PROCEEDING OF THE ELEVENTH MEETING OF COMBINED JOINT AGRICULTURAL RESEARCH COUNCIL OF SAUs - 2014-15

ORGANIZED BY

ANAND AGRICULTURAL UNIVERSITY

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DIRECTORATE OF RESEARCH

ANAND AGRICULTURAL UNIVERSITY

ANAND – 388 110

ELEVENTH COMBINED JOINT AGRESCO MEETING

PROCEEDING OF THE ELEVENTH COMBINED JOINT AGRESCO MEETING OF STATE AGRICULTURAL UNIVERSITIES OF GUJARAT HELD AT ANAND AGRICULTURAL UNIVERSITY, ANAND DURING 7-9 APRIL, 2015

The Eleventh Combined Joint Meeting of Agricultural Research Council (AGRESCO-2015) of SAUs of Gujarat was held at Anand Agricultural University, Anand during April 7-9, 2015. Dr. K. B. Kathiria, Director of Research, AAU, Anand welcomed the dignitaries, invited guests, conveners of various sub-committee and scientists. In his welcome speech, he highlighted the research activities carried out by different AGRESCOsub-committee and way of recommendations prepared for farming as well as scientific community. Dr. N. C. Patel, Hon'ble Vice Chancellor of AAU, Anand welcomed the dignitariesby offering the rose flowers a symbol of love and affection. The Combined Joint AGRESCO meeting of SAUs of Gujarat was inaugurated by lighting the lamp by Hon'ble Minister of Agriculture Shri Babubhai Bokhiriya and other dignitaries. Then Hon'ble Minister of Agriculture was felicitated by Dr. N. C. Patel, Hon'ble Vice chancellor of AAU, Anand. During the auspicious occasion, Shri Babubhai Bokhiriya launched the revamped AAU web site as well as mineral mixture developed by the scientists of Anand Agricultural University. Two informative publications in vernacular language *viz; Aaushadhiy Vanaspatio*: Olakh and Upyog (Medicinal plants: identification and use) and *Khedutopyogi Bhalamano* 2004 to 2014 (Recommendations for farming community 2004 to 2014) were also released by the Hon'ble minister. Moreover, exchange of MoU between Anand Agricultural University and Vasundhara Agribiotech, Rajkot for transfer of technology of tissue cultured date palm was also made in august presence of all the dignitaries.

The august gathering was addressed by Dr. A. J. Kachhiya Patel, Director of Animal Husbandry and Dr. B. R. Shah, Director of Horticulture, Govt. of Gujarat, Gandhinagar. Dr. C. J. Dangariya, Hon'ble Vice Chancellor of NAU, Navsari, Dr. A. A. Patel, Hon'ble Vice Chancellor of SDAU, Sardarkrushinagar, Dr. A. R. Pathak, Hon'ble Vice Chancellor of JAU, Junagadh, Prof. M. C. Varshneya, Hon'ble Vice Chancellor of Kamdhenu University, Gandhinagar and Dr. N. C. Patel, Hon'ble Vice Chancellor of AAU, Anand. Shri Jaswantsinh Solanki, President District Panchayat, Anand and Hon'ble Minister of Agriculture Shri Babubhai Bokhiriya also addressed the gathering.

Dr. A. J. Kachhia Patel, Director of Animal Husbandry emphasized the importance of animal diseases in the field of animal husbandry. He narrated the scheme of state government for free medical treatment to animals.

Dr. B. R. Shah, Director of Horticulture informed the house about the new technologies required to sustain the protective cultivation in Gujarat state. He urged the scientists to solve the problem of nematodes in crops grown in green house and poly-house.

Dr. C. J. Dangariya, Hon'ble Vice Chancellor of NAU, Navsari explained that knowledge based farming system instead of input based farming system is advisable. He also stressed the importance of conservation of natural resources in sustainable agriculture. He also stressed upon research on market intelligence for better price to farmers.

Dr. A. A. Patel, Hon'ble Vice Chancellor of SDAU, Sardarkrushinagar expressed his sincere thanks to the Government of Gujarat for sanctioning the various posts in SAUs of Gujarat. He also suggested to sign the MoU among the SAUs of Gujarat state for exploring the ideas and thoughts.

Dr. A. R. Pathak, Hon'ble Vice Chancellor of JAU, Junagadh expressed his views about the research work carried out by the scientists. He stressed the importance of farming system approach and to work in coordinated manner rather to work in isolated condition. Moreover, on behalf of SAUs of Gujarat, he expressed thank to Shri Babubhai Bokhiriya for his sincere efforts for giving the permission to fill up the vacant posts in the agricultural universities.

Prof. M. C. Varshneya, Hon'ble Vice Chancellor, Kamdhenu University, Gandhinagar highlighted the progress made in newly established Kamdhenu University and expressed thank to Govt. of Gujarat for giving necessary sanction to fill up the various posts.

Dr. N. C. Patel, Hon'ble Vice Chancellor of AAU, Anand congratulated all the scientists who have contributed recommendations for farming community as well as entrepreneurs. He emphasized on target oriented research work and stressed the importance of molecular marker assisted biotechnological work for the development of crop varieties.

Shri Jasubha Solanki has stressed the importance of quality seeds in agriculture production. He emphasized to produce more amount of certified seeds by SAUs so that farmers can not rely on seeds of private organizations. In this context, State Agricultural Universities are producing certified as well as labeled seeds of different mandatory crops from the available land resources.

Gujarat State Seed Corporation, GUJCOMASOL and other government organization are producing certified seeds to fulfill the state requirement.

Shri Babubhai Bokhiriya, Hon'ble minister of Agriculture and co-operation, Animal husbandry, Fisheries and cow-breeding expressed his views about the development of Agriculture in the state. He emphasized on working as per the need of the farmers. In addition to above, Hon'ble minister explained the activities to be carried out during the Krishi Mahotsav-2015.

Dr. M. K. Jhala, Associate Director of Research (Animal science), AAU, Anand proposed the vote of thanks at the end of inaugural session.

PROCEEDING OF ELEVENTH COMBINED JOINT AGRESCO MEETING OF CROP IMPROVEMENT OF STATE AGRICULTURAL UNIVERSITIES OF GUJARAT HELD AT AAU, ANAND DURING 7-9th APRIL, 2015

11.1 CROP IMROVEMENT:

Chairman	**:**	Dr. A. R. Pathak, Hon. Vice Chancellor, JAU, Junagadh
Co-Chairman	**:**	Dr. K. B. Kathiria, Director of Research, AAU, Anand Dr. S. Acharya, Associate Director of Research, SDAU, Sardarkrushinagar
Rapporteurs:	**:**	Dr. K. L. Dobaria / Dr. M. S. Pithia, JAU, Junagadh Dr. Akarsh Parihar, AAU, Anand

The details of recommendations and new technical programmes presented, discussed and approved during the session are as under:

Universities	Varietal proposals/Recommendations				New Technical Programmes	
	Farming Community		Scientific Community			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU	06	05	-	-	05	05
JAU	09	08	-	-	-	-
NAU	-	-	-	-	04	02
SDAU	03	02	01	-	05	05
Total	**18**	**15**	**01**	**-**	**14**	**12**

At the outset of this session, Dr. R. S. Fougat, Convener, CISC, AAU, welcomed all the scientists in the 11th Combined Joint AGRESCO meeting and requested the Chairman to conduct the session. Dr. A. R. Pathak, Hon'ble Vice-Chancellor, JAU and the Chairman of 11th Combined Joint AGRESCO meeting in his introductory remarks sensitized the house by emphasizing on the following points to be taken care by the scientists while formulating a variety development programme and release of a variety.

1. To gain the faith of farmers and traders in public sector varieties, farmer and market oriented breeding programmes should be initiated. The concerned traders / stake holders and millers may be invited before releasing a variety at the respective research station of the university and their consent should be taken regarding consumers' preference for a variety. He cited few examples where very popular varieties were released by taking prior opinion of the farmers and allied stake holders such as GR-11 in rice and Lok-1 in wheat.

2. The varieties / hybrids released by the private sector companies should also be tested by SAU's along with university generated material to have proper evaluation and good comparison and popularize university variety among farmers. The modalities for such testing may be set by Director of Research of respective universities.

3. The farmer's innovative practices should be evaluated at university centers. In order to popularize the variety, more number of FLDs (at least 100) should be taken at farmers' field. The farmers participatory approach in rice, maize and horse gram, is an example of such efforts.

4. Sharing of the breeding material must be done among the SAUs of the state.

5. In south Gujarat, sapota and mango are harvested together because of which sapota does not get remunerative price. Simply by fertilizer management, some farmers have been successful in manipulating flowering and thereby, harvesting period of sapota. Such farmers' practices should be noticed and must be adopted by SAUs if found good.

6. There is no harm in testing good farmers' material even directly under LSVTs at SAUs farms.

After briefings of the chairman, the session was followed by presentation of the recommendations for farming community. Dr. R. S. Fougat presented the report of AAU, Anand.

11.1.1 RECOMMENDATIONS

A. FARMING COMMUNITY

ANAND AGRICULTURAL UNIVERSITY	
The proposals were presented by Dr. R. S. Fougat, Convener, AAU, Anand	
11.1.1.1	**Main Rice Research Station, Aau, Nawagam**
	Proposal for release of a promising Rice culture IET – 22100 (Mahisagar)
	The proposed strain was tested in 23 trials conducted over 5 years in 6 locations of Middle and South Gujarat. It has yielded 5000-5500 kg/ha grain yield which is 29.8 and 6.6% higher yield over the checks GR-4 and GR-12, respectively. Further in per day productivity the culture revealed respectively 29.4 & 11.0% superiority over the check varieties GR-4 and GR-12. It possesses more no. of EBT (Effective Bearing Tillers), 8-11; no. of filled grains /panicle, 350-375 and Panicles/Sq. Mt, 289-299, than the check varieties. In quality characteristics, this culture has shown more hulling recovery (HR) i.e. 81.9%, Milling percentage, 71.08% and Head Rice Recovery (HRR), 62.4% than its check varieties. The proposed strain showed resistance against Leaf Blast (LB). Considering yield attributing characteristics and quality parameters, it is recommended for release for cultivation in rice growing areas of the Gujarat State with following suggestions. **Suggestions:** 1.Tables in the proposal should be designated by the numbers and not as statements 2. The range should be checked for grain yield. 3. Stability index should be calculated considering common entries / years as the yield fluctuation is more. 4. The Gurjari should be excluded where as GR 4 and GR 12 should only be used as checks. **(Action: Res. Sci. (Rice), MRRS, AAU, Nawagam)**
11.1.1.2	**Medicinal & Aromatic Plants Res. Stat., Aau, Anand**
	Proposal for release of Ashwagandha Variety **GUJARAT ANAND ASHWAGANDHA – 1 (GAA-1)**
	The proposed variety is tall (mean height 60 cm) and have dark green foliage with Spad value of 47.50 of Chlorophyll content. The branches possess profusely stellate tomentose. The roots are dark brown in colour and comparatively thick, long and having more girth and root cortex is white in colour and thick. The proposed genotype has yielded 659 kg/ha dry root yield, which is 43.89 and 39.62 % higher than the national check RVA 100 and JA 20 (Three years mean), respectively under state trials. Under coordinated trials it has produced 18.48, 39.96 and 21.40 % higher dry root yield than the RVA 100, JA 20 and JA 134, (Checks), respectively. During five years of experimentation the proposed genotype AWS 1 has recorded 652 kg/ha dry root yield which is 32.79 and 39.91 % higher over RVA 100 and JA 20 respectively. Therefore, it is recommended for release in middle Gujarat. **Suggestions:** **1.** Ashwagandha being a self pollinated crop, the isolation distance should be written accordingly. **2.** Check statistical analysis for disease / pest data. **3.** Photograph must be as per the actual samples **4.** The data of with anoloide content for year 2007-08 should be excluded. **5.** The season rabi should be written instead of kharif / rabi.

