	Paddy	Newly developed variety of paddy	GAR 14	46.84	-	-	46.84	-
2	Paddy	Use of leaf colour chart in Paddy crop	GAR 13	54.98	53.40	2.96	54.98	53.40
3	Wheat	Irrigation at critical growth stages in wheat	GW 496	30.58	29.35	4.19	30.58	29.35
4	Wheat	Weed management in wheat with premix broad spectrum herbicides (GW 496)	GW 496	24.75	-	-	24.75	-
5	Gram	Cultivation of gram with one irrigation at branching stage	GJG 3	10.95	10.64	2.91	10.95	10.64
6	Gram	Use of biofertilizer recommendation in gram	GJG 3	11.24	10.82	3.88	11.24	10.82
7	Green Gram	Use of biofertilizer in summer green gram	GAM 5	15.00	06.00	11.14	10.72	03.91
8	Green Gram	Nutrient management through organic source in summer green gram	GAM 5	10.00	4.00	11.05	10.63	03.95

Table 5.9 FLDs conducted at Training Centre for Tribal Farmer, Dahod

Sr. No.	Crop & Variety	Technology Demonstrated	No. of Farmers	Average Demo. Yield (Kg ha ⁻¹)	Average Grain Yield of Local Check (Kg ha ⁻¹)	Yield Increase (%)
1	Soybean (NRC 37)	New Variety	5	1055	880	19.88
2	Maize (GAYMH 1)	Recommended Fertilizer (160:60:00 kg NPK ha ⁻¹) management in Maize	3	4150	3250	27.69
3	Maize (GAWMH 2)	Recommended Fertilizer (160:60:00 kg NPK ha ⁻¹) management in Maize	3	4275	3330	28.37
4	Maize	Fall army worm pest management in rabi maize crop	10	3715	2785	25.03
5	Green Gram (GAM 5)	Green Gram with Bio fertilizer (Rhizo. + PSB)	7	1165	810	30.47

(ii) On Farm Testing (OFTs)

The aim of On Farm Testing is identifying technologies in terms of location specific sustainable land use system. The KVKs had organized a total of **145 OFTs** on various crops/enterprises. The details of the OFTs conducted during the year 2020-21 are given in Table 5.10 to 5.12.

Table 5.10 OFTs conducted at KVK, Arnej (Dist. Ahmedabad)

(A) **Cereals and Vegetable Crops**

Sr. No.	Crop / Enterprise	Title of OFT	Technology Assessed	No. of Trials	Yield kg/ha	Net Return (Profit) in ₹/Unit	BC Ratio	Results of Assessment	Feedbacks from the Farmers
1	Paddy	Assessment of recommended practices for control of Stem Borer in rice	T1. Farmer's practice	5	48.40	51,335	2.80	Cartap Hydrochloride 4G 25 kg/ha (1 kg ai/ha) gives higher production with net return and less percentage of infected plant	Cartap Hydrochloride 4G control the rice stem borer as well as other damaging sucking insect. Use of pheromone trap in paddy is not feasible
			T2. Cartap Hydrochloride 4G 25 kg/ha (1 kg ai/ha)		55.10	60,865	3.02		
			T3. Pheromone trap @ 30 trap/ha kept in after 30 days of transplanting of paddy with equal distance		53.00	57,090	2.88		
2	Wheat	Assessment of recommended dose of fertilizer and micronutrient in GADW 3	T1. Injudicious use of fertilizer and no use of micronutrient (Farmers Practice)	5	5.77	14425	3.50	20 Kg phosphorus + 25 kg Zinc Sulphate (as a basal Dose) + 20 kg Nitrogen gives higher yield, higher net return and more number of tillers.	Application of basal doze of fertilizer along with Zinc Sulphate and two irrigation in durum Wheat gives higher yields
			T2. 20 kg phosphorus + 25 kg Zinc Sulphate (as a basal Dose) + 20 kg Nitrogen will be given at the 1 st irrigation		6.32	15800	3.50		

Sr. No.	Crop / Enterprise	Title of OFT	Technology Assessed	No. of Trials	Yield kg/ha	Net Return (Profit) in ₹/Unit	BC Ratio	Results of Assessment	Feedbacks from the Farmers
3	Wheat	Assessment of seed treatment for control of Termite in wheat	T3. Seed treatment with Azotobactor @ 30 gm / kg seed + 20 kg phosphorus + 25 kg Zinc Sulphate (as a basal Dose)		6.03	15075	3.50		
			T1. Farmer's practice (No seed treatment) T2. Seed Treatment with Chlorpyrifos 20 EC @ 4 ml / kg seed (0.8 gm ai / kg seed) or fipronil 5 SC @ 5 ml / Kg seed (0.025 gm ai / kg seed) before sowing of 24 hours		5.58	14,130	3.62	Seed Treatment with Chlorpyrifos 20 EC @ 4 ml / kg seed (0.8 gm ai / kg seed) or fipronil 5 SC @ 5 ml / kg seed (0.025 gm ai / kg seed) before sowing of 24 hours with one irrigation at grain formation stage gives higher yield and higher net return and less percentage of infected plant.	Seed treatment with Chlorpyrifos is feasible and easy to adopt practice to control the termite in Goradu soil
4	Isubgul	Varietal assessment of Isubgul cv.GI4	T3. T2 + One irrigation given at a grain formation stage	5	6.17	15,995	3.86		
			T1. Cultivation of local variety of Isubgul (Farmers Practice) T2. Cultivation of Isubgul cv.GI4		9.55	48,450	3.13	Cultivation of Isubgul cv.GI4 is better than local variety	No shedding is found in GI4
					10.20	53,100	3.27		

Sr. No.	Crop / Enterprise	Title of OFT	Technology Assessed	No. of Trials	Yield kg/ha	Net Return (Profit) in ₹/Unit	BC Ratio	Results of Assessment	Feedbacks from the Farmers
5	Coriander	Varietal assessment of coriander cv. GC-3	T1. Cultivation of local variety (Farmers Practice)	5	8.8	41,100	3.00	Varietal evaluation of coriander cv. GC3 is better than Cultivation of local variety (Farmers Practice)	Aroma is good and resistant to powdery mildew
			T2. Varietal evaluation of coriander cv. GC3		12.35	65,750	4.18		
6	Wheat	Assessment of seed bed preparation implements in wheat crop in <i>Bhal</i> region	T1. Farmers practices (2 Cultivator + 2 BhalKaliyu)	5	12.4	39,550	11.27	Use of Zero-till drill for direct sowing of wheat after rice was found to be advantageous in terms of 50-60% saving in time and 35-40% saving in cost of sowing as compared to the conventional practice. The machine saves about Rs. 1500-2000/ha	Good practice to reduce seed bed preparation operation cost in Wheat crop Saves energy
			T2. Cultivator + Rotavator + Seed drill		13.1	42,950	15.81		
			T3. Zero Till Drill		12.4	41,600	24.11		
7	Tomato	Assessment of different type of hand operated wheel hoe in tomato crop in Bhal region	T1. Use of Sickle (Farmer's practice)	5		Not Applicable		The maximum weeding efficiency with 'Sickle' was observed because of the capability of this hand tools to work between plant-to-plant spaces in a row.	1. Good practice to reduce weeding operation cost in tomato crop. 2. Save time

Sr. No.	Crop / Enterprise	Title of OFT	Technology Assessed	No. of Trials	Yield kg/ha	Net Return (Profit) in ₹/Unit	BC Ratio	Results of Assessment	Feedbacks from the Farmers
8	Fruits and Vegetables	Shelf-life assessment of fruits and vegetables using vegetable preservator	T2. Use of Wheel hoe (CIAE Bhopal)	5	Not Applicable	Not Applicable		Push type cycle weeder and push and pull type wheel hoe cannot be used for closer plants. This may be the reason for low weeding efficiency. As weeding is a labour consuming process and because of minimum field capacity of 'Sickle' the cost of operation 'Sickle' for weeding was maximum. Use of wheel hoe for weeding in tomato was found to be advantageous in terms of 50-60% saving in time and 50% saving in cost of sowing as compared to the conventional practice of weeding.	3. It is effective for inter-culturing and weeding. 4. Less time consumes during weeding operation
			T3. Use of push and pull type wheel hoe (CAET-Godhra)						

Table 5.11 OFTs conducted by KVK, Dahod

Crop/ Enterprise	Problem Definition	Title of OFT	No. of Trials	Technology Assessed	Parameters of Assessment	Data on the Parameter	Results of Assessment	BC Ratio	Feedback from the Farmers
Gram	Low yield due to poor quality seed or variety	Varietal Testing of Tomato	03	T ₁ : GG 1 (Farmers practices) T ₂ : JG 14 T ₃ : GJG 3 T ₄ : GG 5	Yield, Cost of Cultivation	Grain yield (q/ha) T ₁ : 9.35 T ₂ : 10.45 T ₃ : 12.50 T ₄ : 11.25	The higher yield was observed in GJG 3 as compare to other	T ₁ : 1.67 T ₂ : 1.75 T ₃ : 2.06 T ₄ : 1.86	GJG 3 and GG 5 variety has very less infestation of wilt
Wheat	To identify new wheat variety for Dahod district	Varietal assessment of Wheat	03	T ₁ : Lok 1 (Farmers practices) T ₂ : GW 496 T ₃ : GW 451 T ₄ : GW 463	Yield, Cost of Cultivation	Grain yield (q/ha) T ₁ : 22.00 T ₂ : 27.55 T ₃ : 28.15 T ₄ : 27.25	The higher yield was observed in GW 451 as compare to other	T ₁ : 1.79 T ₂ : 2.09 T ₃ : 2.13 T ₄ : 1.98	GW 451 is high yielding as well as having good quality
Tomato	Low yield due to poor quality seed or variety or planting materials	Varietal Testing of Tomato	03	T ₁ : Local (Farmers practices) T ₂ : GT 2 T ₃ : GAT 5 T ₄ : Kashi Aman	Yield, Cost of Cultivation	Grain yield (q/ha) T ₁ : 215.3 T ₂ : 254.8 T ₃ : 317.0 T ₄ : 296.8	GAT 5 Variety of Tomato gave higher yield and net realization	T ₁ : 2.79 T ₂ : 3.52 T ₃ : 4.23 T ₄ : 3.96	Less infestation of tomato leaf curl virus and early blight disease
Brinjal	Low yield due to poor quality seed or variety or planting materials	Varietal Testing of Brinjal	03	T ₁ : Local (Farmers practices) T ₂ : GAOB 2 T ₃ : GABH 3 T ₄ : Kashi Sandesh	Yield, Cost of Cultivation	Grain yield (q/ha) T ₁ : 230.39 T ₂ : 281.16 T ₃ : 320 T ₄ : 313.65	Higher production observed in GABH 3	T ₁ : 2.79 T ₂ : 3.39 T ₃ : 3.81 T ₄ : 3.73	High Yielding Variety, Less infestation of sucking pest.

Crop/ Enterprise	Problem Definition	Title of OFT	No. of Trials	Technology Assessed	Parameters of Assessment	Data on the Parameter	Results of Assessment	BC Ratio	Feedback from the Farmers
Castor	Low yield in castor due to spodoptera	Management of spodoptera in castor	03	T ₁ : Farmer practices (No insecticide use) T ₂ : Quinalphos 25 EC @ 20 ml per 10 litre water T ₃ : Chlorantrani- liliprole 18.5 SC @ 3 ml per 10 litre water	Grain yield and larval population per plant	Grain yield T ₁ : 13.1 T ₂ : 14.6 T ₃ : 15.5 Plant Damage (%) T ₁ : 7.3 T ₂ : 3.5 T ₃ : 2.4	T ₃ encountered minimum disease incidence as well as given maximum yield	T ₁ : 1.62 T ₂ : 1.78 T ₃ : 1.88	chlorantran- liliprole found effective in reducing spodoptera infestation in castor
Pigeon Pea	Low yield in Pigeon Pea due to wilt	Management of wilt in Pigeon Pea	03	T ₁ : Farmer practices (No insecticide use) T ₂ : carboxin 37.5 % + thiuram 37.5 % @ 3g/kg seed followed by seed treatment with trichoderma viride @ 10g/ kg seed	Grain Yield and per cent disease & Cost of cultivation	Grain yield T ₁ : 6.4 T ₂ : 7.4 T ₃ : 7.6 Plant Damage (%) T ₁ : 8.5 T ₂ : 3.7 T ₃ : 3.4	T ₃ encountered minimum spodoptera larval population as well as given maximum yield	T ₁ : 1.37 T ₂ : 1.55 T ₃ : 1.58	trichoderma found effective against wilt in pigeonpea

Crop/ Enterprise	Problem Definition	Title of OFT	No. of Trials	Technology Assessed	Parameters of Assessment	Data on the Parameter	Results of Assessment	BC Ratio	Feedback from the Farmers
Animal Science	Low body weight, low income among the chicken reared by farmers	Poultry breed testing	30	T ₃ : T ₂ + Trichoderma viride @ 1 kg/100 kg seed FYM at the time of sowing T ₁ : North Gujarat poultry breed T ₂ : South Gujarat poultry breed T ₃ : Kadaknath poultry breed	Monthly body weight (kg/bird), Mortality and Economics	T ₁ : 1.17 T ₂ : 1.21 T ₃ : 1.13 Mortality (%) T ₁ : 48 T ₂ : 42 T ₃ : 36	Kadaknath birds have a higher sale price resulting in higher economic gain	T ₁ : 1.24 T ₂ : 1.39 T ₃ : 1.41	South Gujarat breed gains weight faster
Animal Science	Negative energy balance in high yielding buffaloes	Rectifying negative energy balance in high yielding buffaloes	08	T ₁ : Farmers' practices (No by-pass nutrient feeding) T ₂ : T1 + 200 g by-pass fat T ₃ : T1 + 100 g by-pass fat + 100 g by-pass protein T ₄ : T1 + 200 g by-pass fat + 100 g by-pass protein	Milk yield (Milk yield L/anim./day) and Milk fat (%)	T ₁ : 9.3 T ₂ : 10.08 T ₃ : 9.68 T ₄ : 10.28 Mortality (%) T ₁ : 6.46 T ₂ : 6.71 T ₃ : 6.51 T ₄ : 6.71	The yield increased over control (T ₁) was 8.38, 4.08, and 10.53 per cent in T ₂ , T ₃ and T ₄ respectively.	T ₁ : 1.88 T ₂ : 1.86 T ₃ : 1.87 T ₄ : 1.86	Animal readily feeds on by-pass protein feed material but is reluctant to feed on by-pass fat.

Table 5.12 OFTs Conducted at KVK, Devataj (Dist. Anand)

(A) Agriculture

Sr. No	Crop/ Enterprise	Title of OFT	Technology Assessed	No. of Trials	Parameters of Assessment	Data on the Parameter	Net return in ₹/ Unit	B:C Ratio	Result of Assessment	Feedbacks from the Farmers
1	Paddy	Varietal Assessment of Aromatic Rice varieties	GAR 14 GAR 1	03	Yield (q/ha.)	30.40 36.80	14070 24580	1.43 1.72	GAR 14 gave -17.39 % yield than GAR 1	Vegetative growth of plant is higher in GAR 14 than GAR 1. but no. of unfilled grain per panicle was found higher than GAR 1
2	Okra	Assessment of convenient method to control of Shoot and fruit borer in Okra	T ₁ - Farmers practice T ₂ - IPM Module (Seed treatment Imidaclopride 9ml/kg + Removal and destruction damage shoots and fruits + Pheromone Trap 60/ha, Change lure at 21 days interval+ Clontraniliprol 0.006% spray+ NSKE 5% spray 35 days after sowing +Emamectin 0.0025% + BT Powder 5wp (10g/10ltr water) +NSKE 5% spray 65 days after sowing	5	Yield (q/ha.) Infestation % Yield (q/ha.) Infestation %	160 19 200 5	154000 200500	3.85 4.37	25 % yield increased in T2	With the use of recommended IPM module for management of shoot and fruit borer in okra more yield and less infestation of shoot and fruit borer was found

Sr. No	Crop/ Enterprise	Title of OFT	Technology Assessed	No. of Trials	Parameters of Assessment	Data on the Parameter	Net return in ₹/ Unit	B:C Ratio	Result of Assessment	Feedbacks from the Farmers
3	Wheat	Management of Termite in wheat crop (GW-496)	T1: Farmer's practice T2: Soil application of Neem cake 1 ton/ha + Seed treatment of Fipronil 5 SC 500 m/100 kg seed	5	Yield (q/ha.) Infestation % Yield (q/ha.) Infestation %	32.00 37.00	32900 38900	2.64 2.79	The assessed technology T2 had recorded highest yield & BC ratio and gave 15.63 % higher yield over T1 with higher net returns (as compared to farmer practices.	With the use of recommended practices for Management of termite more yield and less infestation of termite was found

(B) Animal Science

Sr. No.	Crop/ Enterprise	Title of OFT	Technology Assessed	No. of Trials	ADG (gm/day)	Net return in ₹/ Unit	B:C Ratio	Result of Assessment	Feedbacks from the Farmers
1	Cow	Assessment of milk replacer feeding in calves	Farmers' practices (No use of supplemental feeding) Milk Replacer@ 1:10 L/ Calf / Day (100gm /L Water)	10	185 310	- -	- -	67.56% more average daily gain in body weight was observed	Progressive livestock farmers are convinced to use milk replacer to their calf due to improvement in body weight gain.

(iii) Production of seeds by products

The details of seeds produced by KVKs of AAU during 2020-21 are given in Table 5.13.

Table 5.13 Production of seeds by the KVKs of AAU during 2020-21

Name of KVK	Crop	Name of the Variety	Quantity of Seed (q)	Value (₹)
KVK, Arnej (Ahmedabad)	Wheat	GADW 3	87.20	344440
	Gram	GJG 3	52.60	315600
	Cumin	GC 4	03.60	104400
	Dilseed	GAD 1	03.20	25600
KVK, Dahod	Wheat	GW 451 (Certified)	22.00	76669
	Soybean	NRC 37 (Breeder)	15.00	174375
	Soybean	NRC 37 (Foundation)	27.00	216000
	Soybean	NRC 37 (Certified)	11.00	66000
	Chickpea	GJG 5 (Foundation)	17.50	143500
	Sun hemp	Local	01.10	6600
KVK, Deavataj (Anand)	Paddy	GR 7	46.90	148595
	Paddy	Gurjari	64.50	192141
	Wheat	GW 451	54.70	158055
TRTC Devgadbaria	Soybean	NRC 37	500.00	58125
	Maize fodder	African Tall	430.00	21500
	Wheat	GW 451	850.00	29963
	Gram	JG 14	1500.00	90000
	Maize	ICPF 21 (Pop corn female)	05.00	1000

(iv) Impact of KVKs of AAU

The details of the impact of KVKs of AAU during 2020-21 are given in Table 5.14.

Table 5.14 Impact of KVKs of AAU on specific technology/skill transferred during 2020-21

Sr. No.	Name of specific Technology/Skill Transferred	No. of Participants	Production Increase (%)	Change in Income (₹/ha)	
				Check	Demo
(A) KVK, Arnej (Ahmedabad)					
Cereals					
1	Use of Thiourea 500 ppm in wheat GADW 3	10	12.00	24100	26800
2	Use of leaf colour Chart in paddy	10	12.34	48300	67400
Pulses					
3	Seed treatment in gram	95	14.41	24700	27200
4	Use of Fertilizer and Biofertilizer in gram	95	13.04	24200	28100

Sr. No.	Name of specific Technology/ Skill Transferred	No. of Participants	Production Increase (%)	Change in Income (₹/ha)	
				Check	Demo
5	Use of Bio-agent in gram	95	16.53	25500	27600
Oil Seed					
6	Wilt resistant variety, castor GAC 11	35	24.62	63400	81200
Horticultural crops					
7	Introduction of improved variety GAVC 112 (Chilli)	10	12.52	115300	133200
8	Artificial defoliation (Chilli)	10	7.49	110000	113500
9	Azoxistrobin 23SC 0.23% 10 ml/lit water (Cumin)	10	8.06	46400	48900
10	Introduction of improved variety GC 4 (Cumin)	10	8.20	45250	49675
11	Introduction of new crop and variety GAD 1 (Dilseed)	10	18.57	43245	45325
12	Introduction of new variety GAO 5 (Okra)	10	14.45	104050	125000
13	Introduction of new variety GT 5 (Tomato)	10	5.18	188750	208000
14	For Jassid Thiamithoxam 25WG (Okra)	10	11.49	105350	121400
Commercial crop					
15	Introduction of improved variety GADC 2 (Desi Cotton)	10	11.49	67500	76850
Cattle					
16	Calf Starter	20	29.97% Gain in weight	16.44(274gm ADG)	13.02(217gm ADG)
17	Milk Replacer	20	26.26% Gain in Weight	7.97(177gm ADG)	6.75(150 gm ADG)
18	COFS29	05	18.07% Gain in Weight	15 ton (04 Cutting)	3.5 ton (01 Cutting)
19	Bypass Protein	20	4.83 % Fat Increased	45.27 (503 gm ADG)	34.83 (387 gm ADG)
20	Bypass Fat	20	2.8 % Milk Increased	9.15 L/Day 6.5% Fat	8.90 L/Day 6.2% Fat
Agricultural Engineering					
21	Paddy Transplanter-Manual	10	457 Man hour/q 105 Cost of operation, ₹/q	57 3990	328 8200

Sr. No.	Name of specific Technology/ Skill Transferred	No. of Participants	Production Increase (%)	Change in Income (₹/ha)	
				Check	Demo
22	Electric Operated Paddy Thresher	5	219.35 Threshing Capacity (kg/h)	189	65
23	Women Empowerment	5	Increased shelf-life results cost benefit and saving of resources i.e., time and energy for milking activity helped to improve health		
(B) KVK, Dahod					
Cereals					
1	Varietal replacement- Maize	50	20.34	7966	19457
2	Varietal replacement -Wheat	25	18.51	25252	31381
Pulses					
3	Varietal replacement -Gram	50	33.17	15048	25581
4	Varietal replacement – Pigeon pea	25	26.50	29173	40533
5	Varietal replacement -Green gram	25	20.72	17645	27638
Oil Seed					
6	Varietal replacement –Soybean	50	14.21	29890	36651
Vegetables					
7	Varietal replacement –Okra	50	16.73	121680	146990
8	Varietal replacement – Brinjal	20	19.66	178680	228495
9	Varietal replacement –Tomato	20	25.78	203060	276220
10	Varietal replacement –Chilli	20	15.75	99230	124460
Cattle					
11	Disease management	50	18.06	3890	5660
12	Fertility Management	20	65 % success rate		
Poultry					
13	Poultry birds- Breed replacement :Kadaknath	20	3.30	2550	5250
(C) KVK, Devataj (Anand)					
1	Varietal Introduction GAR 13	1700	76	18600	25200
2	Varietal Introduction GW 451	330	82	8900	13600
3	Production technology of Mung bean	420	72	36000	49700
4	Use of bio fertilizers	145	81	48000	53200
5	Use of mineral mixture	500	81	4700	6300
6	Composite fish culture in village ponds	160	63	41500	75100

NB: The data were based on the actual study, questionnaire/group discussion, etc. with ex-participants.

1. Training Programmes for Extension Functionaries

(a) Extension Education Institute

The Extension Education Institute, Anand caters the extension training needs of middle-level functionaries of various line departments of Western Zone States viz; Gujarat, Rajasthan, Madhya Pradesh, Chhattisgarh, Maharashtra, Goa and UTs of

Diu, Daman and Dadra Nagar Haveli. The aim is to improve their job performance, wherever, they are working in different capacities. The Management Committee of EEI approves action plan and reviews the progress of EEI activities. Total 66 training courses were conducted for 2089 trainees by the EEI, Anand during the year as shown in Table 5.15.

Table 5.15 : Training Programmes Conducted by Extension Education Institute during the Year 2020-21 through online mode

Sr. No.	Type of Courses/Workshops	No. of Courses	No. of Participants
1	On-Campus	43	1373
2	Peripatetic (Off-Campus)	23	716
Total		66	2089

(b) Training & Visit Scheme

The Anand Agricultural University has taken up the task of training for the extension personnel of the Department of Agriculture through the Training and Visit Scheme at Anand. The details about bi-monthly

workshops and pre-seasonal training programmes organized for the extension personnel of the Department of Agriculture and the number of SMSs/AEOs attended the programmes during 2020-21 is given in Table 5.16.

Table 5.16 Training Programmes Organized by T&V during the Year 2020-21 through online mode

Sr. No.	Type of Programmes	No. of Training Programmes	No. of Extension Personnel
1	Bi-Monthly Workshops	04	167
2	Pre-seasonal Trainings	02	112

4. Training Programmes for Farmers / Farm Women / Farm Youths/Extension Workers and Others

Training is essential to increase the efficiency of the farmers, farm women, farm youths and extension workers. On-campus, as well as off-campus training programmes are organized based on the needs and interests of the stakeholders

through the Front Line Transfer of Technology (TOT) Centres. Total 290 (On-campus-172 and Off-campus-118) training programmes were organized by extension education centers of AAU for 11340 beneficiary farmers and extension workers during 2020-21. The center wise details of the training programmes and their beneficiaries are given in Table 5.17 and 5.18.

Table 5.17 On-Campus Training Programmes Organized by TOT Centers during 2020-21 through online mode

Sr. No.	Name of TOT Center	No. of Training Programmes	Farmers	Farm Women	Extension Workers/ Other	Total
1	SSK, Anand	04	73	-	-	73
2	KVK, Arnej (Dist.Ahmedabad)	54	1276	-	-	1276
3	KVK, Dahod	41	2827	1573	423	4823
4	KVK, Devataj (Dist.Anand)	03	113	01	-	114
5	TRTC, Devgadhabaria	08	193	64	00	157
6	TFWTC, Devgadhabaria	10	32	260	00	293
7	DVK, Vejalpur	01	39	-	-	39
8	PVK, Limkheda	15	162	387	00	549
9	TC, Jabugam	10	300	-	-	300
10	ATIC, Anand	01	255	44	48	347
11	APC, Dahod	02	10	-	-	10
12	NARP Extension Scheme MMRS, Godhra	01	55	-	-	55
		03	165	-	-	165
13	School of Baking, Anand	19	67	-	-	67
Total		172	5567	2329	471	8195

Table 5.18 Off-Campus Training Programmes Organized by TOT Centers during 2020-21 through online mode

Sr. No.	Name of TOT Center	No. of Training Programmes	Farmers	Farm Women	Extension Workers/ Other	Total
1	KVK, Arnej (Dist.Ahmedabad)	29	745	-	-	745
2	KVK, Dahod	50	897	563	-	1460
3	KVK, Devataj (Dist.Anand)	01	16	-	-	16
4	TRTC, Devgadhabaria	03	20	45	00	65
5	TFWTC, Devgadhabaria	04	22	60	00	82
6	DVK, Vejalpur	12	437	131	-	568
7	PVK, Limkheda	04	19	50	00	69
8	APC, Dahod	15	140	-	-	140
Total		118	2296	849	00	3145

5. Extension Education Activities

The KVKs, TOT centers as well as the Advisory Service Centers and other Centers had also planned and organized extension education activities. More than 47,223 beneficiary farmers were benefited through various extension education activities conducted by various

extension, education and research centers of AAU whereas, 2,20,033 beneficiary farmers were benefited by providing mobile advisory services (Voice and Text both) through KVKs of AAU during 2020-21. The details of the extension education activities organized under various centers/schemes are given in Tables 5.19 to 5.20.

Table 5.19 Extension Education Activities carried out by KVKs of AAU during 2020-21

Activities	No. of Programmemes	No. of Farmers	No. of Extension Personnel
Advisory services	177	16979	44
Diagnostic visits	232	542	16
Field days	16	351	6
Group discussions	48	810	16
<i>Kisan ghosthis</i>	11	956	26
Film shows	74	2002	202
Exhibition	2	146	9
Lectures delivered	88	17748	527
Method demonstrations	53	1006	20
Celebration of important days	8	316	16
Special day celebration	2	114	2
Farmers visit the KVK	370	2187	70
Filed visit	192	807	37
Telephonic/Postal guidance	1485	1426	59
Farmers meeting	24	446	14
Farmer scientist interaction	11	146	89
Educational tour	1	17	2
Cattle camp/Animal health/Vaccination camp	2	66	3

Table 5.20 Mobile Advisory Services provided by KVKs of AAU during 2020-21

Name of KVK	Message Type	Type of Messages					Total Beneficiaries
		Crop	Live-stock	Marketing	Awareness	Other Enterprise	
Arnej (Dist.Ahmedabad)	Text only	32	21	03	16	28	11520
Dahod	Text only	02	00	01	01	00	38571
	WhatsApp	86	23	06	64	25	1873
Devataj (Dist.Anand)	Text only	01	00	03	05	02	168069
Total		121	44	13	86	55	220033

Table 5.21 : Extension Education Activities Carried Out in Tribal Area by TOT Centers during 2020-21

Sr. No.	Activities	TTF Dahod	APC Dahod	TRTC Devgadbaria	TFWTC Devgadbaria	PVK Limkheda	TOT Godhra	TC Jabugam
1	<i>Khedut shibirs/Pashupalan shibirs/Krushis gosthis/Group discussion</i>	-	2 (20)	-	-	01 (262)	03 (165)	12 (384)
2	Guidance to farmers	206	318	10	11	11	06 (153)	136 (491)
3	Films/Video shows	-	-	-	-	-	01 (50)	05 (150)
4	Guidance through letters/ Telephone/SMS	245	443	304	378	456	283	196 (375)
5	Field visit/ Crop diagnostic services	-	9 (86)	1 (10)	2 (12)	-	13 (13)	-
6	Lectures delivered for new Technology	-	-	6 (133)	6 (183)	16 (504)	08 (1485)	-
7	Pressnote	-	-	01	01	-	-	-
8	Crop Demo/Int.Demo	-	-	12	-	42	-	-

Note: Figures in parentheses indicate numbers of participants/beneficiaries

Table 5.22 Extension Education Activities Carried Out by TOT Centers during 2020-21

Sr. No.	Activities	SSK Anand	ATIC Anand	NIRP Khandha	PRS Dabhoi	PUB Anand	TOT Arnej	FTTC Sansoli
1	Trainings/Khedut shibirs/Pashupalan shibirs/Krushigosthis	-	01 (12)	11 (252)	10 (310)	-	-	19 (743)
2	Group discussions	54 (242)	03 (14)	-	-	-	15 (150)	03 (144)
3	Guidance to farmers	3906	438	-	226	2723	380	211
4	Films/Video/TV/Radio shows	33 (942)	-	-	-	-	-	01 (Mass)
5	Guidance through letters/Telephone/SMS	873	376	-	-	2533	850	296
6	Field day	-	-	08 (136)	05 (105)	-	-	-
7	Field visit/ Crop diagnostic services	03 (03)	-	-	-	-	25 (100)	20 (60)
8	Newspaper coverage/Press Note	01	-	-	03	79	-	-
9	Lectures delivered for new Technology	23 (836)	-	-	-	-	06 (123)	-
10	Escorting the visitors	2989	-	-	-	437	118	-
11	Crop Demo / Interactive Demo	-	-	-	15	-	05	153
12	Success Story	18	-	-	-	-	-	01
13	Khedut din	-	-	-	-	-	-	02 (200)

Note: Figures in parentheses indicate numbers of participants/beneficiaries

6. Publications

(i) Farm Magazine

The publication unit publishes the monthly farm magazine 'Krushigovidya' regularly since May 1948. The main objective of this farm magazine is to disseminate and to popularise improved and scientific methods of agricultural and allied subjects in a very digestible and easily understandable manner for the farming community. A total 1,09,300 copies of krushigovidya distributed during the year 2020-21.

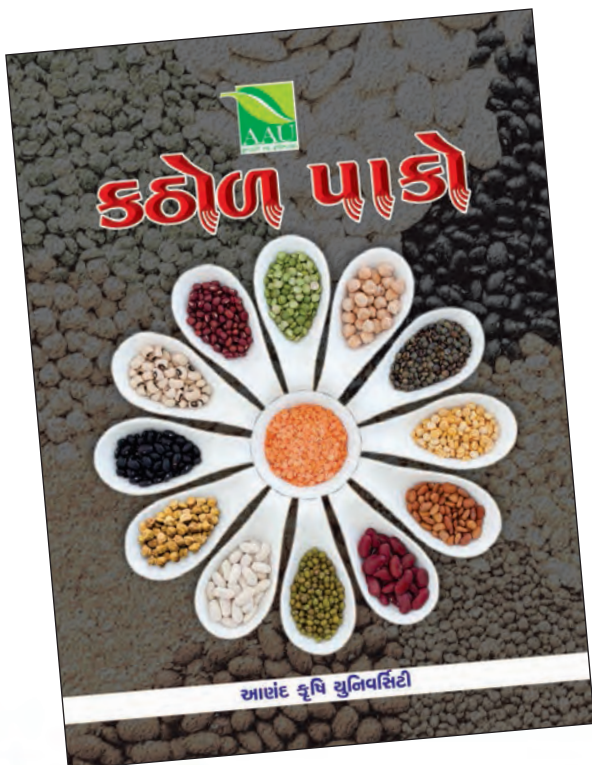
(ii) AAU Newsletter

The Directorate of Extension Education publishes a quarterly 'AAU Newsletter' regularly. The AAU newsletter gives research highlights, technical events/news, extension activities and noteworthy work done by the scientists of AAU.



(iii) Agricultural Literature

The books, booklets, folders, brochures, reports, directory, worksheets, training and practical manuals, etc. on various subjects were published by different extension, education and research centers of AAU during the year. More than, 10,500 copies of books, 4500 copies of booklets, 37,050 copies of folders, 97,300 copies of magazines and more than 5600 copies of other literature were published and distributed to beneficiaries by AAU in all, list of 62 publications are given in Annexure 5.2



Total 1,11,300 copies of different farm literature were distributed by publication unit to farming and scientific community during 2020-21.

(iv) Video Films (DVD)

AAU prepared eight video films. The details of video films (DVD) are given in Annexure 5.3

7. Best Article Award

The AAU gives the Uttam Lekh Awards (Best Articles Awards) for authors whose articles publishes in *Krushigovidya* farm magazine since 2004-05. During this year, Awards were given to 35 authors for their published 13 articles in 12 issues of the 72th volume of *Krushigovidya* farm magazine. Among them, 39 AAU scientists (55.07 %) received the *Uttam Lekh Awards*. The detail is given in Annexure 5.4

8. Mass Media

(i) Radio Talks

During the year, 8 scientists of AAU has delivered 10 radio talks on different topics related to agriculture, horticulture, animal husbandry on All India Radio. The details of radio talks are given in Annexure 5.5

(ii) TV Programmes

Total 16 TV programmes on different aspects covering agriculture, horticulture, animal husbandry, home science etc. were telecast through Doordarshan Kendra, Ahmedabad. The

details of TV programmes are given in Annexure 5.6.

9. Coordination with line Departments

The AAU has planned and organized various extension education programmes/activities in close coordination with line departments of the state. The structural linkages exist under Training and Visit scheme by way of constituting technical committees at the district, zonal and state levels.

The functional linkages also exist under the T&V Scheme through bi-monthly workshops, pre-seasonal trainings, diagnostic team and state level crop seminars/ workshops etc. The coordination exists in a follow-up programme as well as planning of farm trials. In AGRESKO, the officers of the line departments are the members and they generously contribute to the formulation of technical programmes as well as in finalizing recommendations for the farmers.

The interface of AAU scientists with functionaries of the departments of the state, NGOs and other agencies organized at state as well as at campus levels during the year of the report.

The agricultural programmes of All India Radio, as well as *Doordarshan*, were finalized by coordinated efforts. For transfer of technologies to the farmers at large, farmers day, *Krushu Mela*, farmer-scientist interactions, group discussions etc. were organized through collaborative efforts.

Annexure 5.1

Extension Education Schemes

Sr. No.	Scheme	Center
A	Plan Schemes	
1	Training Programmeme on Food Processing Technology	Anand
2	Training Programmeme on Organic Farming	
3	Training Programmeme on Weed Management	
4	Training Programmeme on Integrated Pest Management	
5	Training Programmeme on Seed Production	
6	Training Programmeme on Medicinal and Aromatic Plants	
7	Training in Gardening, Landscaping and Nursery Management	
8	Training in Baking Technology	
9	Training in Commercial Poultry Farming / Advanced Training in Commercial Poultry Technology	
10	Strengthening of Directorate of Extension Education	
11	Agricultural Technology Information Centre	
12	Upgrading of Existing <i>Sardar Smruti Kendra</i>	
13	Establishment of Technological Resource Centre and Educational Museum	
14	Establishment of Transfer of Technology Centre	Arnej
15	Establishment of Agri Poly Clinic for Tribal Farmers	Dahod
16	Strengthening of Demonstration cum Training Centre for Fish Culture	Devataj
17	Establishment of Tribal Farm Women Training Centre	Devgadh Baria
18	Transfer of Technology Centre	Godhra
19	Training Centre	Jabugam
20	Pashu Vigyan Kendra	Limkheda
21	Farm Technology Training Centre	Nenpur
22	Dairy Vigyan Kendra	Vejalpur
B	Non-Plan Schemes	
1	Directorate of Extension Education	Anand
2	Publication Scheme	
3	Establishment of <i>Sardar Smruti Kendra</i> Museum	
4	Farm Advisory Scheme	
6	Tribal Training Centre	Dahod
7	Tribal Research cum Training Centre	Devgadh Baria
C	ICAR Schemes	
1	Overseeing of KVKs through Directorate of Extension Education	Anand
2	<i>Krushu Vigyan Kendra</i>	Arnej
3	<i>Krushu Vigyan Kendra</i>	Dahod
4	<i>Krushu Vigyan Kendra</i>	Devataj
D	Other Agency Schemes	
1	<i>Krushu Mahotsav</i>	Anand
2	Training and Visit Scheme (Plan)	
3	NARP Extension Scheme	Arnej
4	NARP Extension Scheme	Godhra
5	<i>Krushu Library</i>	Anand

Annexure 5.2

Publication of Agricultural Literature during 2020-21

Sr. No.	Name of Publication	Publication Series No. /ISBN/ ISSN No.
Books		
1	<i>Sajiv khetima sankalit vyavasthapan</i>	EDU-1:31:2020:1000
2	<i>Vishwa vyapar sangathan paripekshyma shakbhaji pakoni nikashshil kheti</i>	EDU-1:34:2020:1000
3	<i>Nindan vyavasthapan</i>	EXT-1:27:2021:500
4	Vermicompost	EXT-5:37:2020:2000
5	<i>Jaivik khatar</i>	EXT-5:39:2020:2000
6	<i>Kathol pako</i>	EXT-5:40:2020:2000
7	<i>Krushhi Pakoma processing ane mulyavardhan</i>	EXT-5:41:2020:2000
Booklets		
8	<i>Pashupalan sambandhit – 19 ni samany jankari</i>	EDU-3:17:2020:1000
9	A monogram on management of Injuerd birds	EDU-3:18:2020:1000
10	Papaya Processing Products and Technology	EDU-6:39:2020:200
11	Qualitative For Qetetion of common	RES-1:15:2020:500
12	A blue cross for animal health management booklet	RES-20:1:2021:100
13	<i>Bij masala pakoni vaigyanik kheti paddhati</i>	RES-47:7:2021:500
14	17 th Annual Convocation : Welcome Address	GEN-1:31:2021:300
15	17 th Annual Convocation : Convocation Speech	GEN-1:32:2021:300
16	17 th Annual Convocation : Programme and Procedure	GEN-1:33:2021:300
17	17 th Annual Convocation : <i>Atithi visheshnu sambodhan</i>	GEN-1:34:2021:300
Practical Manuals		
18	Sprinkler and Micro Irrigation Systems Practical Mannual	EDU-4:36:2020:200
19	Agricultural Structures and Environmental Control (PFE-3.5.3)	EDU-4:49:2020:100
20	Post Harvest Engineering of Cereals, Pulses and Oil seeds (PFE- 3.5.4)	EDU-4:50:2020:100
21	Post Harvest Engineering of Horticultural Crops (PFE-3.6.3)	EDU-4:51:2020:100
22	Dairy and Food Engineering (PFE-3.6.7)	EDU-4:52:2020:100
23	Practical Mannual of FPT 124 Basic	EDU-6:40:2020:200
24	Practical Mannual of FPT 361 Basic	EDU-6:41:2020:200
Training Manuals		
25	<i>Bagayati pakoma jivatonu sankalit vyavasthapan</i>	EDU-1:33:2020:1000
26	<i>Marimashala shakbhajipako: Talim samput</i>	RES-5:9:2021:100
Modules		
27	<i>Khetima havaman ane jaminani bhumika</i>	EDU-8:30:2020:50

Sr. No.	Name of Publication	Publication Series No. /ISBN/ ISSN No.
28	<i>Pak utpadan</i>	EDU-8:31:2020:50
29	<i>Bij utpadan</i>	EDU-8:32:2020:50
30	<i>Sankalit poshan vyavasthapan</i>	EDU-8:33:2020:50
31	<i>Piyat vyavasthapan</i>	EDU-8:34:2020:50
32	<i>Paksanrakshan</i>	EDU-8:35:2020:50
33	<i>Farm yantrikaran ane kapni pachhini tantrikatao</i>	EDU-8:36:2020:50
34	<i>Vistarvan vyavastha ane vyaktitva vikas</i>	EDU-8:37:2020:50
Folders		
35	<i>Saragavani jivato ane tenu sankalit vyavasthapan</i>	EDU-1:42:2021:4000
36	<i>Department of Entomology at a Glance</i>	EDU-1:36:2020:500
37	Updraft Throat Type Biomass Gasifier	EDU-4 :38:2020:500
38	Biomass Combustor Based Drying System (English)	EDU-4:39:2020:500
39	Biomass Combustor Based Drying System (Gujarati)	EDU-4:40:2020:500
40	<i>Madhmakhi uchher mateni prathmik jankari</i>	EDU-1:32:2020:1000
41	<i>Shakabhaji pakoma krumithi thatu nukshan tatha tenu vyavasthapan</i>	EDU-1:35:2020:1000
42	Department of Agricultural Entomology at Glance	EDU-1:36:2020:500
43	<i>Gujaratna mukhya kheti pakonu arthkaran</i>	EDU-1:37:2020:500
44	<i>Makaina pakama sankalit jivat vyavasthapan</i>	EDU-1:38:2020:4000
45	Growth and Prospects of Export of Dairy Products from India	EDU-1:39:2020:50
46	<i>Sitafalma chikta (Milibug) nu sankalit vyavasthapan</i>	EDU-:41:2020:5000
47	<i>Saragvani jivato ane tenu sankalit vyavasthapan</i>	EDU-1:42:2021:4000
48	<i>Bagayati Pakoma falmakhinu sankalit vyavasthapan</i>	EDU-1:43:2021:4000
49	<i>Feromentrep sankalit jivat vyavasthapan no agatyano ghatak</i>	EDU-1:44:2021:4000
50	<i>Gayo-Bhensoma thato ganthadar tvachano rog</i>	EDU-3:15:2020:1000
51	Estrus Induction and ovulation Synchronization infertile animals	EDU-3:14:2020:1000
52	<i>Vyandhatv-vasukel dudhala pashuoma vetara and mochananu samkalinikaran</i>	EDU-3:15:2020:1000
53	Novel Peripartum Nutritional postpartum Technologies To Improve fertility	EDU-3:16:2020:1000
54	Biomass Combustor Based Drying System	EDU-4:39:2020:500
55	<i>Biomass combust aadharit sukavani yantra</i>	EDU-4:40:2020:500
56	<i>Khet ojarone ane yantra sambandhit khedut upyogi bhalamano</i>	EDU-4:41:2020:4000
57	Updraft Throat Type Biomass gasifier	EDU-4:38:2020:500
58	<i>Ghauma nindan vyavasthapan</i>	RES-8:3:2021:10,000
59	<i>Gajarghasnu sankalit vyavasthapan</i>	RES-8:4:2021:10,000
60	<i>Unalu magfalima nindan vyavasthapan</i>	RES-8:5:2021:10,000