	(Action: Res. Sci., M & AP Research Station, AAU, Anand)
11.1.1.3	**Medicinal & Aromatic Plants Res. Stat., Aau, Anand**
	Proposal for release of *Aloe vera* Variety **GUJARAT ANAND KUVARPATHU – 1 (GAK-1)**
	The proposed genotype was procured from DMAPR, Boriavi with IC No. 285626 during 2009 and was maintained and improved through Clonal selection. The proposed culture possesses more number of leaves (13.45), leaf length (53.78 cm), leaf width (8.48 cm) and more thickness (2.25 cm) and thereby giving higher leaf yield.GAK 1 yielded 114.13 t/ha fresh leaf yield which is 44.72 and 22.27% higher than Check 1 (Anand local) and check 2 (Kutch Selection) respectively. This genotype is also found superior for mucilage yield and dry exude content. It has yielded 66.25 t/ha mucilage which is 52.09 and 30.88 % higher than Check 1 and check 2 respectively. In want of one more year data, the proposal was deferred and considered as pre-release with following suggestions. **Suggestions:** **1.** The method used in development of this variety should be mentioned as "introduction" and not as "clonal selection". **2.** Proposal must be considered as pre-release and trial for one more year should be conducted at Anand, Nenpur / sonsoli **3.** Table No-3 may be deleted and data of 'Aloin-A' content should be included as point number 9 in description of proposed variety. **(Action: Res. Sci., M & AP Research Station, AAU, Anand)**
11.1.1.4	**Regional Cotton Research Station, Aau, Viramgam**
	Proposal for release of Desi Cotton Variety **GUJARAT ANAND DESI COTTON – 2 (GADC-2)**
	The proposed variety Gujarat Anand Desi Cotton-2 was tested in rainfed conditions at 13 different locations and yields higher seed cotton than check varieties. The average seed cotton yield was 1640 kg/ha, which was an advantage of 39.9, 10.5, 5.8 and 2.8 per cent over V 797, G Cot 13, G Cot 21 and ADC 1, respectively. It gave 777 kg/ha lint yield which is 50.6, 17.7, 8.6 and 8.7 per cent higher than check varieties V 797, G Cot 13, G cot 21 and ADC 1, respectively. The fibre qualities i.e. 2.5 % Span length of 24.16 mm and fibre strength of 19.26 g/tex of Gvhv 655 reflects to higher market value than cultivated desi cotton varieties whereas, G Cot 21 recorded 22.45 mm SL and 17.24 g/tex strength. It shows superiority in fibre quality over cultivar G Cot 21.As far as Ginning out turn is concerned, Gvhv 655 had recorded average GOT of 45.4 %, whereas, G Cot 21 recorded 44.2 %. Two checks G Cot 21 and ADC 1 had produced average coarse fibre but Gvhv 655 had average/medium micronaire value of 4.88. Therefore, the proposed variety is recommended for desi cotton growing areas of north-west agro-climatic zone V and Bhal & Coastal Zone VIII. The variety is accepted for the release with following suggestions. **Suggestions:** **1.** It should be mentioned that AICRP does not conduct the trial on desi cotton; hence it was not evaluated under AICRP. **(Action: Asso. Res. Sci., RCRS, AAU, Viramgam)**
11.1.1.5	**Pulses Research Station, Aau, Vadodara**
	Proposal for release of Green Gram Variety **GUJARAT ANAND MUNGBEAN – 5 (GAM-5)**
	The genotype VMS 6 was developed by pure line selection from germplasm maintained at Vadodara. This genotype yielded 1890 kg/ha grain yield which is 34.84 and 16.19 per cent higher over the check varieties GM 4 and Meha,

	respectively, at Vadodara under three testing. At Navsari, this genotype produced 2382 kg/ha grain yield which is significantly higher to the tune of 84.08 and 25.10 per cent during summer 2014 over both the checks GM-4 and Meha, respectively. Moreover, the entry poised at par with the check varieties GM-4 and Meha at Junagadh and Sardarkrushinagar during 2014.It has average yield under Middle Gujarat condition to the tune of 1890 kg/ha. The genotype has bold seed size with more seeds per pod, attractive shiny grain appearance and less stony seeds. The proposed genotype had very low disease intensity MYMV (4.1%) as compared to the check GM 4 (66.8 %).The population of whitefly (0.44 per leaf) and Pod borer damage (7.77%) was lower as compared to the check GM 4. It is recommended for release in Gujarat for summer cultivation with following suggestions. **Suggestions:** **1.** Add name of contributing scientists from other centers. **2.** Selection pressure of YVM should be maintained in future so as to sustain the resistance. **3.** Proposal should be recasted by considering data of all the centres and the variety may be released for whole Gujarat. **(Action: Res. Sci., Pulses Res. Station, AAU, Vadodara)**
11.1.1.6	**Castor &Seed Spices Research Station, Aau, Sanand**
	Proposal for release of Dill Seed Variety **GUJARAT ANAND DILL SEED – 1 (GAD-1)**
	The genotype yielded 1561 kg/ha seed yield, which is 15.53 % higher over check variety GD-3 under rainfed condition whereas it yielded 1885 kg/ha seed yield which is 12.02 % higher over check variety GD-3 under irrigated condition. It is 10 days early in maturity (av. 133 days) as compared to GD-3 (143 days). The seeds are less flattened and medium in size. The genotype has more number of umbels (12.1-51.4), more number of umbellets/umbels (21.5-50.1), number of seeds/umbellets (22.0-32.7) and shorter plant height (73-127cm) compared to check variety. Looking to above characteristics, it is recommended for release in north and middle Gujarat with following suggestions. **Suggestions:** **1.** The objective should be reframed mentioning yield. The data for disease / pest must be added in the proposal. **(Action: Asstt. Res. Sci., Castor & Seed Spices Res. Station, AAU, Sanand)**
JUNAGADH AGRICULTURAL UNIVERSITY	
The proposals were presented by Dr. L. K. Dhaduk, Convener, JAU, Junagadh.	
11.1.1.7	**Pulses Research Station, JAU, Junagadh**
	Proposal for release of a promising chickpea variety **Gujarat Junagadh Gram 6 (GJG 1003)**
	This variety has produced (1867 kg/ha) 13.6, 21.9 and 5.2 per cent higher seed yield over check varieties Gujarat Gram 1 (1643 kg/ha), Gujarat Gram 2 (1531 kg/ha) and Gujarat Junagadh Gram 3 (1775 kg/ha), respectively. Seeds of this variety are of medium size and dark brown in colour with 19.9 per cent protein. This variety is resistant to wilt (8.7 % in wilt sick plot) and stunt (5.0 %) diseases. It is recommended for release in Gujarat under rainfed condition with following suggestion. **Suggestion:** **1.** Sick plot condition should be mentioned in wilt data.

	(Action: Res. Sci. (Chickpea), Pulses Research Station, JAU, Junagadh)
11.1.1.8	**Vegetable Research Station, JAU, Junagadh**
	Proposal for release of a promising brinjal variety **Gujarat Junagadh Brinjal 4 (JBL-08-8)**
	This variety had recorded a mean fruit yield of 396.03 q/ha which was 30.81 and 25.83 per cent higher over check varieties GOB-1 (302.75 q/ha) and GBL-1 (314.73q/ha), respectively. The little leaf disease (5.08 %) was less as compared to check variety GOB-1 (6.15%). Jassid (3.04/leaf), whitefly (4.70/leaf) and fruit borer (11.05 %) were less as compared to check variety GOB-1. The protein (1.51 %) and total soluble sugar (3.36 %) were also more than check varieties. The fruits of GJB-4 are medium in size with long shape and light purple colour with good shining.It is recommended for release in Gujarat with following suggestion. **Suggestion:** **1.**Name of the variety should be kept as GJLB-4 (Gujarat Junagadh Long Brinjal-4) **(Action: Res. Sci. (G & O), Vegetable Research Station, JAU, Junagadh)**
11.1.1.9	**Vegetable Research Station, JAU, Junagadh**
	Proposal for release of a promising brinjal hybrid **Gujarat Junagadh Brinjal Hybrid 4 (JBH-07-1)**
	This hybrid gave a mean fruit yield of 428.01 q/ha which was 14.11 and 25.68 per cent higher over hybrid checks GBH-2 (375.08 q/ha) and ABH-1 (340.57 q/ha), respectively. It has recorded 6.63 and 7.66 per cent higher fruit yield than the private hybrids Navina (VNR Seeds) and ARBH-201 (Ankur Seeds), respectively. The little leaf disease (4.42 %) was less as compared to check variety GBH-2 (4.98 %). The damage due to jassid (2.84/leaf), whitefly (3.93/leaf) and fruit borer (4.93 %) were less as compared to hybrid checks. The protein (1.48 %) and total soluble sugar (3.33 %) were more as compared to hybrid checks. The fruits of this hybrid are medium in size with oblong shape and pink purple colour with good shine. It is recommended for release in Saurashtra and Middle Gujarat. **Suggestion:** Accepted. Name of the variety should be kept as GJBH-4 (Gujarat Junagadh Brinjal Hybrid-4). **(Action: Res. Sci. (G & O), Vegetable Research Station, JAU, Junagadh)**
11.1.1.10	**Vegetable Research Station, JAU, Junagadh**
	Proposal for release of a promising sponge gourd variety **Gujarat Junagadh Sponge Gourd 2 (JSG-05-04)**
	This variety had recorded a mean fruit yield of 114.04 q/ha, which was 18.05 and 19.18 per cent higher than state check variety GSG-1 (96.60 q/ha) and National check variety Pusa Chikni (95.69 q/ha). Further, mosaic (18.25 %), downy mildew score (2.35), fruit fly damage (12.86 %) and leaf miner larvae (5.61/leaf) were less as compared to check varieties. The pulp/skin ratio (12.393), total soluble solids (6.25 %), total soluble sugar (1.67 %), protein (0.218 %) and chlorophyll total (1.53 mg/g) were more as compared to check varieties. The fruits of GJSG-2 are long in size, green colour with good shine. It is recommended for release in Gujarat with following suggestions. **Suggestions:** 1. The character male / female ratio should be deleted. 2. Correct S,Em.± in Table-1 for the year 2009-10. **(Action: Res. Sci. (G & O), Vegetable Research Station, JAU, Junagadh)**
11.1.1.11	**Vegetable Research Station, JAU, Junagadh**
	Proposal for release of a promising onion variety **Gujarat Junagadh Red Onion 11 (JDRO-07-13)**

	This variety had recorded a mean bulb yield of 323.55 q/ha which was 21.57, 18.71 and 15.41 per cent higher over check varieties AGFL-Red (266.15 q/ha), PilliPatti (272.55 q/ha) and Talaja-Red (280.34 q/ha), respectively. The purple bloch (12.67 %) was less as compared to check varieties AGFL-Red (20.30 %), Pilli Patti (23.56 %) and Talaja-Red (24.28 %). Population of thrips (5.7/leaf) was found less as compared to check varieties. It was found less pungent (Pyruvic acid: 1.22 %) as compared to check varieties AGFL-Red and Talaja-Red. In this variety, 12.94 per cent total soluble solids were recorded. The bulbs of GJRO-11 are medium in size with flat globe shape and red in colour. It is recommended for release in Gujarat (except south Gujarat) with following suggestion. **Suggestion:** This variety should be tested for one more year at Navsari. **(Action: Res. Sci. (G & O), Vegetable Research Station, JAU, Junagadh)**
11.1.1.12	**Vegetable Research Station, JAU, Junagadh**
	Proposal for release of a promising onion variety **Gujarat Junagadh White Onion 2 (JWO-05-7)**
	This variety was deferred by the house with following suggestions. **Suggestions:** 1. The trial should be conducted for one more year. 2. The proposed variety should be compared with GAWO-2. 3. Industrial preference should be taken for dehydration. **(Action: Res. Sci. (G & O), Vegetable Research Station, JAU, Junagadh)**
11.1.1.13	**Vegetable Research Station, JAU, Junagadh**
	Proposal for release of a promising okra hybrid **Gujarat Junagadh Okra Hybrid 4 (JOH-08-19)**
	This hybrid recorded a mean fruit yield of 135.94 q/ha, which was 46.91 per cent higher over check variety Pusa Sawani (92.50 q/ha) while with hybrid check the GJOH-4 recorded 145.74 q/ha fruit yield which was 23.86 per cent higher than GJOH-3 (117.67q/ha). It also yielded 17.11, 28.04 and 30.69 per cent higher yield over one private check HOK-152 and two public sector checks Arka Anamika and Pusa Sawani, respectively. The yellow vain mosaic (36.71 %) was found less as compared to check variety Gujarat Okra Hybrid-2 (46.15 %). The jassid (5.26), thrips (4.79), whitefly (4.76) and fruit borer (4.66 %) damage were less than check varieties. The pods of this hybrid are medium dark green, tender, long and attractive. It is recommended for release in Gujarat with following suggestion. **Suggestion:** This hybrid should be given to KVK of south Gujarat to grow at farmers' field for popularization. **(Action: Res. Sci. (G & O), Vegetable Research Station, JAU, Junagadh)**
11.1.1.14	**Agricultural Research Station, JAU, Amreli**
	Proposal for release of a promising sesame variety **Gujarat Junagadh Til 5 (AT 231)**
	This variety recorded the seed yield of 1241 kg/ha which was 22.39 per cent higher than the check variety Gujarat Til 3 (1014 kg/ha). Oil yield of proposed variety was 22.22 per cent higher than Gujarat Til 3. Proposed variety matured in 91 days and contains 46.98 per cent oil in its seeds, which are white in colour and bolder in size. This variety was approved by the house for cultivation in summer season. **Suggestion:** **1.** The table 7, 8, 9 should be removed for submission of proposal to GSSSC. **(Action: Res. Sci. (Pl. Br.), Agril. Research Station, JAU, Amreli)**

11.1.1.15	**Pulses Research Station, JAU, Junagadh**
	Proposal for release of a promising pigeon pea variety **Gujarat Junagadh Pigeon pea 1 (GJP 0901) - area expansion.**
	This variety has produced (2115, 2045 & 1987 kg/ha) 38.78, 10.06 and 27.62 per cent higher seed yield over check varieties, BDN 2 (1524 kg/ha), ICPL 87119 (1858 kg/ha) and Vaishali (1557 kg/ha), respectively. This variety is medium late (176 days) in maturity. Gujarat Junagadh Pigeon pea 1 (GJP 1) is also found moderately resistant to wilt (13.89 %) and SMD (13.89 %) disease. The seeds of this variety are bold in size with white colour. This variety is recommended for Gujarat state. **(Action: Res. Sci. (Chickpea), Pulses Research Station, JAU, Junagadh)**
NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI	
There was no release proposal from Navsari.	
S. D. AGRICULTURAL UNIVERSITY, Sardarkrushinagar	
The proposals were presented by Dr. Y. Ravindra Babu, Convener, SDAU, Sardarkrushinagar	
11.1.1.16	**Centre of Excellence For Research On Wheat, S. D. Agricultural University, Vijapur, Dist. Mehsana**
	Proposal for release of wheat variety **GDW *(Aestivum)* 451(GW 451)**
	The variety GDW (*Aestivum)* 451 (GW 451) proposed for whole Gujarat under irrigated and timely sown conditions. The Proposed variety has attractive compact plant type with good tillers and gave 53. 92 q/ha grain yield which is 17.05, 9.12, 8.77 and 2.87 per cent higher than checks GW 496, GW 366, LOK 1 and GW 322 respectively. The variety showed resistant to black and brown rust with good grain quality for high iron (40 ppm) and zinc (28 ppm) content. The proposal was accepted with following suggestions. **Suggestions:** 1. The name of the variety should be as per norms of SAUs *i.e.*, GW-451 2. The Table-5 should be deleted from the proposal 3. Important yield contributing traits should be given in the proposal. **[Action: Research Scientist (Wheat), SDAU, Vijapur]**
11.1.1.17	**Centre of Excellence For Research On Pulses, S. D. Agricultural University, Sardarkrushinagar**
	Proposal for release of cowpea variety **GDC 6 (GC 521)**
	The proposal was deferred for want of one year more data and considered as pre-release with following suggestions. **Suggestions:** 1. The name of the variety should be GC-6 instead of GDC-6 and trial should be conducted for one more year at three locations. 2. The type of the data presented i.e. LSVT/SSVT should be given in the proper defined Performa. 3. Ancillary and disease and pest data should be incorporated. **[Action : Research Scientist (Pulses), SDAU, sardarkrushinagar]**
11.1.1.18	**Centre For Research On Seed Spices, S. D. Agricultural University, Jagudan**
	Proposal for release of ajwain variety **GDA 2 (JA-110)**
	The proposed variety recorded an average seed yield of 1134 kg/ha, which was 14.55 per cent higher than GA-1. The seeds of GDA-2 are bold and uniform in size with attractive color, hot pungency and fast aroma. The essential oil content in seed was 4.6 per cent and thymol in volatile oil was 30.84 per cent which are 6.98 and 10.98 per cent higher than GA-1, respectively. The proposal was accepted for ajwain growing areas of Gujarat. **Suggestions:** 1. The Table-1 should be modified by deleting data of trials average and state

	average as well. 2. The Table-4 should be deleted and situation / (incidence) of diseases and pests should be mentioned in text form. 3. The name of the variety should be GA 2 instead of GDA 2. **[Action: Research Scientist (Spices), SDAU, Jagudan]**
B. SCIENTIFIC COMMUNITY	
NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI	
Dr. M. R. Naik, Convener, Crop improvement Sub-Committee of NAU presented 5 scientific recommendations related to diseases and pests as approved in Plant Protection Sub-Committee of NAU for the information of the house.	
S. D. AGRICULTURAL UNIVERSITY, SARDARKRUSHINAGAR	
11.1.1.19	**CIL, S. D. Agricultural University, Sardarkrushinagar**
	Differential staining for easy, rapid and cost effective method for identification of high iron and zinc concentrations in wheat flour.
	Recommendation was not accepted as it was never presented and approved as new technical programme in any of the AGRESCO committee meeting of SDAU. **(Action: Assistant Research Scientist, CIL, SDAU, Sardarkrushinagar)**

11.1.2 NEW TECHNICAL PROGRAMME

Sr. No.	Title	Suggestions	Remarks
ANAND AGRICULTURAL UNIVERSITY, ANAND			
Genetics & Plant Breeding Department, BACA, AAU, Anand			
11.1.2.1	Morphological and molecular characterization of Soybean (*Glycine max* L. Merrill.) genotypes.	Approved with following suggestion/s 1. At least 30-40 genotypes should be tested in study. 2. Protein, oil and other quality parameters should be estimated. **(Action: Prof. & Head, Dept. of Genetics & Pl. Breeding, BACA, AAU, Anand)**	-
Seed Science & Technology Department, BACA, AAU, Anand			
11.1.2.2	Effect of accelerated aging on seed viability, vigour and oil quality of different genotypes of Soybean.	Approved with following suggestion/s 1. Variety GS-2 should be added. 2. Should be evaluated for seed borne pathogens. 3. Alpha-amylase activity should be recorded. **(Action: Prof. & Head, Dept. of Seed Sci. & Tech., BACA, AAU, Anand)**	-
11.1.2.3	Effect of seed pelleting and storage environment on seed viability and vigour in Onion	Approved **(Action: Prof. & Head, Dept. of Seed Sci. & Tech., BACA, AAU, Anand)**	-
Medicinal & Aromatic Plants Res. Station, AAU, Anand			
11.1.2.4	Collection, conservation and establishment of Charoli (*Buchanania lanzan* Spreng) genotypes at Anand	Approved **(Action: Res. Sci., M & AP Res. Station, AAU, Anand)**	-
Tribal Research-cum-Training Centre, AAU, Devgadhbaria			