Sr. No.	Name of Publication	Publication Series No. /ISBN/ ISSN No.
61	<i>Deshi kapasani navi jato ane kheti paddhati</i>	RES-47:6:2021:500
62	Css Mission for integrated Development of Horticulture	EXT-21:4:2021:1000
Profile		
63	AAU Agri Business Incubator Profile	EDU-6:37:2020:300
Magazine		
64	<i>Krushigovidhya Magazine (Monthly)</i>	Year:72-73:No.12-1,2,3:Vol.864-867:12000 Year:73:No.04:Vol.868:11500 Year:73:No.05:Vol.869:12800 Year:73:No.06:Vol.870:13000 Year:73:No.07:Vol.871:12000 Year:73:No.08:Vol.872:12000 Year:73:No.09:Vol.873:12000 Year:73:No.10:Vol.874:12000 Year:73:No.11:Vol.875:12000
Newsletter		
65	AAU Newsletter (Quarterly)	Vol.16 & 17 No.4 & 1:1000 Vol.17 No.2:1000 Vol.17 No.3:1000
66	AAU Agri Business Incubator News Letter	EDU-6:38:2020:200
Bulletin		
67	A Research Bulletin on Endocrinology Buffalo	RES-20:2:2021:200
Reports		
68	Annual Progress Report 2019-20	EDU-4:37:2020:200
69	16 th Annual Report of AAU	GEN-1:30:2020:300

Annexure 5.3

Details of Video Film (DVD) prepared during 2020-21

Sr. No.	Topic/Subject	No. of Copies
1	<i>Krushi Sansodhan Kendra – Sansoli ek parichay</i>	10
2	<i>Divela G. C. H. – 10 Jatni vaigyanik kheti paddhati</i>	10
3	<i>Swachcha ane swasth dudh utpadan</i>	30
4	<i>Pashuoma jivanu ane vishanuthi thata rogo ane tene atkavana upayo</i>	30
5	<i>Pashupalan ma vyandhatva nivarana</i>	30
6	<i>Ghascharanu utpadan ane teni jalavani</i>	30
7	<i>Ghargaththu vastuona upyog thaki pashuona svasthyni jalavani</i>	30
8	<i>Adivasi mahila khedut talim kendranee siddhio</i>	30

Annexure 5.4

Details of AAU Scientist Receiving Best Article Award

Sr. No.	Name of Scientist	Address	Year	Issue No.	Month-Year	Page No.
1	Minaxi R. Prajapati	Polytechnic in Food Science and Home Economics, AAU, Anand	72	1	May – 2019	31-32
2	Dr. K. B. Kamaliya	Polytechnic in Food Science and Home Economics, AAU, Anand	72	1	May – 2019	31-32
3	Dr. D. H. Patel	Polytechnic in Food Science and Home Economics, AAU, Anand	72	1	May – 2019	31-32
4	Er. Kamlesh R. Jethva	Processing and Food Engineering Dept., CAET, AAU, Godhra	72	2	June – 2019	23-26
5	Dr. Sanjay P. Cholera	Processing and Food Engineering Dept., CAET, AAU, Godhra	72	2	June – 2019	23-26
6	Dr. V. I. Joshi	Main Vegetable Research Station, AAU, Anand	72	3	July - 2019	8-13
8	Shri Vipul Patel	Main Vegetable Research Station, AAU, Anand	72	3	July - 2019	8-13
11	Dr. R. R. Acharya	Main Vegetable Research Station, AAU, Anand	72	3	July - 2019	8-13
12	Dr. R. R. Gajera	College of Horticulture, AAU, Anand	72	5	Sep. – 2019	22-25
13	Dr. H. C. Parmar	College of Agriculture, AAU, Jabugam	72	5	Sep. – 2019	5-7
14	Dr. Vinod B. Mor	College of Agriculture, AAU, Jabugam	72	5	Sep. – 2019	5-7
17	Dr. M. V. Patel	College of Agriculture, AAU, Jabugam	72	5	Sep. – 2019	5-7
18	Dr. K. B. Kathiria	Vice-Chancellor, VC Office, AAU, Anand	72	5	Sep. – 2019	5-7
19	Dr. R. M. Rajpura	Animal Science Department, BACA, AAU, Anand	72	6	Oct.- 2019	25-27
20	Dr. M. M. Trivedi	Animal Science Department, BACA, AAU, Anand	72	6	Oct.- 2019	25-27

Sr. No.	Name of Scientist	Address	Year	Issue No.	Month-Year	Page No.
21	Dr. F. P. Savaliya	Poultry Complex AAU, Anand	72	6	Oct.- 2019	25-27
22	Dr. J. S. Doshi	Regional Research Station, AAU, Anand	72	7	Nov. - 2019	34-47
23	Shri V. B. Bhalodiya	Dept. of Agril. Engg., BACA, AAU, Anand	72	7	Nov. - 2019	34-47
24	Shri C. S. Baladhiya	Agricultural Engineering Dept. BACA AAU, Anand	72	7	Nov. - 2019	34-47
25	Dr. D. D. Parekh	College of Horticulture, AAU, Anand	72	7	Nov. - 2019	22-24
26	Dr. Amita B. Parmar	College of Horticulture, AAU, Anand	72	7	Nov. - 2019	22-24
27	Dr. R. R. Gajera	Post Harvest Technology Department, College of Horticulture, AAU, Anand	72	7	Nov. – 2019	38-41
28	Dr. D. D. Chaudhary	AICRP on Weed Management, BACA, AAU, Anand	72	7	Nov. – 2019	31-33
29	Dr. V. J. Patel	Polytechnic in Agriculture, AAU, Anand	72	7	Nov. – 2019	31-33
30	Dr. B. D. Patel	AICRP on Weed Management, BACA, AAU, Anand	72	7	Nov. – 2019	31-33
31	Dr. G. C. Mandli	Veterinary College, AAU, Anand	72	9	Jan. – 2020	5-10
32	Shri P. C. Patel	Office of Directorate of Extension Education, AAU, Anand	72	11	March - 2020	42-45
33	Shri S. A. Sipai	Office of Directorate of Extension Education, AAU, Anand	72	11	March - 2020	42-45
34	Dr. Gautam R. Patel	Registrar Office, AAU, Anand	72	11	March - 2020	11-13
35	Dr. Bindu M. Christian	Agricultural Extension and Communication Department, Polytechnic in Agriculture, AAU, Vaso	72	11	March - 2020	11-13

Annexure 5.5

Radio Talks Delivered during 2020-21

Sr. No.	Name of Scientist	Topic	Date
1	Dr. A. Y. Makani	Advantages of Drip Irrigation Farming System	05/03/2020
2	Er. Khyati Vyas	<i>Khet talavadi nu mahatva</i>	22/07/2020
3	Dr. K. C. Patel	Kharif pakoma gandhak ane shukshma tatvonu mahtva	31/07/2020
4	Dr. Ekta Pandya	Integrated pest control in stored grains	28/01/2021
5	Er. Khyati Vyas	<i>Chhat dvara varsadi pani no sangrah</i>	29/01/2021
6	Dr. A. Y. Makani	Integrated disease management in winter crops	04/02/2021
7	Er. J. J. Chavda	Importance and Utilization of Biogas	23/02/2021
8	Shri. J. M. Patel	Disease and vaccination in animals	18/03/2021
9	Dr. D. K. Vyas	Green house and its Maintenance	25/03/2021
10	Er. Kamlesh R. Jethva	<i>Fal pako ma Packaging ane tenu Mahatav</i>	26/03/2021

Annexure 5.6

Television Programmes Telecasted during 2020-21

Sr. No.	Name of Scientist	Topic	Date
1	Dr. K. V. Patel	<i>Tuver ni jato ane kheti paddhati</i>	21/04/2020
2	Dr. D. B. Sisodiya	<i>Madhy Gujaratna chomasu pakoma sankalit jivat vyavasthapan</i>	13/07/2020
3	Dr. K. C. Patel	<i>Kharif Pakoma gandhak ane sukshma tatvonu mahatva</i>	05/08/2020
4	Dr. M. B. Patel	<i>Popcorn ane sweetcorn makaini kheti paddhati</i>	18/08/2020
5	Dr. R. K. Thumar & Dr. R. G. Parmar	<i>Kharif Pakoma sankalit rog-jivat vyavasthapan</i>	21/08/2020
6	Dr. R. R. Gajera	<i>Krushni kshetrani urja ane teno upyog</i>	26/08/2020
7	Dr. K. K. Hadiya & Dr. R. J. Modi	<i>Pashuoma varshik viyana ni agatyata ane faydao</i>	18/09/2020
8	Dr. R. R. Acharya	<i>Shakbhajini judi judi jato ane teni lakshaniktao</i>	14/10/2020
9	Dr. D. B. Sisodiya	<i>Makaini tapkavali lashkari iyal ane tenu niyantran</i>	11/11/2020
10	Dr. R. K. Thumar & Dr. D. B. Sisodiya	<i>Shiyalu pakoma sankalit jivat niyantran</i>	27/11/2020
11	Dr. D. D. Chudhary	<i>Ravipakoma nindannashakono upayog</i>	02/12/2020

Sr. No.	Name of Scientist	Topic	Date
12	Dr. S. K. Raval & Dr. J. B. Nayak	<i>Pashupalan sambandhit rogoni jankari ane teni agatyata</i>	11/12/2020
13	Dr. M. B. Viradiya	<i>Kheti pakoma poshan vyavasthapan</i>	29//01/2021
14	Dr. R. K. Thumar	<i>Geenhouse ma sankalit jivat vyavasthapan</i>	12/02/2021
15	Dr. R. J. Modi	<i>Vijan pahela ane pachhinu gayo/bhensonu vyavasthapan</i>	23/03/2021
16	Dr. R. R. Acharya	<i>Unalu shakbhajini vaigyanik kheti</i>	30/03/2021



Glimpse of Extension Activities



Glimpse of Extension Activities

Chapter 6

STUDENTS' WELFARE

The office of Director, Students' Welfare, Anand Agricultural University was established with effect from 01/05/2004. This office is looking after students' activities/facilities such as housing, sports, cultural events, fellowships, recreation, health, adventure, counseling, NSS, NCC, placement etc. Moreover, dignitaries of different fields are invited to share their thoughts, experiences and views among staff and students.

6.1 Students Representative Council

All the constituent colleges of the university have the Students Representative Council (SRC) formed as per the university rules by the Principal/Dean of the respective colleges by selecting the sincere and leading students. The Council is formed with a view to representing students' problems through their representatives. The SRC organizes and monitors various extracurricular activities of students like planning forum, sports, debate and elocution, preparation of college magazine, cultural programmes, NSS, NCC etc. in collaboration with Directorate of Students' Welfare.

Apart from this, Alumni Associations in all the nine colleges have been formed. One day seminars are organized for strengthening the professional alliance and creating the spirit of oneness amongst alumni.

6.2 Students' Amenities

Hostel Facilities

Hostel environment plays an important role in the development of personality and character of the students. Good hostel facilities are provided to all the polytechnic, under-graduate and post-graduate students of the university as a residential university along with mess facility. In some of the hostels, self-managed messes are governed

by the students, while some are managed through contract system under the supervision of Rector/Asst. Rector/Asst. Warden. Library facility is also available for the students. The other facilities for day-to-day requirements like laundry, tailor, canteen, cycle store, provision store, telephone, post office, bank, ATM etc. are also available in the university premises. The Rector, Asst. Rectors and Asstt. Wardens are appointed in each college to look after the facilities available and to solve the residential problems of the students.

Health Facilities

Anand Agricultural University has signed MOU with Charutar Arogya Mandal, Karamsad, for providing better health facility to students, staff, labours, pensioners since April 1, 2008. Special facility of doctors for various specialties like Dental, Skin, Physiotherapy, Ayurveda, Homeopathy and other is made available on campus.

The number of cases registered under various medical treatments at University Health Center during the year is as under:

Sr. No.	Test/ Treatment	No. of cases/patients turned up
1.	Allopathic	5859
2.	Dental	93
3.	Homeopathic	752
4.	Physiotherapy	1284
5.	Blood Sugar BS/FBS/PP2bBS test, Lipid Profile, Creatinine, Jaundice/S.G.P.T/SGOT/Albumin, Uric Acid, Blood group & Laboratory test in Health Center.	1928

Sr. No.	Type of Patients	No. of cases/ patients Turned up for the treatment mentioned in above table
1.	University Employee	2013
2.	Family members of University Employee	379
3.	Students	540
4.	Farm labours	660
5.	Pensioners	2267

Placement Cell

Anand Agricultural University has an excellent placement record with top-notch organizations in Banking sector, Agriculture, Irrigation, Tractor manufacturing, Dairy and Food Processing, Information Technology, Pharmaceuticals, NGOs and Semi Government organizations with a strong and supportive

alumni network holding prime position in reputed companies. We not only ensure a job for the deserving students, but also instill a lifetime confidence and growth. Our dedicated placement cell is constantly in touch with the industries. The Student Counseling & Placement Cell looks after students' well-being, Placement and Campus-Interview.

Statement showing the details of students' placement (2019-20)

Name of the Faculty	Name of the College	Name of company	No. of Candidates offered Job		
			U.G.	P.G.	Total
Agriculture	B. A. College of Agriculture	1) IDBI Bank, Mumbai			
		2) Axis Bank, Ahmedabad			
		3) Reliance Jio, Mumbai			
		4) GSFC Agrotech Ltd. Vadodara	26	19	45
		5) AgrostarPvt. Ltd, Ahmedabad			
		6) Government			
		7) Others			
	Total	26	19	45	
	College of Agriculture, AAU, Vaso	Agrostar Pvt. Ltd.	05	-	05
		GSFC Agrotech Ltd.	01	-	01
Rise Hydroponic's, Ahmedabad		01	-	01	
Total		07	-	07	
College of Agriculture, AAU, Jabugam	AgrostarPvt. Ltd	03	-	03	
	Mahindra Krish-e	02	-	02	
	TATA Rallis	01	-	01	
	Gujarat State Seed Certification Agency	01	-	01	
	Total	07	-	07	

Name of the Faculty	Name of the College	Name of company	No. of Candidates offered Job		
			U.G.	P.G.	Total
Veterinary Science	College of Veterinary and Animal Husbandry	Cooperative Dairies	03	-	03
		GVK / EMRI (Karuna Animal Ambulance Service-1962) /MVD	34	03	37
		Private Practice	02	-	02
		Total	39	03	42
Dairy Science	SMC College of Dairy Science	AmulFed Dairy, Gandhinagar	04	0	04
		Banas Dairy, Palanpur	06	03	09
		Dudhdhara Dairy, Bharuch	08	02	10
		GCMMF Ltd., Anand	04	05	09
		IDMC Ltd., VU Nagar	02	0	02
		Lactalis India	02	0	02
		Mother Dairy, Delhi	03	0	03
		Uttam Dairy, Ahmedabad	02	0	02
		Vidya Dairy, Anand	02	0	02
		Total	33	10	43
Food Processing Technology	College of Food Processing Technology & Bio-Energy	Print and Pack Pvt. Ltd, Ahmedabad	01	-	01
		Dhara Foods Pvt. Ltd., Boriavi	01	-	01
		Maharaja Dehydration Pvt. Ltd., Mahuva	01	-	01
		Sachchade Food Pvt. Ltd., Ahmedabad	01	-	01
		Jayant Sancks & Beverages. Pvt. Ltd., Rajkot	01	-	01
		Amee Cooling System, Ahmedabad	01	-	01
		Innovative Cusines Pvt. Ltd., Karjan	01	-	01
		Ocenic Food Limited, Jamnagar	01	-	01
		Vadalia Foods, Rajkot	01	-	01
		Phoenix Frozen Foods Pvt. Ltd., Mogar	01	-	01
		Saraf Food Ltd., Vadodara	02	-	02
		Hindustan Coca-cola Beverages Pvt. Ltd., Goblej	01	-	01
		Euro India Fresh Food Pvt.Ltd, Surat	01	-	01
		Dhaandhar Foods Pvt..Ltd, Palanpur	01	-	01
		Gramin Bank, Keshod	01	-	01
		Iscon Balaji Food Pvt. Ltd., Kanjari	-	01	01
		Kitchen Express Overseas Ltd. Ahmadabad	-	01	01
Total	16	02	18		

Name of the Faculty	Name of the College	Name of company	No. of Candidates offered Job		
			U.G.	P.G.	Total
Agricultural Information Technology	College of Agricultural Information Technology	pCube Software Solution	01	-	01
		VisiLean India Pvt. Ltd	01	-	01
		Addon Solutions Pvt. Ltd	01	-	01
		Shreedama Technologies	01	-	01
		Shree Rama BhagwatiAyurved	01	-	01
		Hyperlink Infosystem	02	-	02
		Sarjen System Pvt. Ltd.	03	-	03
		BLUESOFT	02	-	02
		Infozium solutions Pvt. ltd	01	-	01
		Jeel Infotech	02	-	02
		GlorywebsCreatives Pvt Ltd.	01	-	01
		Total	16	-	16
Horticulture	College of Horticulture	Agro star	05	-	05
		Our Food Private Ltd.	01	-	01
		Sayaji Seeds Pvt. Ltd	01	-	01
		Proactive AgrotechPvt. Ltd	01	-	01
		Sugen Mega Power Project	01	-	01
		Trexil Chemical Industries	01	-	01
		Total	10	-	10
Agribusiness Management	International Agribusiness Management Institute	Jio Platform Pvt. Ltd	-	04	04
		Tirth Agro Engineering Pvt. Ltd (Skatimaan)	-	03	03
		HDFC Bank Ltd	-	02	02
		Centre for Youth and Social Development	-	01	01
		Adare Food Ingredient Pvt. Ltd	-	02	02
		Tata Rallis India Ltd	-	01	01
		Aritya Agro Pvt. Ltd	-	01	01
		Godrej Agro Vet Pvt. Ltd	-	01	01
Total	-	15	15		

6.3 Physical Education Programme

Physical Education and Sports play vital role in the development and maintenance of personality, physical fitness, health and body buildup of the students. Along with the development of academic career of the students, this university also strives hard to take care of physical fitness and personality development of the

students by involving them in physical education, sports, cultural events, adventurous activities etc. at college level under the direct guidance and support of Director of Students' Welfare.

(a) Sports Activities & Cultural Events

The students of the university are also trained for the development of skills and excellence in various sports activities. Inter-collegiate competitions

for various games like Chess, Table-Tennis, Badminton, Kabaddi, Volleyball, Basketball, Kho-kho, Cricket, Cultural activities like Folk Dance, One Act Play, Mono Acting, Mime and Literary activities like Essay, Debate, Extempore etc. are organized at various colleges.

The selected students from Inter-collegiate competitions are nominated for Inter-university participation. Due to Covid-19 Pandemic Inter-collegiate, Inter-university and All India AGRI UNIFEST and AGRI UNISPORTS were cancelled during the year.

(b) National Cadet Corps (NCC)

(i) For Boy Cadets :

NCC is a voluntary organization helping India in nation-building. The NCC camps play a vital role in national integration through interaction among different castes, creeds and culture. With a view to giving a boost to the youth in the positive direction, NCC has been included in the course curriculum. The NCC unit of BACA is attached with 4 Gujarat Battalion, NCC, Vallabh Vidyanagar. The unit consists of two platoons of 100 cadets. This year 4 Gujarat Battalion (Boys) organized Combined Annual Training Camps (CATC-VII & CATC-VIII) at Vallabh Vidyanagar. Total 56 cadets attended CATC camp. During CATC camp, the cadets

participated in different activities like weapon training, obstacle, map reading, essay writing, volleyball competition and tug-of-war. The camp was organized in two part viz. For second year students, it was organized from 18th February to 20th February, 2021 and for third year students, it was organized from 22nd February to 26th February, 2021. All the SOP guidelines of Govt. were followed during the camp. During the camp the cadets were taught about Weapon Training, Field Craft and Battle Craft, Map Reading, Musketry and Drill, personality development, life skills, national integration, etc.

Total 37 cadets passed 'C' certificate examination and among them 6 cadets got 'A' Grade. SGT Hardip Mori received a "Shri B. R. Talati Cash Prize for the highest mark obtained in 'C' certificate examination.

Captain P. A. Gohil, Associate NCC officer, B. A. College of Agriculture, AAU, Anand performed duty with army and police as per gov. guideline of Covid -19 NCC Ex. Yogdan.

During this pandemic situation cadets prepared video clip for Covid -19 NCC Ex. Yogdan for creating awareness among the people.

SUO Thakkar Aryan M selected as a Best Cadet for the year 2020-21



NCC Cadets with Officers



Assembling



Weapon Drill



Capt. P.A. Gohil Performing Duty with Police

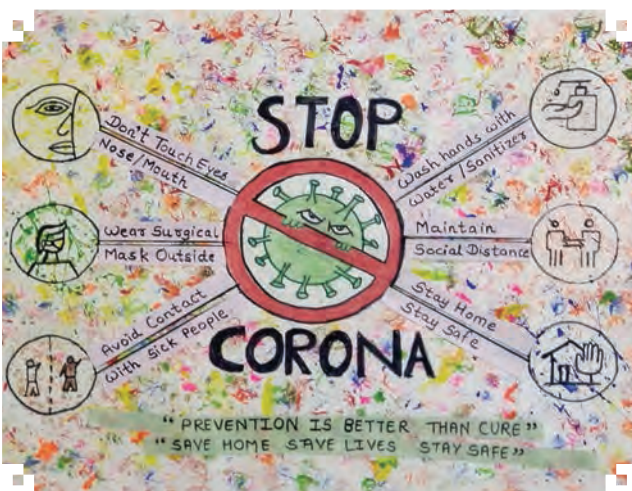
(ii) For Girl Cadets :

- ◆ During the Pandemic of COVID-19, the offline sessions of NCC classes were not conducted but cadets contributed in various ways in different capacity to serve the society by creating awareness about health and hygiene, COVID-19 precautions, conservation of various natural resources and COVID vaccination along with attending online theory and practical sessions and online camps related to NCC activities.
- ◆ During lockdown period Girl cadets prepared different inspirational videos and posters on the measures to prevent the spread of the virus.

officers following all COVID-19 protocols on 22/11/2020 at Sardar Vallabhbhai Patel School, Anand.



Self-Defense Training



Poster Competition

- ◆ SGT Rishika Gupta participated in online training of SSB capsule camp during 14-26 December 2020 and 'Ek Bharat Shresth' Bharat online camp during 10-16 March 2021. She also received 'Most Promising Candidate' position by Flame Academy during SSB camp. She participated in "Cadet Programme Online" webinar during 30-31 January 2021.
- ◆ SGT Yukta Mehta participated in online EBSB camp during 10-15 August 2020 and SSB coaching camp during 01-11 October 2020.
- ◆ Cadets did "Tree Plantation" to spread the message of "Save Nature" at their respective places and tried to make people aware in their surroundings during the month of January 2021.

- ◆ Lt. Rucha Dave arranged self-defense training for Girl cadets along with other NCC



Tree Plantation

- ◆ Cadets prepared different posters on “Save Water” theme and circulated on various online platforms.



Poster Competition

- ◆ UO Dhara Gadhiya received highest marks in ‘C’ certificate examination and stood among the top 5 cadets of the V V Nagar Group. She has been awarded cash prize of Rs. 5000/- by the Commanding Officer Rishi Khosla of 4 Guj. Girls BN, NCC, Anand. She also received “Cadet Welfare Scholarship” worth Rs. 6,000/- from NCC for getting distinction in academics.

6.4 National Service Scheme (NSS)

The Department of Youth Affairs and Sports, Ministry of Human Resources Development, New Delhi had started the National Service Scheme in 1969-70. The basic purpose of this scheme is to develop responsibility through social services and realization of work and discipline. National Service Scheme is functioning in all the UG colleges and Polytechnics of Anand Agricultural University. During the year under report, volunteers registered for regular activity and for special camp are as under:

Sr. No.	Activity	No. of registered volunteers
1	Regular activities	1400
2	Special camp activities	700

During the spare time of academic programme the volunteers are directly involved in the activities related to the problems and requirements of the society and its development through various fields of NSS. They are also inspired to work for Environment, Health, Family welfare, Hospitals and other organizations during natural calamity for the benefit of society and to work with people in the village and slums.

The social activities carried out by NSS are divided in two groups.

4. (A) Regular Activities

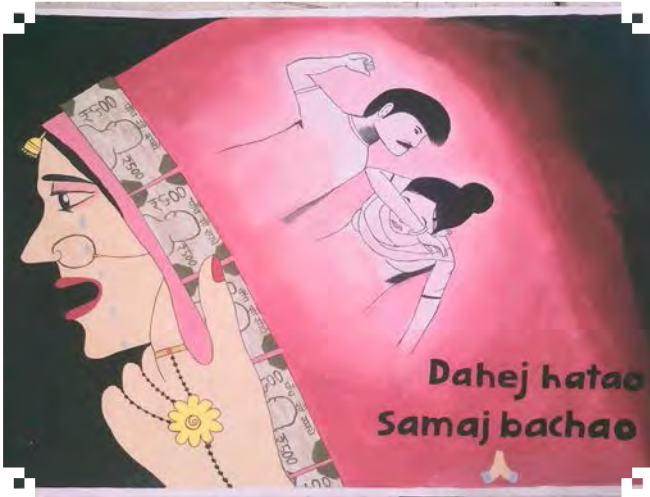
The regular activities carried out by the university during the reporting year include:

- ◆ Celebration of the Independence day and Republic Day
- ◆ Celebration of ‘Matrubhasha Divas’
- ◆ Celebration of NSS Day

- ◆ Tree Plantation Programme
- ◆ Celebration of International Day of Yoga
- ◆ Celebration of International Women’s Day
- ◆ Celebration of Swaschhta Pakhwada
- ◆ Rashtriya Poshan Maah
- ◆ Fit India Movement
- ◆ Celebration of Teacher’s day
- ◆ Voter Awareness Programme
- ◆ Celebration of Agricultural Education Day
- ◆ Gandhi Jayanti
- ◆ Webinar on Yoga
- ◆ Distribution of Ayurvedic Kava for boosting Immunity
- ◆ Awareness programme on Covid-19
- ◆ Campus Sanitization Programme
- ◆ Snehmilan Samaroh
- ◆ Poster and Slogan making competition on COVID-19 awareness
- ◆ Celebration of vigilance awareness week with integrity pledge
- ◆ Celebration of World Soil Day
- ◆ Celebration of Sadbhavana Divas
- ◆ Online awareness lecture on “Importance of Fitness to fight against COVID-19”
- ◆ Poster Competition-2020 on ‘Gandhi Jayanti’
- ◆ A Webinar on “Making Health and Nutrition a Priority During the COVID-19 Pandemic
- ◆ National Voters Day
- ◆ International Peace Day Celebration
- ◆ Online Poster Competition on Observance of Vigilance Awareness
- ◆ A sustainable response to Covid-19
- ◆ Community awareness on Bird Flu and Precautions
- ◆ Yoga and Meditation awareness programme
- ◆ Celebration of Shaheed Diwas
- ◆ Awareness Programme on Road Safety & Traffic



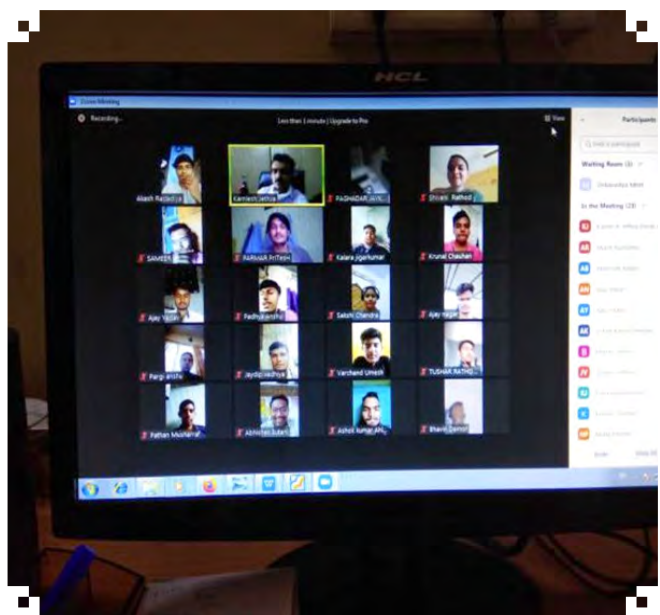
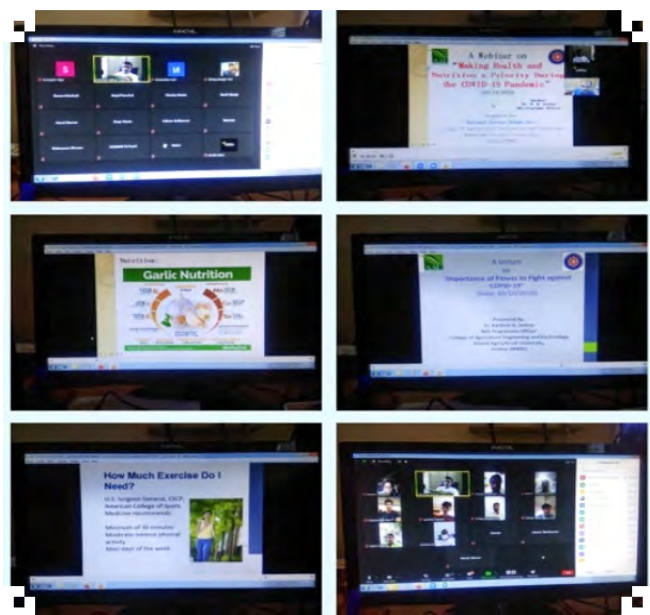
Tree Plantation



Online Poster Making Competition



International Day of Yoga



A Webinar on "Making Health and Nutrition a Priority During the COVID-19 Pandemic"



Fit India Movement



Distribution of Masks by NSS Volunteers



Sadbhavna Divas

4 (B) Special Camp

Special Camp forms an integral part of National Service Scheme. It has special appeal to the youth as it provides unique opportunities to the students for group-living, collective experience sharing and constant interaction with community. Special Camps are organized generally on various developmental issues of national importance. Every year 50 percent of the volunteers of each NSS unit are expected to participate in special camps which is of 07 days duration. Various NSS units of Anand Agricultural University adopt a village or group of villages/

urban slums for intensive social development, where special camps are organized year after year to create tangible and durable community assets. Due to Covid-19 Pandemic, Special Camps were cancelled during the year.

6.5 Other Activities of Directorate of Students' Welfare

(1) International Day of Yoga

June 21 is declared as 'International Day of Yoga' by the United Nations. The Ministry of AYUSH has announced to celebrate International Day of Yoga on the theme of 'YOGA @ HOME'

and 'YOGA WITH FAMILY' due to the current Covid-19 pandemic. The sixth International Day of Yoga was celebrated on June 21, 2020, in which unit/sub-unit officers, employees, students, NSS

volunteers, NCC cadets and university residents performed yoga at home along with their family members.



International Day of Yoga

(2) Webinar on Yoga

International Day of Yoga is celebrated all over the world on 21st June. As per the guidelines of the Ministry of AYUSH, a webinar on the topic of "Yoga nu vastavik svaroop" was organized online through ZoomApp at Anand Agricultural University on 19/06/2020 during 3.00 to 4.00 pm. The webinar was also live streamed on

AAU Facebook link. Dr. Jayana Param Pathak, Yoga Instructor, Gujarat State Yoga Board and Patanjali Yogpeeth delivered a lecture. The webinar was handled by the office of Director of Information Technology, AAU, Anand. The university officers, employees and students, unit/sub unit officers etc. participated in the webinar.



Webinar on Yoga

(3) Distribution of Ayurvedic Kava for boosting Immunity

Ayurvedic kava distribution programme was organized during June 09-10, 2020 with the intention of boosting the immunity of scientists, officers, employees and farm labourers, More

than 1500 employees, officers and farm labourers benefited from it. The entire programme was successfully organized by Dr. H.L.Dhaduk, Research Scientist of Medicinal and Aromatic Crop Research Center and Dr. Dinesh. H. Patel, Director, Students' Welfare, Anand Agricultural University, Anand.

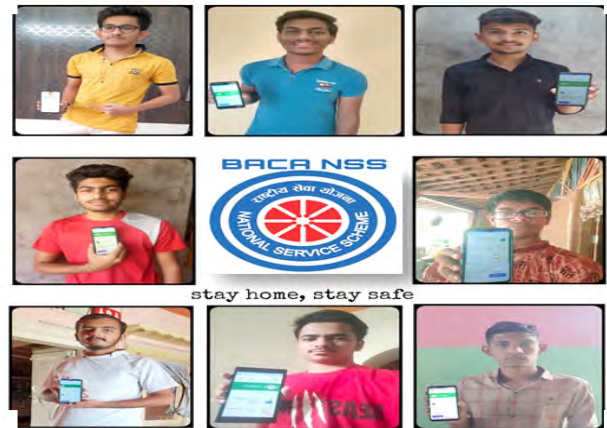


Distribution of Ayurvedic Kava for boosting Immunity

(4) Awareness Programme on Covid-19

NSS Volunteers, NCC Cadets and employees of Anand Agricultural University joined in awareness programme on Novel Corona Virus during Covid-19 pandemic and lockdown

period. University Officers, Unit/sub unit officers, employees, students, NSS Volunteers and NCC Cadets downloaded the ArogyaSetu Mobile app and started using the app in their day-to-day life.



Awareness Programme on Covid-19

(5) Campus Sanitization Programme

The Office of the Directorate of Students' Welfare carried out Campus sanitization programme

on 19/04/2020 by sanitizing office all colleges, hostels, buildings, roads etc. to prevent the spread of Covid-19.



Campus Sanitization Programme

(6) Celebration of 74th Independence Day

Anand Agricultural University celebrated 74th Independence Day at 8.30 am on August 15, 2020 at University Bhavan. University officers and Deans remained present in the celebration of this National Day. Dr. R.V. Vyas, Hon. I/C. Vice Chancellor hoisted the flag and delivered a speech. He commemorated the freedom fighters during the independence of the country, paid homage

to them and to the soldiers who were recently martyred. Special emphasis laid on self-reliant agriculture, new education policy, opening of new FPOs etc. He thanked all the officers, employees and farm laborers for working during the difficult times of Corona Pandemic. Captain P.A. Gohil served as Parade Commandant and Dr. J.B. Nayak served as the announcer on the occasion. The entire programme was coordinated by Dr. Dinesh H. Patel, Director, Students' Welfare.



Celebration of Independence Day

(7) Snehmilan Samaroh

Snehmilan of Vikram Samvat 2077, a New Year of Hindu religion was celebrated on November 19, 2020. Due to Covid-19 Pandemic, this year *Snehmilan Samaroh* was organized on Online Platform through Zoom App. The live streaming of the programme was also telecasted on Facebook

page of AAU, Anand. Dr. R.V. Vyas, Hon. I/C Vice Chancellor, AAU, Anand, all the University officers, Deans of the different faculties, staffs and students joined the programme and extended New Year wishes. Dr. Dinesh H. Patel, Director, Students' Welfare coordinated the programme.



Snehmilan Samaroh

(8) Celebration of 72nd Republic Day

Anand Agricultural University celebrated 72nd Republic Day on January 26, 2021. All University Officers, staff, students of different faculties and family members remained present to

grace this yearly celebration. Dr. R.V. Vyas, Hon. I/C. Vice Chancellor hoisted the flag and delivered a speech. He commemorated the freedom fighters during the independence of the country, paid homage to them.



Republic Day Celebration

6.6 Student Magazine

Student magazine is published by every college of this university with the aim to bring out the hidden talent and expression of the students. Teachers, staff members and students of the college provide the crucial link for the overall development of the students through various articles, poems and interesting agricultural information useful to farmers and scientific community. The detailed report on extra-curricular activities in addition to educational activities is included in the Magazine.

6.7 Educational Tour

Educational tour is considered as a part of academic curriculum of almost all the courses of this university. The duration of educational tour is of 2-3 weeks, which comprises the visits of reputed institutes of Gujarat and outside Gujarat.

The basic purpose of the tour is to gain knowledge and information regarding the study by personal visit to the concerned institutes, industries, organization, farms, research centres etc. Students gain important and interesting information regarding the developments of

agriculture, veterinary and industrial growth by visiting the research centers of Agricultural Universities and other places through educational tours.

6.8 Student Discipline

The virtue of discipline is being

6.9 Donation received for Gold Medal/Gold Plated Silver Medal

Sr. No.	Donation Recieved (Rs.)	Name of the Donor	Name of the Medal and Criterion
1.	3,50,000/-	Dr. Pravinbhai M. Patel, At. & Po: Bavanipura, Ta. Petlad, Dist., Anand /USA addrree: 14100 Murphy Avenue, San Martin CA 95046, USA	Smt. Manjulaben Pravinbhai M. Patel Gold Medal for Postgraduate student securing highest OGPA in the subject of Ph.D. in Soil Science and Agricultural Chemistry in the Faculty of Agriculture, AAU, Anand
2.	1,00,000/-	Dr. H.C. Patel, Retd. Principal & Dean, College of Hroticulture, AAU, Anand. Address: 39, Vishrut Park-2, Jitodia Road, At. Ta & Dist. Anand	Smt. Urmilaben Hemantbhai Patel, Gold Plated Silver Medal for the Undergraduate student securing highest OGPA in the subject of Vegetable Science in the College of Horticulture, AAU, Anand

The university appreciated and noted the kind gesture of the donors and heartily thanked the donors for their generous donation.

6.10 Financial Assistance to the Students

University provides scholarships and financial assistance on merit basis. Government Scholarship and Fellowship etc. are also provided to the students of all the faculties on merit basis as under:

- (1) AAU UG. Fellowship Rs. 6,000/- per year to the students of all faculties
- (2) Merit Scholarships for economically Poor UG students of all faculties worth of Rs.6,000/- per year.
- (3) National Talent Scholarship (ICAR) Rs.36,000/- per year to UG students of the

inculcated in students through Sports, NCC, NSS, Adventure activities, Cultural and Literary activities etc. to maintain cordial atmosphere among students, teachers and staff members of this university. No serious case of misbehavior by the student occurred during the year of report.

faculties of Agriculture, Dairy, Veterinary, Agricultural Engineering and Technology, F.P.T. & B.E.

- (4) National Talent Scholarship (ICAR) Rs.60,000/- per year to PG students of the faculties of Agriculture, Veterinary, Dairy, Agricultural Engineering and Technology, F.P.T. & B.E. and Agri Business Management
- (5) AAU Merit fellowship Rs.18,000/- per year for the first rank holder from the faculties of Agriculture, Veterinary, Dairy, F.P.T. & B.E., Agricultural Engineering and Technology and Agri Business Management for Master studies
- (6) AAU Merit fellowship Rs.24,000/- per year for the first rank holder from the faculties of Agriculture, Veterinary, Dairy, F.P.T. & B.E., Agricultural Engineering and Technology for Ph.D. studies

Number of NTS, UG and PG Fellowship awarded is as under

College Name	NTS Scholarship		UG Fellowship	UG Economic Poor Scholarship	PG Fellowship
	UG	PG			
B.A. College of Agriculture, Anand	32	26	44	03	02
College of Veterinary Science, Anand	13	22	37	11	03
College of Dairy Science, Anand	10	09	15	05	04
College of Food Processing Technology & Bio-Energy, Anand	07	02	14	-	05
College of Agricultural Information Technology, Anand	-	-	18	17	-
College of Agricultural Engineering & Technology, Godhra	15	07	06	-	03
College of Agriculture, Vaso	-	-	26	20	-
College of Horticulure, Anand	-	-	12	05	-
International Agri Business Management of Institute, Anand	-	02	-	-	06
College of Agriculture, Jabugam	-	-	24	15	-
Total	77	68	196	76	23





Glimpse of Activities

Chapter 7

UNIVERSITY LIBRARY

Dr. M. D. Patel Regional e-Library is functioning independently as a separate unit with great pride as “University Library”. Presently, the library is in possession of 24 foreign journals, 70 Indian journals, 101 Indian e-journals, 28 popular magazines, 14 news papers, 81531 barcoded books, 2505 e-books, 11993 reports, 13803 back volumes, 5793 M.Sc. and Ph.D. theses, 280 DVDs, 99 digitized rare books, and several e-resources for the utility of the users. Moreover, library activities like acquisition, circulation, searching etc. are carried out with Koha Library Software integrated with RFID System, which has fortified the library system. Cyberary, a hub of e-activities, is also a part of library providing internet services to users with 36 computers and 125 mbps internet connectivity. This year, more efforts were put in by the library for the development of learning resources, infrastructure, library service innovations, information and communication technology and human resource from the grant given by the state government and the ICAR.

Library Management

The University Library functions under the overall supervision of the University

Library Services

- ◆ Circulation
- ◆ Reprographic
- ◆ Reference
- ◆ Document Delivery Request (CeRA)
- ◆ Inter Library Loan
- ◆ Internet Access (Web Surfing)
- ◆ Online Catalogue
- ◆ News Clipping (via e-mail)
- ◆ Question Papers (online)

Librarian, who is one of the Statutory Officers of the University, directly answerable to the Vice Chancellor. The Library Committee of the University consisting of the following members is constituted under Section-20(4) of the Act to manage the library and render suggestions to the Board of Management on any matter related to the library.