11.1.2.5	Preliminary Evaluation Trial of Promising Local Germplasm of Urdbean	Approved with following suggestion/s 1. Seed colour, seed shape and protein content should be included as observation. **(Action: Unit Head & Assoc. Res. Sci., TRTC, AAU, DevgadhBaria)**	-
JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH			
There was no any new technical programme			
NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI			
Main Sorghum Research Station, NAU, Surat			
11.1.2.6	Large Scale varietal Trial on Grain Sorghum (under conserved moisture condition)	Deferred with following suggestion. 1. The already ongoing experiment on the same aspect should be reformed and the proposed experiment be incorporated as part of that experiment. **(Action: Res. Sci. (Sorghum), NAU, Surat**	-
11.1.2.7	Large Scale varietal Trial on Grain Sorghum (under protective irrigation)	Deferred with following suggestion. 1. The already ongoing experiment on the same aspect should be reformed and the proposed experiment be incorporated as part of that experiment. **(Action: Res. Sci. (Sorghum), NAU, Surat**	-
11.1.2.8	Preliminary Evaluation Trial on Sorghum (summer)	Approved with following suggestion 1. The word summer should be replaced by early summer in the title. **(Action: Res. Sci. (Sorghum), NAU, Surat**	-
11.1.2.9	Small Scale Varietal Trial on Grain Sorghum (summer)	Approved with following suggestion 1. The word summer should be replaced by early summer in the title. **(Action: Res. Sci. (Sorghum), NAU, Surat**	-
S. D. AGRICULTURAL UNIVERSITY, SARDARKRUSHINAGAR			
Cotton Research station, SDAU., Talod			
11.1.2.10	Testing and evaluation of new Bt cotton hybrids under North Gujarat condition at 60 cm X 45 cm spacing.	Approved with following suggestions. 1. Title should be changed as "To identify a genotype of new cotton hybrids under North Gujarat conditions at 60 cm X 45 cm spacing." 2. Incorporate word identify for evaluation in title. 3. Correct objective by writing identify in place of evaluate. 4. Add disease and pest reactions in	-

		objectives. **(Action: Res. Sci. (Cotton), SDAU., Talod**	
CIL, S. D. Agricultural University, Sardarkrushinagar			
11.1.2.11	Identification of putative target genes for Iron and Zinc concentrations in bread wheat.	Approved with following suggestions. 1. Genotypes with extreme value of iron and zinc should be included. 2. Take this as pot trial. **(Action: Assistant Research Scientist CIL, S.D.A.U., Sardarkrushinagar**	-
Department of Genetics and Plant Breeding, S.D.A.U., S. K. Nagar			
11.1.2.12	Identification of molecular markers for heat tolerance at flowering stage in pearl millet.	Approved 1.Use only inbreds and advanced breeding lines 2. Mention the name of molecular markers. **(Action: Professor & Head, Department of Genetics and Plant Breeding, S.D.A.U., S.K. Nagar)**	-
Department of Genetics and Plant Breeding, S.D.A.U., S. K. Nagar			
11.1.2.13	Tagging of wilt resistant gene(s) in castor (*Ricinus communis* L)	Approved **(Action: Professor & Head, Department of Genetics and Plant Breeding, S.D.A.U., S.K.Nagar)**	-
COBS., S.D.A.U., S. K. Nagar			
11.1.2.14	Molecular characterization of wilt resistance in cumin (*Cuminum cyminum* L.)	Approved with following suggestion. 1. Use GC-2 and GC-4 varieties in this study. **(Action: Asst. Professor, COBS., S.D.A.U., Sardarkrushinagar)**	

11.1.3. General Suggestions

1. The suggestions made at the time of sub-committee meeting of SDAU should be incorporated compulsorily in the research report to be presented at the Combined Joint AGRESCO meeting.
2. A meeting should be called by the Research scientists to decide the data / observation to be recorded by the scientists of the respective centers and the same report should be sent to the Director of Research of the concerned university.

11.2 CROP PRODUCTION AND NATURAL RESOURCE MANAGEMENT

Chairman	**:**	Dr. K. P. Patel, Principal and Dean (Agri.), B. A. College of Agriculture, AAU, Anand
Co-Chairman	**:**	Dr. M. K. Arvadia, Principal and Dean (Agri.), N. M. College of Agriculture, NAU, Navsari Dr. K. N. Akbari, ADR, JAU, Targhadia
Rapporteurs:	**:**	Dr. V. R. Bhatt, Professor and Head, Dept. of Agril. Chem & Soil Science, BACA, AAU, Anand Dr. A. U. Amin, Research Scientist, Centre of Excellence for Seed Spices, SDAU, Jagudan

SUMMARY

Universities	Recommendations				New Technical Programmes	
	Farming Community		Scientific Community			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU	25	24[a]	01	01	13	13
JAU	15	13[b]	01	01+02=03	08	08
NAU	07	07	08	08	25	22[c]
SDAU	13	13	01	01	10	10
TOTAL	60	57	11	13	56	53

Note : a. One to be Continue b. One Differed c. Three not approved

11.2.1 RECOMMENDATIONS

A. FARMING COMMUNITY

ANANAD AGRICULTURAL UNIVERSITY

No. 11.2.1.1

Effect of Pearl millet-Soybean row ratios on their productivity

The farmers of the middle Gujarat Agro-climatic zone-III are recommended to grow two rows of *kharif* pearl millet and soybean alternatively at 45 cm row spacing with RDF to each crop for securing higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર -૩ ના ખેડૂતોને ભલામણ કરવામાં આવે છે કે બે હાર બાજરી પછી બે હાર સોયાબીનનું ૪૫સે.મી ના અંતરે દરેકનું વારાફરતી વાવેતર કરવાથી વધુ ઉત્પાદન અને નફો મેળવી શકાય છે.

(Action: Professor and Head, Department of Agronomy, AAU, Anand)

No.11.2.1.2

Assessment of Natural Organic Liquid (NOL) and inorganic nutrient supply system on yield and quality of summer groundnut.

The farmers of the middle Gujarat Agro-climatic zone III growing summer groundnut are recommended to apply RDF (25-50-00 NPK kg/ha) along with application of FYM @10 t/ ha and seed treatment with AAU PGPR consortium* @ 5 ml / kg of seed for securing higher yield and net return.Application of NOL** was not found beneficial.

Note: *PGPR Consortium : [*Azotobcater choococcum* (ABA-1) + *Azospirillum lipoferum* (ASA-1) + *Bacillus coagulans* (PBA-16) + *Bacillus sp.*

** NOL: Cow dung + cow urine + jaggery + buttermilk + pulse flour + soil under Baniyaan tree

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૩માં ઉનાળુ મગફળીનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ઉનાળુ મગફળીનુ વધુ ઉત્પાદન અને નફો મેળવવા માટે ભલામણ કરેલ ખાતર (૨૫-૫૦-૦૦ નાફોપો કિ.ગ્રા/હેક્ટર) ની સાથે પ્રતિ હેક્ટર ૧૦ ટન છાણીયુ ખાતર આપવુ તેમજ ૧ કિ.ગ્રા બિયારણને ૫ મિ.લિ એએવુ પીજીપીઆર કોંસોર્ટીયમ*ની બીજ માવજત આપવી. કુદરતી પ્રવાહી ખાતર (NOL)** ની પાક ઉત્પાદન ઉપર ફાયદાકારક અસર જણાયેલ નથી.

નોંધ :* પીજીપીઆર કોંસોર્ટીયમ: એઝોટોબેક્ટર ક્રુકોકમ (એબીએ-૧) + એઝોસ્પીરીલમ લીપોફેરમ (એએસએ-૧) + બેસીલસ કોગુલંસ (પીબીએ-૧૬) + બેસીલસ સ્પી.

** કુદરતી પ્રવાહી ખાતર (NOL)**: ગોબર+ ગોમુત્ર+ ગોળ+ છાશ+ કઠોળ્ નો લોટ+ વડ નીચેની માટી

(Action: Professor and Head, Department of Agronomy, AAU, Anand)

N0.11.2.1.3

Response of *kharif* and *rabi* crops to urea phosphate foliar application in pearl millet-wheat cropping system

Farmers of the middle Gujarat Agro-Climatic zone – III following pearl millet-wheat crop sequence are recommended for foliar application of 2% DAP or Urea Phosphate (17:44:00) to only pearl millet at pre flowering and 15 days after first spray along with 75% RDF to both the crops (Pearl millet 60:30:00, Wheat 90: 45: 00 NPK kg/ha) for getting higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવા ઝોન-૩ના બાજરી-ઘઉં પાક પધ્ધતિ અપનાવતા ખેડૂતોને ફક્ત બાજરીના ઉભા પાકમાં ડી.એ.પી .અથવા યુરીયાફોસ્ફેટ (૧૭:૪૪:૦૦) ના ૨% દ્રાવણનો બે વાર છંટકાવ ફૂલ બેસતાં પહેલા અને પહેલા છંટકાવ પછી ૧૫ દિવસે કરવાની સાથે બન્ને પાકમાં ભલામણ કરેલ ખાતરના ૭૫% (બાજરી ૬૦:૩૦:૦૦ અને ઘઉં ૯૦:૪૫:૦૦ નાફોપો કિ.ગ્રા. / હે.) આપવાની ભલામણ કરવામાં આવેછે કે જેથી બાજરી – ઘઉં પાક પધ્ધતિમાં વધુ ઉત્પાદન અને નફો મેળવી શકાય.

(Action: IFFCO Chair, AAU, Anand)

No.11.2.1.4

Response of *kharif* and *rabi* crops to urea phosphate foliar application in maize- cabbage cropping system.

Farmers of middle Gujarat agro-climatic zone – III adopting maize-cabbage sequence are recommended for foliar application of 2% DAP or 2% urea phosphate (17:44:00) at tasseling in maize and at head formation in cabbage followed by second spray 15 days after first spray along with RDF (Maize 100:50:00, Cabbage: 200 : 75 : 00 NPK kg/ha + FYM 25 t/ha) for getting higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર – ૩ ના ખેડૂતોને ભલામણ કરવામાં આવે છે કે મકાઇ – કોબીજ પાક પધ્ધતિમાં ભલામણ કરેલ ખાતર (મકાઇ ૧૦૦:૫૦:૦, કોબીજ ૨૦૦:૭૫:૦ ના-ફો-પો કિ.ગ્રા./હે. + ૨૫ ટન છાણીયું ખાતર /હે.) ઉપરાંત ઉભા પાકમાં ડીએપી અથવા યુરીયા ફોસ્ફેટનું ૨ ટકા દ્રાવણનો બે વાર છંટકાવ મકાઇમાં ચમરી આવવા સમયે અને કોબીજના દડા બેસવાના સમયે તથા બીજો છંટકાવ પહેલાં છંટકાવના પંદર દિવસ બાદ કરવાથી મકાઇ તથા કોબીજનું વધુ ઉત્પાદન અને નફો મળે છે.

(Action: IFFCO Chair, AAU, Anand)

No.11.2.1.5

Evaluation of liquid biofertilizer viz; *Azotobacter, Azospirillium* and phosphate culture in brinjal Nursery.

Farmers of Middle Gujarat Agro climatic Zone-III interested to raise good quality brinjal seedlings are recommended to apply 70 kg FYM and 75 % RDF chemical fertilizer (Basal @

375 g N+ 375 g P_2O_5; Top dressing @ 375 g N at 15 DAS) in soil per *guntha* ($100m^2$) along with seed treatment @ 5ml/kg of biofertilizers *viz.* Nitrogen fixer *Azospirillum lipoferum* (ASA-1) mixed with Phosphate solubilizer *Bacillus coagulans (* PBA-16), followed by foliar application @ 5ml / l of water of each biofertilizer at 15 DAS to reduce fertilizer by 25 %.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૩ માં રીંગણીનું ધરૂ ઉછેરતા ખેડૂતોને એક ગુંઠામાંથી ફેરરોપણી લાયક તંદુરસ્ત ધરૂની વધુ સંખ્યા મેળવવા માટે ૭૦ કિ.ગ્રા છાણિયું ખાતર તથા ભલામણ કરેલ રાસાયણિક ખાતરના ૭૫% (પાયામાં ૩૭૫ ગ્રામ નાઈટ્રોજન + ૩૭૫ ગ્રામ ફોસ્ફરસ; વાવણી બાદ ૧૫ દિવસે ૩૭૫ ગ્રામ નાઈટ્રોજન) જમીનમાં આપવા તથા જૈવિક ખાતર નાઈટ્રોજન સ્થિરીકરણ કરનાર અઝોસ્પાઈરીલમ લીપોફેરમ એએસએ-૧ તથા ફોસ્ફેટ દ્રાવ્ય કરનાર બેસીલસ કોએગ્યુલન્સ પીબીએ-૧૬ની બીજ માવજત (૫ મિલિ/કિ.ગ્રા. બીજ) તથા વાવણીના ૧૫ દિવસ બાદ બંને જૈવિક ખાતરો પ્રત્યેક ૫ મિલિ/ લિટરના દરે ધરૂ ઉપર છંટકાવ કરવાથી ૨૫% ભલામણ કરેલ રાસાયણિક ખાતરની પણ બચત થાય છે.

(Action: Research Scientist, Dept. of Microbiology & Bio fertilizer, AAU, Anand)

No.11.2.1.6

Evaluation of liquid Biofertilizer viz; *Azotobacter, Azospirillium* and phosphate culture in chilli nursery.

Farmers of Middle Gujarat Agro climatic Zone-III interested to raise good quality chilli seedlings are recommended to apply 70 kg FYM and 75 % RDF chemical fertilizer (Basal @ 375 g N+ 375 g P_2O_5; Top dressing @ 375 g N at 15 DAS) in soil per *guntha* ($100m^2$) along with seed treatment @ 5ml/kg of biofertilizers *viz.* Nitrogen fixer *Azospirillum lipoferum* (ASA-1) mixed with Phosphate solubilizer *Bacillus coagulans (* PBA-16), followed by foliar application @ 5ml / l of water of each biofertilizer at 15 DAS to reduce fertilizer by 25 %.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૩ માં મરચીનું ધરૂ ઉછેરતા ખેડૂતોને એક ગુંઠામાંથી ફેરરોપણી લાયક તંદુરસ્ત ધરૂની વધુ સંખ્યા મેળવવા માટે ૭૦ કિ.ગ્રા છાણિયું ખાતર તથા ભલામણ કરેલ રાસાયણિક ખાતરના ૭૫% (પાયામાં ૩૭૫ગ્રામ નાઈટ્રોજન + ૩૭૫ ગ્રામ ફોસ્ફરસ; વાવણી બાદ ૧૫ દિવસે ૩૭૫ ગ્રામ નાઈટ્રોજન) જમીનમાં આપવા તથા જૈવિક ખાતર નાઈટ્રોજનસ્થિરીકરણ કરનાર અઝોસ્પાઈરીલમ લીપોફેરમ એએસએ-૧ અથવા એઝોટોબેકટર ક્રુકોકમ એબીએ-૧ તથા ફોસ્ફેટ દ્રાવ્ય કરનાર બેસીલસ કોએગ્યુલન્સ પીબીએ-૧૬ની બીજ માવજત (૫ મિલિ / કિ.ગ્રા. બીજ) તથા વાવણીના ૧૫ દિવસ બાદ બંને જૈવિક ખાતરો પ્રત્યેક ૫ મિલિ / લિટરના દરે ધરૂ ઉપર છંટકાવ કરવાથી ૨૫% ભલામણ કરેલ રાસાયણિક ખાતરની પણ બચત થાય છે.

(Action: Research Scientist, Dept. of Microbiology & Biofertilizer, AAU, Anand)

No.11.2.1.7

Yield and quality of hybrid napier varieties as affected by nitrogen levels

The farmers of middle Gujarat Agro-climatic Zone III growing hybrid napier are recommended to grow variety Co 3 and to fertilize with 75 kg N/ha after each cut upto three years along with common dose of 50 kg N/ha + 50 kg P_2O_5 / ha as basal to obtain higher green forage, dry matter, crude protein yields and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૩ ના ખેડૂતોને ભલામણ કરવામાં આવે છે કે ગજરાજ ઘાસના લીલાચારા, શુષ્ક પદાર્થ, નત્રિલ (ક્રુડપ્રોટીન) નું વધુ ઉત્પાદન અને આર્થિક વળતર મેળવવા માટે સીઓ-૩ જાત પસંદ કરવી. પાયાના ખાતર તરીકે ૫૦ કિલો નાઇટ્રોજન અને ૫૦ કિલો ફોસ્ફરસ પ્રતિ હેક્ટર તેમજ દરેક કાપણી પછી પ્રતિ હેક્ટરે ૭૫ કિલો નાઇટ્રોજન પૂર્તિ ખાતર તરીકે ત્રણ વર્ષ સુધી આપવો.

(Action: Research Scientist, MFRS, AAU, Anand)

No.11.2.1.8

To study the effect of nitrogen and phosphorus on yield and quality of multi cut sorghum cv. CoFS 29

The farmers of middle Gujarat agro climatic zone - III growing multicut forage sorghum cv. CoFS 29 are recommended to apply 160 kg N/ha along with phosphorus @ 60 kgha^{-1}for higher green forage , dry matter, crude protein yields and net realization. Nitrogen to be applied in four equal splits at basal, 30 DAS, after first cut (55 DAS) and second cut (100 DAS) and entire dose of phosphorus as basal.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૩ માં બહુકાપણી ઘાસચારા જુવાર જાત કોઇમ્બતુર ઘાસચારા જુવાર-૨૯ નું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે લીલા અને સૂકાચારાનું તથા કુડ પ્રોટીનનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે પાકને ૧૬૦ કિ.ગ્રા. નાઇટ્રોજન તથા ૬૦ કિ.ગ્રા. ફોસ્ફોરસ પ્રતિ હેક્ટરે આપવો. નાઇટ્રોજનના કુલ જથ્થાને ચાર સરખા ભાગે વાવણી સમયે, વાવણીના ૩૦માં દિવસે, પ્રથમ કાપણી બાદ (વાવણીના ૫૫ માં દિવસે) અને બીજી કાપણી બાદ (વાવણીના ૧૦૦ માં દિવસે) આપવો. જ્યારે ફોસ્ફરસનો બધો જ જથ્થો પાયાના ખાતર તરીકે આપવો.

(Action: Research Scientist, MFRS, AAU, Anand)

No.11.2.1.9

Integrated nutrient management in Maize-*Amaranths* cropping sequence

The farmers of middle Gujarat agro climatic zone III adopting maize – *amaranthus* crop sequence are recommended to apply 100 % RDF (i.e. 60: 40: 00 kg NPK / ha) along with 1 ton castor cake or 10 ton FYM/ ha to maize and 100 % RDF (i.e. 40: 20: 00 kg NPK /ha) to *amaranthus* to get higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર– ૩ના મકાઇ– રાજગરા પાક પધ્ધતિ અપનાવતા ખેડૂતોને આ પધ્ધતિમાંથી વધારે ઉત્પાદન અને નફો મેળવવા માટે મકાઇના પાકમાં પ્રતિ હેકટરે ભલામણ કરેલ રાસાયણિક ખાતરના ૧૦૦% (૬૦: ૪૦: ૦૦કિ.ગ્રા. ના.ફો.પો./ હે.)ની સાથે ૧ ટન દિવેલીનો ખોળ અથવા ૧૦ ટન છાણિયુ ખાતર અને રાજગરાના પાકમાં ભલામણ કરેલ રાસાયણિક ખાતરના ૧૦૦% (૪૦: ૨૦: ૦૦ કિ.ગ્રા. ના.ફો.પો./ હે.) આપવાની ભલામણ કરવામાં આવે છે.

(Action: Research Scientist, RRS, AAU, Anand)

No.11.2.1.10

Assessment of Natural Organic Liquid (NOL) and inorganic nutrient supply system on yield and quality of wheat

The farmers of middle Gujarat Agro-climatic zone III growing wheat are recommended to apply RDF (120-60-00 NPK kg/ ha) along with application of FYM @10 t/ ha and seed treatment with AAU PGPR consortium @ 5 ml kg^{-1} of seed for securing higher yield and net return.Application of NOL was not found beneficial.

Note: *PGPR Consortium: [*Azotobcater choococcum* (ABA-1) + *Azospirillum lipoferum* (ASA-1) + *Bacillus coagulans* (PBA-16) + *Bacillus sp.*

** NOL: Cow dung + cow urine + jaggery + buttermilk + pulse flour + soil under Baniyaan tree

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૩માં ઘઉં નું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ઘઉંના પાકમા વધુ ઉત્પાદન અને નફો મેળવવા માટે ભલામણ કરેલ ખાતર (૧૨૦-૬૦-૦૦ ના.ફો.પો. કિ.ગ્રા./હેક્ટર) ની સાથે પ્રતિ હેક્ટર ૧૦ ટન છાણીયુ ખાતર આપવુ તેમજ ૧ કિ.ગ્રા બિયારણને ૫ મિ.લિ. એએયુ પીજીપીઆર કોંસોર્ટીયમથી બીજ માવજત આપવી. કુદરતી પ્રવાહી ખાતર (NOL) ની પાક ઉત્પાદન ઉપર ફાયદાકારક અસર જણાયેલ નથી.

નોંધ :* પીજીપીઆર કોંસોર્ટીયમ: એઝોટોબેક્ટર કુકોકમ (એબીએ-૧) + એઝોસ્પીરીલમ લીપોફેરમ (એએસએ-૧) + બેસીલસ કોગુલંસ (પીબીએ-૧૬) + બેસીલસ સ્પી.