Library Committee

- (1) The Vice Chancellor - Chairman
- (2) The Director of Research and Dean of Post Graduate Studies
- (3) The Director of Extension Education
- (4) The Deans of Faculties
- (5) Five Heads of the University Departments of different faculties nominated by the Vice Chancellor
- (6) The Registrar
- (7) The Accounts Officer of the University
- (8) The Director of Students' Welfare
- (9) One P.G. Student from each faculty nominated by the Vice Chancellor
- (10) The University Librarian - Secretary

- ◆ Food For Thought (via e-mail)
- ◆ New Arrivals
- ◆ News Papers and Periodicals
- ◆ Digitization (*Krishikosh*)
- ◆ Electronic Resources (Databases, Journals, e-Books etc.)
- ◆ Technical Support
- ◆ Teaching and Training
- ◆ Plagiarism Detection Service

Grant allotted and expended during the year of report

Sr. No.	Type of Grant	Allotment (Rs. in Lakh)	Expenditure (Rs. in Lakh)
1.	State Government	48.00	39.67
2.	ICAR Development	14.90	14.90
Total		62.90	54.57

Resources available during the year of report

Resource Type	Number added during the year	Total
Text Books/Reference Books	1006	81531
e-books	138	2505
Journals	Foreign	24
	Indian	70
	e-journals	101
Back volumes	-	13803
Theses	196	5793
DVDs	-	280
Online Resources	1. Indianjournals.com 2. Indiastat.com 3. CMIE (Commodities) 4. Krishi Kosh 5. J-Gate 6. Consortium of e-Resources in Agriculture (CeRA) 7. e-Books and Encyclopedias 8. Online Question Papers 9. DELNET	
KrishiKosh Repository (http://krishikosh.egranth.ac.in)	M.Sc./Ph.D. Dissertations : 4850+ Digitized Rare Books : 99 Digitized Question Papers : 4000+ Practical Manuals : 62 Annual Reports : 16	

Library activities during the year of report

User Statistics

During the year of report, library operations were limited due to COVID-19 pandemic in academic institutions. There were 2557 library transactions.

ICAR. The DDS service is being provided on time by Dr. M. D. Patel Regional e-Library. This year, the CeRA user statistics indicate 26661 hits and 39 Document Delivery Requests are catered to different users.

CeRA

Consortium for e-Resources in Agriculture is a repository of e-resources provided by the

KrishiKosh

‘KrishiKosh’- an Institutional Repository has been created under the National Agricultural Innovation Project (NAIP)

to provide online access to researchers and scientists all over the world. Since the launching of the Project, AAU has been actively contributing vast material to this repository. Total 4850+ M.Sc./Ph.D. dissertations are uploaded on KrishiKosh. In addition to that historical photographs, digitized rare books (99), digitized Question Papers (4000+), Marketable Technologies, Instructional Manuals (62), Convocational addresses, Annual Reports (16), *Krishi Mahotsav* Model and other institutional publications of AAU are available for open access.

Plagiarism Detection System

Plagiarism Detection System (URKUND) has been set up in the university backed with Anti Plagiarism Policy to maintain higher academic integrity standards in the academic and research. Total 250+ theses/dissertations have been tested for plagiarism to ensure quality in research publications.

Workshop cum Training

Library has organized three different Workshop-cum-Training programs for post graduate students.

- (1) CMIE Training (Date: 01.01.2021, 140 participants)
- (2) JGate Awareness Training (Date: 08.01.2021, 135 participants)
- (3) Reference Manager – Zotero Training (Date: 22.01.2021, 120 participants)

Library Committee Meeting

The Tenth Library Committee meeting after implementation of common statutes for Agricultural Universities of Gujarat was held on 07.08.2020 in the University Bhavan, AAU, Anand and various library related issues were discussed at length.

Digital Library Services

Presently, the Library successfully renders following services to the users:

1. **News Clipping:** This library service is now provided as an attachment in e-mail.
2. **Food For Thought:** Library has started to circulate good reading articles to the library users as an attachment in e-mail.
3. **Online Question Papers:** Students and faculties can access old question papers in pdf format.
4. **AAU in Media:** News and Coverage of Anand Agricultural University from different print and electronic media are uploaded in the media section of AAU website.

Learning and Infrastructure Facilities

- ◆ Print text books and reference books were procured for the benefit of the scientists and students of the University to keep them updated with current developments in agricultural sciences.
- ◆ CD-ROM Library Section has been developed in the library to display different CD-ROMs available in library. User can issue-return CD-ROM and view contents in viewing room.
- ◆ Cloud based KOHA library management system has been extended to sub libraries of Anand Agricultural University. Libraries of different centers namely Library of Agriculture College-Vaso, Library of Agriculture Engineering College-Godhra and Library of Veterinary College-Anand were integrated in existing KOHA LMS, which enables them to use library

management system in different library related activities.

- ◆ RFID (Radio Frequency Identification) is the latest technology to be used in library theft detection systems. RFID system has been implemented in the library which simplifies patron's self check-in / check-out, anti theft detection etc., making it virtual

digital library.

- ◆ Library has become DELNET member. DELNET is a largest network of libraries in South Asia and provide various library related services like interlibrary loan, document delivery services, reference services, professional services, software development and training.



University Library



Cyberary



Periodical Room



Air conditioned Theses Room



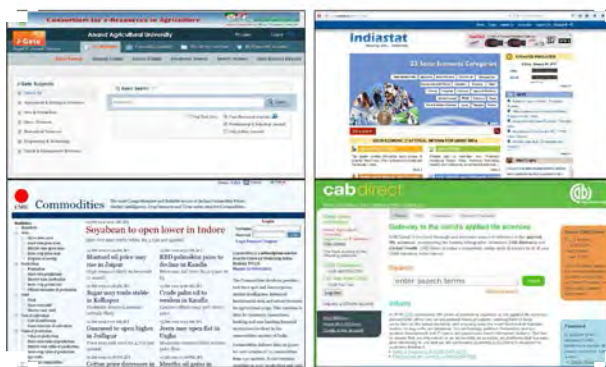
Library Committee Meeting



KrishiKosh Repository



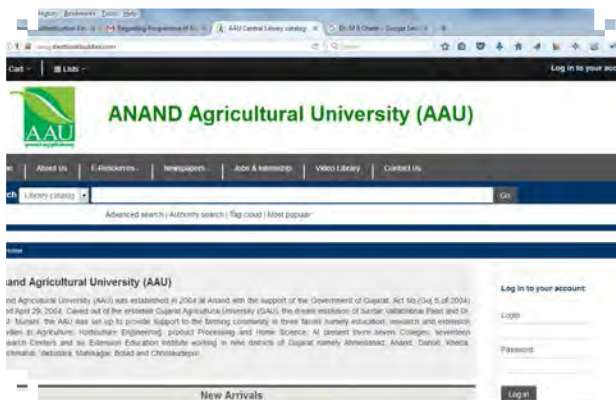
Air conditioned Reading Room



e-Resources



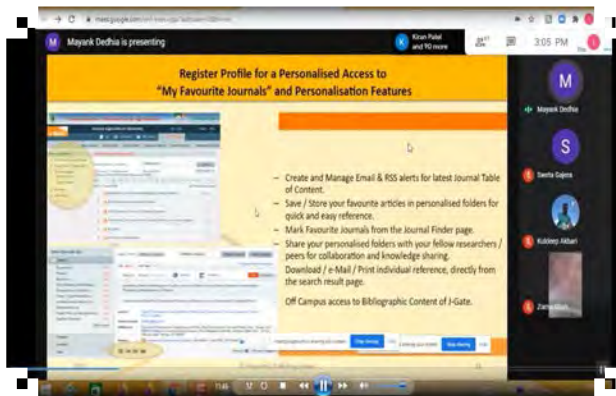
RFID based Self check-in/check-out Kiosk



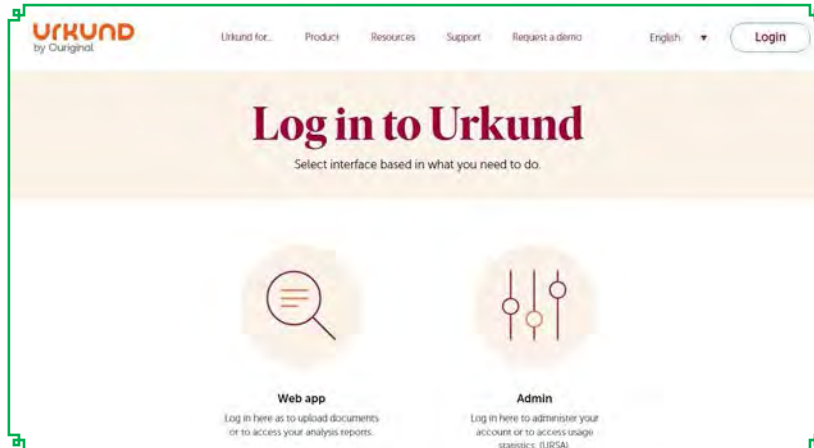
Library KOHA OPAC



CD-ROM Library



Workshop-cum-Training



URKUND – Plagiarism Detection System



Cyberary

Appendix 1

CIVIL WORKS COMPLETED

Sr. No	NAME OF WORK
1	Construction of Building for Seed Hub under K.V.K. at AAU, Dahod
2	Providing of fan In C,D,E type quarters at AAU., Anand.
3	Expansion of Girls Hostel for Polytechnic In Agricultural Engineering at AAU Dahod
4	Construction of Exam Hall for FPT & BE College at AAU., Anand.
5	Providing & Fixing chainlink jali to plot of MVRS Farm under RKVY at AAU, Anand.
6	Construction of shed over terrace of Bio Fertilizer Building at AAU., Anand.
7	Construction of RCC Approach Road to Seed Godown under RKVY at AAU Thasra.
8	Providing & Fixing LED Surface Light in Periodical Room/Stack Room in Library at AAU., Anand
9	Strengthening of Cage House-2 at Poultry Dept., AAU, Anand
10	Renovation of Lab. in Micro. Dept. of Dairy Sci. College, AAU Anand.
11	Construction of Security Cabin for Veterinary College, Vidya Dairy Road Gate, at AAU Anand.
12	Electrification of Building for Seed Hub under KVK at AAU., Dahod
13	Providing and Laying Irrigation Pipe Line under RKVY at AAU Thasra.
14	Renovation in Stack Room of M.D.Patel Library at AAU, Anand
15	Upgrading of Cage House-2 at Poultry Dept. at AAU, Anand.
16	Additional work of electrification for Animal Biotechnology Laboratory under Semen Sexing of Animal Project for Veterinary Collage at AAU., Anand
17	Remaining Work of Providing and Laying Drainage Line for Residential & College Campus of Model Farm at AAU Vadodara.
18	Providing Drainage Line Under Strengthening of Quarters at AAU Vadodara.
19	Construction of Farm Protection Wall To Boundary of Main Rice Research Station Under RKVY at AAU, Navagam.
20	Water Profing to Tarrace of C Type Quarters (9-10,31-32) and Executive Engineer's Office at AAU Anand.
21	Provding Rain Water Harvesting for Building of Seed Hub Under KVK at AAU Dahod.
22	Renovation of Toilet of DR / Reg / Comptroller at Uni.Bhavan at AAU, Anand.
23	Water Profing to Tarrace of B Type Quarters at AAU Anand.

Sr. No	NAME OF WORK
24	Providing putty to False Ceiling of Laboratory of Bio Technology Dept , Vet Sc College at AAU, Anand
25	Repairing of Ceiling in Laboratory in Dairy Engineering Dept at SMC Dairy College AAU, Anand.,
26	Approach Road to Farm from Main Entry Gate on Devrampura Raod at Horticultural Research Station under RKVY at AAU, Khambholaj.
27	Repair and Renovation of Ladies Toilet in M.D. Patel Library at AAU, Anand
28	Repair and Renovation of Gents Toilet in M.D. Patel Library at AAU, Anand
29	Strengthening of Residential Quarters (New A , Rector Qtrs and Old 'A' Type) at AAU, Anand.
30	Providing and Fixing Compact Storage System in Record Room at Animal Bio Technology , Vet Sci. College at AAU Anand.
31	Levelling of Farm of Horticulture Research Station at AAU, Khambholaj.
32	Applying Distempering to Exam Hall for FPT and BE College at AAU, Anand
33	Raising of Compound Wall from Agronomy-Railway Line-New Colony to Hostels at AAU, Anand.
34	Providing Chhajja to Old C Type Quarters at AAU, Anand.
35	Raising of Kaccha Road for Main Rice Research Station, at AAU , Navagam
36	Providing & Fixing Razor Wire Fencing to Existing Compound Wall of MVRS Farm under RKVY at AAU, Anand.
37	Renovation of Sheep and Goat Shed in Instructional Farm of Vet. College at AAU., Anand.
38	Strengthening of Levelled Farm Area and RCC Road under RKVY at AAU, Khambholaj Farm
39	Construction of Animal Shed under R.K.V.Y. at AAU., Arnej.
40	Construction of Micro Plots under RKVY at AAU Viramgam.
41	Strengthening of Compound Wall Parellel to Railway Line at AAU, Anand.
42	Repairing of Flooring in Veterinary A6 Quarters at AAU Anand.
43	Commissioning of Solar Roof Top System at Uni Bhavan, AAU Anand
44	Providing and Fixing Fan to New B, Old B and ASQ Flat at AAU , Anand
45	Construction of Protection Wall to Plot No J-1 for Jitodiya Farm of Forage Research Station at AAU, Anand.
46	Extension of FF on Existing G.F. of Boys Hostel at Muvalia Farm, AAU, Dahod
47	Strengthening of Conference Hall and Office at Lal Bunglow, Model Farm at AAU, Vadodara
48	Construction of Asphalt Approach Road to Farm Area under RKVY at MVRS, AAU, Anand
49	Providing and applying colour to office building at AAU, Dhandhuka.

Sr. No	NAME OF WORK
50	Approach Road to Farm from Main Entry Gate at Main Rice Research Station under RKVY at AAU, Navagam.
51	Construction of Asphalt Approach Road with RCC Box Culvert for Double Track from Dairy Science College to University Bhavan at AAU, Anand
52	Constuction of Approach Road to Demonstration Unit under RKVY at AAU Dabhoi.
53	Rain Water Harvesting System for Residential Quarters at AAU , Jabugam
54	Additional Work in Residential Quarters and College Building at AAU,Jabugam
55	Construction of Pump Room for Instructional Farm ,Vetrinary Science College at AAU Anand.
56	Renovation of Lal Bunglow under RKVY at AAU, Model Farm, Vadodara
57	Construction of Asphalt Approach Road under RKVY at AAU, Thasra Farm.
58	Approach Road to Farm From Main Entry Gate under RKVY at AAU Khandha.
59	Construction of Implement Shed for Hill Millet Research Station at Muvaliya Farm, AAU., Dahod.
60	Strengthening of Central Water Works of Main Campus at AAU , Anand
61	Construction of Threshing Yard under RKVY for Main Rice Research Station at Navagam Farm AAU, Nawagam
62	Strengthening of Street Light at Main Campus, AAU , Anand
63	Construction of Approach Road to Main Building of Polytechnic College at AAU Anand.
64	Construction of Store Room Cum Electric Room at Horticulture Farm of Hort. College at AAU Anand.
65	Construction of Fodder & Implement Shed Under Rkvy for Main Vegetable Research Station at AAU., Anand.
66	Construction of Asphalt Approach Road Under RKVY at AAU, Derol
67	Construction of RCC Farm Approach Road to Shed for Instructional Farm, Veterinary College at AAU Anand.
68	Repairing of New C -33 and Vet A -6 Quarters at AAU, Anand
69	Strengthening of Approach Road to Farm From Main Entry Gate under RKVY at AAU Khandha.
70	Strengthening of Front Part of B A College of Agriculture at AAU, Anand
71	Renovation of Rooms of New Guest House at AAU, Anand
72	Construction of Protection Wall to Boundary of Plot No 4 to 8 and 15 To 17 of Narmada Irrigation Research Project under RKVY at AAU, Khandha.

Appendix 2

CIVIL WORKS ON HAND

Sr. No.	Name of Work
1	Construction of RCC Overhead Water Tank at AAU, Thasra
2	Mosquito Net in P.G. Boys Hostel for BACA at AAU, Anand
3	Expansion of First Floor of Laboratory Building of Nanotechnology at AAU Anand
4	Construction of Seed Storage Godown under RKVY at AAU Khandha
5	Construction of Protection Wall to Plot No I-2, J and Plot Near TCD Farm of Agri Research Station under RKVY at AAU, Thasara.
6	Providing Protection to Lobby for BACA at AAU, Anand.
7	Extension of Shed for Student Sitting Near Examination Hall for BACA at AAU, Anand
8	Construction of Seed Godown under RKVY at AAU., Arnej.
9	Construction of Grass Godown under RKVY at AAU, Arnej.
10	Construction of Vermi Compost Shed under RKVY at AAU, Arnej
11	Construction of Sales Office and Implement Shed at M&AP, AAU Anand
12	Construction of Gazebo under RKVY for Main Vegetable Research Station at AAU., Anand.
13	Construction of Protection to Farm Boundary of Horticulture Research Station at AAU, Khambholaj.
14	Repair and Renovation of Periodical Room of M.D. Patel Liberary at AAU, Anand.
15	Construction of Toilet Block for Labours and Farmers under RKVY for Main Vegetable Research Station at AAU., Anand.
16	Renovation of Hostel (Munshi) Canteen for Sheth M.C. College of Dairy Sceince at AAU., Anand.
17	Construction of Protection Wall to Boundary of Paddy Research Station under RKVY at AAU, Dabhoi.
18	Construction of Extension of Farmers Training Center on First Floor of W.T.O. Cell under RKVY at BACA, AAU., Anand.
19	Construction of Seed Processing and Storage Infrastructure under MIDH at AAU., Viramgam.
20	Construction of Bore Room & Room with Water Tank under RKVY at AAU Viramgam.

Sr. No.	Name of Work
21	Construction of Farm Pond under RKVY for Paddy Research Station at Dabhoi
22	Construction of Protection Wall to Boundary of Farm Area under RKVY at AAU, Derol.
23	Construction of Irrigation Channel under RKVY at Main Rice Research Station, AAU, Navagam.
24	Construction of Rodent Proof Godown under RKVY for Main Rice Research Station at AAU., Nawagam
25	Construction of Toilet Block under RKVY for Main Rice Research Station at Nawagam Farm, AAU, Anand
26	Renovation and Extension of Existing Shed of Open Air Theatre at Veterinary Science College, AAU Anand
27	Construction of Farmers Training Center & Implement Shed under RKVY for Main Rice Research Station at Navagam Farm, AAU., Nawagam
28	Construction of Seed Cotton Storage Godown, Seed Storage Godown & Gining Hall Under R.K.V.Y. At Viramgam Farm, AAU., Viramgam
29	Strengthening of Kitchen and Toilet of New D Type Quarters at AAU, Anand
30	Construction of Extension of Biopesticide Unit on First Floor of Mitra Kitak Building at AAU, Anand
31	Extension of Boys Hostel for Agriculture Wing at AAU., Jabugam. (3rd & Terrace Floor - Left Side)
32	Providing Laboratory Platform for Animal Bio Technology Laboratory, Veterinary College at AAU, Anand.
33	Construction of Farm Protection to Boundary of Plot No 1 to 3,11 To 15, 18 and Office Area at Narmada Irrigation Research Project under RKVY at AAU, Khandha.
34	Modify Rooms into Farmers Training Center, Drying Shed on Existing Terrace under R.K.V.Y. for Main Vegetable Research Station at AAU., Anand.
35	Revamping of Pond under RKVY at AAU., Arnej.
36	Rain Water Harvesting Work of Exam Hall for FPT College at AAU., Anand.
37	Construction of Soak Well for Boys Hostel & Girls Hostel at FPT & BE College, AAU., Anand.
38	Construction of U G Sump for Water Harvesting System at Model Farm, AAU, Vadodara
39	Repairing & Renovation of Labour Quarters and CC Road at LRS Farm of Vet. Sceince College, AAU., Anand.
40	Providing New M S Gate to Compound Wall on Vidhya Dairy Road at ATIC, AAU, Anand.
41	Repairing of Flooring to Health Centre at AAU, Anand
42	Repairing, Renovation of Munshi Hostel of Dairy Science College at AAU, Anand
43	Extension of Hatchery Block of Poultry Farm Veterinary Science College at AAU, Anand

Sr. No.	Name of Work
44	Renovation of Poultry Shed at Dept. of Instruction Livestock Farm Campus at College of Veterinary Science & Animal Husbandary, AAU., Anand.
45	Providing and Fixing Chain Link Jali Fencing on Wall Parallel to Road of Farm Area under RKVY at AAU, Derol.
46	Drainage Facility for UG & PG Hostels of BACA at AAU., Anand.
47	Repairing of Toilet of Office DIT and DSW at University Bhavan, AAU, Anand.
48	Extension and Renovation of Shed at IABMI, AAU., Anand.
49	Construction of Rain Water Drain Channel under RKVY at Organic Research Station AAU Khambholaj.
50	Construction of Working Shed on Terrace & Toilet at Pesticide Residues Lab., AAU Anand.
51	Construction of Gate Near Main Entry and Compound Wall Near Dairy Science College for Double Track Road at AAU, Anand.
52	Construction of Watchman Cabin at Main Entry Gate at AAU, Anand
53	Strengthening of Canal for Rain Water to Farm Pond under RKVY at AAU Arnej
54	Construction of Lift Room for Microbiology Dept of BACA at AAU, Anand.
55	Approach Road to Exam Hall of FPT & BE College, AAU Anand
56	Construction of Threshing Yard at M & AP Farm at AAU, Anand.

Appendix 3

DETAILS OF UNIVERSITY SCHEME

Sr. No.	Budget Head	Name of the Scheme	Center
(1) Plan Schemes			
(I) EDUCATION			
(A) Education schemes in Normal Area			
(i) Agriculture			
1	12134-00	Expansion of Planning & Evaluation Cell	Anand
2	12136-00	Library facilities at AAU	Anand
3	12711-00	Project for Library	Anand
4	12712-02	Landscaping at AAU	Anand
5	12712-03	Creating of the Computer & Communication facilities	Anand
6	12926-00	Modernization of Department of Agriculture Colleges	Anand
7	12929-01	Strengthening of the facility of bio-agents at Department of Plant Pathology.	Anand
8	12930-00	Addition of the facilities for organizing Rural Agricultural Work Experience (RAWEX) programme	Anand
9	12931-00	Strengthening facilities for Sericulture, Apiculture and Mushroom cultivation	Anand
10	12931-01	Strengthening of Modern Green House facilities	Anand
11	12946-00	Strengthening of WTO Cell	Anand
12	12947-00	Strengthening of New Department of Seed Science and Technology	Anand
13	12947-01	Strengthening of Department of Nano technology	Anand
14	12947-02	Centre for Weather forecasting and Climate Change	Anand
15	12948-00	Strengthening of College of Agricultural Information Technology	Anand
16	12949-00	Strengthening of College of MBA (International Agri. Business)	Anand
17	12950-00	Strengthening of College of Food Processing Technology and Bio-energy	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
18	12957-00	Strengthening of Polytechnic in Food Science and Home Economics	Anand
19	12957-01	Strengthening of Polytechnic in Agriculture	Anand
20	12957-02	Strengthening of Polytechnic in Horticulture	Vadodara
21	12958-00	Strengthening of Institute of Distance Education	Anand
22	12969-01	Strengthening of Students Training Centre for Food Processing	Anand
23	12969-02	Strengthening of Student's Training cum Coaching Centre (STCC)	Anand
24	12969-03	e-Education Solution	Anand
25	12984-00	Strengthening of Polytechnic in Agriculture	Vaso
26	12986-00	Strengthening of Teaching in Agricultural Economics	Anand
27	12987-00	Vocational Course of Land Landscape Gardening	Vadodara
28	12987-02	Strengthening of Horticulture Wing	Anand
29	12987-03	Strengthening of Agriculture Wing	Vaso
30	12987-07	Certificate Course of Soil and Water Testing for Sustainable Agriculture	Anand
31	12987-08	Strengthening of Department of Animal Science	Anand
32	12987-10	Strengthening of Department of Plant Physiology	Anand
33	12987-11	Establishment of Department of Food Safety and Testing	Anand
34	12987-14	Establishment of Instructional Processing facilities for students	Anand
35	12987-15	Upgrading of the Agriculture Wing to College of Agriculture at AAU	Anand
36	12987-16	Upgrading of the Horticulture Wing to College of Horticulture at AAU	Anand
(ii) Common and Student facilities			
37	12703-00	Scheme for the award of GAU fellowship for PG studies in various faculties	Anand
38	12865-00	Upgrading of the student facilities at different colleges of AAU	Anand
39	12967-00	Modernizing the student facilities at different colleges of AAU	Anand
40	12967-01	Scheme for fellowship for UG students of various faculties	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
41	12967-02	The schemes for strengthening of office of the Directorate of Students Welfare, Counseling and Placement Cell at AAU	Anand
42	12967-03	Strengthening of Health Centre	Anand
43	12968-00	Strengthening of a Central Instrument Centre with heavy duty generator set	Anand
44	12987-12	Student and faculty exchange programme under national and international collaboration	Anand
45	12987-13	Merit Scholarship Scheme for economically poor under graduate student at Anand Agricultural University	Anand
(iii) Veterinary Science			
46	12303-08	Imparting education on semenology and frozen semen technology to the students and field veterinarians	Anand
47	12909-00	Strengthening at College of Veterinary Science & Animal Husbandry- Livestock Production Technology, Veterinary Clinics and Animal Bio-technology	Anand
48	12910-01	Strengthening of the Post-graduate Department at Veterinary College	Anand
49	12911-00	Strengthening of New Department at Veterinary Science College. (i) Vety. Epidemiology & Preventive Medicine, (ii) Vety. Extension	Anand
50	12981-00	Upgrading of College of Veterinary Science and Animal Husbandry as per Veterinary Council of India regulations	Anand
51	12992-01	Strengthening of Entrepreneur programme as per VCI (2008) at Veterinary College	Anand
52	12351-00	Strengthening and Modernization of Dairy Science for under graduate and post graduate teaching	Anand
53	12951-02	Modernization of Student Training Dairy (STD)	Anand
54	12987-09	Modernization of Department of Dairy Engineering	Anand
(B) Extension Education Schemes in Tribal Area			
55	12975-00	Strengthening of College of Agricultural Engineering and Technology	Godhra
56	12976-00	Strengthening of Agricultural Engineering Polytechnic	Dahod
	12987-01	Vocational Courses on Agricultural Engineering and Technology	Godhra

Sr. No.	Budget Head	Name of the Scheme	Center
	12987-04	Strengthening of Agriculture Wing	Jabugam
	12987-17	Upgrading of the Agriculture Wing to College of Agriculture at AAU	Jabugam
(II) Extension Education			
(A) Extension Education Schemes in Normal Area			
(i) Agriculture			
1	12505-00	Strengthening of the Directorate of Extension Education at AAU	Anand
2	12507-00	Upgrading of Existing Sardar Smruti Kendra	Anand
3	12508-00	Strengthening of Mali Training Centre at AAU	Anand
4	12942-01	Strengthening of Transfer of Technology Centre	Arnej
5	12943-00	Agricultural Technology Information Centre (ATIC)	Anand
6	12988-00 to 12988-05	Training Programme (Weed Management, Seed Production, Organic Farming, Integrated Pest Management, Medicinal & Aromatic Plants and Food Processing Technology)	Anand
7	12993-00	Strengthening of Farm Technology Training Centre	Sansoli
8	12994-01	Strengthening of Technological Resource Centre and Educational Museum at AAU	Anand
(ii) Veterinary Science			
9	12315-00	Upgrading of Poultry Training Centre	Anand
10	12315-01	Strengthening of Demonstration-cum-Training Centre for inland fish culture	Devataj
(B) Extension Education Schemes in Tribal Area			
(iii) Dairy Science			
11	12977-00	Strengthening of Tribal Women Training Centre	Devgadhbaria
12	12978-00	Strengthening of Agro-Polyclinic for Tribal Farmers	Dahod
13	12987-05	Strengthening of Training Centre	Jabugam
14	12993-01	Strengthening of Dairy Vigyan Kendra	Vejelpur
15	12993-02	Strengthening of Transfer of Technology Centre for Tribal	Godhra
16	12993-03	Strengthening of Pashu Vigyan Kendra	Limkheda
(III) Research			
(A) Research Schemes in Normal Area			
(i) Agriculture			
1	12002-00	Strengthening of Research in Millet	Anand
2	12003-00	Strengthening of Research in Rice	Nawagam & Dabhoi

Sr. No.	Budget Head	Name of the Scheme	Center
3	12004-00	Strengthening of Research in Wheat	Anand & Dhandhuka
4	12006-00	Strengthening of Research in Sorghum	Viramgam
5	12007-00	Strengthening of Research in Pulses	Vadodara
6	12008-00	Strengthening of Research in Oilseed (Groundnut)	Anand
7	12009-00	Strengthening of a centre of excellence for Cotton Research	Dhandhuka & Viramgam
8	12010-00	Strengthening of Research in Tobacco	Anand & Dharmaj
9	12012-00	Strengthening of Research in Forage crops	Anand
10	12016-01	Strengthening of Research in Medicinal & Aromatic Plants	Anand
11	12018-00	Expansion of Research in Agricultural Economic	Anand
12	12027-00	Scheme for Management of salt affected soil & poor quality of underground water	Thasra
13	12027-04	Application of Remote Sensing Technique	Anand & Nawagam
14	12041-00	Statistical evaluation of experimental variability and Strengthening research in Agricultural Statistics	Anand
15	12075-00	Development of various Bio-gas Plants to use vegetative wastes	Anand
16	12078-00	Strengthening of Research in Dry-farming	Dhandhuka
17	12092-00	Strengthening of Tissue culture Research & Development at AAU	Anand
18	12131-00	Research on Eco-friendly Biological Fertilizer	Anand
19	12906-00	Centre of Excellence for Soil & Water Management Technology	Anand
20	12907-00	Strengthening of Agrometeorology at AAU	Vadodara
21	12011-00	Centre of Excellence on Agril. Biotechnology	Anand
22	12933-00	Research on Hybrid Development in Paddy	Nawagam
23	12937-00	Strengthening Adaptive Research in Agro-climatic zones of AAU	Anand
24	12938-00	Monitoring of heavy metal contamination in agricultural produce in peri urban areas of Gujarat	Anand
25	12959-00	Research on Horticultural fruit and flower crops	Anand
26	12960-00	Post Harvest Management of some important crops of Middle Gujarat.	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
27	12962-00	Strengthening of Intellectual Property Rights cell	Anand
28	12963-00	Genetic enhancement and production technologies of Pulses, Oilseeds and Cereals	Anand
	12963-01	Genetic enhancement and production technologies of Pulses, Oilseeds and Cereals	Vadodara
	12963-02	Genetic enhancement and production technologies of Pulses, Oilseeds and Cereals	Derol
29	12963-03	Research and Enhancement of Quality Seed Production of Major Crops of Middle Gujarat	Anand
30	12964-00	Insect Pest Management through Bio-control Agents	BACA, Anand
31	12964-01	Insect Pest Management through Bio-control Agents	Dept. of Bio-control
32	12965-00	Establishment of Organic Farm at different centres	Anand
	12965-01	Establishment of Organic Farm at different centres	Vadodara
	12965-02	Establishment of Organic Farm at different centres	Arnej
	12965-03	Establishment of Organic Farm at different centres	Dhandhuka
	12965-04	Establishment of Organic Farm at different centres	Khambholaj
33	12966-00	Strengthening of Centers of Excellence - Medicinal & Aromatic Plants	Anand
34	12969-00	Development of irradiation technology for Agricultural, Animal Dairy and Food products	Anand
35	12970-00	Studies on the estimation of pesticides residues for agriculture commodities	Anand
36	12985-00	Development of Potato varieties and its agro technologies for middle Gujarat	Khambholaj
37	12985-01	Research on Papaya crops	Khambholaj
38	12989-00	Establishment of Research Centre of Seed Spices for Development of Production Technology	Sanand
39	12989-02	Veritable Development of Chickpea in residue moisture condition of Bhal region	Arnej
40	12989-06	Allele Mining for Fragrance and Colour Principles from Saffron and Sandal Wood	Anand
41	12993-04	Study on Pesticides residues analysis from Food, Feed, Water and Soil for food safety in Gujarat	Anand
42	12993-05	Development of varieties in vegetable crops	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
43	12993-07	Research Centre for Distant Hybridization in field and fruit crops	Anand
44	12993-08	Development of early maturing and high yielding Castor Hybrids /Varieties suitable to cropping systems in irrigated area of middle Gujarat	Sansoli
45	12993-09	Evolving Suitable Rice Genotypes for Rabi & Summer Cultivation for Enhancing the Production and Productivity in middle Gujarat of Agro-climatic Zone-III	Nawagam
46	12993-15	Screening and management of root-knot nematodes in important crop of Gujarat	Anand
47	12993-16	Genetic enhancement and production technologies of clusterbean (Guar) for yield and quality	Derol
48	12993-17	Centre for Advance Research in Plant Tissue culture	Anand
49	12993-18	Centre for Advanced Research on Plant Viruses	Anand
50	12993-19	Research on Organic Farming	Anand
51	12993-20	Advanced Research on Pest Management through birds	Anand
52	12993-21	Development of food decontamination technology for safety and quality of fresh and minimally processed fruits and vegetables	Anand
53	12993-22	Research on supply chain and market integration for key agro commodities for farmer's awareness and income enhancement in middle Gujarat	Anand
(ii) Veterinary Science			
54	12303-06	Research on Embryo Transfer in Buffaloes	Anand
55	12303-07	Introduction of Mechanization on Dairy Farms	Anand
56	12303-10	Strengthening of R.B.R. Unit	Anand
57	12313-00	Study on applied reproduction in Surti & Marwadi Goats of Gujarat State	Ramna Muwada
58	12928-00	Centre of Excellence in Animal Biotechnology	Anand
59	12353-00	Strengthening of Livestock Research Station	Anand
60	12388-00	Development and maintenance of different population of poultry	Anand
61	12990-00	Cytogenetic and cell culture studies in Cattle and Buffaloes	Anand
62	12992-00	Etiopathological studies on mortality of broilers	Anand
63	12953-00	Strengthening of Livestock & Veterinary component	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
64	12956-00	Diagnosis, epidemiology and management of diseases of Live stock	Anand
65	12971-00	Centers of Excellence for Animal Nutrition	Anand
66	12972-00	Modernization of diagnostic facilities - Zoonotic disease and compylobacteriosis	Anand
67	12973-00	Conservation and improvement of indigenous cattle	Anand
68	12989-03	Research on silvi pasture systems and forage crops	Ramna Muwada
69	12989-04	Research on silvi pasture systems and forage crops	Meenawada
70	12993-06	Effect of phytochemicals on nutrient utilization, health attributes and production of ruminants	Anand
71	12993-23	Strengthening of Research and Animal Feed Testing Laboratory	Anand
(iii) Dairy Science			
72	12351-02	Development of Dairy Starter Cultures and Value added Dairy Product	Anand
73	12351-03	Development of methods for detection of adulteration in Milk and Milk products	Anand
74	12351-05	Enhancing Self Life of Indigenous Milk product	Anand
75	12951-01	Evaluation of selected natural food additives for their suitability to enhance the quality of dairy products	Anand
76	12951-04	Plasmid profile of lactic acid bacteria and their use as Bio-medical agents	Anand
77	12951-05	Manufacture of Dairy/Non Dairy Processed Cheese and Mozzarella Cheese Analogues	Anand
78	12974-00	Utilization of whey in dairy and food products	Anand
(B) Research Schemes in Tribal Area			
(i) Agriculture			
79	12005-00	Improving Research facilities for Maize	Dahod
80	12007-00	Strengthening of Research in Pulse	Dahod
81	12917-00	Research and demonstrations of bio-fertilizers in Tribal areas of Gujarat	Anand & Godhara
82	12979-00	Genetic enhancement and production technologies of major crops grown in tribal areas	Dahod
	12979-01	Genetic enhancement and production technologies of major crops grown in tribal areas	Devgadhbaria

Sr. No.	Budget Head	Name of the Scheme	Center
83	12979-03	Development of Garlic and Ginger varieties suitable for value addition and its production and protection technologies	Dahod
84	12979-04	Maize productivity enhancement through single cross hybrid(s)	Godhra
85	12979-05	Varietal development in Chickpea for Tribal area	Dahod
86	12987-06	Production Potential and Value Addition of Banana Grown in Tribal area of Chhota Udaipur region of middle Gujarat through multiple approaches	Jabugam
87	12993-10	Advanced centre for research and trainers training on agricultural engineering based interventions	Godhra
88	12993-11	Developing a watershed based conclave for experimental learning at Kakanpur	Kankanpur
89	12993-13	Tailoring Maize for specific uses thereby nutritional enrichment and security-A better alternatives for Rainfed Farming, particularly Tribal Areas of Gujarat State	Godhra

(2) Non-Plan Schemes

(I) Education

1	1311-00	Zonal Engineering Construction Unit	Anand
2	1312-00	North Cattle Breeding Farm, (Vety. College)	Anand
	1312-0A	North Cattle Breeding Farm	Sansoli
	1312-0A	North Cattle Breeding Farm	Jabugam
	1312-0C	North Cattle Breeding Farm	Vegtable
3	1314-00	Institute of Agriculture Veterinary College, Breeding Research Station	Anand
4	1315-00	Institute of Experiment, Dairy Science College	Anand
5	1317-00	Institute of Programme Extension Education	Anand
6	1318-00	Institute of I.D.C. Project	Anand
7	3126-02	B.A. College of Agriculture	Anand
	3126-2L	B.A. College of Agriculture-Library	Anand
8	3248-00	Establishment of Extension Wing	Anand
9	4280-00	Strengthening of Under Graduate Teaching	Anand
10	4500-00	Vice Chancellor Office & Registrar Section	Anand
11	4501-00	Director of Research	Anand
12	4502-00	Comptroller Section	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
13	4504-00	Director of Student Welfare	Anand
14	4504-01	Director of Information Technology	Anand
15	4505-00	Director of Extension Education	Anand
16	4571-03	Executive Engineer & Guest House	Anand
17	4571-3D	Executive Engineer & Guest House	Devataj
18	4571-04	Medical Unit Centre	Anand
19	4807-00	Inter University Cultural Activities (FPT&BE College)	Anand
20	4808-00	Inter University Cultural Activities (DSW)	Anand
21	4862-00	Inter University Cultural Activities (DSW)	Vaso
22	4862-00	Inter College & Inter University Sports & Quize (BACA)	Anand
23	4862-0A	Inter Colleges & Schools Sports & Student Welfare	Vaso
24	4862-0B	Planning of Sports Game, Maintenance of Ground and Students DA, etc. (IABMI, Veterinary College & Agri. Engg. College, Godhra)	Anand
25	4864-00	Parvatarohan (DSW)	Anand
26	5106-00	Strengthening of department by providing additional equipment in view of Semester System	Anand
27	5116-00	Establishment of Sardar Smruti Kendra, Museum Information Centre	Anand
28	5228-00	Polytechnic in Agriculture	Anand
	5228-00	Polytechnic in Horticulture	Vadodara
	5228-00	Polytechnic in Agricultural Engineering & Technology	Dahod
	5228-0A	Horticultural Research Station (Vegetable)	Khabholaj
	5228-0B	Polytechnic in Agriculture	Vaso
	5228-0C	Agricultural Research Station	Jabugam
29	5229-00	Establishment of Polytechnic in Home Science & Economics	Anand
30	5711-0L	Establishment of Library	Anand
31	5810-00	Project for Health Centre	Anand
32	6110-01	Strengthening of P.G. Teaching	Anand
33	6119-00	Scheme for Instructional Farm	Anand
34	6502-03	Department of Agricultural Product Process Engineering	Anand
35	6503-02	Department of Nematology	Anand
36	6503-03	Department of Horticulture	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
37	6503-04	Department of Bio-chemistry	Anand
38	7712-01	Establishment of Meteorology department	Anand
(II) Extension			
39	3315-00	Poultry Feeding Manufacturing Unit	Anand
40	5255-00	Strengthening of Poultry Training Centre	Anand
41	5301-00	Project for Investigation & Research, Veterinary Science & Animal Husbandry	Anand
42	5309-00	Project for Veterinary Science & Animal Husbandry	Anand
43	5311-00	Project for Reproductive Biological Research Unit	Anand
44	5353-00	Livestock Research Station	Anand
45	6309-00	Scheme for increasing the admission capacity in Degree Course of B.V.Sc. & A.H.	Anand
46	6374-00	Study on Correlated Response to Selection in Patanwadi & Cross Breed Sheep	Anand
47	7228-01	School of Baking	Anand
48	7303-07	Import & Establishment of Exotic Cattle, HF Project	Anand
49	5351-00	Project for the Department of Dairy Science College	Anand
50	5351-0T	Project Dairy Science College (Dept of Biotechnology)	Anand
(III) Research			
51	3226-00	Scheme of Design Experiment	Anand
52	5002-00	Scheme for Research in Bajara	Anand
53	5003-00	Scheme for Research in Paddy	Nawagam, Dabhoi, Derol & Vadodara
54	5004-00	Scheme for Research in Wheat	Dhandhuka
55	5006-00	Scheme for Research in Jowar	Viramgam
56	5007-00	Scheme for Research in Pulses (Cereals)	Vadodara, Dahod & Arnej
57	5008-00	Scheme for Research in Oilseed	Derol
58	5009-00	Strengthening Research in Cotton	Anand, Thasra, Dhandhuka & Viramgam
59	5010-00	Research in Tobacco	Anand & Dharmaj
60	5010-00	Research in Castor & Seed Spices	Sanand

Sr. No.	Budget Head	Name of the Scheme	Center
61	5011-00	Scheme for Research in Sugarcane	Thasra
62	5012-00	Scheme for Research in Grasses	Anand
63	5013-00	Scheme for Research in Vegetable Tuber (Tomato)	Anand
64	5014-00	Scheme for Research and Improvement in Fruit Crops	Anand
65	5018-00	Strengthening of Research in Agricultural Economics	Anand
66	5020-00	Scheme for Research in Agriculture Chemistry & Soil Science	Anand
67	5025-00	Scheme for Expansion Mechanical Commercial Farm	Anand
68	5026-00	Scheme for Research in Pest Control & Plant Disease	Anand
69	5026-01	Project for Research in Pest Control & Plant Disease	Anand
70	5029-00	Western Regional Animal Nutrition Station	Anand
71	5042-00	Strengthening of Dry Farming Research Station	Dhandhuka
72	5044-00	Project for Expansion of Plant Pathology Research	Anand
73	5046-0B	Study of Biology Inteer control of White Gurb	Anand
74	5073-00	Establishment of Agricultural Product Process Engineering	Anand
75	7078-00	National Agricultural Research Project	Arnej
76	8091-0A	National Agricultural Research Project	Anand
	8091-AB	National Agricultural Research Project (Bio-technology)	Anand
	8091-0B	National Agricultural Research Project	Godhra
	8091-0C	National Agricultural Research Project (RRS, UNIT-5)	Anand
	8091-0C	National Agricultural Research Project	Derol
77	9091-10	National Agricultural Research Project (Scheme Phase-II)	Anand, Sansoli & Khambholaj
	9091-10A	National Agricultural Research Project (Scheme Phase-II)	Jabugam and Vadodara
78	5002-03	Strengthening of Research in Hill Millet	Dahod
79	5704-00	Tribal Research-cum-Training Centre	Devgadhbaria
80	6005-00	Strengthening Research in Maize	Devgadhbaria
81	6009-00	Strengthening Research in Budded Cotton	Devgadhbaria
82	6704-06	Training of Tribal Farmer Women & Farm Youth	Dahod
83	7007-00	Strengthening of Research in Pulses	Dahod
(3) I.C.A.R.			
(a) I.C.A.R. CO-ORDINATED SCHEMES (25:75%)			
1	2003-00	All India Coordinated Research Project on Rice	Nawagam
2	2005-00	All India Coordinated Research Project on Maize	Godhra