** કુદરતી પ્રવાહી ખાતર (NOL)** : ગોબર+ ગોમુત્ર+ ગોળ+ છાશ+ કઠોળ્ નો લોટ+ વડ નીચેની માટી

(Action: Research Scientist, RRS, AAU, Anand)

No.11.2.1.11

Effect of planting time on yield and quality of *bidi* tobacco varieties

The farmers of Middle Gujarat Agro-climatic Zone III are recommended to transplant *bidi* tobacco varieties MRGTH 1 and GT 7 from 1st to 3rd week of September to get higher yield and net return without affecting the quality.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર – ૩ ના બીડી તમાકુની ખેતી કરતા ખેડૂતોને તમાકુની ગુણવત્તાને અસર કર્યા વગર વધારે ઉત્પાદન અને નફો મેળવવા તમાકુની એમઆરજીટીએચ – ૧ અને જીટી – ૭ જાતોને સપ્ટેમ્બરના પ્રથમ થી ત્રીજા સપ્તાહ માં રોપણી કરવાની ભલામણ કરવામાં આવે છે.

(Action: Research Scientist, BTRS, AAU, Anand)

No.11.2.1.12

Effect of covering materials on growth and transplantable seedling in *bidi* tobacco nursery

The farmers of Middle Gujarat Agro climatic Zone III raising *bidi* tobacco nursery are recommended to cover their nursery with green shade net having 75% shading for 15 days from sowing to obtain higher transplantable seedlings per unit area and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર– ૩ના બીડી તમાકુનું ધરૂવાડીયું ઉછેરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે એકમ વિસ્તારમાંથી ફેરરોપણી લાયક છોડની વધારે સંખ્યા અને નફો મેળવવા માટે તમાકુના ધરૂવાડીયામાં બીજની વાવણીથી ૧૫ દિવસ સુધી આવરણ તરીકે ૭૫ % છાંયાવાળી લીલી શેડનેટ નો ઉપયોગ કરવો

(Action: Research Scientist, BTRS, AAU, Anand)

No.11.2.1.13

Effect of spacing, nitrogen and topping levels on yield and quality of *bidi* tobacco variety GABT 11

The farmers of Middle Gujarat Agro climatic Zone III are recommended to transplant *bidi* tobacco variety GABT 11 at spacing of 105 cm x 90 cm and fertilize with 200 kg N/ha (25 % as basal from Ammonium sulphate and remaining 75 % in 3 equal splits from Urea at an interval of 30 days after transplanting) and topping at 24 leaves/ plant to obtain higher yield and net realization.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર – ૩ ના બીડી તમાકુ ની ખેતી કરતા ખેડૂતોને તમાકુની જીએબીટી – ૧૧ જાતમાં વધુ ઉત્પાદન અને નફો મેળવવા ૧૦૫ સે.મી. x ૯૦ સે.મી. ના અંતરે રોપણી કરી હેક્ટર દીઠ ૨૦૦ કિલો નાઇટ્રોજન (૨૫% નાઇટ્રોજન પાયાના ખાતર તરીકે એમોનિયમ સલ્ફેટમાંથી અને બાકીનો ૭૫% નાઇટ્રોજન યુરીયામાંથી ત્રણ સરખા હપ્તામાં રોપણી પછી ૩૦ દિવસના અંતરે) આપીને ૨૪ પાને ખૂંટણી કરવાની ભલામણ કરવામાં આવે છે.

(Action: Research Scientist, BTRS, AAU, Anand)

No.-11.2.1.14

Effect of organic manures on dry biomass yield of *dodi* (*Leptadenia reticulata*)

The farmers of middle Gujarat Agro-climatic zone-III growing *dodi* crop (*Leptadenia reticulata*) in *kharif* are recommended to manure the crop with 10 t FYM/ ha at the time of land preparation for securing higher dry biomass yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર – ૩ના ચોમાસામાં ડોડી પાકનું વાવેતર કરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે પાકને ૧૦ ટન છાણિયું ખાતર પ્રતિ હેકટરે જમીન તૈયાર કરતી વખતે આપવાની ભલામણ કરવામાં આવે છે.

(Action: Research Scientist, Medicinal & Aromatic crop Research Station, AAU, Anand)

No.11.2.1.15

Effect of different spacing and time of sowing on dry biomass yield of *bhoyambli* (*Phyllunthus fraternus*.)

The farmers of middle Gujarat Agro climatic Zone III interested to grow *bhoyambli* (*Phyllunthus fraternus*) are recommended to sow *bhoyambli* in first week of July with broadcasting or 15 cm spacing apart for securing higher dry biomass yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર–૩ના ભોંયઆમલીની ખેતી કરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે ભોંયઆમલીનું વાવેતર જુલાઇ માસના પ્રથમ અઠવાડિયામાં, પુંખીને અથવા બે હાર વચ્ચે ૧૫સે.મી. અંતર રાખીને કરવાની ભલામણ કરવામાં આવે છે.

(Action: Research Scientist, Medicinal & Aromatic crop Research Station, AAU, Anand)

No.11.2.1.16

Effect of land configuration and seed rate on yield of cumin (GC 4) in *Bhal* region

The farmers of *Bhal* and Coastal Agro-climatic Zone-VIII growing cumin (GC 4) crop are recommended to prepare broad bed of 90 cm and furrow of 30 cm width keeping seed rate @ 20 kg/ ha through broadcast for obtaining higher yield and net return.

ભાલ અને દરિયાકાંઠા ખેત આબોહવાકીય વિસ્તાર-૮ માં જીરૂ (ગુજરાત જીરૂ ૪)નું વાવેતર કરતા ખેડૂતોને જીરાનું વધુ ઉત્પાદન અને નફો મેળવવા માટે ૯૦ સે.મી ના પહોળા પાળાની અને નીકની પહોળાઇ ૩૦ સે.મી. રાખી પ્રતિ હેક્ટરે ૨૦ કિ.ગ્રા. બિયારણનો દર રાખી પહોળા પાળા ઉપર પુંખવાની ભલામણ કરવામાં આવે છે.

(Action: Research Scientist, ARS, AAU, Arnej)

No.11.2.1.17

Study of cotton-castor relay cropping in sandy loam soil of middle Gujarat conditions

The farmers of middle Gujarat Agro-climatic zone-III following Bt cotton-castor relay cropping system are recommended to sow Bt Cotton in first week of June at 180 cm x 60 cm spacing and castor (GCH 7) in the last week of August in between two rows of cotton keeping 60 cm intra row spacing and fertilize with 75:50 kg NP/ha (25:50 kg/ha NP as basal and remaining 50 kg/ha N in two equal splits at 30 and 70 DAS) to achieve higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર – ૩ ના ખેડૂતોને પ્રતિ હેકટરે વધુ ઉત્પાદન અને નફો મેળવવા કપાસ દિવેલા રીલે પાક પધ્ધતિ અપનાવવાની ભલામણ કરવામાં આવે છે. જેના માટે બીટી કપાસની વાવણી જૂનના પ્રથમ સપ્તાહમાં ૧૮૦ સે.મી. x ૬૦ સે.મી.ના અંતરે કરવાની અને કપાસની બે હાર વચ્ચે ઓગષ્ટ મહિનાના છેલ્લા સપ્તાહે હારમાં દિવેલાના બે છોડ વચ્ચે ૬૦ સે.મી.નુ અંતર રાખી વાવણી કરવાની ભલામણ કરવામાં આવે છે. દિવેલાના પાકને પ્રતિ હેકટરે ૭૫:૫૦ કિ.ગ્રા નાઇટ્રોજન-ફોસ્ફરસ./ હે. આપવો, જે પૈકી ૨૫:૫૦ કિ.ગ્રા. નાઇટ્રોજન-ફોસ્ફરસ ખાતર પાયામાં અને ૫૦ કિ.ગ્રા. નાઇટ્રોજન / હે. બે સરખા હપ્તે વાવણી બાદ ૩૦ અને ૭૦ દિવસે આપવું.

(Action: Associate Research Scientist, ARS, AAU, Thasra)

No.11.2.1.18

Assessment of organic and inorganic nutrient supply system on yield and quality of paddy - wheat crop sequence

The farmers of middle Gujarat Agro-climatic Zone-III adopting paddy - wheat crop sequence are recommended to apply fertilizers to get higher production and net realization from this crop sequence as follow.

Paddy	Wheat
➢ 100 % RDN (100 kg N/ha) through 50 % FYM (about 10 t/ha) + 25 % from vermicompost (about 1.50 t/ha) + 25 %	➢ 100 % RDN (120 kg N/ha) through 75 % (90 kg/ha) from fertilizer + 25 % from vermicompost (about 1.80 t/ha) or

from castor cake (about 0.60 t/ha) or ➢ 100 % RDN from FYM (about 20.0 t/ha) to paddy.	➢ 100 % RDF (120:60:0kg NPK/ha) from fertilizer to wheat.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૩માં ડાંગર- ઘઉં પાક પધ્ધતિ અપનાવતા ખેડૂતોને આ પધ્ધતિમાંથી વધારે ઉત્પાદન મેળવવા માટે પ્રતિ હેક્ટરે નીચે મુજબ પોષણ વ્યવસ્થા અપનાવવાની ભલામણ કરવામાં આવે છે.

ડાંગર	ઘઉં
• ડાંગરના પાકને ૧૦૦ % ભલામણ કરેલ નાઈટ્રોજન ૧૦૦ કિ.ગ્રા/.હે પૈકી ૫૦ %નાઈટ્રોજન છાણિયા ખાતર અંદાજિત ૧૦ ટન/હે + (૨૫ % નાઈટ્રોજન વર્મીકમ્પોસ્ટ) અંદાજિત ૧.૫૦ ટન/હે +૨૫ % નાઈટ્રોજન દિવેલી ખોળ અંદાજિત ૦.૬૦ ટન/હે ના રૂપમાં અથવા • ૧૦૦ % ભલામણ કરેલ નાઇટ્રોજન છાણિયા ખાતર) અંદાજિત ૨૦ ટન/હે (ના રૂપમાં	• ઘઉં ના પાકને ૧૦૦ % ભલામણ કરેલ નાઇટ્રોજન ૧૨૦ કિ.ગ્રા/.હે પૈકી ૭૫ %નાઈટ્રોજન ૯૦ કિ.ગ્રા/.હે (રાસાયણિક ખાતર ના રૂપમાં + ૨૫ % નાઈટ્રોજન વર્મીકમ્પોસ્ટ) અંદાજિત ૧.૮૦ ટન/હે ના રૂપમાં અથવા • ૧૦૦ % ભલામણ કરેલ ખાતર) ૧૨૦: ૬૦ :૦ના-ફો-પો કિ.ગ્રા/.હે (રાસાયણિક ખાતર ના રૂપમાં

(Action: Research Scientist, MRRS, AAU, Nawagam)

No.11.2.1.19

Performance of different varieties of pigeonpea under different plant geometry

The farmers of middle Gujarat Agro-climatic zone-III growing pigeonpea are recommended to sow variety AGT-2 at spacing of 120 cm x 45 cm for getting higher yield and net return. The farmers growing *vaishali* variety are recommended to adopt 120 cm x 30 cm spacing.