Sr. No.	Budget Head	Name of the Scheme	Center
3	2010-04	All India Network Research Project on Tobacco	Anand
4	2012-00	All India Coordinated Research Project on Forage Crops and utilization	Anand
5	2020-00	All India Coordinated Research Project on Micro & Secondary Nutrients & Pollution Elements in Soil & Plants	Anand
6	2025-00	All India Coordinated Research Project on Integrated Farming System: On Farm Research	Devgadhbria
7	2026-01	All India Coordinated Research Project on Nematode Agriculture	Anand
8	2028-00	All India Coordinated Research Project on Nutritional and Physiological approaches for enhancing Reproductive performance in Animals cattle and Buffalo	Anand
9	2043-00	All India Coordinated Research Project on Medicinal & Aromatic Plants	Anand
10	2044-00	All India Coordinated Research Project on Biological Control of Crop Pests	Anand
11	2046-00	All India Coordinated Research Project on Weed Management	Anand
12	2080-00	All India Coordinated Research Project on National Seed Project (crops) - Seed Technology Research	Anand
13	2084-00	AINP on Agricultural Ornithology	Anand
14	2093-00	All India Coordinated Research Project on Agro-meteorology	Anand
(b) I.C.A.R. AD-HOC SCHEME (100%)			
1	2002-02	Need based contingency for conducting coordinated trials of Finger Millet	Dahod
2	2003-01	Insecticide Testing Fee for cooperative centre	Nawagam, Derol & Dabhoi
3	2003-02	Network programme of Haemorrhagic Septicemia	Anand
4	2003-04	FLD Promote Non-Hybrid Rice Technology	Nawagam
5	2004-01	Frontline Demonstration in Wheat	Anand, Arnej & Dhandhuka
6	2005-01	FLD's Training programme under accelerated maize improvement	Godhra
7	2005-02	Frontline Demonstration on Maize	Godhra
8	2005-07	AICRP on Maize Contingencies for TSP Project	Godhra
9	2005-08	AICRP on Maize Contingencies for Testing Fee	Godhra & Dahod

Sr. No.	Budget Head	Name of the Scheme	Center
10	2005-09	AICRP on Maize Operational Expenses for NICRA (National Initiative on Climate Resilient Agriculture) Project	Godhra
11	2005-10	Climate Resilient Maize for Asia	Godhra
12	2005-11	AICRP on Maize-SCSP	Godhra
13	2006-01	District Agriculture Contingency plans for Gujarat State	Anand
14	2007-01	Need based contingency for conducting coordinated trials of Soybean	Devgadbaria
15	2008-1H1	Frontline Demonstration on Oilseeds Castor	Anand
16	2008-02	Conducting the Co-ordinated Trials of AICRP on Castor	Anand, Sanand, Derol & Sansoli
17	2008-03	AICRP on Spices for Voluntary Centre	Sanand
18	2008-04	AICRP on Sorghum Voluntary Centre	Anand & Viramgam
19	2008-16	AICRP on Rapeseed - Mustard	Anand
20	2008-17	AICRP on Pearl-Millet / Bajra	Anand
21	2008-20	AICRP on Groundnut Conducting trials	Anand
22	2009-02	Conducting trials on Cotton crops	Anand & Viramgam
23	2010-4 A	AINP on Tobacco TSP Project	Anand
24	2010-4 B	XXIV Tobacco Workshop of All India Network Project on Tobacco	Anand
25	2012-02	Barley AICW & BIP trials	Anand
26	2012-07	Forage Technology Demonstrative for Kharif 2010-11	Anand
27	2020-01	AICRP on Micro & Secondary Nutrients & Pollution Elements in Soil & Plants for TSP Project	Anand
28	2020-02	AICRP on Micro & Secondary Nutrients & Pollutant Elements in Soil & Plants for SCSP Project	Anand
29	2020-03	SPAH Study in Tribal Area	Anand
30	2025-02	AICRP on Integrated Farming System (TSP & FLD)	Devgadhbaria
31	2026-1B	AICRP on Nematode Pest TSP	Anand
32	2026-1A	AICRP on Nematode Pest	Anand
33	2028-01	Establishment of Core Laboratory under Network Programme NBAGR-Karnal	Anand
34	2028-17	Determining population structure & Identification of SNPs associated with milk traits in kachchi & Marwari camel	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
35	2028-18	Organization of 21 days Summer/Winter school on “Agri-business & marketing information system”.	Anand
36	2028-19	New frontiers in hybrid seed production & genetic purity testing	Anand
37	2028-20	Numerical Technique & its Application to Agricultural & Food Engineering Problems	Anand
38	2028-21	Techniques for estimation of nutraceutical properties form crops	Anand
39	2029-00	Estimation of Methane emission under Different Feeding Systems and Development of Mitigation Strategies	Anand
40	2030-01	Semen sexing in cattle	Anand
41	2030-02	Entrepreneurship Oriented Male Weiner Goats Rearing & Selling Unit	Anand
42	2030-08	Network Project on Ethno-Veterinary Medical under A. P. Cess Fund	Anand
43	2030-10	Seed Production in Agricultural Crops and Horticulture Crops (Field Crops)	Sanand, Vadodara, Derol & other Farms
44	2030-19	National Initiative on Climate Resilient Agriculture (NICRA)	Anand
45	2030-20	Niche Area Project “ Metagenomic Analysis of Ruminant Microbes	Anand
46	2030-21	Movement of Dairy Professionals in Western India (Graduates, Post-Graduates & Doctorates)-A Career Path Analysis	Anand
47	2030-22	Assessment of Present Examination system & its suitability in Dairy Science Colleges of India	Anand
48	2032-00	Production & demonstration of tissue culture raised plants under three locations & collection & maintenance of elite germplasm of date palm	Anand
49	2033-00	NFBSFARA project-Development of solar-hybrid refrigeration technology for on-farm (or in production catchment) safe transient storage of horticultural produce	Anand
50	2034-00	Establishment of Agro Processing Centre for Gourd, Aloe-vera etc.	Anand
51	2035-00	Supply-Demand Analysis of Professional Human Resource in terms of Dairy Technologists in India	Anand
52	2036-00	Development of Non Thermal Plasma (NTP) Decontamination Technology for Fruits & Vegetables	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
53	2037-00	Establishing Centre for Agricultural Market Intelligence	Anand
54	2037-01	NAHEP Component 2, AAU	Anand
55	2044-01	AICRP on Biological Control of Crop Pests (TSP)	Anand
56	2044-15	Emeritus Scientist Scheme-Calibration & validation of CROPGRO-Cotton, CROPGRO-Pigeon pea, SUBSTOR-Potato & CANEGRO-sugarcane models for different crops of Gujarat for climate change impact studies & yield forecasting	Anand
57	2044-16	ICAR-Emeritus Professor Scheme	Anand
58	2046-01	Development of Integrated pest management (IPM) packages under selective crop conditions, Anand (Tribal Sub Plan)	Anand
59	2076-03	Central Sector Special Food grains Production of Breeder Seed	Godhara, Nawagam
60	2076-05	Research & Development efforts on Hybrids in selected crop Millet Cotton Castor	Anand
61	2080-02	AICRP on National Seed Project (TSP)	Anand
62	2080-03	ICAR Seed Project-Development of serological & molecular diagnostic kit for seed health assessment of rice & cotton (Crops)	Anand
63	2084-01	AINP on Agricultural Ornithology (TSP)	Anand
64	2093-01	AICRP on Agro-meteorology TSP	Anand
65	2095-02	AINP on Pesticide Residue (SCSP)	Anand
66	2096-00	All India Coordinated Vegetable Improvement Project (Voluntary Centre)	Anand
67	2305-02	AICRP Poultry Scheme Income-Department Share	Anand
68	2305-07	Conservation of Ankleshwar Chicken	Anand
69	2374-01	Conducting the Co-ordinated Trials under AICRP on Chikpea	Anand
70	2704-10	Kisan Sammelans, Krishi Melas, Kisan Ghosties, Group Meeting & Displaying Exhibitions & Demonstrations of Technologies during pre-Kharif	Devataj, Dahod & Arnej
71	2704-25	Cluster Frontline Demonstrations of Rabi Pulses 2016-17	Dahod, Devataj & Arnej
72	2704-26	Organizing Trainings for creation of awareness among the farmers & other stakeholders about the provisions of the protection of plant varieties & Farmers Right Act 2001	Dahod & Arnej
73	2704-27	Soil Testing Kit (International Soils Day)	Dahod, Devataj & Arnej

Sr. No.	Budget Head	Name of the Scheme	Center
74	2704-28	Kisan Sammelans, Krishi Melas, Kisan Ghosties, Group Meeting & Displaying Exhibitions & Demonstrations of Technologies during pre-Rabi	Dahod, Devataj & Arnej
75	2704-29	Exposure visits for the Farmers & Extension Workers of Gujarat State under National Food Security	Godhara & Devataj
76	2704-32	Strengthening & setting up of Tissue culture facilities for Date palm and other tissue culture protocols for its commercial cultivation	Anand
77	2704-33	Farmers Fair/Programmes on Pradhan Mantri Fasal Bima Yojna	Dahod, Devataj & Arnej
78	2704-34	Annual Zonal Workshop of KVKs of Zone VI	Anand
79	2704-34A	Cluster Frontline Demonstrations of Rabi Oilseeds for 2016-17	Anand
80	2704-35	Conducting at least two Skill Development Training courses of 200 hours duration through KVK for pulse Cultivator & Micro Irrigation Technician	Anand
81	2704-36	Creation of Seed-Hubs for increasing indigenous production of pulses in India	Anand
82	2704-37	Pandit Deen Dayal Upadhyay Unnat Krishi Shiksha Yojan	Anand, Derol & Devataj
83	2704-38	Paramparagat Krishi Vikas Yojna (PKVY)	Anand
84	2704-51	Trial During Kharif under AICRP (Mullarp)	Vadodara
85	2704-52	Production Oriented Survey	Nawagam
86	15121-00	Strengthening & Development of Agricultural Education (AUs)	Anand & Godhra
87	15124-00	Strengthening & Development of Agricultural Education (AUs)	Anand & Godhra
88	15132-00	Strengthening & Development of Agricultural Education (AUs)	Anand & Godhra
89	15133-00	Strengthening & Development of Agricultural Education (AUs)	Anand & Godhra
90	15211-00	Strengthening & Development of Agricultural Education (AUs)	Anand & Godhra
91	15231-00	Strengthening & Development of Agricultural Education (AUs)	Anand & Godhra
92	15711-00	Strengthening & Development of Agricultural Education (AUs)	Anand & Godhra
93	15911-00	Strengthening & Development of Agricultural Education (AUs)	Anand & Godhra
94	15912-00	Strengthening & Development of Agricultural Education (AUs)	Anand & Godhra

Sr. No.	Budget Head	Name of the Scheme	Center
95	15913-00	Strengthening & Development of Agricultural Education (AUs)	Anand & Godhra
96	15921-00	Strengthening & Development of Agricultural Education (AUs)	Anand & Godhra
97	15922-00	Strengthening & Development of Agricultural Education (AUs)	Anand & Godhra
98	15923-00	Strengthening & Development of Agricultural Education (AUs)	Anand & Godhra
99	18311-04	ICAR-Merit-Cum-means	Godhra
100	18311-07	ICAR-PG Scholarship	Anand & Godhra
101	18311-08	ICAR-Internship Allowances to Veterinary graduates	Anand
102	18457-35	ICAR-Senior Research Fellowship for Ph.D. Student	Anand
103	15630-00	Library Strengthening in Agricultural Universities	Anand & Godhra
104	15657-00	Student READY Programme	Anand & Godhra
105	15658-00	National Talents Scholarship	Anand & Godhra
(c) Krushi Vigyan Kendra at AAU			
1	2704-04	Krushi Vigyan Kendra	Dahod
2	2704-07	Krushi Vigyan Kendra	Devataj
3	2704-08	Krushi Vigyan Kendra	Arnej
4	2704-09	Director of Extension Education Office	DEE, Anand
(4) Other Agency Scheme			
(a) Government of India			
1	18005-01	Experimental Agro.Met. Advisory Services.	Anand
2	18005-03	Scheme for Modelling of impact of dynamic environment on population of crop pests in Middle Gujarat Zone, Anand.	Anand
3	18043-05	Central Sector Scheme for Macromanagement of Agriculture - Development of Medicinal and Aromatic Plants.	Anand
4	18246-04	Training Programme on Kissan Call Centre	Anand
5	18246-05	Green House/Nethouse Training to Farmers	Anand
6	18246-94.1	Scheme of Jatropha Plantation and Nursery (Tree Borne Oilseeds)(TC Lab). APPE Unit	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
7	18246-94.2	Scheme of Jatropha Plantation and Nursery (Tree Borne Oilseeds), APPE Unit, Anand.	Anand
8	18246-97	Experimental Agromet Advisory Services (EAASU) Unit at Arnej	Arnej
9	18246-98	Centrally Sponsored Scheme for National Horticulture Mission.	Arnej, Viramgam, Anand
10	18248-00	National Agricultural Extension Project-I (Non-plan)	Anand
11	18252-08	Imparting Training on Officers of Semen Stations in the Country : as a collaborative project	Anand
12	18310-00	Monitoring of Pesticide Residue at National Level.	Anand
13	18311-07J	Indo-Afghanistan Fellowship Programme	Anand
14	18311-07H	Indo-Africa Fellowship Programme	Anand
15	18311-07I	NAARC Fellowship (Nepal Aided Programme)	Anand
16	18311-07K	Scholarship for the J&K Students at Vety. Sci. College	Anand
17	18311-7B	Rajiv Gandhi National Fellowship for SC candidates	Anand
18	18311-7C	Implementation of Award of INSPIRE Fellowship at BACA & Vety. Sci. College & Dairy Sci. College	Anand
19	18311-7E	C.V.Raman International Fellowship for African Researchers - Dr.Gabriel Habiaryame, Rwanda	Anand
20	18346-00	Detoxification and Utilization of Key Agro-forest based non conventional oil cakes in the Feeding of Livestock, Veterinary College, Anand.	Anand
21	18382-01	Online Pest Monitoring and Advisory Services (OPMAS) under NFSM-Commercial Crops-Cotton	Anand
22	18454-28	Evaluation of IIHR Bio-pesticides in Okra	Anand
23	18454-29	Bioefficacy Studies of Bio-Nematicide, Actinovate STP against Root-knot Nematodes in Tomato	Anand
24	18454-30	Nutraceutical Importance and Molecular Characterization of Okra	Anand
25	18454-31	Identification, Molecular Characterization and Documentation of Crops specific Efficient and Agrochemical Tolerant Straits of Trichoderma spp. For Sustainable and Eco-friendly Management of Plant Pathogens/Diseases	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
26	18454-32	Evaluation of Bio-efficacy and Phytotoxicity of Movento 150 OD (Spirotetramat 15% w/w OD) against Sucking Pest Complex of Cotton	Anand
27	18454-32.1	Bio-efficacy and Phytotoxicity of Imidacloprid 200 SL(Imidacloprid 17.1% w/w SL) against Sucking Insect Pests of Cotton	Anand
28	18454-32.2	Bio-efficacy and Phytotoxicity of Solomon 300 OD (Betacyfluthrin 9% w/w + Imidacloprid 21% w/w OD) against Sucking Insect Pests in Cotton	Anand
29	18454-32.3	Bio-efficacy and Phytotoxicity of Combi Product SLR-525 against Sucking Insect Pests in Cotton	Anand
30	18461-00	Conservation and Resource Maintenance of Jatropha Germplasm at Deptt. of Agril. Biotechnology	Anand
31	18486-00	Metabolic and Molecular Profiling of Aromatic Rice Germplasm of India for Gaining Insights about Aroma	Anand
32	18488-00	Sustainability of Sarus Crane of Western India : Evaluation of with Habitat-based Meta-population Model	Anand
33	18495-00	Fortified Formulations of PGPR Consortium and PGPR Metabolites with Humic Acid and Micronutrients followed by Efficacy on Okra, tomato & Chilli Crops	Anand
34	18497-00	FASAL-R&D Area Estimation of Sugarcane and Cotton in Gujarat Using AWIFS and RISAT Data	Anand
35	18498-00	Whole Genome Sequencing and Development of Allied Genomic Research in Two Commercially Important Fish-Labeorohita and Clarisbatrachus	Anand
36	18501-00	Controlling Enteric Pathogenes of Poultry : Host/Microbiota Interactions, Risk Assessment and Effective Management Intervention	Anand
37	18502-00	Sensor System Studies for the GISAT	Anand
38	18502-01	Calibration and Validation of SMAP Soil Moisture Over Semi-Arid Agricultural Patches in Gujarat	Anand
39	18503-00	Developing Advance Diagnostic and Alternative Control Approaches against Bovine Mastitis	Anand
40	18503-01	Bio-prospecting of Crop Residues by Solid State Fermentation to Enhance Nutrient Utilization and Feed Efficiency in Ruminants	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
41	18505-00	Development of Recombinant Poultry Vaccine with HVT (Herpes Virus Turkey) as Backbone	Anand
42	18311-7G	Royal Govt. of Bhutan Fellowship	Anand
43	18802-0K	Conducting Training-cum-Awareness Programme on PPV and FR Act, 2001	Anand
44	18802-0o	Animal Husbandry Department of Jashpur Distt.(CG)	Anand
45	18095-00	Surti Buffalo Breeders Association of Gujarat	Anand
46	18802-0P	Communication & Extension Work Services	Anand
47	18457-26	The study of on Evaluating the lampact of Ration Balansing on Methane Emissions in Dairy Animals	Anand
48	18457-30	Magnitude of residues of Cyantraniliprole 10.26 10% OD in Chilli	Anand
49	18457-33	Evaluation of efficacy of Sulphur and Zinc containing Complex Fertilizers for maximizing yield through balanced nutrition of different crops in India	Anand
50	18457-34	Cloning, characterization and functional screening of industrially important novel cellulase encoding genes from the bovine rumen microbial coommunity using metagenomic approach	Anand
51	18457-38	Host transcriptomics and gud microbiome analysis in broiler with contracting feed conversion ratio	Anand
52	18457-39	Development of parl millet forage hybrids and pearl millet napier (PN) hybrids for high biomass and quality suited for different agro climatic zones of India	Anand
53	18457-23(1)	Molecular characterisation of lesser known livestock population of Gujarat	Anand
54	18096-00	Measurement to Management M2M : Improved Water Use Efficiency & Agricultural Productivity Through Experimental Sensor Network	Anand
55	18457-74	Development of Technoligy for the preparation of Fermented Rice Beverage in Meghalaya and evaluation of its functional properties	Anand
56	18457-81	Organize one training programme	Anand
57	18457-82	Directorate and sameti	Anand
58	18457-85	Forecasting sugarcane Production at mill catchment in Bharuch, Gujatat with remote sensing and ancillary information	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
59	18457-86	Development of a Decision Support System (DSS) Planning storage infrastructures and supply chain logistics	Anand
60	18457-87	“SCATSAT – 1 Utilization project on Rice Productivity from Scatsat-1 Data	Anand
61	18457-92	Efficacy of Fumigator (a sorghum variety with high HCN content) on tomato against root-knot nematode (Meloidogyne spp.)	Anand
62	18457-94	Land surface albedo retrieval using GISAT data	Anand
63	18457-95	Gross Primary Productivity from Agriculture using GISAT data	Anand
64	18457-96	Crop discrimination & soil fertility assessment using AVIRIS-NG data	Anand
65	18557-01	Functional metagenomics of camel rumen microbiome for novel key glycoside hydrolases (GH) to benefit animal nutrition and biofuels	Anand
66	18557-02	Biotransformation and bioavailability of soy isoflavones in a fermented soy beverage	Anand
67	18557-06	Native methanotrophic bacterial consortium for mitigation of methane flux from rice ecosystems	Anand
68	18557-07	To study the residue and dissipation of Tebuconazole 430SC (Folicur) on Tomato”	Anand
69	18557-08	To study the persistence & residues of Mancozeb 52.6% + Hexconazole 2.4% WG (UPF 209b) on Chilli	Anand
70	18557-10	Nutrient & management to Increase efficiency in Crops & Animal	Anand
71	18557-11	(1) Study the residues of lifenuron 5.4% EC on cotton (2) Study the residues of flubendiamide 20% WG on tomato (3) Study the residues of lifenuron 5.4% EC on chilli (4) Study the residues of flubendiamide 20% WG on on paddy	Anand
72	18557-12	(1) Study the persistence & residues of Acetamiprid 25% + Bifenthrin 25% WG on (GPI 515) Soybean crop	Anand
73	18557-13	“(1) Study the persistence & residues of Novaluron 9.45% + Lambda cyhalothrin 1.9% ZC (GPI 1316) on red gram (2) Study the persistence & residues of Zoxystrobin 8.3% + Mencozeb 66.7% WG (Avancer glow) on soybean	Anand
74	18557-14	Training Programme of Animal Husbandry Department of Jaspur District (CG) at EEI	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
75	18557-17	Evaluating L & S band SAR data for estimation of crop biophysical parameters and soil moisture	Anand
76	18557-18	Hydrological & Crop Simulation Modeling in the Arena of Climate Change	
77	18557-20	ASPEE Scholarship	Anand
78	18557-21	Bio-Efficacy of Vellum Prime 400 SC against root-knot nematode infecting Brinjal	Anand
79	18557-22	Bio-Efficacy of Vellum Prime 400 SC against root-knot nematode infecting Chilli	Anand
80	18557-23	(1) To Study the Persistence & residues of Pendimethalin 38.7% CS (Dost Super) on Cumin (2) To Study the Persistence & residues of Pendimethalin 38.7% CS (Dost Super) on Chick Pea	Anand
81	18557-26	Study the Persistence & residues of Ipfencazone 25% SC(w/v) on Rice	Anand
82	18557-29	Skill Development Training Programmes	Anand
83	18557-31	Study the residue of Azoxystrobin 18.2% + Difenoconazole 11.4% w/w SC on Banana	Anand
84	18557-32	Study the persistence and residues of Oxyfluorfen + Clonidafop Propargyl (UPH 716) on Onion	Anand
85	18557-33	Study the persistence and residues of Azoxystrobin 4.7% + Mancozeb 59.7% + Tebuconazole 5.6% WG (GPF 215) on Cucumber	Anand
86	18557-34	Study the persistence and residues of Metalaxyl-M 3.9% + Mancozeb 64% WG (GPH 616) on Potato	Anand
87	18557-50	Study the residues and dissipation of ME 5382 (10% Suspension Concentrate) on Paddy Rice	Arnej
88	18557-51	Study the residues and dissipation of ME 5382 (2% Granular) on Paddy Rice	Arnej
89	18557-52	Krushi Kalyan Abhiyan	Dahod
90	18557-55	Study the residues and dissipation of Metalaxyl-M 31.8% ES on Maize and Chilli	Anand
91	18557-60	Evaluation of existing plantation, establishment of agro forestry trials and capacity building to promote Sandal wood (Santalum album) cultivation in Gujarat and Rajasthan	Anand
92	18557-61	Skill Development Training Programmes 2018-19	Dahod, Anand

Sr. No.	Budget Head	Name of the Scheme	Center
93	18557-62	Evaluation of Bt cotton hybrids and varieties received through CICR Coimbatore under AICAR on Cotton	Anand
94	18557-66	Quality Seed Production Technology of Arid Crops	Anand
95	18557-72	DBT Newwork programme on bovine tuberculosis control: Mycobacterial diseases in animals Network (MyDAN) programme	Anand
96	18557-73	Biotechnological approaches for conservation and Eco-restoration of Paris Polyphylla and Kaempheria parviflora -A highly traded endangered medicinal plant species in Arunachal pradesh	Anand
97	18557-77	Green Energy Initiatives In Agricultural to Combat Climate Change Training	Anand
98	18557-82	(1) To study the residue and dissipation of Fluopyram 200g/L + Tebuconazole 200g/L SC (Luna experience) on Rose (2) To study the residue and dissipation of Fluopyram 200g/L + Tebuconazole 200g/L SC (Luna experience) on Banana (3) To study the residue and dissipation of Fluopyram 250g/L + Trifloxystrobin 250g/L SC (Luna sensation) on Chilli (4) To study the residue and dissipation of Fluopyram 250g/L + Trifloxystrobin 250g/L SC (Luna sensation) on Onion (5) To study the residue and dissipation of Spirotetramat 150g/L OD (Movento) on Cabbage (6) To study the residue and dissipation of Beta-cyfluthrin 90g/L + Imidacloprid 210g/L OD (Solomon) on Cucumber (7) To study the residue and dissipation of Fosetyl AI 80 % WP (Aliutte) on Bengal gram (8) To study the residue and dissipation of Fosetyl AI 80 % WP (Aliutte) on Banana (9) To study the residue and dissipation of Fluopyram 400 g/L (Valum prime) on Chilli (10) To study the residue and dissipation of Fluopyram 400 g/L (Valum prime) on Brinjal	Anand
99	18557-83	(1) To study the persistence and dissipation of Cyantraniliprole 8% + Diafenthiuron 40% W/W SC on Brinjal (2) To study the persistence and dissipation of Cyantraniliprole 8% + Diafenthiuron 40% W/W SC on Okra and (3) To study the persistence and dissipation of Cyantraniliprole 8% + B369Diafenthiuron 40% W/W SC on Tomato	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
100	18557-84	Demonstration of efficacy of Nimitz 2GR in different crops (Tomato, Guava and Pomegranate)	Anand
101	18557-85	Validation and Promotion of Sustainable and Adaptable IPM Technology for Brinjal Crop	Anand
102	18557-86	XXV meeting of ICAR Regional Committee No. VI	Anand
103	18557-87	To Study the persistence and dissipation of insecticide Acephate 75% SP in cotton	Anand
104	18557-88	Establishment of Demonstration units on Micro Irrigation Systems (Drip/Sprinkler)	Dahod
105	18557-89	District Kisan Mela at KVK Dahod	Dahod
106	18557-90	Atmosphere and Climate Research - Modelling Observing Systems and Services (Across) (0335)	Dahod
107	18557-94	INSA FELLOWSHIP	Anand
108	18557-95	Creation of mass production facility of bio-pesticides for plant disease management	Anand
109	18557-97	स्वच्छ भारत अभियान	Devataj
110	18557-98	“R-ABI, College of FPT & BE, AAU, Anand	Anand
111	18558-02	“Development of Active-Passive algorithm for High Resolution Soil Moisture over Bare and Vegetation Covered Soil”	Anand
112	18558-03	“Spectral Library Development and Spectral Sensitivity Analysis for Multi Crops and Growth Stages”	Anand
113	18558-11	“Evaluation of premix herbicide RIL-202/F1 35.9% SE for its bio-efficacy and phytotoxicity on soybean as pre-emergence and its effect on succeeding crop”	Anand
114	18558-12	“Evaluation of premix herbicide RIL-202/F1 35.9% SE for its bio-efficacy and phytotoxicity on soybean as pre plant incorporation and its effect on succeeding crop	Anand
115	18558-13	“Evaluation of RIL-165/F1 (30% SE) against Spodoptera litura, Helicoverpa armigera, semilooper and girdle beetle infesting Soybean”	Anand
116	18558-14	“Evaluation of RIL-173/F1 (22.5%SC) against sucking pests (aphid, jassid, whitefly, thrips and mealybug) in cotton”	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
117	18558-20	“Renewable Energy for Environmental Protection and Energy Conservation”	Godhra
118	18558-21	“1. To Study the residue and dissipation of Vayego (Tetraniliprole 200g/L SC) in/on Maize 2. To Study the residue and dissipation of Larvin (Thiodicarb 75% WP) in/on Maize”	Anand
119	18558-32	“New Developments in Dairy Sector: Issues and Strategies for increasing Income of Rural Milk Producer of India”	Anand
120	18558-43	“ 1. To Study the residue and dissipation of Fluopyram 400g/L SC (Velum Prime) in/on Pomegranate (Two Season-Soil Drenching) 2. To Study the residue and dissipation of Fluopyram 400g/L SC (Velum Prime)in/on Pomegranate (Two Season-Drip) 3. To Study the residue and dissipation of Tetraniliprole 120 g/L + Thiocloprid 360 g/L DC in/on Brinjal (one Season) 4. To Study the residue and dissipation of Tetraniliprole 120 g/L + Fipronil 240 g/L FS (Reatis Plus) in/on Maize (One Season)	Anand
121	18558-44	“1 To Study the residue and dissipation of Fluopyram 400g/L SC (Velum Prime) in/on Cucumber (Two Season-Drip), 2. To Study the residue and dissipation of Fluopyram 400g/L SC (Velum Prime) in/on Tomato (Two Season-Drip) 3. To Study the residue and dissipation of Spirotetramat 30 g/L + Difenthiurom 120 g/L SC in/on Chilli (One Season)”	Anand
122	18558-45	“Evaluaton of Health Promoting Schemes Jointly offered by Government and Dairy Co operatives of Gujarat”	Anand
123	18558-46	“ To Evaluate Various Socio-Economic Upliftment Schemes Provided to Member Farmers by Gujarat Dairy Cooperatives”	Anand
124	18558-47	“Comparative Analysis of Dairy Business Models Existing in Gujarat: Study of Selected Districts and Exploring Possibility of Implementing New Models”	Anand
125	18558-48	“Animal Disease Control”	Devataj, Arnej
126	18558-49	“Fertilizer Application Awarness Campaign”	Dahod, Devataj, Arnej
127	18558-50	Microbial based Agricultural Waste Management using Vermi composting under SWAACHHTA ACTION PLAN (SAP)	Dahod, Devataj, Arnej
128	18558-51	“Tree Plantation Campaign”	Dahod, Devataj, Arnej

Sr. No.	Budget Head	Name of the Scheme	Center
(b) Government of Gujarat			
1	18023-00	Narmada irrigation Research Project (Khandha)	Khandha
2	18023-11	Sardar Sarovar Narmada Irrigation Research Project. Thasra	Thasra
3	18023-11	Sardar Sarovar Narmada Irrigation Research Project, Dabhoi.	Dabhoi
4	18023-12	Sardar Sarovar Narmada Irrigation Research Project at Dhandhuka.	Dhandhuka
5	18027-07	Payment of TA/DA to Experts of GAU for work Done for Sardar Sarovar at Anand.	Anand
6	18053-00	Cost of Cultivation Scheme at BACA	BACA Anand
7	18246-00	T. & V. Benor Scheme(Plan), Anand.	Anand
8	18246-00	T. & V. Benor Scheme(Plan), Vadodara.	Vadodara
9	18246-03	T. & V. Scheme under Benor System, Anand	Anand
10	18252-00	Training course & seminar to assistance to state for Control of Animal Disease (ASCARD).	Anand
11	18252-07	Brain Storming Workshop on Vegetable and Forage Crops Seed Production	Anand
12	18258-01	Krushu Mahotsav At DEE, Anand	Anand
13	18258-02	Shibir during the Krushu Mahotsav-2011 at Vety. Sci. College	Anand
14	18258-03	Shibir during the Krushu Mahotsav-2011 at Dairy Sci. College	Anand
15	18274-00	Purchase of Instruments / Equipments for Veterinary Clinic/ Biotechnology Laboratory / Modernisation of Laboratory.	Anand
16	18275-03	Assessment, Refinement, Validation and Adoption of Frontline Technologies and other Short term Researchable Issue through KVK & other local Research Centres	Anand
17	18283-05	Small Nursery under NHM at Vaso	Vaso
18	18300-00	Right to Information Act -2005	Anand
19	18303-00	Establishment of Frozen Semen Station & Breeding of Animals at Chharodi & Vety.Sci.College	Anand
20	18396-00	Pesticide residues sample testing charges, ICAR U-9.	Anand
21	18396-00	Monitoring of Surface and Ground Water for Pesticides Residue in SSP Command Phase-I Area	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
22	18396-01	Monitoring of Surface and Ground Water for Pesticides Residue in SSP Command Phase-II Area	Anand
23	18405-00	Soil Health Card programme for state farmers, Anand (Plan)	Anand
24	18406-00	Soil Health Card programme for state farmers, Anand (Non-Plan)	Anand
25	18409-00 to 18409-12	Analysis of Soil Sample and to prepare Soil Health Card.	Anand
26	18455-00	PCR-RFLP and Microsatellite based Genotyping of Poultry Birds at Vety. Sci. College	Anand
27	18458-00	Molecular Characterization of Dangi and Khillar Cattle at Vety. Sci. College	Anand
28	18458-01	Metagenomic Analysis of Viruses Associated with Respiratory Trait Infections in Poultry	Anand
29	18458-02	Evaluation of Efficacy of a Nanotechnology based Formulation against Infection/Infestation of Canine Skin at Vety. Sci. College	Anand
30	18467-00	Whole Genome Sequencing of Isabgol (<i>Plantago ovata F.</i>) at Agril. Biotech Unit	Anand
31	18471-00 to 18471-18	CSS-Development and Strengthening of Infrastructure Facilities for Production and Distribution of Quality Seeds	Anand
32	18472-00	High Thought Exome Sequence Analysis in Four Buffalo Breeds of Gujarat to Detect Single Nucleotide Polymorphisms at Vety Sci College	Anand
33	18473-00	Modelling for Estimation of Incident Photosynthetically Active Radiation (IPDR) Using INSAT 3D Data at BACA	Anand
34	18474-00	Single Nucleotide Polymorphism Detection in Coding Region of Poultry Genome and its Association with Feed Conversion Ration of Broilers at Vety Sci College	Anand
35	18475-00	Establishment of Mashroom Cultivation Laboratory & Training at MVRS & Devgadbaria	Anand
36	18476-00	Metagenomic and Investigation of Synbiotic Fermented Dairy Product containing Probiotic Lactobacillus Helveticus MTCC 5462 in Geriatric Volunteers at Dairy Sci College	Anand
37	18476-01	Development of Technology for Production of ACE inhibitor Bio-active peptides through Fermentation of Soy Milk and Bovine Milk	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
38	18476-02	Challenges, Opportunity and Expectations of Stakeholders of Dairy Industry of Gujarat and its Implication for Strategy and Policy Formulation: An Indepth case Study	Anand
39	18476-03	Evaluation of Milkoscream for its Efficacy in Analysis of Milk	Anand
40	18476-04	Bio-processing of Lactic Culture from North-Eastern Region to Develop Functional Fermented Soya Foods with Potential Health Benefits at Dairy Sci. College	Anand
41	18476-05	Evaluation of Everest Milk Analyzer and Adulteration Detection Strips for their Efficacy in Analysis of Mil at Dariy Sci. College	Anand
42	18477-00 to 18477-07	C-Dap Project	Anand
43	18478-00	Genetic Diversity and Haplotyping of Innate Immune Genes in Indian Cattle and Buffalo at Vety Sci College	Anand
44	18485-01	Pashupalan Shibir at Veterinary Sci. College, Anand	Anand
45	18490-00	Accelerated Fodder Development Programme	Anand
46	18491-00	Development of EST-SSR Markers for Fibre Quality in Diploid Cotton (<i>Gossypium herbaceum</i>)	Anand
47	18492-00	Incubation Centre-cum-Excellence Centre in Food Processing Technology at AAU Anand Campus	Anand
48	18493-00	Biochemical and Molecular Characterization of T.durum Cultivars for its product processing Quality	Anand
49	18494-00	GPS Enabled Tablet PC based Application - Tablet	Anand
50	18499-00	Genome Sequencing for the Breeds of Gir Cattle and Jafarabadi Buffalo	Anand
51	18482-00	Large Scale Multiplication of Indigenous Date palm Trees through Tissue Culture	Anand
52	18484-00	Establishment of Centre for DNA Fingerprint in Crops and other Bio-inputs in Agriculture - RKVY	Anand
53	18275-04	“Kharif Pako ni Adhunik Kheti Padhhati”	Anand
54	18503-02	Developing Advance Diagnostic & Alternative Control Approaches against Bovine Mastitis(RKVY)	Anand
55	18802-0Q	(1) Image Building & Skill enhancement for Panchayti Raj System & (2) Mainstreaming Gender in Agriculture & Allied Sectors	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
56	18457-28	Quality Seed Production in fodder crops under fodder development programme	Anand
57	18457-29	Evaluation of performance of Maize Hybrids	Derol
58	18457-31	Bioefficacy and phytotoxicity evaluation of Tebuconazole 10% + Sulphur 65% WG (XLC 750) against powdery mildew (<i>Oidium mangiferae</i> Bert.) of mango (<i>Mangifera indica</i> L.)	Anand
59	18457-36	To promote assistance to State Farmers for Organic Farming-2015-16	Anand
60	18457-37	Bagayat khedut sammelan	Anand
61	18802-0L	Seminar on “Land Scaping and Nursery Management” under NHM	Anand
62	18802-0M	Training Prog. On “Value Addition & Marketing on Chilli, Cauliflower & other crops at EEI, Anand	Anand
63	18802-0N	All India Survey on Higher Education (AISHE) at BACA	Anand
64	18457-75	Genetic diversity analysis and development of molecular Markers for drought tolerance in Teak (<i>Tectona grandis</i> L.F) populations of Gujarat	Anand
65	18457-77	Estimation of Methane Emission in cattle and Dietary interventions for its Mitigation	Anand
66	18457-79	Impact of Climate on Epidemiology of Major Important Diseases of cattle and Buffalo in Middle Gujarat	Anand
67	18457-83	મહિલા સંબંધિત કાયદાકીય જાગૃતિ શિબિર	Anand
68	18457-42	Development of Resource Model cum Demonstration Farm for Organic Farming at MVRS	Arnej
69	18457-42-1	Establishment of Model Organic Farm cum Training Centre	Devataj
70	18457-42-2	Establishment of Model Organic Farm cum Training Centre	Sansoli
71	18457-42-3	Establishment of Model Organic Farm cum Training Centre	Arnej
72	18457-88	Development, validation & technology transfer of microbial consortium of bioagents in sustainable management of biotic & abiotic stresses in crops	Anand
73	18557-16	Student Startup and Inovation Policy	Anand
74	18557-25	બાગાયત પાકોમાં સંવર્ધન અને નર્સરી વ્યવસ્થાન વર્કશોપ	Anand
75	18557-28	Science based Agriculture & Climate Change	Anand
76	18557-39	Pharmacokinetics of Phage therapy: a step forward in the treatment of subclinical mastitis in Gir cattle	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
77	18557-40	Screening for polymorphism(s) in the selected candidate genes involved in the pathogenesis of Steroid Resistant Nephrotic Syndrome	Anand
78	18557-59	Doubling the farmers income by 2022- A Strategic Initiative	Anand
79	18557-63	સેન્ટ્રીય ખેતીની પ્રદર્શન સામગ્રી માટે	Anand
80	18557-69	Demonstration on Hydroponics and Soil Less Culture	Anand
81	18557-70	Experiential Learning Unit on “ Plant Propagation and demonstraion of nursery management techniques under greenhouse environment	Vaso
82	18557-71	Green House facility for mass multiplication and demonstration of interspecific hybrid of fruits and vegetables	Anand
83	18557-93	Strengthening of Commercial Tissue Culture Laboratory	
84	18557-96	ARYA Project at KVK Anand	Devataj
85	18557-99	Hi-Tech Demonstration for propagation and production of quality planting matirials of Horticulture plants under protected condition	Vadodra
86	18273-00	National Service Scheme	Anand
87	18273-01	AGRIUNIFEST-2011	Anand
88	18558-31	“Hi-tech Demonstration Unit for Management of Plant Parasitic Nematodes under Protected Condition”	Anand
89	18558-33	Training Programmes on “Good Animal Husbandry and Veterinary practices for Doubling of Animal Owners Income”	Anand
90	18558-34	“સુભાષ પાલેકર પ્રાકૃતિક કૃષિ (SPNF)”	Anand
91	18558-41	“Crop Protection in Horticultural Crops” under NHM	Anand
(c) RKVY Project (GOG)			
1	18557-38	Strengthening of Pesticide Residue Laboratory as per NABL-17025 REQUIREMENT	Anand
2	18557-76	Integrated Farming System Model for sustainable livelihood for tribal farmers	Dahod
3	18557-75	Establishment of mass production laboratory of native biocotrol for insect pest management	Anand
4	18557-78	Mechanized Dairy Cattle Breeding Farm	Anand
5	18557-79	Minimal Processing unit to enhance quality of fruits and vegetables	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
6	18557-91	Facility Creation at Pulse Research Station, Vadodara	Vadodara
7	18557-92	Strengthening of Krishi Vigyan Kendra, Arnej	Arnej
8	18558-08	“Creation of Seed Storage Godown Facility at Khandha”	Khandha
9	18558-09	“Establishment of Advanced Laboratory in Nano technology for Evolving Novel Applications in Agricultural Sciences”	Anand
10	18558-10	“Establishment of infrastucture for seed processing and abiotic stress screening of desi Cotton”	Viramgam
11	18558-23	Pesearch infrastructure for modernization of Main Vegetable Research Station, Anand	Anand
12	18558-24	“To develop the model farm at Thasra in Kheda district of Middle Gujarat”	Thasra
13	18558-25	“Facilitates creation at agricultural research station Derol”	Derol
14	18558-26	“To develop the model farm in Vadodara district of Middle Gujarat”	Derol
15	18558-27	“Creation of Facilities for Farmers Training Under WTO Cell”	Anand
16	18558-28	“Development of Horticultural Research Station, Khambholaj”	Khambholaj
17	18558-29	“Ceration of infrastructure facilities at AAU, Khandha in Vadodara district of middle Gujarat”	Vadodara
18	18558-30	“Strengthening of infrastructure facilities for seed production at Main Rice Research Station, AAU, Navagam, Ta. & De. Kheda (Gujarat)”	Nawagam
(d) NGO & Private Agencies			
1	18014-19	Testing of <i>Bt. K.</i> & Fenproathrin 30% EC against pest of Cabbage, Cauliflower, Chillies & Okra at Anand.	Anand
2	18035-00	Professor on IFFCO chair.	Anand
3	18284-00	Mahila Pashupalan Talim Karyakrm	Anand
4	18299-00	Bt. Cotton Hybrid Trials (approved by GEAC)	Dhandhuka, Viramgam
5	18299-03	Bt. Cotton Hybrid Trials (approved by GEAC) at RRS & Dhandhuka	Dhandhuka
6	18309-00	Monitoring Cell : MLT & LST trials Monitoring charges	Anand
7	18321-00	Refresher Training Programme for Veterinarians of Co-op. Dairies of the State, Veterinary College,	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
8	18321-01	Evaluation of Efficacy of a Formulation in the Treatment of Sub-clinical Bovine Mastitis	Anand
9	18379-01	To evaluate performance of their maize hybrid against their check hybrids	Anand
10	18411-00	Project proposal for efficacy of Treeplan 48 E.C. against weeds in onion & cumin at Anand.	Anand
11	18411-00	Performance trial of Hybrid Maize	Anand
12	18411-01	Evaluation of Performance of Maize Hybrids at Jabugam and Vadodara	Jabugam, Vadodara
13	18411-01(1)	Evaluation of Performance of Maize Hybrids at Jabugam and Vadodara	Jabugam, Vadodara
14	18411-01(2)	Evaluation of Performance of Maize Hybrids at Jabugam and Vadodara	Jabugam, Vadodara
15	18411-01(3)	Monsanto Corn Hybrid Evaluation Trials at Jabugam	Jabugam
16	18411-02(2)	Evaluation of Performance of Rice Hybrids at Nawagam	Nawagam
17	18411-05	Testing Fees for Hybrid of Maize at Nenpur/Sansoli	Sansoli
18	18411-06	Testing Fees for Hybrid Paddy at Nawagam	Nawagam
19	18411-07	Testing Fees for Hybrid Paddy at Dabhoi	Dabhoi
20	18431-03	Testing fee for Evaluation of Efficacy of Transgenic Corn hybrid with stacked events of TC 1507 x NK 603 in 3rd season of Bio Safety Research Level-I at BTRS	Anand
21	18437-01	Multilocation Supervised Field Trial for Residue Study of Nativo 75 WG (Trifloxystrobin 25% + Tebuconazole 50%-75 WF) on Mango at ICAR U-9	Anand
22	18437-03	Testing of Bioefficacy and Phytotoxicity of Carbosulfan 25% EC against Sucking Pests of Cumin	Anand
23	18437-05	Residue Studies of Chlorothalonil 75 WP applied as Foliar Spray in Chilli Crop	Anand
24	18437-06	Testing Bio-efficacy and Phytotoxicity of Indoxacarb 15.8 EC against <i>Helicoverpa armigera</i> in Tomato	Anand
25	18443-01	Development of Micropropagation Technology in <i>Opuntia (Opuntia Ficus Indica)</i>	Anand
26	18443-02	Mapping of QTL Associated with Drought Tolerance Related Traits during the Seedlings Stage in Maize	Anand
27	18443-03	Large Scale Diagnosis of Sex in papaya (cv. Madhubindu) by Loop Mediated Isothermal Amplification (LAMP) and its Comparison with Routinely Used PCR Technique	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
28	18447-02	Evaluation of Fodder Beet for its Yield and Quality to Different Dates of Harvesting at ICAR Unit-9	Anand
29	18447-05	Bio-efficacy of Metarrhizium Anisopliae based Bio-insecticides Met 52 EC for the Control of Sucking Pests Complex in Chilli	Anand
30	18447-06	Bio-efficacy of Metarrhizium Anisopliae based Bio-insecticides Met 52 EC for the Control of Sucking Pests Complex in Brinjal	Anand
31	18447-07	Evaluation of Sulphur and Zinc Containing Complex Fertilizer, efficacy in Groundnut-Wheat and Maize-Mustard Cropping System	Anand
32	18447-08	(i) Testing the Bio-efficacy of Jump Start in soybean; (ii) Testing the Bio-efficacy optimize 400 in Soybean; and (iii) Testing the Bio-efficacy Taegro in soybean	Anand
33	18447-11	Supervised Field Trial on Residue and Persistence Study Ipoconazole + Metalaxyl (Rencona dimension) on Maize	Anand
34	18447-12	Supervised Field Trial on Residue & Persistence Study of "Triazophos on Brinjal"	Anand
35	18447-13	Supervised Field Trial on Residue & Persistence Study of "Phosphamidon on Mustard"	Anand
36	18447-14	Supervised Field Trial on Residue & Persistence Study of "Phenthoate on Cotton"	Anand
37	18447-15	Supervised Field Trial on Residue & Persistence Study of "Monocrotophos on Castor"	Anand
38	18447-16	Supervised Field Trial on Residue & Persistence Study of "Monocrotophos on Pigeon pea"	Anand
39	18447-17	Supervised Field Trial on Residue & Persistence Study of "Monocrotophos on Mustard"	Anand
40	18447-18	Supervised Field Trial on Residue & Persistence Study of "Penflufen + Trifloxystrobin 308 FS on Bengal Gram"	Anand
41	18447-19	Study on the Detoxification of Pesticide Residues in/on Tomato and Chilli at Field as well as in House Environment Using "Agroclean"	Anand
42	18447-20	Supervised Field Trial on Residue and persistence Study of "Fluopyram 200 + Tebuconazole 200-400 SC in Chilli"	Anand
43	18447-20.1	Supervised Field Trial on Residue and Persistence Study of "Fluopyram 400 SC in Tomato"	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
44	18447-20.2	Supervised Field Trial on Residue and Persistence Study of “Deltamethrin 2.8% EC (Decis 2.5 EC) on Chickpea”	Anand
45	18447-20.3	Supervised Field Trial on Residue and Persistence Study of “Imidacloprid 350 WG on Chilli, Tomato & Brinjal	Anand
46	18447-20.4	Supervised Field Trial on Residue and persistence Study of UPI 1810 on Cotton	Anand
47	18447-20.5	Supervised Field Trial on Residue and Persistence Study of “Fluopyram 200 + Tebuconazole 200-400 SC on Onion”	Anand
48	18447-20.6	Supervised Field Trial on Residue and Persistence Study of “Flubendiamide 24% + Thiacloprid 24%-480 SC on Red-gram”	Anand
49	18447-20.7	(1) Evaluation of Residues of Fosetyl 80 WP in Tomato & (2) Evaluation of Residues of Fluopyram (200) + Tebuconazole (200)-400 SC in Mango at ICAR Unit-9	Anand
50	18447-21	Evaluation of Performance of Pearlmillet Hybrids	Anand
51	18447-22	Supervised Field Trial on Residue and Persistence Study of Dimethoate 30% EC on Cotton	Anand
52	18447-23	Evaluation of Performance of Makkhani Grass Hybrid	Anand
53	18447-24	Residues and Persistence Studies of “Pyraclostrobin 25g/L +Fipronil 250g/L + Thiophanate Methyl 225g/L in Groundnut (STANDAK TOP 500G/L FS)	Anand
54	18447-25	Residues and Persistence Studies with “Afidopyropen 50g/L DC” in Cotton (BAS 440 01 L)	Anand
55	18447-26	Residues and Persistence Studies with “Afidopyropen 50g/L DC” in Brinjal (BAS 440 01 L)	Anand
56	18447-27	Residue and Persistence Studies of “Pyraclostrobin 25g/L + Fipronil 250g/L +Thiophanate Methyl 225g/L in Soybean (STANDAK TOP 500G/L FS)	Anand
57	18447-28	Evaluation of Performance of Pearl Millet Hybrid	Anand
58	18449-00	(i)Evaluation of Bio-efficacy and Phytotoxicity of Propamocarb 530 + Fosetyl 310-840 SL(previcur energy 840 SC) against Damping-off of Chilli, Tomato and Cabbage Seedlings in NurseryBed; (ii) Evaluation of Phytotoxicity of Propamocarb 530 + Fosetyl 310-840 SL (Previcur Energy 840 SL) against Damping-off of Tobacco Seedlings in Nursert Bed; (iii) Evaluation of Residues and Persistence (Dissipation) of Tiadimeton (Baleton) 25 WP in Chilli and soil; and (iv) Evaluation of Bio-efficacy of Trifloxystrobin 25% +Tebuconazole 5% - 75 WG against Anthracnose, Grey Mildew, Leaf spots and Root-knot of cotton at BACA	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
59	18454-00	Evaluation of RIL-021/F2 (70% SF) for Bio-efficacy against Sucking Insect Pests, Phytotoxicity and its Safety to Natural Enemies on Cotton at BACA	Anand
60	18454-01	Bio-efficacy of Hexaconazole 4% + Zineb 68% WP against Disease Complex in Cumin at BACA	Anand
61	18454-07	Effect of Rhizomyx and Rhizonyco on Yield and its Attributes of Bt.Cotton at BACA & Thasra	Anand
62	18454-08	Evaluation of Bio-efficacy and Phytotoxicity of BYI02960 SL 200 against sucking pests complex of cotton at BACA	Anand
63	18454-09	Evaluation of Bio-efficacy and Phytotoxicity of Fipronil 200 SC against Insect pests of cotton at BACA	Anand
64	18454-11	Bio-efficacy of UpF-509 against Major Diseases of Chilli at BACA	Anand
65	18454-12	Evaluation of Bio-efficacy of Diafenthiuron 50 WP from New Source against Cotton Insect pests at BACA	Anand
66	18454-13	To study the Bioefficacy of Shriram Agrinos product HYT-A, HYT-B & HYT-C on Tomato at BACA	Anand
67	18454-16	Study the Performance of Bio Gold and Power gold as a Manure and Soil Conditioner in Improving the Cotton (Bt.) Yield and Fertilizer Use Efficacy	Anand
68	18454-17	Evaluation of Bio-efficacy and Phytotoxicity of Antracol 70 WP (propineb 70% WP) against Leaf Spot diseases of Cotton	Anand
69	18454-18	Testing of Zineb 68% + Hexaconazole 4% WP (AVTAR) against Diseases of Cotton and Maize	Anand
70	18454-19	Evaluation of Carbendazin 25% + Mancozeb 50% WS (SPRINT) against Diseases of Maize and Onion Bulb	Anand
71	18454-20	Bioefficacy and Phytotoxicity of Agro-clean, a Bio-product against Sucking Insect pests of Bt. Cotton	Anand
72	18454-21	Bioefficacy and Phytotoxicity Evaluation of CHA1322 (Flutriatol 250 g/L SC) against Tikka Disease (Early & Late Leaf Spot) of Groundnut	Anand
73	18454-22/ 22.1/22.2	Development of Agro-technologies for Utilization of Treated Effluent Water for Cultivation of Crops	Anand
74	18454-23 & 18454-23.1	Payment of Research Study Assignment	Derol