મધ્ય ગુજરાતના ખેત આબોહવાકીય વિસ્તાર-૩ ના તુવેરની ખેતી કરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા એ.જી.ટી.-૨ જાતનું ૧૨૦ સે.મી. x ૪૫ સે.મી. ના અંતરે વાવેતર કરવાની ભલામણ છે. વૈશાલી જાતનું વાવેતર કરતા ખેડૂતોને ૧૨૦ સે. મી. x ૩૦ સે. મી. ના અંતરે વાવેતર કરવાની ભલામણ કરવામાં આવે છે.

(Action: Research Scientist, Pulses Research Station, AAU, Vadodara)

No.11.2.1.20

Nutrient management in pigeonpea based intercropping system.

The farmers of middle Gujarat Agro-climatic zone-III growing pigeon pea are recommended to adopt inter cropping system involving one row of black gram or soybean as an inter crop after two rows of pigeonpea at uniform inter row spacing of 60 cm by applying recommended dose of fertilizer to both the crops for getting higher yield and net return.

મધ્ય ગુજરાતના ખેત આબોહવાકીય વિસ્તાર-૩ ના તુવેરની ખેતી કરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા ભલામણ કરેલ રાસાયણિક ખાતરનો ઉપયોગ કરી તુવેર સાથે આંતર પાક તરીકે ૬૦ સે. મી. ના સરખા અંતરે તુવેરની બે હાર બાદ અડદ અથવા સોયાબીનની એક હાર વાવવાની ભલામણ કરવામાં આવે છે.

(Action: Research Scientist, Pulses Research Station, AAU, Vadodara)

No.11.2.1.21

Effects of sowing dates and spacing on summer green gram.

The farmers of middle Gujarat Agro-climatic Zone-III growing summer green gram are recommended to sow the crop during first week of March at 45 cm spacing for obtaining higher yield and net return.

મધ્ય ગુજરાતના ખેત આબોહવાકીય વિસ્તાર-૩ ના ઉનાળુ મગની ખેતી કરતા ખેડૂતોને મગનુ વધુ ઉત્પાદન અને નફો મેળવવા માટે માર્ચના પ્રથમ અઠવાડીયામાં ૪૫ સે. મી. ના અંતરે વાવેતર કરવાની ભલામણ કરવામાં આવે છે.

(Action: Research Scientist, Pulses Research Station, AAU, Vadodara)

No.11.2.1.22

Effects of agronomic practices on growth and yield of cluster bean

The farmers of middle Gujarat Agro-climatic Zone-III are recommended to sow cluster bean variety GG 2 in summer during 1st week of February at 60 cm x 15 cm spacing for getting higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૩ ના ઉનાળુ ગુવાર જીજી ૨ ની ખેતી કરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા ગુવારનું વાવેતર ફેબ્રુઆરીના પ્રથમ અઠવાડિયામાં ૬૦ સે.મી.× ૧૫ સે.મી. ના અંતરે કરવાની ભલામણ છે.

(Action: Research Scientist, ARS, AAU, Derol)

No.11.2.1.23

Response of drilled paddy to graded levels of nitrogen and phosphorus

The farmers of middle Gujarat Agro-climatic Zone-III growing drilled paddy are recommended to apply 75 kg N and 12.5 kg P_2O_5 per hectare in soils having low available nitrogen and high available phosphorus for getting higher yield and net return.

Entire quantity of phosphorus and 50% nitrogen to be applied as basal and remaining 50% nitrogen to be applied one month after sowing, when there is sufficient moisture in the soil.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૩ ના ઓરાણ ડાંગરની ખેતી કરતા ખેડૂતોને ડાંગરના પાકનું વધુ ઉત્પાદન અને નફો મેળવવા લભ્ય નાઈટ્રોજનનું ઓછું પ્રમાણ અને લભ્ય ફોસ્ફરસનું વધુ પ્રમાણ ધરાવતી જમીનમાં હેક્ટર દીઠ ૭૫ કિ.ગ્રા. નાઈટ્રોજન અને ૧૨.૫ કિ.ગ્રા. ફોસ્ફરસ આપવાની ભલામણ છે.

ફોસ્ફરસનો સંપૂર્ણ જથ્થો અને નાઈટ્રોજનનો અડધો જથ્થો પાયાના ખાતર તરીકે તથા નાઈટ્રોજનનો બાકીનો અડધો જથ્થો વાવણીના એક મહિના પછી જમીનમાં જ્યારે પૂરતો ભેજ હોય ત્યારે આપવો.

(Action: Research Scientist, ARS, AAU, Derol)

No.11.2.1.24

Assessment of Natural organic Liquid (NOL) and inorganic nutrient supply system on yield and quality of potato cv.*K. badshah*

The farmers of middle Gujarat Agro-climatic zone III growing potato are recommended to apply RDF (220-110-220 NPK kg ha^{-1}) along with application of FYM @20 t ha^{-1} and seed treatment with AAU PGPR consortium @ 1 l/ha of seed for securing higher yield and net return.Application of NOL was not found beneficial.

Note: *PGPR Consortium: [*Azotobcater choococcum* (ABA-1) + *Azospirillum lipoferum* (ASA-1) + *Bacillus coagulans* (PBA-16) + *Bacillus sp.*

** NOL: Cow dung + cow urine + jaggery + buttermilk + pulse flour + soil under Baniyaan tree

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૩માં બટાટાનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, બટાટા ના પાકમાં વધુ ઉત્પાદન અને નફો મેળવવા માટે ભલામણ કરેલ ખાતર (૨૨૦-૧૧૦-૨૨૦ નાફોપો કિ.ગ્રા/હેક્ટર) ની સાથે પ્રતિ હેક્ટર ૨૦ ટન છાણીયુ ખાતર આપવુ તેમજ બિયારણને પ્રતિ હેક્ટર ૧ લિ એઅેયુ પીજીપીઆર કોંસોર્ટીયમ થી બીજ માવજત આપવી . કુદરતી પ્રવાહી ખાતર (NOL) ની પાક ઉત્પાદન ઉપર ફાયદાકારક અસર જણાયેલ નથી.

નોંધ :* પીજીપીઆર કોંસોર્ટીયમ: એઝોટોબેક્ટર કુકોકમ (એબીએ-૧) + એઝોસ્પીરીલમ લીપોફેરમ (એએસએ-૧) + બેસીલસ કોએંગુલંસ (પીબીએ-૧૬) + બેસીલસ સ્પી.

** કુદરતી પ્રવાહી ખાતર (NOL)** : ગોબર+ ગૌમુત્ર+ ગોળ+ છાશ+ કઠોળનો લોટ+ વડ નીચેની માટી

(Action: Associate Research Scientist, ARS, AAU, Khambholaj)

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

No.11.2.1.25

Weed management in garlic

The farmers of South Saurashtra Agro-climatic Zone growing garlic are advised to apply oxyfluorfen 240 g/ha (23.5 EC 20 ml/10 lit) as pre-emergence and hand weeding at 40 days after

sowing (DAS) or oxadiargyl 90 g/ha (6 EC 30 ml/10 lit) as pre-emergence and hand weeding at 40 DAS for achieving higher yield and net realization as well as effective weed management.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં લસણનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે લસણનું મહત્તમ ઉત્પાદન, ચોખ્ખુ વળતર અને અસરકારક નીંદણ નિયંત્રણ માટે ઓકસીફલોરફેન ૨૪૦ ગ્રામ/હે. (૨૩.૫ ઈસી ૨૦ મિ.લિ./૧૦ લિ.) પ્રમાણે વાવણી બાદ પરંતુ પાક અને નીંદણ ઉગ્યા પહેલાં છંટકાવ કરવો તથા વાવણી બાદ ૪૦ દિવસે હાથ નિંદામણ કરવુ અથવા ઓકઝાડાયાર્જીલ ૯૦ ગ્રામ/હે. (૬ ઈસી ૩૦ મિ.લિ./૧૦ લિ.) પ્રમાણે વાવણી બાદ પરંતુ પાક અને નીંદણ ઉગ્યા પહેલાં છંટકાવ કરવો તથા વાવણી બાદ ૪૦ દિવસે હાથ નિંદામણ કરવું.

(Comment: The oxyfluorfen and oxadiargyl are not recommended by CIB; hence recommendation is made for scientific community. The redrafted recommendation is kept under scientific recommendation.)

(Action: Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)

No.11.2.1.26

Weed management in cumin

The farmers of South Saurashtra Agro-climatic Zone growing cumin are recommended to apply oxadiargyl 75 g/ha (6 EC 25 ml/10 lit) as early post-emergence application at 7 DAS followed by hand weeding at 45 DAS for achieving higher yield and net realization as well as effective weed management.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં જીરૂનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે જીરૂનું મહત્તમ ઉત્પાદન, ચોખ્ખુ વળતર અને અસરકારક નીંદણ નિયંત્રણ માટે ઓકસાડાયાર્જીલ ૭૫ ગ્રામ/હે. (૬ ઈસી ૨૫ મિ.લિ/૧૦ લિ.) પ્રમાણે વાવણી બાદ ૭ દિવસે છંટકાવ કરવો તથા વાવણી બાદ ૪૫ દિવસે હાથ નિંદામણ કરવું.

(Comment: Only oxadiargyl is recommended for cumin by CIB, hence, for pendimethalin separate scientific information is made).

(Action: Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)

No.11.2.1.27

Evaluation of pre and post emergence herbicides for irrigated Bt. cotton

The farmers of South Saurashtra Agro-climatic Zone growing Bt. cotton are recommended to apply pendimethalin 900 g/ha (30 EC 60 ml/10 lit) as pre-emergence followed by hand weeding and interculturing at 30 and 60 days after sowing (DAS) or pendimethalin 900 g/ha (30 EC 60 ml/10 lit) as pre-emergence followed by quizalofop 40 g/ha (5 EC 16 ml/10 lit) at 45 DAS for achieving higher yield and net realization as well as effective weed management.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં બીટી કપાસનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે કપાસનું મહત્તમ ઉત્પાદન, ચોખ્ખુ વળતર અને અસરકારક નીંદણ નિયંત્રણ માટે પેન્ડીમેથાલીન ૯૦૦ ગ્રામ/હે. (૩૦ ઈસી ૬૦ મિ.લિ/૧૦ લિ.) પ્રમાણે વાવણી બાદ પરંતુ પાક અને નીંદણ ઉગ્યા પહેલાં છંટકાવ કરવો તથા વાવણી બાદ ૩૦ અને ૬૦ દિવસે હાથ નિંદામણ અને આંતરખેડ કરવા અથવા પેન્ડીમેથાલીન ૯૦૦ ગ્રામ/હે. (૩૦ ઈસી ૬૦ મિ.લિ/૧૦ લિ.) પ્રમાણે વાવણી બાદ પરંતુ પાક અને નીંદણ ઉગ્યા પહેલાં છંટકાવ કરવો તથા વાવણી બાદ ૪૫ દિવસે કવીઝાલોફોપ ૪૦ ગ્રામ/હે. (૫ ઈસી ૧૬મિ.લિ/૧૦ લિ.) પ્રમાણે છંટકાવ કરવો.