Sr. No.	Budget Head	Name of the Scheme	Center
75	18454-24	Evaluation of Efficacy of DPX-Q8U80 500 SC against Root-knot Nematodes in Brinjal and Tomato	Anand
76	18454-25	Genetic Characterization of Emerging Newcastle Disease Virus Variations in India	Anand
77	18454-26	Evaluation of MCW-2 (2% GR) against Root-knot Nematodes in Okra and Cucumber	Anand
78	18454-27	Bio-safety Research Trial-1 (BRL-1) for Insect Resistant Transgenic Corn Hybrid (MON-89034)	Anand
79	18457-ABCD	Evaluation of Syngenta GM Corn Hybrids in BRC-I trial in Rabi 2011-12 at BACA & Godhra	Anand
80	18457-03	Bio-efficacy of Diafenthiuron 50 WP against Brinjal Whitefly at MVRS	Anand
81	18457-04	Bio-efficacy of Diafenthiuron 50 WP against Chilli Mites at MVRS	Anand
82	18457-05	Evaluation of Bio-efficacy of Thiamethoxam 12.6% + Lambdacyhalothrim 9.5% ZC (Alika 247 ZC) against Corn pests at Derol	Anand
83	18457-07	Bioefficacy and Phytotoxicity of Flubendiamide (Takumi) 20% WG against Borer pests of Chilli at MVRS	Anand
84	18457-08	To Study the Bioefficacy of Privi's Nutrivit/Trypto/Super Gold on various Crops at MVRS	Anand
85	18457-09	Evaluation of Transgenic Stacked Corn (MON 89034 x NK 603) against Lepidopteron pests, Bioefficacy, Phytotoxicity and Carryover of Roundup formulation (MON 76366) at Derol & BACA	Anand
86	18457-10	Diatomaceous Earth as Source of in Different Crops of India	Anand
87	18457-11	Effect of Application of different Sources of Phosphorus on Growth and Yield of Crops under Cropping Sequence- Maize-Mustard-Wheat-Greengram	Anand
88	18457-12	Response of Greengram (Kharif) and Maize (Rabi) to the Foliar application of Kappaphycus Cell Sap (Sea Weed) Organic Fertilizer	Anand
89	18457-13	(i) Testing the Bio-efficacy & Phytotoxicity of Chloronutriniliprote 35% WG against Lepidopteran Pests of Okra; and (ii) Testing the Bio-efficacy and Phytotoxicity of Chlorantrimiliprole 35% WG against Lapidopteran pests of Tomato	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
90	18457-14	Testing of Agro Charger and Agro Clean in Tomato	Anand
91	18457-15	Testing of Agro Charger and Agro Clean in Chilli	Anand
92	18457-16	Bioefficacy and Phytotoxicity of Bio-pesticides (Brahmas-tra, Agniastra & Neemastra) against Sucking Insect Pests of Cotton and Okra	Anand
93	18457-17	Evaluation of Polymer Coated Urea in Transplanted Paddy at Thasra and Anand	Anand
94	18457-18	Testing Bio-efficacy and Phytotoxicity of HGW 86 10% OD (Cyantranilipole) against Sucking and Lepidopteran Pests of Potato	Anand
95	18457-19	Testing of Cumacin and Florigen in Chilli at MVRs, Anand	Anand
96	18457-20	Evaluation of Performance of Maize (Corn) Hybrid at Derol	Anand
97	18459-00	To Study the Bio-efficacy of Silixol (Stabilized Silicic acid in Liquid form) on Okra, Brinjal, Tomato and Chilli at MVRs	Anand
98	18802-0B	Organizing workshop-SEWA, Ahmedabad	Anand
99	18802-0C	Training-cum-Exposure Visit Programme of Milk Cooperative System "Anand Pattern" for Extension Functionaries and Group Leaders at EEI	Anand
100	18802-0E	Training Programme on "Communication Skill and Propagation Methods of Forest & Horticultural Crops at EEI	Anand
101	18802-0F	Diploma in Agril. Extension Services for Impact Dealer at Dir of Res.	Anand
102	18802-0G	Training programme on "Special Training on Soil Health Card Project (e-Krishi Kiran) at EEI	Anand
103	19200-00	To avail financial assistance from the Private Cooperative Institutions, Anand.	Anand
104		Testing Fee of foreign students (Lund University)	Anand
105	18399-01	Evaluation of Performance Rice Hybrid K-2015-01 during Kharif-2015	Anand
106	18457-21	Bioefficacy of RDS63 35% WG against Helicoverpa armigera in tomato	Anand
107	18457-21(1)	Bioefficacy of RDS63 35% WG against Spodoptera litura in chilli	Anand
108	18457-21(2)	Bioefficacy of RDS63 35% WG against lepidopteran Pests of cabbage	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
109	18457-21(3)	Efficacy of RDS63 20 SC (Dicloromezotiaz) against lepidopteran pests of pigeonpea	Derol
110	18457-22	Hybrid Rice Coded SAU trial	Nawagam
111	18457-23	Studies on supplementing sudhdhi (Alfatoxin binder) on milk yield, gross composition & alfatoxin M1 level in Milk of dairy animals	Derol
112	18457-24	Evaluation of MAIRM-08(Difenthrin 47% + Bifenthrin 9.4% SC) against sucking pests (Jassid, Whitefly, Aphid & Thrips) & Bolloworms in Cotton	Anand
113	18457-24(1)	Evaluation of Buprofezin 15% + Acephate 35% WP against Sucking Pests in Cotton	Anand
114	18457-25	Bioefficacy & Phytotoxicity evaluation of carboxin 75% WP against angular leaf spot [Xanthomonas axonopodis pv-malvacearum(smith) Dye] of Cotton	Anand
115	18457-27	Bioefficacy & phytotoxicity of Flonicamid 50% WG against sucking pests of Brinjal	
116	18457-27(1)	Bioefficacy & phytotoxicity of Flonicamid 50% WG against sucking pests of okra	Anand
117	18457-27(2)	Bioefficacy & phytotoxicity of Flonicamid 50% WG against sucking pests of okra	Anand
118	18457-32	Field evaluation of fungicide Pyraclostrobin 20% WG on early blight disease of tomato crop	Anand
119	18457-40	Bayer Fellowship Program	Anand
120	18457-41	Providing expert services regarding agriculture crops / Fodder in setting up of 1 MW Grid Connected Distributed Solar PVPilot Project at Village: Amrol Dist: Anand- Gujarat at Dire. of Research	
121	18457-43	Bioefficacy evaluation of new insecticide modecule PII 8007 20% SC on insect pests of Pomegranate	Anand
122	18457-44	“Feasibility study for enrichment of hygienised dry sewage sludge with Plant Growth Promoting Bacterial consortium (Anubhav Bio-NPK) and to assess its efficacy in potato, tomato and Wheat”	Anand
123	18457-45	“ To study the persistene and dissipation of Chlorpyrifos 20 % EC ON Groungnut “	Anand
124	18457-46	Management of pink bollworm, Pextinophora gossypiel-la (Saunders) using PB Rope Land its impact on sucking insect pestsand beneficial Fauna in Bt cotton	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
125	18457-47	“ Bio-efficacy evaluation of a combination product PCT-16 for seed treatment in Cotton crop.	Anand
126	18457-48	“ Bio-efficacy evaluation of a combination product PCT-16 for seed treatment in Groundnut crop.	Anand
127	18457-49	“Identification of “Molecular Protraits” in Squamous Cell Carcinoma of Horn in Kankrej (Bos indicus) Bullocks”	Anand
128	18457-50	“ Effects of Novozymes products on yield and its attributes in chilli”	Anand
129	18457-51	“ Bio-efficacy and Phytotoxicity of Flonicamid 50% WG against sucking insect pests in Bt. Cotton”	Anand
130	18457-52	“ Bio-efficacy and Phytotoxicity of Spiromesifen 22.9% SG against whitefly and mites in Bt. Cotton”	Anand
131	18457-53	“ Bio-effocacy cum Phytotoxicity study of Spiromesifen 22.9% SG against brinjal mite.”	Anand
132	18457-54	“ Agronomic Field Studies with various products of novo-zyms Pvt. Ltd. N yield of cotton. “	Anand
133	18457-55	સેલ્ડ્રિય ખેતીના પ્રોત્સાહન માટે સહાય પુરી પાડવાની યોજના	Anand
134	18457-56	Evaluation of Bio-efficacy and phytotoxicity of Thiocyclam Hydrogen Oxalate 4% Gr (New source) against major insect pests of Rice”	Anand
135	18457-57	Field Bio-efficacy cum phytotoxicity evaluation of Pyraclostrobin 20%WG against Soybean-Cercospora (frog eye) & Alternaria leaf spot	Anand
136	18457-58	Evaluation of bio-efficacy and phytotoxicity of Pyraclostrobin 20% WG against Alternaria leaf spot/blight disease of cotton	Anand
137	18457-60	Bio-efficacy evaluation of Pyraclostrobin 20%WG against Turcicum leaf blight (Exserohilum turcicum) of Maize	Anand
138	18457-59	Evaluation bio-efficacy and phytotoxicity of Pyraclostrobin 20%WG against early blight disease of tomato	Anand
140	18457-61	Field Evaluation of Herbicide. Atrazine 50% WP against weeds of Maize	Anand
141	18457-62	Evaluation of in-vitro and in-vivo efficacy of a formulation containing nanotechnology based alkyl polyglycosides of herbs against mastitis pathogens and its post-exposure effect on gene expression of certain bacteria”	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
142	18457-63	To study the persistence and dissipation of the (1) Flonicamid 50% WG on Cotton, (2) Flonicamid 50% WG on Paddy. (3) Spiromesifen 22.9% SC on Cotton, (4) Spiromesifen 22.9% SC ON Brinjal and (5) Thiocyclam Hydrogen Oxalate 4% G on Paddy	Anand
143	18457-64	Chlorothalonil 40% + Difenconazole 4% w/w SC (Bravo Top 550 w/v SC) against Groundnut disease	Anand
144	18457-65	Evaluation of Pydiflumetofen 7.5% + Difenconazole 12.5 w/v (200 sc) against Groundnut diseases	Anand
145	18457-66	“Bio-efficacy and Phytotoxicity of Power oil Garnet AG (2.5% v/v) against sucking pests and pink bollworm in Bt. Cotton”	Anand
146	18457-67	“Feasibility of using Dry vinasse (Commercial Yeast molasses) in cattle ration”	Anand
147	18457-68	Certificate in Agricultural extension services for input dealers	Anand
148	18457-69	To study the residue and dissipation of (1) Flupyrad 400 SC (Velum) in Banana (2) Imidacloprid 600 FS (Gaucho) in Bengal Gram, (3) Flupyrad 400 SC (Velum) in Cucumber, (4) Spirotetramat 150 OD (Movento) in Citrus, (5) Fluopicolide 4.44% + Fosetyl AL 66.67% WG (Profler) in Citrus, (6) Betacyfluthrin 90 + Imidacloprid 180 SC WS (Solomon) in Citrus, (7) Fosetyl AL 80 WP (Aliette) in Tomato”	Anand
149	18457-70	Innovative approaches value addition in dairy products and future prospects in dairy industry	Anand
150	18457-71	Bioprospecting of oxalate degrading lactic acid bacteria to develop a functional product with potential in preventing kidney stone disease	Anand
151	18457-72	To study the persistence and residues of (1) Carbendazim 12% + Mancozeb 63% WP in cotton and (2) Carbendazim 12% Mancozeb 63% WP in Soybean	Anand
152	18457-73	Efficacy of Q8U80 500 SC for the management of root knot nematodes on multiple crops (Tomato, Brinjal, Cucumber and Capsicum)	Anand
153	18457-76	Evaluation of different Organic Products in Moong crop	Anand
154	18457-78	Mission for Sustainable Agriculture	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
155	18457-80	To study the persistance and dissipation of (1) Spinetoram + 36% Scin chickpea and (2) Mancozeb 75 WP ON POTATO”	Anand
156	18457-84	Evaluatuion of performance of pearl millet viz PB 1728 (9428) and 9461	Anand
157	18457-89	Field bio-efficacy & phytotoxicity evaluation of Sulfentrazone 39.6% SC against weed complex of Soybean	Anand
158	18457-90	Field bio-efficacy & phytotoxicity evaluation Diclosulam 84% WG against weed complex of Soybean	Anand
159	18457-91	Field bio-efficacy & phytotoxicity evaluation Diclosulam 84% WG against weed complex of Groundnut	Anand
160	18457-97	Bio-efficacy cum phyto-toxicity field evaluation of insecticide Lufenuron 5.4% EC against American bollworm, Helicoverpa armigera (Hubner) Hardwick in cotton	Anand
161	18457-98	Bio-efficacy & phyto-toxicity study of Flubendiamide 20% WG tomato fruit borer	Anand
162	18457-99	Bio-efficacy & phyto-toxicity study of Lufenuron 5.4% EC against chilli fruit borer	Anand
163	18557-00	Evaluation of Bio-efficacy and phytotoxicity of Flubendiamide 20 WG (New Source) against stem borer and leaf folder infesting rice	Sansoli
164	18557-03	Integrated Nutrient and Water Management in Crops & Animals	
165	18557-05	Standardzation of PB Rope L required for the management of pink ballorm pectinophora gossypiells (Saunders) in BT cotton	Anand
166	18557-09	Evaluation MCW-2 (2%GR) against Root Knot Nematode (Meloidogyne incognita) in Capsicum (under polyhouse condition)”	Anand
167	18557-15	Evaluation of Efficacy of Homeopathic formulation in Clinical/Subclinical Mastitis in cattle	Anand
168	18557-27	Evaluation of bio-efficacy of Thiamethoxam 12.6% + Lambda cyhalothrin 9.5% ZC (Alika 247 ZC) against cumin pests	Anand
169	18557-30	Women Farmers Particularly Livestock farmers	Anand
170	18557-36	Bio-efficacy and phytotoxicity of BAS 325 01 1 150 SC against insect pests of tomato	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
171	18557-37	Bio-efficacy and phytotoxicity of BAS 325 01 1 150 SC against insect pests of chilli	Anand
172	18489-00	Upgradation/Setting of Food Testing Laboratory	Anand
173	18444-05	Testing of Spinetoram 12% SC w/v (11.7% w'w) against Lepidopteron Insect pests of Transplanted Rice at Nawagam	Anand
174	18454-14	Testing performance of new Nematicide Mew-2 (10% GR) (Fluensulfone) against Root-knot Nematodes in Tomato at BACA	Anand
175	18366-01	Biotechnological approach for Containment of Animal Diseases (RKVY stream-II) - Vety. Sci. College	Anand
176	18367-00	Strengthening of Agricultural Extension Activities of Agricultural Technology Information Centre (RKVY stream-II)	Anand
177	18368-00	Master Trainer Training on Agricultural Extension Activities (RKVY stream-II) - D.E.E.	Anand
178	18370-00	Strengthening of Mass Multiplication of Tissue Culture Datepalm and Jetropha (RKVY stream-I)	Anand
179	18371-00	Maximization of Crop Productivity in Saline & Water Logged Area (RKVY stream-I) - Arnej	Anand
180	18372-00	Genetic Enhancement of Rainfed and Irrigated Rice Yield through Conventional and Molecular Approaches (RKVY stream-I)	Anand
181	18373-00	Diversified Cultivation for Value Added Maize (RKVY stream-I) - Godhra	Anand
182	18374-00	Development of Integrated Farming System (RKVY stream-I) ARS, Anand (Nenpur/Sansoli/Minawada)	Anand
183	18374-01	-do- ARS, Anand (Nenpur/Sansoli/Minawada)	Anand
184	18375-00	Newer Approaches in Surgical Treatment of Animals (RKVY stream-I) - Principal, Vety. Sci. College, Anand	Anand
185	18376-00	Innovative Approach for Agricultural Extension Activities by Village Adoption (RKVY stream-I) D.E.E.	Anand
186	18377-00	Agricultural Extension Activities for Specialized Agricultural Innovations (RKVY stream-I) - D.E.E.	Anand
187	18415-00	Centre of Organic Farming - RKVY Stream-II	Anand
188	18421-00	Enhancing productivity of Rice in favourable and frangible eco-system of the Gujarat state through transfer of technology - RKVY Stream-I	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
189	18422-00	Referral laboratory for Food Testing and Quality Control - RKVY stream-I	Anand
190	18439-00	Transfer of Mass Production Technology of Efficient and Pesticidies Tolerant Bio-control Agents Trichoderma spp. to Farmers for Sustainable Management of Plant Diseases (RKVY stream-I)	Anand
191	18440-00	Increasing Milk Production by Recent Bio-technological Approach (RKVY stream-I)	Anand
192	18442-00	Use of Recent Molecular Techniques to Reduce Economic Losses Incurred Due to Bovine Mastitis by Evolving Diagnostic, Therapeutic and Preventive Measures(RKVY stream-I)	Anand
193	18483-00	Establishment of Liquid Bio-fertilizer Mass Production Unit (Bio-fertilizer Plant)	Anand
194	18557-41	Evaluation of sulphur and Zinc based fertilizers on periodic availability and leaching of sulphur and zinc in soils and its effect on yield, nutrients content and quality parameters in kharif paddy and summer Green gram	Anand, Thasra
195	18557-42	Center for Development of Advance Computing (C-DAC), Hydrabad	Anand
196	18557-43	Bio-efficacy of Glufosinate Ammonium 13.5% SL against major weeds, its effect on succeeding crop and its phytotoxicity on cotton	Anand
197	18557-44	Bio-efficacy and Phytotoxicity evaluation of Myclobutanil 10% WP against Alternaria blight in Cotton	Anand
198	18557-45	Bio-efficacy and Phytotoxicity of Cyantraniliprole 200 g/I SC against insect pests of Chilli when applied as Nursery Tray Drench Application	Anand
199	18557-46	Bio-efficacy and Phytotoxicity of Cyantraniliprole 200 g/I SC against insect pests of Capsicum when applied as Nursery Tray Drench Application	Anand
200	18557-47	Bio-efficacy and Phytotoxicity of Cyantraniliprole 200 g/I SC against insect pests of Tomato when applied as Nursery Tray Drench Application	Anand
201	18557-48	Bio-efficacy and Phytotoxicity of Cyantraniliprole 200 g/I SC against insect pests of Cucumber when applied as Nursery Tray Drench Application	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
202	18557-49	Bio-efficacy and Phytotoxicity of Cyantraniliprole 200 g/l SC against insect pests of Watermelon when applied as Nursery Tray Drench Application	Arnej
203	18557-53	Effect of Krishisol on Growth, Yield and Quality of Chik-cpea (<i>Cicer arietinum</i> L.)	Derol
204	18557-54	Efficacy of Ani Guard-O on Bovine Ticks	
205	18557-56	Evaluation of bio-efficacy of SYN 547407 100 DC against pests complex in Redgram	Vadodara
206	18557-57	Evaluation of bio-efficacy of SYN 547407 10 % W/v DC against pests complex in Cotton	
207	18557-58	Evaluation of bio-efficacy of Spiropidion 30% + Acetamipride 24% WG against Cotton pests	Arnej
208	18557-64	Recent Agricultural Practices for Cereal & Spice Crops	Anand
209	18557-65	Value Addition and Marketing of Tomato, Chili, Cauliflower & Other Cereal & Spice Crops	Anand
210	18557-67	Bhutan Students Hostel Fees	Anand
211	18557-68	Swadeshi Science Movement	Anand
212	18557-74	Recent managemental Practices for crops and Animals	Anand
213	18557-80	Effect of Krishisol on Growth, Yield and Quality of Onion (<i>Allium cepa</i> L.)	Anand
214	18557-81	Evaluate the efficiency of potassium thiosulphate and calcium thiosulphate on yield, nutrient uptake and quality of potato and cabbage and changes in soil properties under middle Gujarat conditions	Anand
215	18558-00	“Efficacy of Fluazaindolizine (Q8U80) 500SC for the management of root knot nematode on Bitter gourd”	Anand
216	18558-01	“Efficacy of Fluazaindolizine(Q8U80) 500SC for the management of root knot nematode on multiple crops (Okara, Water melon and Ridge gourd)”	Anand
217	18558-04	“Semen Sexing-2030-01	Anand
218	18558-05	“Bio-efficacy of DAH-307 17.18% EC against weeds, its phytotoxicity on Groundnut and effect on succeeding crops”	Anand
219	18558-06	“Bio-efficacy field trial of insecticide against fall army-worm, <i>Spodoptera frugiperda</i> (J.E.Smith) infesting maize”	Anand
220	18558-07	“Evaluation of performance of Maize Hybrids”	Godhra

Sr. No.	Budget Head	Name of the Scheme	Center
221	18558-15	“Evaluation of bio-efficacy of SYN 547407 10% w/v DC against pests complex in Groundnut	Anand
222	18558-16	“Effect of organic product Denicotinised Tobacco Dust (DTD) on plant growth and fruit yield of Okra in Kharif season”	Anand
223	18558-17	“Efficacy of Fluazaindolizine (Q8U80) 500SC for the management of root knot nematode on Bitter gourd”	Anand
224	18558-18	“Bio-efficacy of ULALA (Fonicamid 50% WG) against insect pest of Soybean	Devagadhbaria
225	18558-19	“Bio-efficacy of ATABRON (Chlorfluzuron 5.4% EC) against insect pest of Soybean”	Devagadhbaria
226	18558-22	“GCRF One Health Poultry Hub”	Anand
227	18558-35	“Effect of YUSA crystal on growth and yield of crops and soil properties”	Anand
228	18558-36	“Assessment of trace any heavy metal buildup in soil and plant using treated effluent water”	Anand
229	18558-37	“Effect of blow down STP treated water of thermal power station on crop yield and soil properties”	Anand
230	18558-38	કૃષિ અને જાતીલતા	Anand
231	18558-39	“(1) To Study the residue and dissipation of Flubendiamide 480 g/L SC (Fame) in/on Mentha (One Season)” (2) “ To Study the residue and dissipation of Fluoxapiprolin 30 g/L + Fluopicolide 200 g/L SC in/on Potato (One Season) “ (3) “ To Study the residue and dissipation of Iprovalicrb 8.4% + Copper Oxy Chloride 40.6% WG in/on Cucunber (One Season)”	Anand
232	18558-40	“Improving rainfed Kharif maize productivity”	Godhra
233	18558-42	“Crop Protection in Horticultural Crops” under NHM	Anand
234	18558-52	“Effect of biogas slurry based Su-dhan product on growth and yield of wheat (rabi) and maize (kharif) crops”	Anand
235	18558-53	workshop of S.PN.F trainer	Anand
236	18558-54	“Development of probiotic dietary preparation for prevention and treatment of obesity”	Anand
237	18558-55	“Evaluation of performance of Rice Hybrids”	Nawagam

Sr. No.	Budget Head	Name of the Scheme	Center
238	18558-56	“Feasibility of processed biomass sludge as Organic manure and its effect on crops yield and soil properties”	Anand
239	18558-57	“Evaluation of bio-efficacy of Cyantraniliprole 20% + Lufenuron 20% w/v SC (400SC) against cotton pests”	Anand
240	18558-58	“Evaluation of performance of Rice Hybrids-1”	Nawagam
241	18558-59	“Building a Network of researchers with expertise in molecular diagnostics to monitor and Investigate antimicrobial resistance (AMR) in South Asia”	Anand
242	18558-60	“ To Study the persistence and dissipation of Fluxapyroxad 167g/L + Pyraclostrobin 333g/L SC in/on Cumin regarding-(ST-406)	Anand
243	18558-61	“ Evaluation of Rallis Fungicide Pre-Mixture, Ayaan 48% WG (Kresoxim Methyl 40% + Hexaconazole 8%) for Bio-efficacy and Phytotoxicity on Soybean”	Devgadhbaria
244	18558-62	“Effect of Nano Fertilizers on Growth and Yield of maize and soil properties”	Anand
245	18558-63	“Vulture Conservation Project”	Anand
246	18558-64	“To Study the persistence and dissipation of Zineb 75% WP in/on Chilli (One season) regarding...(ST-386) and To Study the persistence and dissipation of Zineb 75% WP in/on Potato (One season) regarding...(ST-388)”	Anand
247	18558-65	“Development of Irrigation facilities by rainwater harvesting through farm pond At College of Agriculture, AAU, Vaso, Dist. Kheda”	Vaso
248	18558-66	“To Study the residue and persistence of Tetraniliprole 120 g/L + Spirotetramat 240 g/L SC (Vayego Care) in/on Chilli and Soil (One season) Tetraniliprole 120 g/L + Spirotetramat 240 g/L SC (Vayego Care) in/on Tomato and Soil (One Season) regarding...(ST-400)	Anand
249	18558-67	“Evaluation of insecticide, Dimethoate 30% EC for bio-efficacy (against pests) in Potato, its safety to natural enemies and phytotoxicity effect on the crop”	Anand
250	18558-68	“Testing fee to study the residue and persistence of UPH 616 (Propanil 60% + Propyrisulfuron 2.0% WG) in/on Rice (Direct seeded) regarding...(ST-408)	Anand

Sr. No.	Budget Head	Name of the Scheme	Center
251	18558-69	1."Study the residue and dissipation of Tetraniliprole 480 g/L FS (Reatis) in/on Maize and Soil (One season) regarding...(ST-409) ` 4,00,000/-, (2) Study the residue and persistence of Fluopyram 400 g/L SC (Velum Prime) in/on Potato (Soil Drenchiny) (Two seasons) regarding...(ST-410) `8,00,000/- and (3) Study the residue and persisistence of Isoxaflutole 225 g/L + Thiencarbazonemethyl 90 g/L SC in/on Maize (Two seasons) regarding...(ST-411) ` 15,00,000)	Anand
252	18558-70	"Assessment of farmers chilli variety AMP-R for Food Processing Chutney & Sauce Production"	Anand
253	18558-71	"Evaluation of performance of Chicklet Variety"	Anand
254	18558-72	ગુજરાત ઓર્ગેનીક કૃષિ યુનિવર્સિટીનાં સ્ટાફની બેઠક વ્યવસ્થાની કામગીરી	Anand
255	18558-79	"Testing fee to Study the residue and dissipation of Pyriothio-bac Sodium + Bispyribac Sodium in/on Rice (Two Seasons) regarding....(ST-413)"	Anand

Appendix 4

LIST OF RESEARCH PAPER PUBLISHED

1. FACULTY OF AGRICULTURE/ HORTICULTURE

1. Aal J. M., Patel K. M., Patel S. J. and Sindha D. J. (2020). Effect of integrated nutrient management on fruit yield of Aonla (*Emblca officinalis* Gaertn.) cv. Gujarat Aonla-1. *International Journal of Current Microbiology and Applied Sciences*, 9(10): 2319-7706.
2. Aal J. M., Patel K. M., Rathva J. C. and Nadoda S. R. (2020). Effect of integrated nutrient management on fruit quality and shelf life of Aonla (*Emblca officinalis* Gaertn.) cv. Gujarat Aonla-1. *International Journal of Chemical Studies*, 8(5): 1227-1230.
3. Aghara V. G., Patel V. J., Patel B. D. and Panchal P. S. (2020). Feasibilities of intensification system in finger millet (*Eleusine coracana* L. Gaerth). *International Journal of Current Microbiology and Applied Sciences*, 9(11): 3050-3056.
4. Amarjeet S. T., Sakure A. A., Dhaduk H. L., Kumar S. and Mistry J. G. (2020). Impact evaluation of growth stage and species on morpho-physiological traits and bioactive constituent of essential oil in Ocimum through multi-year experiment. *Industrial Crops & Products*, 158: 113052.
5. Baladhiya C. S., Doshi J. S. and Bhloদিয়া V. B. (2020). Performance evaluation of mechanized manufacture of bottle guard Halwa. *International Journal of Agricultural Engineering*, 13(1): 113-120.
6. Ban S. H., Patel J. B. and Gaikwad A. B. (2020). Management practices adopted by ginger growers to cope with general adverse situation and marketing risks. *Gujarat Journal of Extension Education*, 31(1): 122-125.
7. Ban S. H., Patel J. B. and Popat R. C. (2020). Planting material and soil health related risk management practices adopted by the ginger growers. *Gujarat Journal of Extension Education*, 31(2): 63-67.
8. Barad A. H., Dabhi M. V., Rathod N. K. and Prajapati H. N. (2020). Bio-efficacy of different insecticides against mealy bug infesting custard apple. *International Journal of Current Microbiology and Applied Sciences*, 9(9): 1723-1727.
9. Barad K. B., Patel K. M., Jangod R. and Jethava B. A. (2020). Effect of application of GA3 and NAA on yield, quality and economics of broccoli (*Brassica oleracea* var. *italica*) var. *Pusa KTS-1*. *International Journal of Chemical Studies*, 8(5): 1376-1378
10. Bariya M. K., Patel Hansa, Chandravadia K. U. and Chovatia J. V. (2020). Empowerment of Women through Self Help Groups in Amreli district of Gujarat, *Journal of Krishi Vigyan*, 8(2): 60-64.

11. Bartwal D. and Patel R. A. (2020). Effect of chemical fertilizer, organic manure and bio-fertilizer on growth and yield of summer cowpea (*Vigna unguiculata L. Walp*). ***International Journal of Current Microbiology and Applied Sciences***, 9(11): 599-603.
12. Bhatt N. A., Rojasara Y. M. and Patel J. N. (2019). Role of entomophage biodiversity park in bidi tobacco based agro-ecosystem. ***Journal of Entomology and Zoology Studies***, 7(5): 521-524.
13. Boppana J. and Patel J. B. (2020). Attitude of farmers towards Krishi Mahotsav. ***Gujarat Journal Extension Education***, 31(1): 126-129.
14. Boppana J., Patel J. B. and Shafi M. (2020). Relationship between profile of the farmers and their attitude towards Krishi Mahotsav. ***Gujarat Journal Extension Education***, 31(2): 147-151.
15. Borah B. and Sodavadiya H. B. (2020). Potentiality of zeolite minerals for sustaining soil fertility and quality in Agriculture as a review. ***Trends in Biosciences***, 13(5): 258-264.
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- (6) FACULTY OF AGRICULTURAL INFORMATION TECHNOLOGY**
1. Baby A., Parmar R. S., Raj M. P. and Reddy K. Indudhar (2021) Classification model prediction for rice yield using data mining approach in Ranga Reddy district of Telangana, **India Journal of Agrometeorology**, 23(2) 241-247.

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(7) FACULTY OF AGRICULTURAL BUSINESS MANAGEMENT

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2. **Panigrahy S. R. (2020). Success Story of a Dairy Farmer, Harendra Bhai (ODIA). Prani Bikash Dhara**, 5(1): 32-33.
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8. **Prajapati M. R. and Singh R. (2020). A study on Capital Structure Analysis of Food Processing Industry. India International Journal of Business Management & Research**, 10(4): 89- 96.
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10. **Vahoniya D. (2020). Impact of covid-19 on transportation system of India, International Journal of Mechanical and Production Engineering Research and Development**, 10 (3): 5655-5664.

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Appendix 5

LIST OF THESIS SUBMITTED

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
(A) FACULTY OF AGRICULTURE				
1	Rural area working zeal of the Postgraduate Agricultural Scholars	M. Sc. (Agri.)	Elvis Munetsi	Dr. N. B. Chauhan
2	Extent of participation of dairy women in decision making process with special reference to animal husbandry activities	M. Sc. (Agri.)	Patel Yaksh Mahendrabhai	Dr. J. K. Patel
3	Heterosis and Combining ability studies for seed yield and its component traits in Castor (<i>Ricinus communis</i> L.)	M. Sc. (Agri.)	Patel Devang Manharlal	Dr. D. A. Patel
4	Effect of irrigation scheduling and nitrogen sources on growth and yield of summer groundnut (<i>Arachis hypogaea</i> L.)	M. Sc. (Agri.)	Patel Tirthkumar Dasharathbhai	Dr. R. A. Patel
5	Effect of INM on summer pearl millet (<i>Pennisetum glaucum</i> L.) and its residual effect on succeeding Kharif green gram (<i>Vigna radiata</i> L.) under typic ustochrepts	M. Sc. (Agri.)	Manish Yadav	Dr. N. J. Jadav
6	Bionomics and management of rice moth, <i>Corcyra cephalonica</i> (Stainton) in stored groundnut	M. Sc. (Agri.)	Ramanaji Naralasetti	Dr. M. V. Dabhi
7	Evaluation of aquacrop model for simulation of yield response to water in rainfed groundnut	M. Sc. (Agri.)	Joshi Sanjaybhai	Dr. M. M. Lunagaria
8	Attitude of farmers towards Krishi mahotsav	M. Sc. (Agri.)	Boppana Jagadeeswari	Dr. J. B. Patel
9	Bioecology and management of fall Armyworm, <i>Spodoptera frugiperda</i> (J. E. Smith) infesting maize	M. Sc. (Agri.)	Patel Harsh Bhupendrabhai	Dr. D. B. Sisodiya
10	Comparison of economic coefficients to select the optimum selection index in Tomato (<i>Solanum lycopersicum</i> L.)	M. Sc. (Agri.)	Vishnurekha N.	Dr. P. R. Vaishnav

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
11	Effect of inorganic and organic nutrients on growth and yield of summer green gram (<i>Vigna radiata</i> L. Wilczek)	M. Sc. (Agri.)	Makwana Sanjaykumar Natvarlal	Dr. G. G. Patel
12	Diversity of moths (Lepidoptera: Heterocera) in agricultural landscape	M. Sc. (Agri.)	Renuka Hiremath	Dr. C. K. Borad
13	Integrated nutrient management in summer green gram (<i>Vigna radiata</i> L. Wilczek) under middle Gujarat condition	M. Sc. (Agri.)	Patel Bharatkumar Karsanbhai	Dr. N. P. Chauhan
14	Effect of sprouting time on nutritional quality of chickpea (<i>Cicer arietinum</i> L.) and mungbean (<i>Vigna radiata</i> L.)	M. Sc. (Agri.)	Madastu Saikrishna	Dr. N. J. Patel
15	Effect of foliar spray of nitrogen and potash on yield and quality of hybrid Bidi Tobacco	M. Sc. (Agri.)	Patel Pooja Shankarbhai	Dr. K. M. Gediya
16	Effect of enriched organic fertilizer on growth, herbage yield and quality of senna (<i>Cassia angustifolia</i> Vahl.) under salt affected soil	M. Sc. (Agri.)	Prem Kumar B.	Dr. B. B. Basak
17	Effect of row spacing and nutrient management on yield and quality of soybean [<i>Glycine max</i> (L.) Merrill]	M. Sc. (Agri.)	Chandana Mahapatra	Dr. S. N. Shah
18	Inclination of banana growers towards soil health card in Anand district	M. Sc. (Agri.)	Mehul Prajapati	Dr. A. R. Makwan
19	Succession of major pests and management of red pumpkin beetle, <i>Aulacophora foveicollis</i> Lucas on cucumber	M. Sc. (Agri.)	Patel Denisha Rameshbhai	Dr. R. M. Patel
20	Bio-ecology and evaluation of insecticides against mealybug, <i>Ferrisia virgata</i> (Cockerell), infesting custard apple	M. Sc. (Agri.)	Sapteshwariya Shivam Vipulkumar	Dr. A. H. Barad
21	Morphological, biochemical and molecular characterization of Ashwagandha [<i>Withania somnifera</i> (L.) Dunal]	M. Sc. (Agri.)	Venna Santhosh	Dr. H. L. Dhaduk
22	Feasibilities of intensification system in finger millet (<i>Eleusine coracana</i> L. Gaertn)	M. Sc. (Agri.)	Aghara Vikaskumar Ganeshbhai	Dr. V. J. Patel
23	Varietal response of soybean (<i>Glycine max</i> L. Merrill) to various intra row spacing under ridge and furrow system	M. Sc. (Agri.)	Rathwa Mayurbhai Kamrubhai	Dr. G. J. Patel
24	Comparative biology, population dynamics and management of cabbage aphid, <i>Lipaphis erysimi</i> (Kalt.)	M. Sc. (Agri.)	Chavada Kavan Mansukhbhai	Dr. P. H. Godhani

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
25	Status of seed mycoflora of chilli cultivars and their management under in vitro conditions	M. Sc. (Agri.)	Chaudhari Vigneshaben Govindbhai	Dr. V. R. Gohel
26	Survey and biological control of fall armyworm, <i>Spodoptera frugiperda</i> (J. E. Smith) infesting maize	M. Sc. (Agri.)	Patel Piyushkumar Hasamukhbhai	Dr. D. B. Sisodiya
27	Effect of integrated nutrient management on yield and quality of dual purpose fodder oat (<i>Avena sativa</i> L.)	M. Sc. (Agri.)	Shiyal Vikrambhai Naranbhai	Dr. H. K. Patel
28	Weed management in rice (<i>Oryza sativa</i> L.) nursery	M. Sc. (Agri.)	Vala Jhanvi Rajnikant	Dr. A. S. Bhanvadia
29	Influence of phytohormones on morpho-physiological growth, yield and quality of Kalmegh (<i>Andrographis paniculata</i> Nees)	M. Sc. (Agri.)	Shekhada Raxit Rameshbhai	Dr. S. J. Macwan
30	Study on genetic variability and stability for yield and its component traits in rice (<i>Oryza sativa</i> L.) under different environments	M. Sc. (Agri.)	Patel Nidhiben Dineshbhai	Dr. M. B. Parmar
31	Effect of potassium and potassium mobilizing bacteria (KMB) with and without FYM on yield and nutrient uptake in wheat (<i>Triticum aestivum</i> L.)	M. Sc. (Agri.)	Patel Swatibahen Hasmukhbhai	Dr. M. B. Viradiya
32	Analysis of genetic variation in muskmelon (<i>Cucumis melo</i> L.)	M. Sc. (Agri.)	Prajapati Pragatiben Jayantibhai	Dr. R. R. Acharya
33	Dynamics of crop diversification during recent decade in middle Gujarat	M. Sc. (Agri.)	Puneeth Raj C. S.	Dr. V. K. Gondaliya
34	Development of molecular marker for identification of sex in date palm (<i>Phoenix dactylifera</i> L.)	M. Sc. (Agri.)	Savani Khyati Rasikbhai	Dr. G. B. Patil
35	Genetic variability and identification of yellow mosaic disease resistance through field screening and molecular markers in greengram [<i>Vigna radiata</i> (L.) Wilczek]	M. Sc. (Agri.)	Suthar Vishal Pirabhai	Dr. K. V. Patel
36	Heterosis and combining ability studies in chilli (<i>Capsicum annuum</i> L.) using line x tester analysis	M. Sc. (Agri.)	Ujjaval Navinbhai Patel	Dr. D. A. Patel
37	Study on water stress and melatonin in tomato (<i>Solanum lycopersicum</i> L.) at seedling stage	M. Sc. (Agri.)	Vadee Dhruvinkumar Naveenbhai	Dr. J. J. Dhruve

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
38	Variability, correlation and path analysis for grain yield and its component traits in wheat (<i>Triticum aestivum</i> L.)	M. Sc. (Agri.)	Chaudhary Navinkumar Bhagvanbhai	Dr. B. N. Patel
39	Morphological and molecular variability analysis and identification of wilt resistance through artificial screening in castor [<i>Ricinus communis</i> (L.)] genotypes	M. Sc. (Agri.)	Dhavalsinh Rajput	Dr. M. P. Patel
40	Study of variability, heritability and trait association for yield and quality traits in Kalmegh (<i>Andrographis paniculata</i> (Burm.F.) Nees.)	M. Sc. (Agri.)	Dharshini M. S.	Dr. K. A. Geetha
41	Perception of farmers towards technical capability of KVK scientists	M. Sc. (Agri.)	Dhananjaya J. P.	Dr. D. D. Patel
42	Development of test to measure the knowledge of dairy farmers about deworming and vaccination in buffalo	M. Sc. (Agri.)	Rathavi Bhaveshkumar Manubhai	Dr. M. R. Patel
43	Iron ferti-fortification in grain amaranthus (<i>Amaranthus hypochondriacus</i> L.)	M. Sc. (Agri.)	Chaudhari Drashtiben Bharatbhai	Dr. P. V. Mehta
44	Study on application of schoenite as a source of K in combination with different potassic fertilizers in fodder lucerne (<i>Medicago sativa</i> L.)	M. Sc. (Agri.)	Parmar Ravinaben Babubhai	Dr. K. C. Patel
45	Relative bio-efficacy and residue dynamics of insecticides in tomato	M. Sc. (Agri.)	Arunasai M. P.	Dr. K. D. Parmar
46	Epidemiology and management of fungal foliar diseases in turmeric (<i>Curcuma longa</i> L.)	M. Sc. (Agri.)	Chaudhari Keyurkumar Bhikhabhai	Dr. N. M. Gohel
47	Effect of land configuration and sulphur levels on growth and yield of summer groundnut (<i>Arachis hypogaea</i> L.)	M. Sc. (Agri.)	Manglesh	Dr. M. V. Patel
48	Effect of potash, potassium mobilizing bacteria (KMB) and FYM on forage yield, nutrient uptake by forage maize (<i>Zea mays</i> L.) and soil fertility in a loamy sand soil of middle Gujarat	M. Sc. (Agri.)	Chaudhary Nishabahen Natavarbhai	Dr. J. K. Parmar
49	Nitrogen management for enhancing productivity and quality of finger millet (<i>Eleusine coracana</i> (L.) Gaertn)	M. Sc. (Agri.)	Patel Himanshi Hitendrakumar	Dr. Jagruti C. Shroff

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
50	Nutraceutical and molecular characterization in cowpea	M. Sc. (Agri.)	Patel Rohinikumari Mitthalbhai	Dr. Akarsh Parihar
51	Role performance of gram panchayat members for village development in tribal areas of Gujarat	M. Sc. (Agri.)	Surkal Binalkumaree Rajeshbhai	Dr. Sunil R. Patel
52	Effect of different spacing and planting ratio on seed yield and quality parameters in Chilli (<i>Capsicum annuum</i> L.)	M. Sc. (Agri.)	Chandela Jayshri Rambhai	Dr. Kalyanrao Patil
53	An Economic analysis of lucerne and fodder bajra in middle Gujarat	M. Sc. (Agri.)	Bavaliya Pooja Rasikbhai	Dr. K. S. Jadav
54	Life table, feeding potential and relative toxicity of insecticides to ladybird beetle, <i>Cheilomenes sexmaculata</i> (Fabricius)	M. Sc. (Agri.)	Singh Neelam Anilkumar	Dr. M. R. Dabhi
55	Morphological, physico-biochemical and marker (SSR and SRAP) based diversity study in castor (<i>Ricinus communis</i> L.)	M. Sc. (Agri.)	Akhila S. R.	Dr. Sushil Kumar
56	Moisture stress detection in chickpea (<i>Cicer arietinum</i> L.) based on canopy-air temperature differential using infrared thermometer	M. Sc. (Agri.)	Sabhani Khyatiben Hemantbhai	Dr. B. I. Karande
57	Estimation of surface energy fluxes over mustard crop using two source energy balance model	M. Sc. (Agri.)	Vala Radhikaben Punjabhai	Dr. M. M. Lunagaria
58	In Vitro mutagenesis resistance to alternaria blight in cumin (<i>Cuminum cyminum</i> L.)	M. Sc. (Agri.)	Vishalakshi T. P.	Dr. G. B. Patil
59	Effect of different chemicals on quality and shelf life of sapota (<i>Manilkara achras</i> (Mill.) Fosberg) cv. Kalipatti under cold storage condition	M. Sc. (Horti.)	Patel Bhavikkumar Dahyabhai	Dr. D. D. Parekh
60	Effect of GA3 and NAA on growth, yield and quality of broccoli (<i>Brassica oleracea</i> var. italica) var. Pusa KTS-1	M. Sc. (Horti.)	Barad Kajalben Balubhai	Dr. K. M. Patel
61	Effect of stem cutting and growth regulators on the propagation of fig (<i>Ficus carica</i> L.) cv. Black Ischia	M. Sc. (Horti.)	Desai Yas Maganbhai	Dr. J. S. Patel
62	Effect of seed storage period and growth regulators on seed germination and growth of jackfruit (<i>Artocarpus heterophyllus</i> LAM.)	M. Sc. (Horti.)	Chaudhari Maniben Nanjibhai	Dr. B. N. Satodiya

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
63	Effect of different sources of nitrogen on growth, yield and quality of custard apple (<i>Annona squamosa</i> L.) cv. Sindhan	M. Sc. (Horti.)	Rakesh Jangid	Dr. M. M. Masu
64	Effect of post harvest treatments on quality and shelf life of Ber (<i>Zizyphus mauritiana</i> Lamk.) under cold storage condition cv. Gola	M. Sc. (Horti.)	Patel Nidhiben Arvindbhai	Dr. B. H. Panchal
65	Effect of spacing and foliar spray of PGRs on growth and yield of cowpea [<i>Vigna unguiculata</i> (L.) Walp] cv. AVCP 1	M. Sc. (Horti.)	Chaudhari Hemal Jayantibhai	Dr. B. N. Satodiya
66	Effect of different seed packaging materials and sowing time on seed germination and seedling growth of cashew (<i>Anacardium occidentale</i> L.) VAR. V-4	M. Sc. (Horti.)	Parmar Ishani Prakashbhai	Dr. H. H. Sitapara
67	Effect of fruit bagging on quality and pest-disease occurrence of Guava (<i>Pisidium guajava</i> L.) cv Allahabad safeda	M. Sc. (Horti.)	Vedha Venkappa Bhandi	Dr. N. I. Shah
68	Effect of growing media and gibberellic acid on seed vigour, growth and survival of acid lime (<i>Citrus aurantifolia</i> Swingle) cv. Kagzi lime	M. Sc. (Horti.)	Suthar Dharaben Prakashbhai	Dr. A. V. Kotecha
69	Effect of different coating materials on quality and shelf life of custard apple (<i>Annona squamosa</i> L.) cv. Local	M. Sc. (Horti.)	Thakor Anita Omprakash	Dr. V. K. Patel
70	Response of levels of nitrogen and row spacing on growth, leaf yield and quality of palak (<i>Beta vulgaris</i> var. bengalensis) Var. Arka Anupama	M. Sc. (Horti.)	Patel Mahimaben Jagdishbhai	Dr. B. H. Panchal
71	Integrated nutrient Management in Chickpea (<i>Cicer arietinum</i> L.) - Forage sorghum (<i>Sorghum bicolor</i> L.) Cropping sequence	Ph. D. (Agri.)	Sodavadiya Harinanandan Babubhai	Dr. A. C. Sadhu
72	E-extension employability of scholars pursuing post graduation in agricultural extension in SAUs of Gujarat	Ph. D. (Agri.)	Vegad Nileshkumar Mansukhlal	Dr. N. B. Chauhan
73	Soil test based fertilizer prescriptions through inductive cum targeted yield model for wheat	Ph. D. (Agri.)	Patel Alpeshbhai Kalidas	Dr. K. C. Patel
74	Weed management in soybean - pigeonpea intercropping system and its residual effect on succeeding crops	Ph. D. (Agri.)	Hajari Rohitchandra Vinodchandra	Dr. G. J. Patel

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
75	Effectiveness of ATMA as perceived by beneficiary farmers of Ahmedabad district of Gujarat State	Ph. D. (Agri.)	Kharade Daulatrao Alias Pravinkumar Pandurang	Dr. J. K. Patel
76	Pests succession and management of major insect pests in Fennel (<i>Foeniculum vulgare</i> L.)	Ph. D. (Agri.)	Shewale Chirag Prakashbhai	Retd. Dr. P. K. Borad
77	Genetic analysis for seed yield as well as cured leaf yield and its components in Bidi Tobacco (<i>Nicotiana tabacum</i> L.)	Ph. D. (Agri.)	Mistri Jigar Girishkumar	Dr. K. B. Kathiria
78	Diamide insecticides resistance in diamondback moth, <i>Plutella xylostella</i> (Linnaeus)	Ph. D. (Agri.)	Chaudhari Janakkumar Dineshbhai	Dr. C. K. Borad
79	Evaluation of antioxidants and differential gene expression in response of melatonin in bottle gourd (<i>Lagenaria siceraria</i> (Mol.) Standl.)	Ph. D. (Agri.)	Bedse Tushar Javaji	Dr. J. J. Dhruve
80	Production and marketing of milk across different herd sizes of buffaloes and crossbred cows in middle Gujarat	Ph. D. (Agri.)	Maitri Satashia	Dr. R. S. Pundir
81	Extension Employability amongst the postgraduate scholars of SAUs of Gujarat	Ph. D. (Agri.)	Gattupalli Naveen Kumar	Dr. N. B. Chauhan
82	Risk Management practices adopted by the farmers in Ginger cultivation	Ph. D. (Agri.)	Ban Shrikant Hari	Dr. J. B. Patel
83	Population structuring and gene expression analysis of drought tolerant genes in Teak (<i>Tectona grandis</i> L.)	Ph. D. (Agri.)	Maisuria Hemanshukumar Jekishandas	Dr. H. L. Dhaduk
84	Survey of insect pests and management of leaf eating caterpillar, Noorda blitealis Walker in drumstick, <i>Moringa oleifera</i> Lam.	Ph. D. (Agri.)	Suthar Meeralben Dineshkumar	Dr. P. K. Borad
85	Studies on wilt complex of chickpea (<i>Cicer arietinum</i> L.) and its management	Ph. D. (Agri.)	Parmar Harshil Vinodbhai	Dr. N. M. Gohel
86	Management of complex weed flora through herbicide combinations in irrigated wheat (<i>Triticum aestivum</i> L.) and their residual effect on succeeding greengram (<i>Vigna radiata</i> L.)	Ph. D. (Agri.)	Patel Vipulbhai Yogeshbhai	Dr. B. D. Patel

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
87	Generation mean analysis for fruit yield and its component traits in Brinjal [<i>Solanum melongena</i> L.]	Ph. D. (Agri.)	Rathava Kalpanaben Vipinchandra	Dr. R. R. Acharya
88	Mapping QTLs for high zinc and iron content in maize (<i>Zea mays</i> L.)	Ph. D. (Agri.)	Pitambara	Dr. Y. M. Shukla
89	Farmers' inclination towards farmers interest group under ATMA programme	Ph. D. (Agri.)	Ninama Mugdhaben Dipsinh	Dr. Arun Patel
90	Persistence of S-metolachlor in/on maize (<i>Zea mays</i> L.) and In Vitro degradation in different types of soils and water	Ph. D. (Agri.)	Satpute Nitin Rohidas	Dr. P. G. Shah
91	Line x tester analysis of CGMS based pearl millet (<i>Pennisetum glaucum</i> (L.) R. Br.) hybrids over environments	Ph. D. (Agri.)	Ankesh Kumar	Dr. B. N. Patel
92	Response of semi rabi pearl millet (<i>Pennisetum glaucum</i>) to sowing time, spacing and sowing method	Ph. D. (Agri.)	Chaudhari Niteshkumar Jaysinh	Dr. M. V. Patel
93	Integrated nitrogen management in maize (Popcorn) (<i>Zea mays everta</i> L.) - chickpea (<i>Cicer arietinum</i> L.) intercropping system and it's residual effect on summer vegetable cowpea (<i>Vigna unguiculata</i> L. walp)	Ph. D. (Agri.)	Vaghela Gaurang Manilal	Dr. N. P. Chauhan
94	Participation of farmwomen in family welfare and agricultural development	Ph. D. (Agri.)	Thakur Nidhi Bholusinh	Dr. J. B. Patel
95	Epidemiology and management of root rot [<i>Macrophomina phaseolina</i> (Tassi) Goid.] of Desi cotton (<i>Gossypium herbaceum</i> L.)	Ph. D. (Agri.)	Patel Sanketkumar Vikashbhai	Dr. N. M. Gohel
96	Effect of seed soaking and foliar spray of stress mitigating bio-regulators on productivity of durum wheat under conserved soil moisture condition	Ph. D. (Agri.)	Ram Niwas Choudhary	Dr. K. D. Mevada
97	Study of Astro-meteorological techniques for predicting rainfall and its distribution in Gujarat	Ph. D. (Agri.)	Vaidya Vidyadhar Bhaskar	Dr. Vyas Pandey
98	Fate of Fluopyram in soils and chilli (<i>Capsicum annuum</i> L.)	Ph. D. (Agri.)	Rathod Pareshkumar Himmatlal	Dr. P. G. Shah
99	Farming workability of the farmers' sons of middle Gujarat	Ph. D. (Agri.)	Khatri Krishna Deepakkumar	Dr. N. B. Chauhan

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
100	Knowledge and attitude of member farmers of Gram Panchayat towards Pradhan Mantri Fasal Bima Yojana	Ph. D. (Agri.)	Chauhan Chirag Dilipsinh	Dr. J. B. Patel
101	Generation mean analysis for fruit yield and its component traits in Tomato [<i>Solanum lycopersicum</i> (L.)]	Ph. D. (Agri.)	Damor Hitekshaben Ishvarbhai	Dr. R. R. Acharya
102	Effect of priming on seed quality parameters and genotoxicity under salt stress conditions in wheat (<i>Triticum aestivum</i> L.)	Ph. D. (Agri.)	Pusarla Susmitha	Dr. Kalyanrao Patil
103	Influence of scion age and season on softwood grafting of mango cv. Langra under different growing condition	Ph. D. (Horti.)	Patel Hiralben Rameshbhai	Dr. N. I. Shah
104	Effect of different application methods of micronutrients on flowering, yield and quality of mango (<i>Mangifera indica</i> L.) cv. Mallika	Ph. D. (Horti.)	Kacha Hiteshkumar Laxmidas	Dr. H. C. Patel
105	Influence of time of pruning and fertilizer application on flowering, fruiting and quality behavior of phalsa (<i>Grewia asiatica</i> L.) cv. Local	Ph. D. (Horti.)	Mahida Shailendra kumar Vijaysinh	Dr. N. I. Shah
106	Effect of green manures and bio-fertilizers on yield, quality and soil-leaf nutrient status of Mango (<i>Mangifera indica</i> L.) cv. Amrapali	Ph. D. (Horti.)	Patel Hirenkumar Thakorbbhai	Dr. N. I. Shah
107	Effect of post shooting spray and covering material on bunch for yield, quality and shelf life of Banana (<i>Musa paradisiaca</i> L.)	Ph. D. (Horti.)	Paradva Dipakkumar Ramjibhai	Dr. M. J. Patel
108	Influence of scion age and season on softwood grafting of mango cv. Langra under different growing condition	Ph. D. (Horti.)	Patel Hiralben Rameshbhai	Dr. N. I. Shah
(B) FACULTY OF VETERINARY SCIENCE AND ANIMAL HUSBANDRY				
109	Studies on Surgico-Therapeutic management of corneal ulcer in Dogs	M.V.Sc.	Patel Krunal Prakashbhai	Dr. P. V. Parikh
110	Cryoprotective and capacitation inhibitory potential of mifepristone, sericin and taurine in tris egg yolk extender for bovine semen	M.V.Sc.	Devangana Chaturvedi	Dr. A. J. Dhami
111	Dietary Interventions for designer milk Production in dairy cattle	M.V.Sc.	Bhavsar Maitri Yogeshkumar	Dr. P. R. Pandya
112	Embryo production and pregnancy rates from OPU-IVEP using conventional and sexed semen in cattle	M.V.Sc.	Patel Mayankkumar Jashavantbhai	Dr. K. K. Hadiya

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
113	Studies on management of surgical affections of external ear in canines	M.V.Sc.	Ashwathkumar S. N.	Dr. P. V. Parikh
114	Effect of feeding bypass fat on reproductive and productive performance of Surti buffaloes	M.V.Sc.	Patel Parimalkumar Dhanjibhai	Dr. D. C. Patel
115	Seroprevalence of Crimean Congo Haemorrhagic Fever in bovine in middle Gujarat	M.V.Sc.	Dave Keshank Mukeshkumar	Dr. S. K. Raval
116	Study on prevention of conception and medical termination of pregnancy in bitches	M.V.Sc.	Parmar Bhanusinh Mansukhbhai	Dr. M. T. Panchal
117	Studies on ketamine-midazolam, isoflurane and sevoflurane-induction and maintenance with or without butorphanol premedication in birds	M.V.Sc.	Anjana Ruchikkumar Rajendrabhai	Dr. P. V. Parikh
118	Effect of solid state fermentation (SSF) biomass on growth performance of crossbred heifers	M.V.Sc.	Chaudhari Fenil Narayanbhai	Dr. M. A. Shekh
119	Comparision of loop mediated isothermal amplification with polymerase chain reaction for detection of salmonella spp. in poultry meat	M.V.Sc.	Pargi Zalak Bharatkumar	Dr. J. B. Nayak
120	Comparison of loop mediated isothermal amplification with polymerase chain reaction for detection of <i>Staphylococcus aureus</i> & methicillin resistant <i>Staphylococcus aureus</i> in chevon	M.V.Sc.	Sonali Thakur	Dr. M. N. Brahmbhatt
121	Comparative studies of seaweed and legume straw supplementation on performance of crossbred lactating cows	M.V.Sc.	Sarishti Katwal	Dr. M. M. Trivedi
122	Estimation of breeding value for energy corrected test day milk yield in buffalo	M.V.Sc.	Patel Pragneshkumar Maheshbhai	Dr. R. S. Joshi
123	Effect of Ashwagandha and Shatavari on growth performance of Surti kids	M.V.Sc.	Sandeep Jugran	Dr. S. G. Vahora
124	Studies on incidence, diagnosis and surgical intervention of pyometra in canines	M.V.Sc.	Hadiya Hardik Dhirubhai	Dr. D. M. Patel
125	Genome-wide SNP detection, validation and development of SNP array for Gir cattle	M.V.Sc.	Patel Mayankkumar Ramanbhai	Dr. P. G. Koringa

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
126	Effect of dietary supplementation of L-Threonine on performance of commercial broiler chicken	M.V.Sc.	Parmar Yashkumar Sureshbhai	Dr. R. S. Joshi
127	Genetic studies on various economic traits of two strains of white leghorn chicken	M.V.Sc.	Patel Ronak Rakeshbhai	Dr. F. P. Savaliya
128	Performance of sheared and non-sheared adult indigenous sheep under different roofing materials	M.V.Sc.	Khant Malhar Rameshkumar	Dr. K. N. Wadhvani
129	Patho - epidemiological and molecular identification of chicken anaemia virus in broilers	M.V.Sc.	Kabariya Digjay Vasantbhai	Dr. C. J. Dave
130	Etiopathological study of swollen head syndrome in broilers	M.V.Sc.	Momin Sohilabbas Gulamakbar	Dr. D. J. Ghodasara
131	Etiopathological study of colisepticemia with coinfection of low pathogenic avian influenza and Mycoplasma in broilers	M.V.Sc.	Pradhnya Choudhari	Dr. D. J. Ghodasara
132	Isolation and characterization of bacteria and fungi from otitis externa in dogs and isolation of bacteriophages of Pseudomonas spp.	M.V.Sc.	Doshi Dhruvi Minesh	Dr. B. B. Bhanderi
133	Effect of various breed proportions on breeding values for various traits in HF crossbred cattle	M.V.Sc.	Patel Komal Natvarlal	Dr. D. N. Rank
134	Serosurveillance and incidence of Canine distemper virus (CDV) in canines and molecular detection by RT-PCR	M.V.Sc.	Joshi Vedanshee Rajeshkumar	Dr. M. K. Jhala
135	Comparative analysis of intradermal tuberculin test, immuno chromatographic assay & polymerase chain reaction for diagnosis and prevalence of bovine tuberculosis	M.V.Sc.	Chaudhari Pravinkumar Jayantibhai	Dr. B. B. Bhanderi
136	Effect of watering frequency and feed on growth of crossbred calves	M.V.Sc.	Desai Yash Ashokbhai	Dr. S. V. Shah
137	Isolation, identification and antimicrobial resistance in <i>Escherichia coli</i> obtained from various animal species and birds	M.V.Sc.	Khant Ravindrakumar Bharatsinh	Dr. R. A. Mathakiya
138	Cell culture propagation, RNA-PAGE analysis and characterization of Rotavirus by G and P genotyping	M.V.Sc.	Luhar Deep Kiritbhai	Dr. R. A. Mathakiya

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
139	Studies on immunomodulatory and growth promoting effect of clove oil in broiler chicken	M.V.Sc.	Parmar Jaydipkumar Kantibhai	Dr. K. A. Sadariya
140	Studies on immunomodulatory and growth promoting effects of cinnamon oil in broiler chicken	M.V.Sc.	Goswami Bhavingiri Gautamgiri	Dr. S. K. Bhavsar
141	Effect of varying levels of dietary protein and energy on performance of commercial broiler chicken	M.V.Sc.	Bhagat Vikaskumar Ramanbhai	Dr. R. K. Mishra
142	Comparative morphological and morphometrical studies on different structures of the brain of Goat and Sheep	M.V.Sc.	Kavita Kumari	Dr. Sweta P. Pandya
143	Effect of dietary supplementation of protease enzyme on performance of commercial broiler chicken	M.V.Sc.	Palak Tripathi	Dr. A. B. Patel
144	Studies on diagnosis and therapeutic management of mange in camels (<i>Camelus dromedarius</i>)	M.V.Sc.	Pandya Nidhiben Rashmikant	Dr. G. C. Mandali
145	Evaluation of prophylactic efficacy of plants <i>Boerhavia diffusa</i> and <i>Tribulus terrestris</i> on adenine induced chronic kidney disease in rats	M.V.Sc.	Patel Siddhiben Gunvantbhai	Dr. S. K. Raval
146	Standardization and evaluation of chicken cutlets prepared with pumpkin	M.V.Sc.	Taral Bhoomiben Rameshbhai	Dr. M. N. Brahmbhatt
147	Studies on prevalence, haemato-biochemical parameters and diagnostic aspects of bovine babesiosis by using blood smear examination and polymerase chain reaction	M.V.Sc.	Karishma Chauhan	Dr. P. V. Patel
148	Clinico-Etiodiagnosis and therapeutic management of vomition in dogs	M.V.Sc.	Rimjhim Khanduri	Dr. S. K. Raval
149	Identification and molecular characterization of extended spectrum beta lactamase producing <i>Klebsiella</i> spp. from poultry meat	M.V.Sc.	Modh Kiranben Sureshkumar	Dr. B. C. Parmar
150	Studies on effect of flunixin meglumine and febrile condition on Pharmacokinetics of cefpirome and safety of simultaneous administration of cefpirome and flunixin meglumine in sheep	Ph.D.	Sarvaiya Vaidehiben Niteshkumar	Dr. A. M. Thaker

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
151	Effect of whole wheat feeding on gizzard development and performance of commercial broilers	Ph.D.	Bhagora Nikeshkumar Jagubhai	Dr. F. P. Savaliya
(C) FACULTY OF DAIRY SCIENCE				
152	Process development of flavoured milk using amaranth and dates as functional ingredients	M.Tech	Patel Dasharathkumar Keshabhai	Dr. S. V. Pinto
153	Evaluation of effect of cardamom on lipolysis in Khoa	M.Tech	Patel Sagar Manojkumar	Dr. B. M. Mehta
154	Study on level and status of selected minerals in Surti buffalo milk	M.Tech	Chaudhari Nileshkumar Dahyabhai	Dr. S. C. Parmar
155	Development of moringa and milk solids based extruded snack food	M.Tech	Panchal Chiragkumar Shashikantbhai	Dr. Amit M. Patel
156	Development of Technology for manufacture of orange ice cream	M.Tech	Zala Dharmendrasinh Anopsinh	Dr. J. P. Prajapati
157	Development of technology for manufacture of carrot kheer	M.Tech	Sourabh Suresh Kale	Dr. J. P. Prajapati
158	Evaluation of effect of cardamom on proteolysis in khoa	M.Tech	Patel Ravi Pareshkumar	Dr. B. M. Mehta
159	Study on activity of selected indigenous enzymes in Surti buffalo milk	M.Tech	Hirapara Anjnaben Ashokbhai	Dr. Amit Kumar Jain
160	Utilization of sweet potato solids in ice cream for value addition	M.Tech	Panchal Chirag Harishkumar	Dr. Atanu Jana
161	Development of ragi and milk solids based extruded snack food	M.Tech	Arunkumar	Dr. Amit M. Patel
162	Evaluation of the suitability of fig in preparation of Basundi	M.Tech	Patel Arpankumar Amrutbhai	Dr. J. P. Prajapati
163	Studies on physico-chemical, sensory and textural characteristics of whey and fruit based probiotic candy	M.Tech	Kalariya Bansi Jayantilal	Dr. Smitha Balakrishnan
164	Purification and characterization of antioxidative peptides derived from fermented camel milk	M.Tech	Patel Dharmishtaben Dipakbhai	Dr. Subrota Hati
165	Assessment of probiotic potential and anticancer activity of lactic acid bacteria isolated from human milk and infant feces	M.Tech	Darji Mansiben Pankajkumar	Dr. Sreeja V.

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
166	Development and functional evaluation of synbiotic creamed cottage cheese	M.Tech	Solanki Pintaben Pareshkumar	Dr. Sreeja V.
167	Purification and characterization of antioxidative and antihypertensive peptides derived from hydrolysed milk protein	M.Tech	Chaudhari Hiralben Mansinhbhai	Dr. Subrota Hati
168	Development of dietetic low-cholesterol paneer employing β -cyclodextrin and partial homogenization of milk	Ph.D.	Modi Rameshkumar Bharatbhai	Dr. Atanu Jana
169	Development of technology to prepare Chhana based cake using ghee residue and whey protein concentrate	Ph.D.	Patel Dhinalkumar Hemantbhai	Dr. J. P. Prajapati
170	Development of rapid methods for detection of coliforms in milk	Ph.D.	Gawai Kunal Manohar	Dr. J. B. Prajapati
171	Evaluation of probiotic cultures for their potential antiobesity effects	Ph.D.	Makwana Shrushti Pareshkumar	Dr. J. B. Prajapati
(D) FACULTY OF FOOD PROCESSING TECHNOLOGY AND BIO-ENERGY				
172	Study on Microwave assisted dehydration of aonla segments, shreds and mango slices	M.Tech. (FT)	Rathod Devalba Jaydeepsinh	Dr. A. K. Sharma
173	Technology for production of tomato ketchup slice	M.Tech. (FT)	Chudasama Mehul Hirabhai	Dr. S. H. Akbari
174	Encapsulation of essential oil from cryoground dill seed	M.Tech. (FT)	Anitha N.	Dr. R. V. Prasad
175	Technology for Production of high protein meal from commercial deoiled peanut cake	Ph.D.	Tagalpallewar Govind Pradip	Dr. S. H. Akbari
176	Development of drying technology for date palm fruits using novel techniques	Ph.D.	Nukasani Sagarika	Dr. S. S. Kapdi
(E) FACULTY OF AGRICULTURAL ENGINEERING AND TECHNOLOGY				
177	Investigating hydrologic significance of morphometric indicators for selected watersheds of middle Gujarat	M.Tech. (Agril. Engg.)	Deepa Sahu	Dr. M. L. Gaur
178	Drying of beetroot (<i>Beta vulgaris</i> L.) using biomass combustor based dryer	M.Tech. (Agril. Engg.)	Chavda Jagdishkumar Jamnadas	Dr. D. K. Vyas
179	Development of carrot pomace blended dehydrated sweet corn halwa	M.Tech. (Agril. Engg.)	Nayi Pratikkumar Navinbhai	Dr. Navneet Kumar

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
180	Development of two row fertilizer applicator for side dressing in maize(<i>Zea mays</i> L.)	M.Tech. (Agril. Engg.)	Godhani Rajeshkumar Shivabhai	Dr. Pankaj Gupta
181	Morphometric based prioritization of sub watersheds for soil and water conservation measures using RS and GIS	M.Tech. (Agril. Engg.)	Hirapara Paraskumar Subhashbhai	Dr. M. M. Trivedi
(F) FACULTY OF AGRIBUSINESS MANAGEMENT				
182	A comparative analysis of solar irrigation system under SKY scheme and conventional irrigation system for Amod and Ashapuri feeders in Anand district of central Gujarat	MBA- ABM	Misghina Okbaslassie Solomon	Dr. R. S. Pundir
183	A study on exploring ways to expand market of Amul Tru in Borsad taluka	MBA- ABM	Sifatullah Zaheer	Dr. Ritambhara Singh
184	Market Analysis of research Paddy, hybrid Paddy and selected hybrid vegetables seeds in selected talukas of Anand dictrict	MBA- ABM	Tadha Chiragkumar Vitthalbhai	Dr. R. S. Pundir
185	Development of a business plan for Dangi Adivasi Mahila Khedut Utpadak producer company Limited in Dang District	MBA- ABM	Ram Nilesh Hamirbhai	Dr. Mahesh Prajapati
186	A comparative analysis of solar irrigation system under SKY scheme and conventional irrigation system for Ozarala and Jorapura feeders in Kheda district of central Gujarat	MBA- ABM	Patel Rikinbhai Vinodbhai	Dr. S. R. Panigrahy
187	A Study on customer satisfaction for housing loans of HDFC Limited	MBA- ABM	Patel Sheel Rohitkumar	Dr. R. S. Pundir
188	Unit level study on consumer purchase behaviour of value-added dairy products	MBA- ABM	Chauhan Nikunj Kiritbhai	Dr. D. R. Vahoniya
189	Opportunities in food processing industry in India	MBA- ABM	Jaiswal Ankit Shirishkumar	Dr. S. R. Panigrahy
190	Efficiency of mechanization in dairy farming in Anand district of Gujarat	MBA- ABM	Usdadiya Deep Dilsukhbhai	Dr. S. R. Panigrahy
191	Market analysis of hybrid castor seed Avani-41 of Avani seeds limited in Mehsana and Sabarkantha districts	MBA- ABM	Patel Meet Kamleshkumar	Dr. Ritambhara Singh
192	Efficiency of mechanization in dairy farming in Banaskantha District of Gujarat	MBA- ABM	Vora Jasmin Bhanubhai	Dr. Ritambhara Singh
193	Livelihood patterns of tribal in Koraput district of Odisha with special attention to agriculture and allied activities	MBA- ABM	Abhishek Mishra	Dr. Ashish Mahera

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
194	Market analysis of research paddy, hybrid Paddy and selected Hybrid vegetables seeds in selected talukas of Kheda district	MBA-ABM	Modi Sujal Shaileshkumar	Dr. Ashish Mahera
195	Need analysis of traders and their intent to shift from Azadpur APMC to IIHM Ganaur	MBA-ABM	Patel Darshankumar Sureshbhai	Dr. Mahesh Prajapati
196	A comparative analysis of solar Irrigation system under SKY scheme vis-à-vis Conventional irrigation system for Isnav and Agas feeders in central Gujarat	MBA-ABM	Taviad Sunilkumar Bhurabhai	Dr. Snehal Mishra
197	Market potential and farmers' purchasing behaviour towards the products of Gujarat Life Sciences Pvt.Ltd. in Anand district	MBA-ABM	Patel Shaktiben Pravinbhai	Dr. Snehal Mishra
198	Buying behaviour and satisfaction level for spare parts and lubricants of VST Shakti in Anand and Mahisagar districts of Gujarat	MBA-ABM	Katara Tusharkumar Rameshbhai	Dr. Snehal Mishra
199	A comparative analysis of solar irrigation system under SKY scheme vis-à-vis conventional irrigation system for Golaj and Navakuva Feeders in central Gujarat	MBA-ABM	Supriya Meena	Dr. Snehal Mishra
200	A comparative analysis of solar irrigation system under SKY scheme and conventional irrigation system for Sandeshar and Nesh feeders in Kheda district of central Gujarat	MBA-ABM	Gajulapalli Suma	Dr. Mahesh Prajapati
201	A Study on Exploring ways to expand Market of AMUL chocolate cookies in Borsad Taluka	MBA-ABM	Rohit Kumar Sharma	Dr. Y. A. Lad
202	A study on exploring ways to expand market of AMUL Tru in Baroda city	MBA-ABM	Vempalli Thanuja	Dr. Mahesh Prajapati
203	Comprehensive analysis of Amul bakery products in Anand city, Gujarat	MBA-ABM	Vasaiya Varshaben Swaroopsinh	Dr. D. R. Vahoniya
204	Production and consumption status of finger millet in India: An exploratory study	MBA-ABM	Prathyusha Arikilla	Dr. D. R. Vahoniya
(G) FACULTY OF DISTANCE EDUCATION				
205	Farmers perception about the Krishi jivan farm magazine	M.Sc. Agril. Journalism	Parmar Krushnpalsinh Indrasinh	Dr. Vinaya Kumar H. M.
206	Development of scale to measure the attitude of students towards agricultural journalism	M. Sc. Agril. Journalism	Patel Juliben Mahendrakumar	Dr. J. B. Patel

Sr. No.	Thesis Title	Degree	Name of Student	Major Guide
207	A Study of price behaviour and market integration of soybean in Gujarat	M. Sc. Agril. Marketing	Parmar Priyankaben Rameshbhai	Dr. Ganga Devi
208	Spatial and temporal behaviour analysis of arrivals and prices of castor in Gujarat	M. Sc. Agril. Marketing	Patel Bhaveshkumar Ratilal	Dr. K. S. Jadav
209	Price analysis of major cereal crops in middle Gujarat	M. Sc. Agril. Marketing	Raval Nidhiben Rajendrakumar	Dr. V. K. Gondaliya
210	Utility perception of farmers towards M-kisan in Bhavnagar District	M. Sc. Agril. Journalism	Makwana Megha Rajeshkumar	Dr. Hemlata Saini

Appendix 6

LIST OF SEMINARS, SYMPOSIA, CONFERENCE AND WORKSHOP ETC. ORGANIZED

(1) Faculty of Agriculture

Sr. No.	Title	Duration	Sponsored Authority
1	One day training on 'Organic farming crop production- individual & ICS formation in third party certification'	29-06-2020	Gujarat organic products certification Agency, Ahmedabad
2	State Level Webinar: <i>Kharif pakoma pak sanrakshan na pravartman prashno ane nirakaran</i>	20-08-2020	Plant Protection Association of Gujarat and Anand Agricultural University, Anand
3	State Level Webinar: <i>Kapas na pakma pak sanrakshan</i>	16-09-2020	Plant Protection Association of Gujarat
4	State Level Webinar: <i>Shiyalu shakbhaji pakoma pak sanrakshan</i>	06-10-2020	Plant Protection Association of Gujarat
5	National Training Course on 'Technology Interventions Towards Transformation of Agriculture, Sericulture, Animal Husbandry and Allied Sectors into Sustainable Enterprises for Atmanirbhar Bharat'	11-10-2020 to 31-10-2020	Agro Environmental Development society India, Central Sericultural Research & Training Institute, (CSRTI), Karnataka, Pondicherry Institute of Agricultural Sciences, Pondicherry and Bioved Research Institute of Agriculture & Sciences Allahabad
6	State Level Webinar: <i>Sajiv khetima pak sanrakshan</i>	27-10-2020	PPAG & AAU, Anand & GOAU, Gandhinagar
7	Online Training on 'Space Technology & Machine Learning for Agriculture'	28-10-2020 to 29-10-2020	NAHEP -CAAST , ICAR
8	Online Training Programme on 'Accounting for Climate Risk in Crop Yield Modelling'	07-12-2020	NAHEP-CAAST Project, AAU, Anand
9	Webinar on 'Artificial Intelligence in Agriculture'	02-02-2021	NAHEP -CAAST, ICAR
10	International conference on 'Current approaches in agriculture, animal husbandry and allied sciences'	13-03-2021 to 15-03-2021	AEDS, UP
11	Nematode Awareness Day for Tribal Farmers at Krushi Vigyan Kendra, Dediapada, Dist. Narmada	18-03-2021	AICRP on Nematodes in Agriculture

(2) Faculty of Horticulture

Sr. No.	Title	Duration	Sponsoring Authority
1	10 days training on 'Research Methodology for Social sciences'	01-09-2020 to 11-09-2020	ICAR, New Delhi and NHAEP-CAAST, AAU
2	One day webinar on ' <i>Shiyalu shakbhajina pakoma paksanrakshan</i> '	06-10-2020	PPAG, Gujarat & AAU, Anand
3	Two days training on 'Space technology & Machine Learning for Agriculture'	28-10-2020 to 29-10-2020	ICAR, New Delhi and NHAEP-CAAST, AAU
4	Online Seminar on 'Underutilized Horticultural Crops'	05-01-2021	College of Horticulture, AAU & NHAEP-CAAST, AAU
5	Online Seminar on 'Co-operative marketing in Gujarat'	30-01-2021	College of Horticulture, AAU & NHAEP-CAAST, AAU
6	One day webinar on 'Artificial Intelligence in Agriculture'	02-02-2021	ICAR, New Delhi and NHAEP-CAAST, AAU

(3) Faculty of Veterinary Science

Sr. No.	Title	Date	Funding Agency
1	One day training programme and kit distribution programme under SCSP component of AICRP	05-03-2021	ICAR, New Delhi

(4) Faculty of Dairy Science

Sr. No.	Title	Duration	Sponsoring Authority
1	e-International Conference Role of Fermented Foods in Health	25-06-2020	SASNET-FF, Anand
2	International Webinar on 'Functional Fermented Foods-Current status and future prospects'	15-12-2020	Gujarat State Biotechnology Mission (GSBTM) and SASNET-Fermented Foods

(5) Faculty of Agricultural Information Technology

Sr. No.	Title	Duration	Sponsoring Authority
1	IIRS Outreach Programme on 'Basic Principles of Remote Sensing Technology'	13-04-2020 to 25-04-2020	IIRS, Dehradun
2	IIRS Online one day Workshop 'Machine Learning for Remote Sensing Data Classification'	01-06-2020	IIRS, Dehradun
3	IIRS Outreach Programme on 'Basics of Geocomputation and Geoweb Services'	19-10-2020 to 29-10-2020	IIRS, Dehradun
4	IIRS Outreach Programme on 'Remote Sensing of Land Degradation'	01-12-2020 to 07-12-2020	IIRS, Dehradun

(6) Faculty of Food Processing Technology and Bio-energy

Sr. No.	Title	Duration	Sponsoring Authority
1	Innovative Agro Food Processing Technologies for Entrepreneurship Development	30-05-2020 to 04-06-2020	RKVY RAFTAAR Agri Business Incubator, College of FPT & BE project, under Ministry of Agriculture and Farmers' Welfare
2	Agri Boot Camps	24-06-2020 to 07-07-2020	RKVY RAFTAAR Agri Business Incubator, College of FPT & BE project, under Ministry of Agriculture and Farmers' Welfare
3	Nutrition and Health- Eat Right, Bite by Bite	21-09-2020 to 25-09-2020	RKVY RAFTAAR Agri Business Incubator, College of FPT & BE project, under Ministry of Agriculture and Farmers' Welfare
4	Nurturing Entrepreneurship in Food and Agro-processing (NEFA- 2021)	16-01-2021	RKVY RAFTAAR Agri Business Incubator, College of FPT & BE project, under Ministry of Agriculture and Farmers' Welfare
5	Pallav and Praseon Programme	31-01-2021 to 30-03-2021	RKVY RAFTAAR Agri Business Incubator, College of FPT & BE project, under Ministry of Agriculture and Farmers' Welfare
6	“Q&A Session by Building a Start-up – 1 & 2	25-02-2021	RKVY RAFTAAR Agri Business Incubator, College of FPT & BE project, under Ministry of Agriculture and Farmers' Welfare
7	Technologies available for commercialization by Food& Agriculture Entrepreneurs	25-02-2021	RKVY RAFTAAR Agri Business Incubator, College of FPT & BE project, under Ministry of Agriculture and Farmers' Welfare
8	‘Tips for Start-ups to achieve success and to avoid failure’ and important of IPR for Start-ups’	26-02-2021	RKVY RAFTAAR Agri Business Incubator, College of FPT & BE project, under Ministry of Agriculture and Farmers' Welfare
9	Levering an Idea into a Successful Startup	27-02-2021	RKVY RAFTAAR Agri Business Incubator, College of FPT & BE project, under Ministry of Agriculture and Farmers' Welfare

(7) Faculty of Agril. Engineering and Technology

Sr. No.	Title	Duration	Sponsoring Authority
1	'Cost Effective and Innovative Green Energy Initiatives for Futuristic Agriculture'	11-11-2020	Centre for Agricultural Market Intelligence, NAHEP (ICAR) Project, AAU, Anand
2	Online seminar on 'Paradigm Shift in Mechanization for Futuristic Agriculture'	16-12-2020	National Agricultural Higher Education Project- CAAST, Anand Agricultural University, Anand

(8) Faculty of IABMI

Sr. No.	Title	Duration	Sponsoring Authority
1	Webinar on Goat Farming: Potential Opportunity for Agribusiness	30-05-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
2	Webinar on e-NAM: Challenges and Prospects	10-06-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
3	Webinar on Impact of COVID-19 on Dairy and Food Processing Sector	16-06-2020 to 17-06-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
4	Webinar on Fishery Business Eco-system in India	22-06-2020 to 23-06-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
5	Webinar on Agricultural Market Reforms and Market Intelligence	07-07-2020 to 08-07-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
6	Webinar on Farmer Producer Organizations and Commodity Markets	27-07-2020 to 28-07-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
7	Webinar on ' <i>Kharif Pakona Pak Sanraxanna Pravartaman Prashno ane Nirakaran</i> '	20-08-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
8	Ten day training programme on Research Methodology for Social Sciences	01-09-2020 to 11-09-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
9	Webinar on Trade in F&V Products & Dairy Commodities	15-09-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
10	Webinar on Plant Protection Measures in Cotton	16-09-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
11	Webinar on Market Dynamics in Poultry Sector: Perspectives and Challenges	17-09-2020 to 18-09-2020	ICAR, NAHEP-CAAST Project, AAU, Anand

Sr. No.	Title	Duration	Sponsoring Authority
12	Webinar on International Trade in Agricultural Commodities	21-09-2020 to 22-09-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
13	Webinar on Plant Protection in Vegetable Crops of Rabi Season	06-10-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
14	Webinar on Technical Writing	16-10-2020 to 17-10-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
15	Webinar on ' <i>Kapasana Pakma Pak Sanrakshan</i> '	27-10-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
16	Online Training on Space Technology and Machine Learning for Agriculture	28-10-2020 to 29-10-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
17	Webinar on ' <i>Chandan ni Adhunik Kheti</i> '	02-11-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
18	Webinar on ' <i>Shiyalu Pakma Poshan Vyavstha</i> '	09-11-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
19	Online Seminar on Cost Effective and Innovative Green Energy Initiatives for Futuristic Agriculture	11-11-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
20	Webinar on ' <i>Jivant jamin : Swasth jamin</i> '	05-12-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
21	Online Training on Accounting for Climate Risk in Crop Yield Modeling	7-12-2020 to 11-12-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
22	Online Seminar on Paradigm Shift in Mechanization for Futuristic Agriculture	16-12-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
23	Online Seminar on Advances in micro-irrigation and fertigation for improving water use efficiency and crop productivity	18-12-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
24	Online Seminar on Protected cultivation for enhancing resource use efficiency and productivity of horticultural crops	22-12-2020	ICAR, NAHEP-CAAST Project, AAU, Anand
25	Online Seminar on Underutilized Horticultural Crops	05-01-2021	ICAR, NAHEP-CAAST Project, AAU, Anand
26	Webinar on Data Science for Agriculture	12-01-2021	ICAR, NAHEP-CAAST Project, AAU, Anand

Sr. No.	Title	Duration	Sponsoring Authority
27	Five-Day Training Programme on Value-Addition in Milk, Fruits & Vegetables: A Success Mantra for Agripreneurs	18-01-2021 to 22-01-2021	ICAR, NAHEP-CAAST Project, AAU, Anand
28	Online Seminar on Co-operative Marketing in Gujarat	31-01-2021	ICAR, NAHEP-CAAST Project, AAU, Anand
29	Webinar on Artificial Intelligence in Agriculture	02-02-2021	ICAR, NAHEP-CAAST Project, AAU, Anand
30	Webinar on Startup Opportunities in Indian Fishery Sector	10-03-2021	ICAR, NAHEP-CAAST Project, AAU, Anand

Appendix 7

LIST OF UNIVERSITY TEACHERS WHO PARTICIPATED IN SEMINARS, SYMPOSIA, CONFERENCES, WORKSHOPS AND TRAINING PROGRAMMES ORGANIZED BY THE OTHER INSTITUTIONS

(1) FACULTY OF AGRICULTURE

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
1	Dr. M. L. Gaur	Workshops hosted by the Indian Engg Teachers Association; Asso. of Training & Placement Officers; Industry Institute Collaboration Association under NITI AAYOG : National Task Force on IT & SD, GOI; (1)Workshop on Data Science/ Machine Learning :Real Life Application & (2) Workshop on Distributed Computing	27.04.2020	27.04.2020
2	Dr. R. G. Parmar	35 th Annual Group Meeting of AICRP on NSP (Crops) – STR	14.05.2020	15.05.2020.
3	Dr. M. L. Gaur	Webinar on ‘Agriculture and Impact of COVID-19’ hosted by Anand Agricultural University with Governor Office and Govt of Gujarat	15.05.2020	15.05.2020
4	Dr. Nitin Patel	Webinar on ‘Biography of Zero’ at Department of Mathematics, Faculty of Science, Marwadi University	16.05.2020	16.05.2020
5	Dr. A.M. Raiyani	Webinar on Development of Viral Vaccine and Other Preventative Measures in Pandemic Organized by Department of Microbiology and Biotechnology University School of Sciences, Gujarat University, Ahmedabad, Gujarat	17.05.2020	17.05.2020
6	Dr. M. B. Zala	National Technological Backstopping Webinar on ‘Resource Conservation and Energy Self Reliance for Sustainable Agricultural Development’ organized by Directorate of Extension Education, SDAU, Sardarkrushinagar	28.05.2020	30.05.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
7	Dr. Ganga Devi	Webinar on 'Goat Farming: Potential Opportunity for Agribusiness' NAHEP, CAAST Centre for Agricultural Market Intelligence, AAU, Anand.	30.05.2020	30.05.2020
8	Dr. D. P. Gohil Dr. H. K. Patel Dr. P. H. Rathod	Online National group meeting <i>Kharif-2020</i> organized by Project Coordinator (FC), AICRP on Forage crops, Jhansi.	01.06.2020	01.06.2020
9	Dr. N. B. Patel Dr. K. D. Parmar Dr. R. L. Kalasariya	5 days training on Pesticide Application Techniques and Safety Measures organized by NIPHM, Rajendranagar, Hyderabad	01.06.2020	05.06.2020
10	Dr. Ganga Devi Dr. Rachana K. Bansal Dr. N. B. Patel	Webinar on 'e-Nam Challenges and Prospects' NAHEP, CAAST Centre for Agricultural Market Intelligence, AAU, Anand.	10.06.2020	10.06.2020
11	Mr. G. K. Bhabhor Dr. C. S. Baladhiya	Post COVID - 19 Agribusiness: Challenges and Opportunities at JAU, Junagadh	13.06.2020	14.06.2020
12	Dr. Ganga Devi Rachana K. Bansal Dr. C. S. Baladhiya	Webinar on 'Impact of Covid-19 on Dairy & Food Processing Sector' NAHEP, CAAST Centre for Agricultural Market Intelligence, AAU, Anand.	16.06.2020	16.06.2020
13	Mr. Ratilal M. Chavadhari	National Level Webinar on 'Status & Scope of Vegetable Transplanter in Developing Countries' Organized by department of Farm Machinery and Power Engineering.	19.06.2020	19.06.2020
14	Dr. A. S. Shaikh Dr. Ganga Devi Dr. Rachana K. Bansal Dr. N. B. Patel	Webinar on 'Fishery Business Ecosystem in India' NAHEP, CAAST Centre for Agricultural Market Intelligence, AAU, Anand.	22.06.2020	23.06.2020
15	Dr. N. B. Patel Dr. C. S. Baladhiya	e-International Conference on 'Role of fermented foods in Pandemic era' organised by Guru Nanak Khalsa College, Mumbai, Swedish South Asian Network on Fermented Foods and AAU, Anand	25.06.2020	25.06.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
16	Mrs. H. N. Shelat Dr. Y. K. Jhala	Vulnerability assessment organized by the GoG Climate Change Dept. and GEDA, Gujarat	26.06.2020	26.06.2020
17	Dr. Hemlata Saini	'Strategy for strengthening agricultural education under changing scenario of covid-19' organized by SKRAU, Bikaner	26.06.2020	27.06.2020
18	Dr. P. M. Patel	One day training on 'Organic farming crop production- individual & ICS formation in third party certification' in AAU, Anand	29.06.2020	29.06.2020
19	Dr. K. D. Parmar Dr. R. L. Kalasariya	Five days training course on ' <i>Pest Risk Analysis</i> ' conducted at NIPHM, Hyderabad	29.06.2020	03.07.2020
20	Dr. V. K. Patel Mr. V. D. Rathva	Webinar on 'Underutilized horticultural crops' organized by BAU, Sabour, Bhagalpur	04.07.2020	04.07.2020
21	Rachana K. Bansal	National webinar on 'Motivation of Youth towards Agri-entrepreneurship and innovative Farming,' JNKVV, College of Agriculture, Ganj Basoda, MP.	04.07.2020	05.07.2020
22	Dr. A. S. Shaikh Dr. N. B. Patel Dr. Puja Pandey Dr. Vinaya Kumar, H. M. Dr. A.N. Khokhar	Webinar on 'Agricultural Market Reforms and Market Intelligence' NAHEP, CAAST, Centre for Agricultural Market Intelligence, AAU, Anand.	07.07.2020	08.07.2020
23	Mr. Ratilal M. Chavadhari	Participated in 21 days Online Refresher Course on 'Statistical Tools and Techniques for Analysis of Agricultural Data' conducted by the Academy of Agricultural Research and Education Management, Directorate of Human Resource Management in Collaboration with the Department of Mathematics & Statistics, CCS, HAU, Hisar.	08.07.2020	28.07.2020
24	Dr. Y. K. Jhala	Use of social media skills for extension organized by the Extension Education Institute (Western region), AAU, Gujarat	09.07.2020	10.07.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
25	Dr. H. L. Kacha	International Web-Conference on Climate Smart Agriculture for sustainable food and nutritional security	10.07.2020	11.07.2020
26	Dr. G.G. Patel	Online Annual Zonal Workshop of KVKs of Maharashtra, Gujarat and Goa, ATARI, Pune	10.07.2020	12.07.2020
27	Dr. N. M. Gohel Dr. A. R. Makwan Dr. Kiran Chandravadia	Webinar on Addressing COVID-19 impact on food security, nutrition and future livelihood: A special focus to Gujarat organized by NAU, Bharuch	15.07.2020	16.07.2020
28	Dr. Y. B. Chauhan	Webinar on Drying and dehydration of onion, garlic and Ginger in to flakes and powder: An opportunity to establish industry' organized by Farm to Fork solution, Mumbai.	16.07.2020	16.07.2020
29	Dr. N. B. Patel	Challenges and Recent Initiatives on Sustainable Management on Fall Armyworm	16.07.2020	16.07.2020
30	Dr. N. M. Gohel	National Webinar on Intellectual Property Rights in Agriculture Sector organized by NAHEP, SKRAU, Bikaner (Raj.)	17.07.2020	17.07.2020
31	Dr. Ranganathswamy Math	Training on 'Upgradation of HRD skills for Extension personnel, by EEI, AAU, Gujarat.	17.07.2020	18.07.2020
32	Dr. Raghunandan, B. L. Dr. M. B. Zala	Five days online training on 'Production Protocol for Predators and Parasitoids' organized by NIPHM, Hyderabad	20.07.2020	24.07.2020
33	Dr. R. G. Machhar, Mr. C. B. Damor, Mr. G. D. Hadiya and Mr. R. L. Chavadhari	One day international webinar on 'Climate smart rice hybrids' organized by Biogene.com.	21.07.2020	21.07.2020
34	Dr. R. G. Machhar, Mr. C. B. Damor, Mr. G. D. Hadiya, Mr. R. V. Hajari and Mr. R. L. Chavadhari Dr. G. J. Patel Dr. Y. B. Chauhan	One day national webinar on 'Enhancing castor production: genetic reformation and technological intervention' organized by castor-mustard research station, SDAU, Sardar krushinagar	23.07.2020	23.07.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
35	Dr H. K. Patel	Online national training on 'Writing Skills for Print and Electronic Media' organized by EEI, AAU, Anand	23.07.2020	24.07.2020
36	Dr. P. G. Shah, Dr. K. D. Parmar Dr. N. S. Litoriya Dr. R. L. Kalasariya Mrs. N. N. Chaudhary Mr. N. R. Chauhan	28 th Annual Review Workshop of AINP on Pesticide Residues	23.07.2020	23.07.2020
37	Mrs. H. N. Shelat Dr. Y. K. Jhala	Climate change and water resource management organized by the GoG Climate Change Dept and GEDA, Gujarat	24.07.2020	24.07.2020
38	Dr. G. J. Patel	Webinar on Role of IFS in doubling the farmers' income for profitability and livelihood security' Shri Vaishnav Vidyapeeth Vishwavidyalaya, Indore Shri Vaishnav Institute of Agriculture (SVIAG) Centre for Vocational Studies	24.07.2020	24.07.2020
39	Dr. Vinaya Kumar, H. M. Dr. A. N. Khokhar Dr. Ganga Devi Dr. Rachana K. Bansal Dr. N. B. Patel Dr. A. R. Makwan Dr. Arjunsinh Rathava	Farmer Producer Organization and Commodity Markers organized by NAHEP, CAAST, Anand	27.07.2020	28.07.2020
40	Dr. R. G. Machhar, Mr. C. B. Damor, Mr. G. D. Hadiya and Mr. R. L. Chavadhari	Attended the one days national webinar on 'Future prospects of apiculture in India' organized by all India coordinated research project on honey bees & pollinators and Department of Apiculture, UAS, GKVK, Bengaluru, Karnataka.	28.07.2020	28.07.2020
41	Dr. H. L. Dhaduk Dr. Amarjeet Singh Th.	Annual Review Meeting Presented Annual progress Report of CSS-MIDH of the year 2019-20 & Annual Action Plan for 2020-21 during the 14 th Annual Review meeting of Spices & Aromatic Plants held through virtual mode	28.07.2020	29.07.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
42	Dr. K. D. Parmar Dr. R. L. Kalasariya Dr. M. B. Zala	Three days training course on <i>Vertebrate Pest Management - Wild Boar, Monkey and Birds</i> conducted at NIPHM, Hyderabad	29.07.2020	31.07.2020
43	Dr. N. M. Gohel Dr. Puja Pandey Dr. Sneha Mistry Dr. K. D. Parmar	International Web Conference on 'Ensuring food safety, security and sustainability through crop protection' organized by BAU, Sabour, Bhagalpur	05.08.2020	06.08.2020
44	Dr. R. G. Machhar Mr. C. B. Damor Mr. G. D. Hadiya Dr. Kiran Chandravadia	One day national webinar on 'Startup – A stepping stone to attain self-reliance and sustainability in Agricultural sciences' organized by ASPEE College of Home Science and Nutrition, SDAU, Sardar krushinagar.	06.08.2020	06.08.2020
45	Dr. Ajay Kumar Maru	Webinar on 'Nematode problems in horticultural crops and their management' organized by Department of Nematology, College of Agriculture, CCSHAU, Hisar, Haryana	09.08.2020	09.08.2020
46	Mrs. H. N. Shelat Dr. Y. K. Jhala	Climate change communication in Gujarat through community science centers organized by the GoG Climate Change Dept and GEDA, Gujarat	14.08.2020	14.08.2020
47	Dr. H. K. Patel	National Web-Conference on 'Technological Approaches for Recourse Conservation and Management for Environmental Sustainability' organized by ANCRM, Lucknow	16.08.2020	17.08.2020
48	Dr. Sneha Mistry	Five days training on 'Production protocols for biofertilizer' organized by the National Institute of Plant Health Management, Hyderabad	17.08.2020	21.08.2020
49	Dr. R. G. Parmar Dr. N. M. Gohel Dr. Arjunsinh Rathava Dr. Y. B. Chauhan	Webinar on 'Biopesticide: Green technology in sustainable agriculture' organized by College of Agriculture, NAU, Bharuch	18.08.2020	18.08.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
50	Dr. S. B. Katole	Gender Mainstreaming & leadership skills in Agriculture, EEI, AAU, Anand	19.08.2020	20.08.2020
51	Dr. R. A. Patel Mr. Ratilal M. Chavadhari Dr. D. B. Sisodiya Dr. M. D. Suthar Dr. C. B. Varma Dr. R. G. Parmar Dr. N. M. Gohel Dr. V. R. Gohel Dr. Ajay Kumar Maru Dr. Tulika Singh Mrs. Anjana B. Prajapati Dr. A. D. Kalola Dr. N. B. Patel Dr. Raghunandan, B. L. Dr. H. K. Patel Dr. M. P. Patel Mrs. Hitiksha K. Parmar Dr. R. G. Machhar Mr. C. B. Damor Mr. G. D. Hadiya Dr. R. V. Hajari Dr. M. R. Dabhi Dr. Kiran Chandravadia Dr. Ranganathswamy Math Dr. Arjunsinh Rathava Dr. M. B. Zala Dr. Y. B. Chauhan	State Level Webinar on ' <i>Kharif pakoma pak sanrakshan na pravartman prashno ane nirakaran</i> ' jointly organized by the Plant Protection Association of Gujarat (PPAG) and Anand Agricultural University, Anand.	20.08.2020	20.08.2020
52	Dr. R. M. Patel	Management of commodity interest groups and farmers organizations, EEI, AAU, Anand	24.08.2020	25.08.2020
53	Dr. Y. K. Jhala Mr. S. V. Rathod Dr. Ranganathswamy Math Dr. Arjunsinh Rathava	Two days online workshop on 'Microbial intervention in plant health and nutrition' organized at N. M. College of Agriculture, NAU, Navsari	25.08.2020	26.08.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
54	Dr. N. M. Gohel	National Web Conference on 'Mushroom production: An emerging avenue for rural youth and self employment' organized by BAU, Sabour, Bhagalpur	26.08.2020	27.08.2020
55	Mrs. Anjana B. Prajapati Mrs. Hitiksha K. Parmar Dr. R. G. Machhar Mr. C. B. Damor Mr. G. D. Hadiya Dr. R. V. Hajari Dr. M. R. Dabhi Dr. Kiran Chandravadia Dr. Ranganathswamy Math Dr. Arjunsinh Rathava Dr. Y. B. Chauhan	Attended one day national webinar on 'Recent trends in Horticultural Entomology' organized by the Department of Plant Protection, college of Horticulture, Sardarkrushinagar Dantiwada Agricultural University, Jagudan	27.08.2020	27.08.2020
56	Mrs. H. N. Shelat Dr. Y. K. Jhala	Climate adaptation of vulnerable communities organized by GoG Climate Change Dept. and GEDA, Gujarat	28.08.2020	28.08.2020
57	Mr. J. H. Bhatt	Recent Extension approaches for Entrepreneurship development in Agriculture & Allied Sector, EEI, AAU, Anand	28.08.2020	29.08.2020
58	Dr. R. G. Parmar Dr. N. M. Gohel	National Webinar on 'Sustainable pest management of organic banana: Need of climate smart agriculture' organized by BAU, Sabour, Bhagalpur	31.08.2020	31.08.2020
59	Dr. G. N. Motka Dr. A. D. Kalola Dr. D. J. Parmar Dr. A. N. Khokhar Dr. Ganga Devi Dr. R. G. Machhar Mr. C. B. Damor Mr. G. D. Hadiya Dr. Puja Pandey Mrs. N. N. Chaudhary Dr. G. R. Jadeja	'Research Methodology for Social Science' Jointly organized by NAHEP-CAAST and Centre for Agricultural Market Intelligence, AAU, Anand	01.09.2020	11.09.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
60	Dr. Y. K. Jhala Dr. H. K. Patel	Communication skills for effective extension services organized by Extension Education Institute (Western region) at AAU, Anand	02.09.2020	03.09.2020
61	Dr. R. L. Kalasariya Dr. M. B. Zala	National Level Webinar on 'Plant Health Management for Sustainable Agriculture' organized on the eve of International Year of Plant Health (IYPH2020) by NIPHM, Hyderabad	04.09.2020	04.09.2020
62	Dr. G. J. Patel Dr. P. M. Patel Dr. D. R. Pardava Mr. A.M.Raiyani Dr. Vinod B. Mor Dr. Arjunsinh Rathava Mr. V. D. Rathva	National Webinar on Recent Advances in underutilized fruits in SDAU, Jagudan	05.09.2020	05.09.2020
63	Dr. D. A. Patel Dr. Sneha Macwana Dr. Arna Das Dr. Jigar Mistry Mr. Ratilal M. Chavadhari Dr. R. G. Parmar Dr. N. M. Gohel Dr. J. C. Shroff Dr. G. N. Motka Dr. Y. K. Jhala Dr. Sunil J. Macwan Dr. A. D. Kalola Dr. D. J. Parmar Dr. X. U. Shukla Mr. S. V. Rathod Dr. V. J. Patel Mr. S. V. Rathod Mr. A. M. Raiyani Dr. K. D. Parmar Dr. M. P. Patel Dr. Ranganathswamy Math Dr. Arjunsinh Rathava	Participated in the webinar on: Biotechnology Approaches for Crop Improvement' organized by BACA Alumni Association, Anand Agricultural University, Anand.	10.09.2020	10.09.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
64	Mr. A.M. Raiyani Mr. J. S. Doshi Mr. Hitiksha K. Parmar	National Webinar on Contemplative Perspectives on Seed: Conservation, Quality Assurance and Supply Systems organized by the ICAR-Indian Institute of Seed Science, Mau	10.09.2020	10.09.2020
65	Dr. M. L. Gaur Prof. Bhavin Ram Rachana K. Bansal Dr. R. D. Shinde Dr. G. J. Patel	International Web-Conference on Resource Management and Biodiversity Conservation to Achieve Sustainable Development Goals organized online by the Academy of natural resource conservation and management (ANRCM) Lucknow (UP)	11.09.2020	12.09.2020
66	Dr. R. Radha Rani Dr. R. G. Machhar C. B. Damor G. D. Hadiya	Workshop on Application of Remote Sensing & GIS In Agriculture Development	14.09.2020	17.09.2020
67	Dr. G. N. Motka Dr. Hemlata Saini Dr. N. B. Patel A.M. Raiyani Dr. C. S. Baladhiya Dr. Arjunsinh Rathava	Workshop on 'Trade in F & V products and dairy commodities' organized by the NAHEP-CAAST, Centre for Agricultural Market Intelligence, AAU, Anand.	15.09.2020	15.09.2020
68	Dr. R. A. Patel Dr. S. N. Shah Dr. J. C. Shroff Dr. G. N. Motka Dr. B. D. Patel Dr. H. K. Patel Dr. D. B. Sisodiya Dr. M. D. Suthar Dr. C. B. Varma Smt. Minakshi Lunagariya Dr. R. G. Parmar Dr. N. M. Gohel Dr. V.R.Gohel Dr. Puja Pandey Dr. Sneha Mistry Dr. R. K. Thumar Ms. Anjana B. Prajapati Dr. N. B. Patel Dr. Raghunandan, B. L.	State level webinar on 'Kapasna Pakma Pak Sharakshan' organized by the Plant Protection Association of Gujarat and AAU, Anand	16.09.2020	16.09.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
	Dr. H.K Patel. Mr. A. M. Raiyani Dr. M. P. Patel Mrs. Hitiksha K. Parmar Dr. R. G. Machhar Mr. C. B. Damor Mr. G. D. Hadiya Dr. R. V. Hajari Dr. M. R. Dabhi Dr. Kiran Chandravadia Dr. Vinod B. Mor Dr. Arjunsinh Rathava Dr. K. H. Patel Dr. M. B. Zala Dr. G. J. Patel			
69	Dr. G. N. Motka Dr. Hemlata Saini Dr. D. J. Parmar Dr. A.N. Khokhar Dr. X. U. Shukla Dr. R. M. Rajpura Dr. K. S. Jadav Dr. A. S. Shaikh Dr. N. B. Patel Mr. A.M. Raiyani Dr. R. Radha Rani Dr. Arjunsinh Rathava	Two-day webinar on 'Market Dynamic in Poultry Sector: Perspectives and challenges' organized by plant protection association of Gujarat and AAU, Anand	17.09.2020	18.09.2020
70	Dr. J. C. Shroff Dr. N. B. Patel Dr. G. R. Jadeja Dr. H. L. Kacha Mr. G. K. Bhabhor Dr. C. S. Baladhiya Dr. Ranganathswamy Math Dr. K.H.Patel	International Webinar Series on nutrition and health - eat right, bite by bite. College of FPT & BE, AAU, Anand	21.09.2020	25.09.2020
71	Dr. K. D. Parmar, Dr. N. S. Litoriya, Dr. R. L. Kalasariya, Mrs. N. N. Chaudhary, Mr. N. R. Chauhan, Mr. D. G. Goyara Ms. S. S. Chauhan	Five days training course on 'Laboratory Quality System Management and Internal Audit as per the ISO 17025:2017' conducted at NIPHM, Hyderabad	21.09.2020	25.09.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
72	Dr. R. G. Machhar Mr. C. B. Damor Mr. G. D. Hadiya	Four days online training on 'Promotion of public-private partnership under extension reforms' organized by EEI, Anand, Gujarat	21.09.2020	24.09.2020
73	Mr. Ratilal M. Chavadhari Dr. N. B. Patel Mrs. Hitiksha K. Parmar Dr. Arjunsinh Rathava	Webinar on 'Advances in Biotechnological Application for Crop Improvement' Organized by the Department of Biotechnology, College of Agriculture, JAU, Junagadh.	22.09.2020	22.09.2020
74	Dr. N. B. Patel Mr. A.M. Raiyani	Management of Biotic and Abiotic Stresses in Protected Agriculture	22.09.2020	24.09.2020
75	Mrs. H. N. Shelat Dr. Y. K. Jhala	Education towards climate action organized by GoG Climate Change Dept. and GEDA, Gujarat	25.09.2020	25.09.2020
76	Dr. R. R. Acharya Dr. V. I. Joshi Dr. N. A. Patel Dr. M. M. Pandya	All India Coordinated Research Project on Vegetable crop XXXVIII online group meeting of vegetable research workers	25.09.2020	27.09.2020
77	Dr. D. P. Gohil, Dr. H. K. Patel Dr. P. H. Rathod	Online National Group Meeting Rabi-2020-21 organized by Project Coordinator (FC), AICRP on Forage Crops, Jhansi.	28.09.2020	28.09.2020
78	Mrs. Minaxi R. Prajapati	National Webinar on 'Reframing Steps to curb Malnutrition' Organized by S. M. Patel College of Home Science, Vallabh Vidyanagar & Indian Dietetic Association Gujarat Chapter	29.09.2020	29.09.2020
79	Dr. T. T. Patel,	XXXI Workshop of AICRP on Spices organized by ICAR-AICRPS, ICAR-IISR, Kozhikode.	29.09.2020	30.09.2020
80	Mr. Ratilal M. Chavadhari Mrs. Rucha Dave Dr. Aakash Mishra Dr. R. D. Shinde	International E-Conference on 'Soil Spectroscopy: An Emerging Technique for Rapid Soil Health Assessment' Jointly organized by the ICAR - Indian Institute of Soil Science, Bhopal & World Agroforestry (ICRAF), Nairobi.	01.10.2020	01.10.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
81	Dr. Vinaya Kumar, H. M.	Research Methodology for Social Sciences organized by NAHEP CAAST-Anand	01.10.2020	01.10.2020
82	Dr. R. G. Parmar Dr. N. M. Gohel	National Webinar on 'Recent Advancements in Seed Health Management' organized by ICAR-IISS, Mau (UP)	05.10.2020	05.10.2020
83	Dr. B. N. Thakker	21 days online training on 'Communication and Management Skills for Extension Personnel' organized by NAARM, Hyderabad	01.10.2020	21.10.2020
84	Dr. K. H. Patel	One week online International Training programme on secondary Agriculture for doubling farmer's income using efficient technology organized under IDP-NAHEP-SKUSAT-Kashmir	05.10.2020	11.10.2020
85	Dr. R. G. Parmar	Multidisciplinary approaches for plant disease management for achieving sustainability in agriculture' organised by the Department of Plant Pathology, College of Horticulture, Bengaluru (University of Horticultural Sciences, Bagalkot), India	6.10. 2020	9.10.2020
86	Dr. R. A. Patel D. D. Chaudhari Dr H. K. Patel Dr. D. B. Sisodiya Dr. M. D. Suthar Dr. C. B. Varma Dr. R. G. Parmar, Dr. N. M. Gohel Dr. V.R.Gohel Dr. Puja Pandey Dr. Tulika Singh Mrs. Anjana B. Prajapati Dr. N. B. Patel Dr.Raghunandan, B. L. Dr. H.K Patel. Mr. A.M. Raiyani Dr. R. G. Machhar Mr. C. B. Damor	State Level Webinar on 'Crop Protection in <i>Rabi</i> Vegetable Crops' (<i>Shiyalu shakbhajee pakoma pak sanrakshan</i>). Lecture delivered on 'Weed Management in <i>Rabi</i> Vegetable crops' (<i>Shiyalu Shakbhajina pakoma nindan niyantran</i>) organized by the Plant Protection Association of Gujarat (PPAG) and Anand Agricultural University, Anand	06.10.2020	06.10.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
	Mr. G. D. Hadiya Dr. Kiran Chandravadia Dr. Vinod B. Mor Mr. K.H.Patel Dr. Y. B. Chauhan			
87	Mrs. H. N. Shelat Dr. Y. K. Jhala Dr. V. J. Patel	Utilization of Organic Waste for Soil Health Management and Energy Production Under Changing Climate Scenario organized by NAHEP , AAU and Shri Karan Narendra Agri. Univ, Jobner	06.10.2020	06.10.2020
88	Dr. R. K. Thumar	Virtual meeting of AICRP on nematodes	07.10.2020	07.10.2020
89	Dr. A. C. Vaidya Dr. H. L. Kacha Mr. N. K. Rathod Mr. G. K. Bhabhor Mr. N.D. Makwana	Short Training on Participatory programme planning, monitoring and evaluation	07.10.2020	10.10.2020
90	Dr. M.P. Patel	Webinar on Translating Physiology into Techniques for Abiotic Stress Tolerance organized by the ICAR-National Institute of Abiotic Stress Management (NIASM) Baramati	09.10.2020	09.10.2020
91	Dr. H. K Patel Dr. K. V. Patel	21 Days National Training course on 'Technology Interventions Towards Transformation of Agriculture, Sericulture, Animal Husbandry and allied sectors into sustainable Enterprises for Atmanirbhar Bharat'	11.10.2020	31.10.2020
92	Dr. B. I. Karande	Crop simulation and water stress monitoring under climate smart agriculture', at EEI (Western Zone), Gujarat	13.10. 2020	13.10. 2020
93	Dr. Hemlata Saini Dr. Kiran Chandravadia	'Market intelligence and export potential in horticultural sector' organized by SDAU, Dantiwada	14.10. 2020	14.10. 2020
94	Dr. K.H. Patel	One day technical webinar on IPM for Maize crop with special reference to FAW in central western India. Organized by IIMR, Ludhiana	15.10. 2020	15.10. 2020

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			From	To
95	Dr. Puja Pandey Dr. Vinaya Kumar, H. M. Dr. Hemlata Saini Mr. A.M. Raiyani Dr. R. Radha Rani Dr. R. G. Machhar Mr. C. B. Damor Mr. G. D. Hadiya Dr. Kiran Chandravadia Dr. Arjunsinh Rathava	Webinar on 'Technical Writing' organized by NAHEP, AAU, Anand.	16.10.2020	17.10.2020
96	Dr. Y. K. Jhala Dr. H. K. Patel	Five-days online training on 'Production protocols for biofertilizers' organized by National Institute of Plant Health Management, Hyderabad	17.10.2020	21.10.2020
97	Dr. J. C. Shroff	Online seminar on Advances in micro irrigation and fertigation for improving water use efficiency and crop productivity, CoA, Vaso and CAMI, NAHEP-CAAST, Anand	18.10.2020	18.10.2020
98	Dr. A. D. Kalola Dr. D. J. Parmar	Webinar on 'Diagnostic and Remedial Measure for Common Errors in Application of Statistics' organized by the Department of Agricultural Statistics, College of Agriculture, Navsari Agricultural University, Campus Bharuch.	20.10.2020	21.10.2020
99	Dr. N. M. Gohel Dr. Puja Pandey Dr. N. B. Patel Dr. R. L. Kalasariya Dr. R. G. Machhar Mr. C. B. Damor Mr. G. D. Hadiya Dr. R. V. Hajari Dr. Ranganathswamy Math Dr. Arjunsinh Rathava Mr. V. D. Rathva	National Webinar on 'Integrated Disease Management in Horticultural Crops' organized by SDAU, Jagudan	22.10.2020	22.10.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
100	Dr. R. A. Patel Dr. S. N. Shah Dr. J. C. Shroff Dr. H. K. Patel Dr. D. B. Sisodiya Dr. M. D. Suthar Dr. C. B. Varma Dr. R. G. Parmar, Dr. N. M. Gohel Dr. V.R.Gohel Dr. Puja Pandey Dr. Sneha Mistry Mrs. Anjana B. Prajapati Dr. N. B. Patel Dr.Raghunandan, B. L. Dr. H.K Patel. Mr. A.M. Raiyani Dr. Ranganathswamy Math Dr. Arjunsinh Rathava Dr. K. H. Patel Dr. M. B. Zala Dr. G. J. Patel	Attended State level webinar on 'Sajeev khetima pak sanrakshan' jointly organized by PPAG and Anand Agricultural University at AAU, Anand.	27.10.2020	27.10.2020
101	Dr. Vinaya Kumar, H. M. Dr. Hemlata Saini	'New approaches for enhancing animal productivity' organized by AKNAU, Jobner	28.10.2020	28.10.2020
102	Dr. C. S. Baladhiya	Webinar on 'Impact of climate change on agriculture', NAU, Navsari.	28.10.2020	28.10.2020
103	Dr. Hemlata Saini, Dr. D. J. Parmar Dr. A. R. Makwan	'Space technology and Machine learning for agriculture' organized by AAU, Anand	28.10.2020	29.10.2020
104	Dr. J. C. Shroff Mr. A. P. Patel Dr. Kiran Chandravadia Dr. Arjunsinh Rathava Dr. K. H. Patel	State level webinar on 'Chandan ni aadhunik kheti' CAMI, NAHEP-CAAST, Anand and Chandan Vikas Association	02.11.2020	02.11.2020
105	Dr. Raghunandan, B. L Dr. K. D. Parmar, Dr. R. L. Kalasariya, Dr. N. S. Litoriya, Mr. N. R. Chauhan Mrs. N. N. Chaudhary.	National Level Symposium on 'Plant Health Management' organized by Department of Plant Pathology and Entomology, College of Agriculture, NAU, Campus Bharuch	02.11.2020	04.11.2020

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			From	To
106	Dr. H. L. Dhaduk Mr. B. V. Hirpara	Annual Group Meeting XXVIII Group Meeting of AICRP on Medicinal and Aromatic Plants and Betel vine on Virtual mode	02.11.2020	05.11.2020
107	Mr. A. P. Patel Dr. G. J. Patel	Workshop on HPTLC Technique and its application in Agriculture organized by the Department of Plant Molecular Biology and Biotechnology, ASPEE College of Horticulture and Forestry, Navsari Agricultural University, Navsari	03.11.2020	03.11.2020
108	Dr. G. J. Patel Dr. H. K. Patel	National Webinar on 'Integrated Farming System and Farmers' Income' organized by the Department of Agronomy, Rajasthan College of Agriculture, Maharana Pratap University of Agriculture and Technology, Udaipur, Rajasthan under Institutional Development Plan, National Agricultural Higher Education Project (NAHEP) of Indian Council of Agricultural Research (ICAR), New Delhi.	05.11.2020	05.11.2020
109	Dr. S. N. Shah Dr. J. C. Shroff	National webinar on "Precision nutrient management for sustainable soil health and crop productivity" organized by Banda University of Agriculture and Technology, Banda (U.P.)	06.11.2020	07.11.2020
110	Dr. S. N. Shah Dr. J. C. Shroff Dr. G. N. Motka Mr. A. P. Patel Dr. M. J. Patel Mrs. H. N. Shelat Dr. Y. K. Jhala Dr. H. K. Patel Dr. R. G. Parmar Dr. N. M. Gohel Dr. V. R. Gohel Dr. Puja Pandey Dr. R. D. Shinde	State level webinar on ' <i>Shiyalu pakoma poshan vyavstha</i> ' jointly organized by ISSS, Anand Chapter and NAHEP-CAAST, Anand Agricultural University at AAU, Anand.	09.11.2020	09.11.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
	Dr. J. K. Parmar Dr. M. B. Viradiya Dr. N. J. Jadav Dr. Aakash Mishra Dr. P. V. Mehta Mr. S. V. Rathod Dr. N. B. Patel Dr. H.K. Patel Dr. Sunil R. Patel Dr. Kiran Chandravadia Dr. Vinod B. Mor Dr. K. H. Patel			
111	Dr. G. N. Motka Dr. A.N. Khokhar Mr. A. M. Raiyani Dr. Kiran Chandravadia	Webinar on 'Cost Effective and Innovative Green Energy Initiatives for Futuristic Agriculture' jointly organized by the College of Agriculture Engineering and Technology, AAU, Godhara and Centre for Agricultural Market Intelligence, NAHEP-CAAST and AAU, Anand	11.11.2020	11.11.2020
112	Dr. R. G. Parmar	Management of Root-rot disease of Horticultural Crops organized by the Department of Plant Pathology, PG College of Agriculture, Dr. Rajendra Prasad Central Agricultural University Pusa, Samastipur (Bihar) India	24.11. 2020	24.11. 2020
113	Dr. Sneha Macwana	International E-Conference on 'Advances and Future Outlook in Biotechnology and Crop Improvement for Sustainable Productivity' organized by the Department of Biotechnology and Crop Improvement, College of Horticulture, Bengaluru	24.11.2020	27.11.2020
114	Dr. S. N. Shah	Attended national webinar on 'Krushik Shiksha ke naye aayam evam avsar' organized by Maharana Pratap University of Agriculture and Technology, Udaipur.	03.12.2020	03.12.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
115	Dr. Sunil J. Macwan Dr. H. K. Patel	National webinar on National Education Day organized by Director of Research, MPUAT, Udaipur, Rajasthan	03.12.2020	03.12.2020
116	Dr. Sunil J. Macwan	National webinar on Plant Genetics Resource Management and Biotechnological approaches for food security, organized by the Director of Research, MPUAT, Udaipur	04.12.2020	04.12.2020
117	Dr. R. A. Patel Dr. S. N. Shah Dr. J. C. Shroff Dr. P. M. Patel Mr. A. P. Patel Dr. Y. K. Jhala Dr. H. K. Patel Dr. Aakash Mishra Dr. V. J. Patel Mr. S. V. Rathod Dr. N. B. Patel Dr. H. K. Patel Dr. M. R. Dabhi Dr. Kiran Chandravadia Dr. Rajkumar D. Shinde Dr. Arjunsinh Rathava Dr. K. H. Patel	Attended State level webinar on 'Jivant jamin-Swasth jamin' jointly organized by ISSS, Anand Chapter and NAHEP-CAAST, Anand Agricultural University, Anand	05.12.2020	05.12.2020
118	Dr. Vinaya Kumar, H. M.	Paradigm Shift in Mechanization for Futuristic Agriculture organized by NAHEP CAAST-Anand	16.12.2020	16.12.2020
119	Dr. M. L. Gaur Dr. Bhavin Ram Dr. H. K. Patel Dr. C. S. Baladhiya Dr. K.H.Patel	ICAR- NAHEP sponsored online seminar on 'Advances in micro-irrigation and fertigation for improving water use efficiency and crop productivity; organized at Centre for Agril. Market Intelligence, Anand Agricultural University Anand.	18.12.2020	18.12.2020
120	Dr. V. B. Bhalodiya Dr. N. B. Patel Dr. H. K. Patel Dr. C. S. Baladhiya Dr. K.H.Patel Mr. V. D. Rathva Dr. G. J. Patel	Online seminar on protected cultivation for enhancing resources use efficiency and productivity of horticultural crops. Jointly organised by the College Agriculture, Vaso and Centre for Agricultural Market Intelligence, NAHEP-CAAST, AAU, Anand	22.12.2020	22.12.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
121	Dr. V. B. Vaidya	Agritech theme' in India International science Festival-2020 organized by CSIR-NISTADS, Ministry of Science and Technology, GoI, New Delhi and <i>Vijnana Bharat</i> .	22.12.2020	25.12.2020
122	Dr. N. M. Gohel	India International Science Festival (IISF 2020), Mega Science Technology & Industry Expo, the largest virtual science expo organized by the Ministry of Science & Technology, New Delhi	22.12.2020	25.12.2020
123	Dr. R. G. Machhar Mr. C. B. Damor Mr. G. D. Hadiya	Two days online training on 'Management of fall army worm, pink bollworm and integrated pest management practices through extension skills' organized by EEI, Anand Agricultural University, Anand	23.12.2020	24.12.2020
124	Dr. Hemlata Saini	Socio-economic and Environmental Issues: Challenges and Future Prospects in Current Pandemic Situation' organized by the Asian Biological Research Foundation.	26.12.2020	28.12.2020
125	Dr. Sunil J. Macwan Dr. R. R. Acharya Dr. V. I. Joshi Dr. N. A. Patel Dr. M. M. Pandya	National level online training on Emerging Trends in seed production technology and quality control framework for effective seed supply chain of Horticulture crops, organized by the Department of Biotechnology & Crop improvement College of Horticulture, Bidar, University of Horticulture Science, Bagalkot, Karnataka.	28.12.2020	06.01.2021
126	Dr. M. L. Gaur	Attended 29 th National Web Conference on 'Sustainable Soil and Water Management for Bio-diversity Conservation, Food Security and Climate Resilience' Organized by the Soil Conservation Society of India, New Delhi.	29.12.2020	30.12.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
127	Dr. C. S. Baladhiya	International webinar on 'Dairy products for health and wealth, SMC College of Dairy Science, AAU, Anand.	02.01.2021	02.01.2021
128	Dr. R. G. Machhar Mr. C. B. Damor Mr. G. D. Hadiya Dr. R. V. Hajari Dr. R. L. Kalasariya Dr. K. H. Patel Dr. G. J. Patel	National webinar on ' <i>Sustainable Agriculture Through Natural Resource Management</i> ' organized by Department of Agronomy, College of Agriculture, NAU, Campus Bharuch	04.01.2021	08.01.2021
129	Mr. A. P. Patel Dr. H. K. Patel Dr. Sneha Mistry Dr. Arjunsinh Rathava Dr. M. L. Gaur	Seminar on 'Underutilized Horticultural Crops' organized by the College of Horticulture, AAU, Anand and NAHEP-CAAST, Anand Agricultural University, Anand	05.01.2021	05.01.2021
130	Dr. K. D. Parmar Dr. N. S. Litoriya Dr. R. L. Kalasariya Mrs. N. N. Chaudhary Mr. N. R. Chauhan Dr. V. I. Joshi Dr. N. A. Patel Dr. M. M. Pandya	21 days virtual National level higher training on 'Sustainable Development of Secondary Agriculture: Economical, Food Nutritional and Livelihood Perspective' conducted at Center for Advanced Agricultural Science & Technology of NAU, Navsari, Gujarat under NAHEP of ICAR, New Delhi	16.01.2021	05.02.2021
131	Dr. R. L. Kalasariya	National webinar on 'Pesticide Residue Management: Indian Scenario' organized by NAHEP-CAAST, NAU, Navsari, Gujarat, India	23.01.2021	23.01.2021
132	Dr. H. K. Patel	National Seminar on Current Trends in Life Sciences (NSCTLS-2021) organised by the Amity University, Gwalior	29.01.2021	29.01.2021
133	Mrs. H. N. Shelat Dr. K. S. Jadav Dr. A. S. Shaikh Dr. Rachana K. Bansal Dr. N. B. Patel Dr. K. H. Patel	Co-operative marketing in Gujarat NAHEP- CAAST, AAU, Anand	30.01.2021	30.01.2021
134	Dr. N. B. Patel Dr. C. S. Baladhiya Dr. Kiran Chandravadia Dr. K. H. Patel	Webinar on 'Artificial Intelligence in Agriculture, AAU, Anand.	02.02.2021	02.02.2021

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			From	To
135	Dr. M. L. Gaur Dr. Bhavin Ram	One week online International Training programme on 'Water Resource Modelling' organized by the Centre for advanced agricultural sciences and technology for climate smart agriculture and water management (CAAST-CSAWM), Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra India under world bank aided ICAR-NAHEP programme.	08.02.2021	12.02.2021
136	Dr. D. B. Sisodiya Dr. R. K. Thumar	Web-symposium on 'Recent advances in beneficial insect and natural resins & gums' organized by Society for advancement of natural resins & gums and ICAR-Indian institute of natural resins & gums, Ranchi	25.02.2021	26.02.2021
137	Dr. Puja Pandey Dr. Sneha Mistry	National Symposium of IPS West Zone on 'Probing beneficial microorganism for next green revolution'	25.02.2021	26.02.2021
138	Dr. Kiran Chandravadia	Webinar on 'Startup Opportunities in Indian Fishery Sector, AAU, Anand.	10.03.2021	10.03.2021
139	Dr. Ajay Kumar Maru	The 4 th National Conference and Webinar on Doubling Farmers Income for Sustainable & Harmonious Agriculture, DISHA-2021 at Sambodhi Retreat, Dhanbad, Jharkhand	13.03.2021	14.03.2021
140	Mrs. H. N. Shelat	An interactive panel discussion cum webinar on climate change in search of truth for the freezing world organized by Nanoland, Ahmedabad	23.03.2021	23.03.2021
141	Dr. M. L. Gaur	Attended 2 days online national training on 'Creating awareness about Intellectual Property Rights protection for the start-Ups and entrepreneur in Agri-Horti sectors' organized by the College of Horticulture and Forestry, Central Agricultural University (Imphal) Arunachala Pradesh, India under Institutional development plan of National Agricultural Higher Education Project.	26.03.2021	27.03.2021

(2) FACULTY OF VETERINARY SCIENCE

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
1	Dr. D. B. Sadhu	E-course on 'Teaching from Homes with IT tools'	23.04.2020	01.05.2020
2	Dr. U. M. Patel	National level Webinar on 'Approaches towards development of rural and agriculture sector in present scenerio' organized by JNKVV, Jabalpur at College of Agriculture, Tikamgarh (MP).	08.05.2020	09.05.2020
3	Dr. F. P. Savaliya Dr. R. K. Mishra Dr. A. B. Patel Dr. N. J. Bhagora Dr. U. M. Patel	Webinar on Goat farming: Potential Opportunity for Agribusiness	30.05.2020	30.05.2020
4	Dr. K. A. Sadariya	Webinar on World Environment Day, organised by Social Forestry Division Anand & Youth Hostel Association of India, Vallabh Vidyanagar Unit.	05.06.2020	05.06.2020
5	Dr. S. K. Raval Dr. D. B. Sadhu Dr. R. J. Bhojani	National webinar on Clinical approach to anaemia and transfusion practices in dogs and cats	14.06.2020	14.06.2020
6	Dr. S.K. Bhavsar	National Webinar on 'Animal Models: Challenges and Future' organized by the Indian Society of Veterinary Pharmacology and Toxicology (ISVPT).	27.06.2020	27.06.2020
7	Dr. U. M. Patel	Webinar cum basic Workshop on 'Sampling Research' organized by Vigyan Varta: An International e-magazine for science enthusiasts.	03.07.2020	03.07.2020
8	Dr. R. J. Bhojani	Webinar on Lumpy skin disease in animals	05.07.2020	05.07.2020
9	Dr. U. M. Patel	Participated Webinar on 'Agricultural market reforms and market intelligence' by National Agricultural Higher Education Project- CAAST, Centre for Agricultural Market Intelligence, AAU, Anand.	07.07.2020	08.07.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
10	Dr. S. K. Bhavsar, Dr. K. A. Sadariya, Dr. B. R. Patel	National Webinar on Complementary and alternative Veterinary therapeutics, College of Veterinary Science & A.H. Mhow, NDVSU, MP.	09.07.2020	09.07.2020
11	Dr. S. K. Bhavsar, Dr. K. A. Sadariya	National Webinar on 'Pharmacological Potential of A1 and A2 Milk: Myths & Facts' organized by the Indian Society of Veterinary Pharmacology and Toxicology (ISVPT).	11.07.2020	11.07.2020
12	Dr. R. J. Bhojani	Webinar on Clinical use of antibacterial in veterinary practices: an overview	25.07.2020	25.07.2020
13	Dr. U. M. Patel	National Webinar on 'Innovative techniques in agriculture' organized by the Post graduate department of Agriculture, Khalsa College Patiala.	07.08.2020	07.08.2020
14	Dr. S. K. Bhavsar	National Webinar on 'Natural Products of Plant origin in Animal Health' organized by Indian Society of Veterinary Pharmacology and Toxicology (ISVPT).	08.08.2020	08.08.2020
15	Dr. K. A. Sadariya	National Webinar on 'Covid pandemic: Herbal solutions for health care of livestock and poultry', Dept. of VPT, Vet. College, Orathanadu, TANUVAS, Tamilnadu	13.08.2020	14.08.2020
16	Dr. D. B. Sadhu Dr. R. J. Bhojani	Webinar on Animal production medicine in Anthropocene Epoch	13.08.2020	13.08.2020
17	Dr. S. K. Raval, Dr. D. B. Sadhu Dr. R. J. Bhojani	E-course on 'Basics of Electrocardiography in Dogs'	17.08.2020	23.08.2020
18	Dr. U. M. Patel	State level Webinar on 'Kharif pakoma pak sanrakshan orashno ane nirakaran' jointly organized by Plant Protection Association of Gujarat (PPAG) and AAU, Anand	20.08.2020	20.08.2020
19	Dr. S. K. Bhavsar Dr. K. A. Sadariya	National Webinar on 'Antimicrobial Resistance from Food Perspective' organized by the Indian Society of Veterinary Pharmacology and Toxicology (ISVPT).	22.08.2020	22.08.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
20	Dr. S.K. Bhavsar, Dr. K.A. Sadariya	National Webinar on 'Role of Drug Metabolism and Pharmacokinetics in Drug Discovery and Development' organized by the Indian Society of Veterinary Pharmacology and Toxicology (ISVPT).	12.09.2020	12.09.2020
21	Dr. F. P. Savaliya Dr. R. K. Mishra Dr. A. B. Patel Dr. N. J. Bhagora Dr. K.A. Sadariya	Webinar on 'Market dynamics in poultry sector: perspectives and challenges' at NAHEP-CAAST, AAU, Anand, Gujarat.	17.09.2020	18.09.2020
22	Dr. S.K. Bhavsar Dr. K.A. Sadariya	National Webinar on 'One health approach to Control and Elimination of rabies in India' CVSc&AH, AAU, Anand	25.09.2020	25.09.2020
23	Dr.U.M. Patel	State level Webinar on ' <i>Kapasana Pakama Pak Sanraxan</i> ' jointly organized by Plant Protection Association of Gujarat (PPAG) and AAU, Anand	26.09.2020	26.09.2020
24	Dr. S.K. Raval	Webinar on Lets end rabies through collaboration and vaccination	28.09.2021	28.09.2021
25	Dr. S. K. Bhavsar, Dr. K. A. Sadariya, Dr. B. R. Patel	XX Annual Conference of Indian Society of Veterinary Pharmacology and Toxicology (ISVPT-2020) and international webinar on 'Translational Approaches in Herbal Drug Development' held at Department of Veterinary Pharmacology and Toxicology, College of Veterinary Sciences DUVASU, Mathura	04.10.2020	05.10.2020
26	Dr. F. P. Savaliya Dr. R. K. Mishra Dr. A. B. Patel Dr. N. J. Bhagora	Webinar on Incredible chicken Eggs	09.10.2020	09.10.2020
27	Dr. S. K. Bhavsar	National Webinar on 'Role of laboratory animals in Preclinical studies' organized by the Indian Society of Veterinary Pharmacology and Toxicology (ISVPT).	10.10.2020	10.10.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
28	Dr. P. G. Koringa Dr. S. J. Jakhesara	Pandemics: managing uncertainty	14.10.2020	14.10.2020
29	Dr. U. M. Patel	National level Webinar on 'Market intelligence and export potential in horticulture sector' organized by the Department of Social science, SDAU, Jagudan.	14.10.2020	14.10.2020
30	Dr. S. K. Bhavsar	National Webinar on 'Technical Writing' organized by the Centre for Agricultural market Intelligence. AAU, Anand.	16.10.2020	17.10.2020
31	Dr. B. R. Patel	Training on 'Advance Diagnostic Approaches: A Preparation to combat New Challenges of Veterinary Science' organized by College of Veterinary Science & A.H. Mhow, NDVSU, MP.	19.10.2020	31.10.2020
32	Dr. P. G. Koringa Dr. S. J. Jakhesara	Disease and health through a One Health lens.	28.10.2020	28.10.2020
33	Dr. S. K. Bhavsar, Dr. K. A. Sadariya	National Webinar on 'Biosimilars: Regulatory perspective on pre-clinical pharmacology and safety evaluation' organized by Indian Society of Veterinary Pharmacology and Toxicology (ISVPT).	07.11.2020	07.11.2020
34	Dr. U. M. Patel	Seminar on 'Cost effective and innovative green energy initiatives for futuristic agriculture' jointly organized by College of Agricultural Engineering and Technology, AAU, Godhra, Centre for Agricultural Market Intelligence, NAHEP-CAAST, AAU, Anand.	11.11.2020	11.11.2020
35	Dr. S. K. Bhavsar, Dr. K. A. Sadariya	National Webinar on 'An Overview of Regulatory Toxicology' organized by the Indian Society of Veterinary Pharmacology and Toxicology (ISVPT).	21.11.2020	21.11.2020
36	Dr. P. G. Koringa and Dr. S. J. Jakhesara	One health poultry hub mini conference for coordination and planning	23.11.2020	26.11.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
37	Dr. S. K. Raval, Dr. G. C. Mandali	International webinar on 'Advances in diagnosis and medical management of farm animal diseases', MAFSU, Nagpur	26.11.2021	26.11.2021
38	Dr. U. M. Patel	It is relevant in training programme on 'Government support & facilities available for animal husbandry sector' at Vidhya dairy, Anand.	30.11.2020	30.11.2020
39	Dr. P. G. Koringa and Dr. S. J. Jakhesara	Poultry production: keeping the customer satisfied	09.12.2020	09.12.2020
40	Dr. S. K. Bhavsar, Dr. K. A. Sadariya	National Webinar on 'Pre-clinical imaging biomarker in drug discovery' organized by the Indian Society of Veterinary Pharmacology and Toxicology (ISVPT).	12.12.2020	12.12.2020
41	Dr. K.A. Sadariya	Online International Training Programme on 'Advances in pharmacology: addressing the paradigm shift in clinical and para-clinical sciences', Dept. of VPT., Vet. College, Rewa, NDVSU, Jabalpur, MP.	28.12.2020	21.1.2021
42	Dr. G. C. Mandali	International Webinar on 'Dairy Products for Health and Wealth', AAU, Anand.	02.01.2021	02.01.2021
43	Dr. J. H. Patel	National level higher training on 'Sustainable development of secondary agriculture: economical, food nutritional and livelihood perspective' organized by the Centre of Advance Agricultural Science & Technology of NAU, Navsari, Gujarat	16.01.2021	05.02.2021
44	Dr. B. R. Patel Dr. S. K. Raval Dr. G. C. Mandali	Avian Influenza: Revisited Kamdhenu University, Gandhinagar, Gujarat.	20.01.2021	20.01.2021
45	Dr. P. G. Koringa and Dr. S. J. Jakhesara	Poultry production: vaccination challenges	03.02.2021	03.02.2021
46	Dr. S. K. Bhavsar, Dr. K. A. Sadariya, Dr. B. R. Patel	Inhalation Toxicity and its risk assessment organized by the Indian Society of Veterinary Pharmacology and Toxicology (ISVPT).	06.02.2021	06.02.2021
47	Dr. J. H. Chaudhary	21 Day online training on 'Application of Novel Methods in Prevention and Control of Zoonoses and Ensuring Food Safety'	18.02.2021	10.03.2021

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
48	Dr. P. G. Koringa Dr. S. J. Jakhesara	Antimicrobial resistance governance: behavior and blame	17.03.2021	17.03.2021

(3) FACULTY OF DAIRY SCIENCE

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
1	Dr. A. K. Makwana Dr. K. C. Kamani Dr. M. C. Prajapati	3 rd Online Short-Term Course on 'E-Content Development' organized by UGC – Human Resource Development Centre, Gujarat University, Ahmedabad	14.05.2020	20.05.2020
2	Dr. M. C. Prajapati	Webinar on 'Agribusiness in India Beyond 2020: Hiring Trends & New CRM Skill in Global Agribusiness' organized by the Ganpat University - Centre for Management Studies and Research.	26.05.2020	26.05.2020
3	Dr. A.K. Makwana Dr. M.C. Prajapati	Webinar on 'Digital & Social Media Marketing' jointly organized by the Department of Commerce & Business Management, Faculty of Commerce, The Maharaja Sayajirao University of Baroda, Vadodara and Indian Institute of Digital Education, Mumbai.	28.05.2020	28.05.2020
4	Er. Arpita M. Rathva Dr. Sreeja V Dr. Kunal M Gawai Dr. Subrota Hati	National workshop on 'Nutritional Sustenance through Dairy Products: Initiatives and Strategies' organized by the College of Food and Dairy Technology, Chennai	01.06.2020	01.06.2020
5	Dr. Sreeja V Dr. Kunal M. Gawai Dr. Subrota Hati	E-International Conference –Role of Fermented Foods in Pandemic Era on 25-06-2020, organized by Guru Nanak Khalsa College (Autonomous), Mumbai & Swedish South Asian Network on Fermented Foods (SASNET-FF).	25.06.2020	25.06.2020
6	Dr. Kunal M Gawai Dr. Subrota Hati	Webinar on Agricultural Market reforms and Market intelligence organized by the National Agricultural Higher Education Project- CAAST Center for Agricultural Market Intelligence, AAU, Anand	07.07.2020	08.07.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
7	Dr. A. K. Makwana Dr. K. C. Kamani Dr. M. C. Prajapati Dr. M. D. Gurjar	Two-day webinar on 'Farmer Producer Organisation and Commodity Market' at centre for Agricultural Market Intelligence, Anand Agricultural University, Anand.	27.07.2020	28.07.2020
8	Er. Arpita M. Rathva	'Recent Advances in Dairy Process Engineering' organized by Department of Food Process Engineering, College of Food and Dairy Technology, Koduvalli.	24.08.2020	28.08.2020
9	Komal Patel Dr. Kunal M Gawai Dr. Subrota Hati	International Webinar Series on: 'Nutrition and Health- Eat Right. Bite by Bite' organized by RKVY-RAFTAAR, College of Food Processing Technology and Bio-Energy, AAU, Anand.	21.09.2020	25.09.2020
10	Er. Arpita M Rathva Ajay J Gokhale	'Traceability and Recall in Foods' Organised by the Department of Food Technology, Lady Irwin College, Delhi	01.10.2020	01.10.2020
11	Dr. Sreeja V. Dr. Kunal M Gawai Dr. Subrota Hati Ajay J Gokhale, Komal Patel	Webinar on Dairy based probiotic functional foods on 05-10-2020 organized by IDA Gujarat Chapter in Association of SMC College of Dairy Science, AAU, Anand.	05.10.2020	05.10.2020
12	Er. Arpita M Rathva	21 Days National Training Course (online) on Technology Interventions Towards Transformation of Agriculture, Sericulture, Animal Husbandry and Allied Sectors in to Sustainable Enterprises For <i>Atmanirbhar Bharat</i>	11.10.2020	31.10.2020
13	Dr. Sreeja V Dr. Subrota Hati Er. Arpita M Rathva	Webinar series on Reducing carbon foot print in the Dairy Industry-Future and Challenges (Edition-II) organized by the Mansinhbhai Institute of dairy and Food Technology (MIDFT), Mehsana, Gujarat.	05.11.2020	05.11.2020
14	Ajay J Gokhale, Dr. Jarita Mallik	Changing Paradigms on Food Security and Food Sufficiency'	23.11.2020	28.11.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
15	Dr. Ajay J Gokhale, Ms. Rachana Rathwa, Dr. Komal Patel, Dr. Jarita Mallik, dr. Chetan Dharaiya Dr. Ashish Patel Dr. Kunal M Gawai Ms. Mital R. Kathriya	Functional fermented foods-current status and future prospects	15.12.2020	15.12.2020
16	Dr. Suneeta Pinto, Ms. Rachana Rathawa, Dr. Jarita Mallik, Dr. Chetan Dharaiya, Dr. Ajay Gokhale Er. Arpita M Rathva Ashish Patel Dr. I. A. Chauhan Dr. Sreeja V. Dr. Kunal M Gawai Dr. Subrota Hati Ms. Mital R. Kathriya Dr. A. K. Makwana Dr. K. C. Kamani Dr. M. C. Prajapati Dr. M. D. Gurjar	Webinar on 'Dairy Products for Health and Wealth'	02.01.2021	02.01.2021
17	Dr. Komal Patel	Webinar on: Data Science for Agriculture' organized by the Centre for Agricultural Market Intelligence, NAHEP-CAAST, AAU, Anand	12.01.2021	12.01.2021
18	Dr. Suneeta Pinto, Dr. Rachana Rathawa, Dr. Jarita Mallik, Chetan Dharaiya, Dr. Ajay Gokhale	Five days online training on 'Value addition in milk fruits and vegetables: A success <i>Mantra</i> for Agripreneurs NAHEP-CAAST project, Anand Agricultural University, Anand	18.01.2021	22.01.2021
19	Dr. Suneeta Pinto	Online Seminar on Cooperative marketing in Gujarat, College of Horticulture, AAU, Anand and Centre for Agril. Market Intelligence, NAHEP-CAAST, AAU, Anand	30.01.2021	30.01.2021

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
20	Dr. A. K. Makwana Dr. K. C. Kamani Dr. M. C. Prajapati Dr. M. D. Gurjar	Online Webinar Series on 'Technology available for commercialization, Levering and Idea, and Importance of IPR for Startups' organized by Agri. & Food Business Incubator, Anand Agricultural University, Anand, Gujarat	25.02.2021	27.02.2021
21	Dr. Suneeta Pinto Komal Patel Dr. Jarita Mallik Rachana Rathwa	Webinar on: 'Women Empowering Life'	25.03.2021	25.03.2021

(4) FACULTY OF AGRICULTURAL INFORMATION TECHNOLOGY

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
1	Er. Vishal Mehra	2 nd International Conference on Soft Computing and it's Emerging Application	11.12.2020	12.12.2020

(5) FACULTY OF FOOD PROCESSING TECHNOLOGY AND BIO-ENERGY

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
1	Er. Arvind N. Nakiya	Massive Open online course on 'COVID 19: The pandemic' Organized by R K University, Rajkot.	11.05.2020	15.05.2020
2	Dr. B.H. Joshi	National Level e-Faculty Development Programme on 'Comprehensive Quality Initiatives for Higher Education in Pandemic Era' organized by the Internal Quality Assurance Cell of UkaTarsadia University (UTU), Bardoli, Gujarat.	26 .05. 2020	30.05.2020
3	Dr. Samit Dutta	Webinar Series on 'Innovative Agro-Food Processing Technologies for Entrepreneurship Development' organized by RKVY RAFTAAR-Agri Business Incubator (Ministry of Agriculture Cooperation and Farmers' Welfare), Agri. & Food Business Incubator, AAU, Anand	30.05.2020	04.06.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
4	Dr. Samit Dutta,	Webinar Series on 'Opportunities for startups in these challenging times' organized by i-HUB SSIP, Education Dept., GoG	07.06.2020	07.06.2020
5	Dr. Samit Dutta, Er. Tanmay H Bhatt	Webinar on 'eNAM: Challenges and Prospects' org. by Centre for Agricultural Market Intelligence (NAHEP-CAAST), AAU, Anand	10.06.2020	10.06.2020
6	Dr S. R. Bhise	Participated in two days National Webinar on 'Post COVID-19 Agribusiness: Challenges and Opportunities' organized by the Junagadh Agricultural University, Junagadh	13.06.2020	14.06.2020
7	Dr. S. R. Bhise	Four days international e-Conference on 'Novel Nutrition Approach and Emerging Opportunities to Sustain in Pandemic Scenario' organized by the Department of Nutrition and Dietetics, Mount Carmel College, Autonomous, Bengaluru in association with IITB Remote Centre, Women's Polytechnic College, Puducherry.	15.06.2020	18.06.2020
8	Dr. B. H. Joshi	E - International conference on Role of fermented foods in pandemic era organised by Guru Nanak Khalsa College and Swedish South Indian Network for Fermented Foods in Association with Lund University Sweden and AAU, Anand	25.06.2021	25.06.2021
9	Dr. Samit Dutta Er. Tanmay H. Bhatt	Two days webinar on 'Agricultural Market reforms and Market intelligence' organized by the Centre for Agricultural Market Intelligence (NAHEP-CAAST), AAU, Anand	07.07.2020	08.07.2020
10	Dr. H. Pandey	'Indian Agricultural Education System and Entrepreneurship Scope in 21 st Century'	05.08.2020	14.08.2020
11	Dr. Ameer Ravani	National Women's Food Science & Technology Conference, 2021 organised by IIFPT, MOFPI, Thanjavur	08.02.2021	08.03.2021

(6) FACULTY OF AGRICULTURAL BUSINESS MANAGEMENT

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
1	Dr. Shakti Ranjan Panigrahy	Webiner on 'Indian Potato Industry – Post Covid 19 Challenges, Opportunities and Scope of Mechanisation'	18.05.2020	18.05.2020
2	Dr, Vishita Khanna Dr. Y. A. Lad Dr. Snehal Mishra Dr. Shakti Ranjan Panigrahy	Goat Farming: Potential Opportunity for Agribusiness	30.05.2020	30.05.2020
3	Dr, Vishita Khanna Dr. Y. A. Lad Dr. Shakti Ranjan Panigrahy Dr. Y. C. Zala	eNAM: Challenges and Prospects	10.06.2020	10.06.2020
4	Dr, Vishita Khanna Dr. Y. A. Lad Dr. Snehal Mishra	Impact of COVID-19 on Dairy and Food Processing Sector	16.06.2020	17.06.2020
5	Dr, Vishita Khanna Dr. Y. A. Lad Dr. Shakti Ranjan Panigrahy.	Webinar on Fishery Business Eco-system in India	22.06.2020	23.06.2020
6	Dr, Vishita Khanna Dr. Y. A. Lad Dr. Snehal Mishra Dr. Shakti Ranjan Panigrahy Dr. Prajapati M. R. Dr. Ritambhara Singh	Agricultural Market Reforms and Market Intelligence	07.07.2020	08.07.2020
7	Dr, Vishita Khanna Dr. Y. A. Lad Dr. Snehal Mishra Dr. Shakti Ranjan Panigrahy Dr. M. R. Prajapati Dr. Ritambhara Singh	Farmer Producer Organizations and Commodity Markets	27.07.2020	28.07.2020
8	Dr. Y. A. Lad	National level webinar on ' <i>kharif pakona pak saraxan na pravartman prashno ane nirakaran</i> '	20.08.2020	20.08.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
9	Dr. C. R. Dudhagara Dr, Vishita Khanna Dr. Y. A. Lad Dr. Shakti Ranjan Panigrahy Dr. A. B. Mahera	Attended Ten Days Online Training on 'Research Methodology for Social Sciences'	01.09.2020	11.09.2020
10	Dr. Y. A. Lad Dr, Vishita Khanna	Webinar on 'Trade in F&V Products & Dairy Commodities'	15.09.2020	15.09.2020
11	Dr. Y. A. Lad Dr, Vishita Khanna	Webinar on Market Dynamics in Poultry Sector: Perspectives and Challenges	17.09.2020	18 .09.2020
12	Dr, Vishita Khanna Dr. Snehal Mishra Dr. Shakti Ranjan Panigrahy Dr. M. R. Prajapati Dr. Ritambhara Singh	Webinar on 'International Trade in Agricultural Commodities'	21.09.2020	23.09.2020
13	Dr. Shakti Ranjan Panigrahy	Attended a webinar on 'Farm Bills 2020: Understanding the Implications' delivered by Prof. Ramesh Chand, member NITI Aayog, Government of India by NAHEP (ICAR)- CAAST, IARI	26.09.2020	26.09.2020
14	Dr. Y. A. Lad	Webinar on ' <i>Kapas na pak ma pak sarkshan</i> '	27.10. 2020	27.10. 2020
15	Dr. Y. A. Lad Dr, Vishita Khanna	Online Seminar on Protected cultivation for enhancing resource use efficiency and productivity of horticultural crops	22 .12.2020	22 .12.2020
16	Dr, Vishita Khanna	Webinar on 'Data Science for Agriculture'	12.01.2020	12.01.2020
17	Dr. C. R. Dudhagara Dr, Vishita Khanna Dr. Y. A. Lad	Attended Five Days Online Training on 'Value-Addition in Milk, Fruits & Vegetables: A Success Mantra for Agripreneurs'	18.01.2020	22.01.2020
18	Dr. D. R. Vahoniya	Workshop cum Training on 'Remote sensing, Data Science and Agro-Block chain for Market Intelligence'	31.01.2020	2.02.2020
19	Dr. Y. A. Lad	Webinar on Startup Opportunities in Indian Fishery Sector	10.03.2020	10.03.2020

(7) FACULTY OF AGRIL ENGINEERING AND TECHNOLOGY

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
1	Er. Kamlesh Jethva Dr. Navneet Kumar	A webinar Series on 'Innovative Agro Food Processing Technologies for Entrepreneurship Development' organized by RKVY RAFTAAR-Agri Business Incubator, AAU, Anand	30.05.2020	04.06.2020
2	Dr. Navneet Kumar	National webinar on 'Food protection – science and strategies' organized by the Association of Food Scientists and Technologists (India), Mysore	31.05.2020	31.05.2020
3	Er. Kamlesh Jethva	National webinar on 'Modeling and Simulation using Solidworks for Food and Agriculture Related Problems' jointly organized by the College of FPT&BE, AAU, Anand and Khodiyar, CAD Centre Pvt. Ltd., VV Nagar	09.06.2020	09.06.2020
4	Er. A. N. Kunapara	National Webinar on 'Post COVID-19 Agribusiness: Challenges and Opportunities' organized by Junagadh Agricultural University	13.06.2020	14.06.2020
5	Er. Kamlesh Jethva	National webinar on 'Food Processing: Prospects and Opportunities' organized by the Department of PFE, College of Technology and Engineering, MPUAT, Udaipur	26.06.2020	26.06.2020
6	Dr. Navneet Kumar	Webinar on 'Sustainable food waste utilization and management' organized by <i>Universiti Teknologi Malaysia</i>	28.07.2020	28.07.2020
7	Er. Kamlesh Jethva	Two Week National e-Training on 'Indian Agricultural Education System and Entrepreneurship Scope in 21 st Century' organized by the National Agricultural Higher Education Project (NAHEP), Dr. PDKV, Akola.	05.08.2020	14.08.2020
8	Er. A. N. Kunapara	Webinar on 'Understanding What and how publishing ethics' by Springer nature	14.10.2020	14.10.2020

(8) FACULTY OF HORTICULTURE

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
1.	Dr. R. R. Gajera	Two days' workshop on Hi-Tech Horticulture organized by the Society for Advancement in Agriculture, Horticulture and allied Sectors (SAAHAS)	16.05.2020	17.05.2020
2.	Dr. A. H. Barad Dr. H. N. Prajapati	Five days training on Pesticide Application Techniques and Safety Measures organized by NIPHM, Rajendranagar, Hyderabad	01.06.2020	05.06.2020
3.	Mr. U. C. Chaudhari	One day Webinar on Status and Scope of Vegetable Transplanter in Developing Countries organized by K. K. Wagh College of Agricultural Engineering & Technology, Nashik	19.06.2020	19.06.2020
4	Dr. B. N. Satodiya	Two days' workshop on Quality production of pomegranate in arid region during COVID-19 organized by AICRP on Arid Zone Fruits, ARS, Director of Research, SKRAU, Bikaner, Rajasthan	02.07.2020	03.07.2020
5	Dr. D. R. Pardava	One day Webinar on Advances in Disease and Pest Management for Sustainable Banana Industry organized by the Assam Agricultural University, Jorhat, Assam	04.07.2020	04.07.2020
6	Dr. A. V. Kotecha Dr. H.N. Prajapati Dr. Prity Kumari	Two days' Workshop cum training on Farmer Producer organizations and commodity market organized by ICAR, New Delhi and NAHEP-CASST	07.07.2020	08.07.2020
7	Dr. Prity Kumari	Ten days FDP on Artificial Intelligence (AI), Machine Learning, Deep Learning & Its Applications by Eduxlabs in association with IIT Roorkee.	20.07.2020	30.07.2020
8	Dr. C. H. Raval	One day Webinar on Enhancing castor production : Genetic & technological intervention organized by SDAU, S.K.Nagar	23.07.2020	23.07.2020
9	Dr. A. H. Barad Dr. Prity Kumari	Two days' Workshop cum training on Agricultural Market Reforms and Market Intelligence organized by the ICAR, New Delhi and NAHEP-CAAST, AAU, Anand	27.07.2020	28.07.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
10	Dr. C. H. Raval	One day Webinar on Recent trends in seed spices production organized by SDAU, S.K.Nagar	04.08.2020	04.08.2020
11	Dr. A. H. Barad Dr. H. N. Prajapati Dr. B. L. Dudhat Dr. C. H. Raval	One day Webinar on <i>Kharif pakoma pak sarkshanna pravartman prashno ane nirakaran</i> organized by PPAG, Gujarat and AAU, Anand	20.08.2020	20.08.2020
12	Dr. A. V. Kotecha	Three days' workshop on Advance in moringa farming– a way forward to trending entrepreneurship organized by the Horticultural College and research institute, Periyakulam (TN)	25.08.2020	28.08.2020
13	Dr. A. H. Barad Dr. H. N. Prajapati Dr. C. H. Raval	One day Webinar on Recent trends in Horticultural entomology organized by College of Horticulture, Jagudan, SDAU, Dantiwada	27.08.2020	27.08.2020
14	Dr. R. R. Gajera Dr. A. B. Parmar	Five days training on 'CAD for Landscaping' organized by the Dept. of floriculture and Landscape Architecture, College of Horticulture, Bagalkot.	31.08.2020	09.09.2020
15	Dr. R. R. Gajera Dr. A. H. Barad Dr. A. B. Parmar Dr. H. N. Prajapati	One day Webinar on Biotechnological Approaches for Crop improvement organized by BACA, Alumni, AAU, Anand	10.09.2020	10.09.2020
16	Dr. A. H. Barad Dr. H. N. Prajapati Dr. C. H. Raval	One day Webinar on <i>Kapasna pakma pak sanrakshan</i> organized by the PPAG, Gujarat and AAU, Anand	16.09.2020	16.09.2020
17	Dr. R.R. Gajera Dr. A. B. Parmar	Webinar Series on 'Nutrition and health – Eat right, Bite by bite' organized by RKVY-RAFTAAR Agri-Business Incubator, College of Food processing technology and Bio energy, AAU, Anand	21.09.2020	25.09.2020
18	Dr. D. R. Pardava Dr. A. V. Kotecha	One day Webinar on Underutilized Fruits: converting waste land in to goldmine organized by College of Agriculture, NAU, Bharuch	30.09.2020	30.09.2020
19	Dr. B. N. Satodiya Dr. R. R. Gajera Dr. A. H. Barad Dr. B. L. Dudhat Dr. A. B. Parmar Dr. Prity Kumari Dr. H.N. Prajapati Mr. U. C. Chaudhari	One day webinar on <i>Shiyalu shakbhajina pakoma pak sanrakshan</i> organized by the PPAG, Gujarat and AAU, Anand	06.10.2020	06.10.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
20.	Dr. A. B. Dudhat	One day Webinar on Regulatory environment for safe use of Agrochemicals in India & 'Underutilized foods for enhancement of food and nutritional security organized by NAHEP-CAAST NAU, Navsari	07.10.2020	07.10.2020
21	Dr. B. L. Dudhat Dr. A. B. Parmar	One day Webinar on Market Intelligence and Export Potential in Horticulture Sector organized by the Department of Social Science, College of Horticulture, SDAU, Jagudan.	14.10.2020	14.10.2020
22	Dr. D. R. Pardava	One day Webinar on Future Strategies for Multiplication of Potato organized by the University of Horticulture Science, Bagalkot and International Potato Centre	15.10.2020	15.10.2020
23	Dr. A. H. Barad Dr. H. N. Prajapati Dr. C. H. Raval Mr. U. C. Chaudhri	One day Webinar on <i>Sajeev khetima pak sanrakshan</i> organized by PPAG, Gujarat and AAU, Anand	27.10.2020	27.10.2020
24	Dr. A. H. Barad Dr. H.N. Prajapati Dr. C. H. Raval Mr. U. C. Chaudhari	One day Webinar on <i>Chanadnni Aadhunik Kheti</i> organized by the NAHEP-CAAST AAU, Anand & ChandanVikas Association (India)	02.11.2020	02.11.2020
25	Dr. B. L. Dudhat	One day Webinar on Cost Effective and Innovative Green Energy Initiatives for Futuristic Agriculture organized by the NAHEP-CAAST AAU, Anand&CAET, AAU ,Godhra	11.11.2020	11.11.2020
26	Dr. A. B. Parmar	One day Webinar on <i>Jivant Jamin-Swasth Jamin'</i> organized by the ICAR, New Delhi and NAHEP-CAAST AAU, Anand&Indian society of soil science Anand chapter	05.12.2020	05.12.2020
27	Dr. Prity Kumari	Five days' Workshop cum training on accounting for climate risk for crop yield modeling organized by the Department of Agricultural Meteorology, BACA and NAHEP.CAAST AAU, Anand	07.12.2020	11.12.2020
28	Dr. A. H. Barad Dr. H. N. Prajapati	One day Webinar on Advance in micro- irrigation and fertigation for improving water use efficiency and crop productivity organized by the College of Agriculture, Vaso, AAU, Anand& NHAEP-CASST, AAU, Anand	18.12.2020	18.12.2020

Sr. No.	Name of Teacher/ Scientist	Participated in	Duration	
			From	To
29	Dr. N. I. Shah Dr. B. N. Satodiya Dr. A. H. Barad Dr. H. N. Prajapati	One day Webinar on Protected cultivation for enhancing resource use efficiency and productivity of horticultural crops organized by the College of Agriculture, Vaso, AAU, Anand & NAHEP-CASST, AAU, Ananad	22.12.2020	22.12.2020
30.	Dr. R. R. Gajera Dr. A. V. Kotecha Dr. A. H. Barad Dr. A. B. Parmar Dr. D. R. Pardava Dr. H. N. Prajapati	One day Webinar on Underutilized horticultural crops organized by College of Horticulture, AAU & NAHEP-CAAST, AAU, Anand	05.01.2021	05.01.2021
31	Dr. Prity Kumari Dr. R. R. Gajera	One day Webinar on Data Science for Agriculture under project named 'Establishing center for Agricultural market Intelligence' organized by the ICAR, New Delhi and NAHEP-CAAST AAU, Anand	12.01.2021	12.01.2021
32	Dr. B. N. Satodiya Dr. A. B. Parmar	Two days Webinar on 'Recent Advances in mango production' organized by the College of Horticulture, Bidar, University of Horticultural Sciences, Bagalkot, Karnataka	15.01.2021	16.01.2021
33	Dr. B. N. Satodiya Dr. R. R. Gajera Dr. A. H. Barad Dr. B. L. Dudhat Dr. Prity Kumari Dr. H. N. Prajapati	One day Webinar on Co-operative Marketing in Gujarat organized by the College of Horticulture, AAU & NAHEP-CAAST, AAU	30.01.2021	30.01.2021
34	Dr. A. V. Kotecha Dr. B. L. Dudhat	One day Webinar on Artificial intelligence in agriculture organized by NAHEP-CAAST AAU, Anand	02.02.2021	02.02.2021
35	Dr. A. B. Parmar	Conference on 'Biological tools for sustainable environment organized by the Department of Biosciences, Veer Narmad South Gujarat University, Surat.	27.03.2021	27.03.2021

Appendix 8

NAME & DETAILS OF THE DIGNITARIES VISITED

Sr. No.	Name	Date of visit
1	Raju Shah Chairman, The Institute of Indian Foundryman, Vadodara Chapter	02-07-2020
2	Kanjibhai Patel I/C Banas BIOCNG Plant Banas Dairy, Palanpur	08-10-2020
3	Dr. Chetan Patel, Assistant Director of Agriculture, Biofertilizer Lab., Gandhinagar	09-10-2020
4	Dr. Shrihari Hasabnis, I/C Biological Nitrogen Fixation Scheme, College of Agriculture, Pune Dr. Vinay Supe, Associate Director of Research, Regional Fruit Research Station, Ganeshkhind, Pune	10-12-2020
5	Acharya P. P. Sidhdheswar Swamiji, Chairman, KVK, Kolhapur	21-12-2020
6	Smt. Somita Biswas, Joint Secretary (Mechanization and Technology), Department of Agriculture, Ministry of Agriculture and Farmers Welfare, Govt. of India, New Delhi	25-02-2021 to 26-02-2021
7	P. M. Meva, Chief Manager (Marketing), IIFCO, Kalol	03-03-2021
8	Dr. Shrichand Jat ATMA, Agril. Dept., Harda (M.P.) with group of farmers of Harda district	08-03-2021

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