(Action: Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)

No.11.2.1.28

Evaluation of preparatory and secondary tillage practices in rainfed groundnut

The farmers of South Saurashtra Agro-climatic Zone growing rainfed groundnut are recommended to adopt in-row subsoiling (20 cm depth) before sowing, interculturing at 15, 30, 45 and 60 days after sowing (DAS) and apply pendimethalin@ 900 g/ha (30 EC 60 ml/10 lit) as pre-emergence with hand weeding at 30 and 45 DAS for achieving higher yield and net realization as well as effective moisture conservation and weed management.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં વરસાદ આધારીત મગફળીનું વાવેતર કરતાં ખેડૂતોને મગફળીનું મહત્તમ ઉત્પાદન, ચોખ્ખુ વળતર તેમજ અસરકારક ભેજ સંગ્રહ તથા નીંદણ નિયંત્રણ માટે વાવણી પહેલાં હારમાં સબસોઈલીંગ (૨૦ સે.મી. ની ઉંડાઈએ) તથા ૧૫, ૩૦, ૪૫ અને ૬૦ દિવસે આંતરખેડ કરવાની તેમજ વાવણી બાદ પરંતુ પાક અને નીંદણ ઉગ્યા પહેલાં પેન્ડીમેથાલીન ૯૦૦ ગ્રા./હે. (૩૦ ઈસી ૬૦ મિ.લિ/૧૦ લિ.) પ્રમાણે છંટકાવ કરવાની તથા વાવણી બાદ ૩૦ અને ૪૫ દિવસે હાથ નિંદામણ કરવાની ભલામણ કરવામાં આવે છે.

(Action: Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)

No.11.2.1.29

Studies on the effect of water soluble foliar grade fertilizers on the growth and yield of summer groundnut

The farmers of South Saurashtra Agro-climatic Zone growing summer groundnut are recommended to fertilize the crop with FYM 7.5 t/ha + 60 % RDF (i.e. 15-30 kg N-P_2O_5/ha) for obtaining higher yield and net realization.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ઉનાળુ મગફળી ઉગાડતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે મગફળીમાં પ્રતિ હેકટરે ૭.૫ ટન છાણીયુ ખાતર અને ભલામણ કરેલ રાસાયણિક ખાતરના ૬૦ % (એટલે કે ૧૫–૩૦ કિ.ના.–ફો./હે.) જથ્થો આપવાથી વધુ ઉત્પાદન અને નફો મળે છે.

(Action: Research Scientist (G'nut), Main Oilseeds Research Station, JAU, Junagadh)

No.11.2.2.6

Effect of bio-phos on the performance of castor

The farmers of South Saurashtra Agro-climatic Zone growing irrigated castor are recommended to apply 40 kg P_2O_5/ha and treat the seeds with phosphate solubilizing microorganism (*Chaetomiumglobosum*) @ 30 g/50 g seed along with recommended dose of nitrogen (120 kg/ha) for obtaining higher seed yield and net return.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં દિવેલાં ઉગાડતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે વાવેતર સમયે પ્રતિ હેકટરે ૪૦ કિ.ગ્રા ફોસ્ફરસ અને ૫૦ ગ્રામ બીજ દીઠ ૩૦ ગ્રામ ફોસ્ફેટ સોલ્યુબીલાઈઝીંગ માઈક્રો ઓર્ગેનિઝમ (ક્રીટોમીયમ ગ્લોબોઝમ)ની બીજ માવજત આપવાની સાથે ભલામણ કરવામાં આવેલ નાઈટ્રોજન (૧૨૦ કિ.ગ્રા./હે.) આપવાથી દાણાનું વધુ ઉત્પાદન અને નફો મળે છે.

(Action: Research Scientist (G'nut), Main Oilseeds Research Station, JAU, Junagadh)

No.11.2.1.30

Nutrient management in groundnut-Bt. cotton intercropping system

The farmers of South Saurashtra Agro-climatic Zone adopting groundnut - Bt. cotton inter-cropping system (in 3:1 ratio) are recommended to apply 50 per cent RDF (i.e.6.25-12.5-0 kg N-P_2O_5-K_2O/ha) to the groundnut crop and 100 per cent recommended dose of fertilizer (i.e. 160 kg N/ha) to the cotton crop for obtaining higher yield and net realization.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં મગફળી અને કપાસની આંતરપાક પધ્ધતિ (૩:૧ ના પ્રમાણમા) અપનાવતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે મગફળીના પાકને ભલામણ કરવામાં આવેલખાતરનો ૫૦ ટકા જથ્થો (એટલે કે ૬.૨૫–૧૨.૫–૦ ના–ફો–પો કિ.ગ્રા./હે) અને કપાસના પાકને ભલામણ કરેલ ખાતરનો ૧૦૦ ટકા જથ્થો (એટલે કે ૧૬૦ નાઈટ્રોજન કિ.ગ્રા./હે) આપવાથી વધારે ઉત્પાદન અને નફો મળે છે.

(Action: Research Scientist (G'nut), Main Oilseeds Research Station, JAU, Junagadh)

No.11.2.1.31

Studies of possibilities of organic farming in pearl millet–gram crop sequence

The farmers of North Saurashtra Agro-climatic Zone adopting pearl millet-gram crop sequence and interested in organic farming are recommended to apply FYM 7.5 t/ha every year to pearl millet only for securing higher net realization and to maintain soil fertility.

ઉત્તર સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં બાજરી –ચણા પાક પધ્ધતિ અપનાવતા અને સેન્દ્રીય ખેતીમાં રસ ધરાવતા ખેડૂતોને વધુ નફો મેળવવા તેમજ જમીનની ફળદ્રુપતા જાળવવા દર વર્ષે ફકત બાજરાના પાકમાં છાણિયુ ખાતર ૭.૫ ટન/હેકટર પ્રમાણે આપવાની ભલામણ કરવામાં આવે છે.

(Action: Research Scientist (Pearl millet), Pearl millet Research Station, JAU, Jamnagar)

No.11.2.1.32

Optimization of nutrients for pearl millet production in *kharif* season

The farmers of North Saurashtra Agro-climatic Zone growing hybrid pearl millet during *kharif* season are recommended to apply 100 kg N and 30 kg P_2O_5/ha for obtaining higher yield and net return.

ઉત્તર સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ચોમાસાની ઋતુમાં સંકર બાજરી ઉગાડતાં ખેડૂતોને વધુ ઉત્પાદન અનેનફો મેળવવા પ્રતિ હેકટર ૧૦૦ કિ.ગ્રા. નાઈટ્રોજન અને ૩૦ કિ.ગ્રા. ફોસ્ફરસ આપવાની ભલામણ કરવામાં આવે છે.

(Action: Research Scientist (Pearl millet), Pearl millet Research Station, JAU, Jamnagar)

No.11.2.1.33

Nutrient management through organic and inorganic sources for major and trace elements in rainfed pearl millet

The farmers of North Saurashtra Agro-climatic Zone growing hybrid pearl millet during *kharif* season are recommended to apply $ZnSO_4$ and $FeSO_4$ @ 20 kg/ha each, along with recommended dose of fertilizers (80-40-0 kg $N-P_2O_5-K_2O$/ha) and FYM 5 t/ha for obtaining higher yield and net return as well as for improving grain quality.

ઉત્તર સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારમાં ચોમાસાની ઋતુમાં સંકર બાજરી ઉગાડતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે બાજરીનું મહતમ ઉત્પાદન, ચોખ્ખુ વળતર અને દાણાની ગુણવત્તા સુધારવા માટે ભલામણ કરેલ રાસાયણિક ખાતર (૮૦–૪૦–૦ કિ.ગ્રા. ના.–ફો.–પો./હે.) અનેપ ટન/હે. છાણિયા ખાતર સાથે ઝીંક સલ્ફેટ અને ફેરસ સલ્ફેટ દરેક ૨૦ કિ.ગ્રા./હે. આપવુ.

(Action: Research Scientist (Pearl millet), Pearl millet Research Station, JAU, Jamnagar)

No.11.2.1.34

Effect of crop geometry and irrigation levels on sugarcane

The farmers of South Saurashtra Agro-climatic Zone growing sugarcane are recommended to adopt drip method of irrigation and plant the crop in paired rows (60-90-60 cm) and irrigate the crop at 0.9 PEF with laying laterals in each paired rows for securing higher cane yield and net return. Nitrogen and potassium should be applied at 80 per cent of recommended dose (i.e. 200-100 $N-K_2O$ kg/ha) under drip irrigation in 10 equal splits starting from 45 DAP at an interval of 20 days.

Drip system details:

Details	Operating time-Alternate days	
	Month	Minutes
Dripper spacing: 60 cm	March-May	2 Hrs. 20 min
Dripper discharge: 4lph	June	2 Hrs. 10 min
Operating pressure: 1.2 kg/cm2	July-September	1 Hr. 30 min
Operating frequency: Alternate days	October-November December-January	1 Hr. 40 min 1 Hr. 25 min

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં શેરડીનુ વાવેતર કરતાં ખેડૂતોને વધારે ઉત્પાદન અને નફો મેળવવા માટે ટપક પધ્ધતિથી પિયત આપવાની ભલામણ કરવામાં આવે છે. આ માટે શેરડીની રોપણી જોડિયા હાર પધ્ધતિમાં (૬૦ : ૯૦ :૬૦ સેમી.) કરવી અને દરેક જોડિયા હાર વચ્ચે લેટરલ ગોઠવી પાકને ૦.૯ બાષ્પિભવનાંકે પિયત આપવું. ટપક પધ્ધતિમાં ભલામણ કરેલ નાઈટ્રોજન અને પોટાશ ખાતરનો ૮૦ ટકા જથ્થો (એટલે કે ૨૦૦–૧૦૦ કિ.ગ્રા. ના–પો / હે.) રોપણીના ૪૫ દિવસથી ચાલુ કરી ૨૦ દિવસના ગાળે ૧૦ સરખા હપ્તામાં આપવો.

ટપક પધ્ધતિની વિગત :

વિગત	પરિચાલનનો સમય– એકાંતરા દિવસે	
	મહિનો	મીનીટ
ટપકણિયાનું અંતર : ૬૦ સે.મી.	માર્ચ–મે	૨ કલાક ૨૦ મીનીટ
ટપકણિયાની સ્ત્રાવ ક્ષમતા: ૪ લીટર પ્રતિ કલાક	જૂન	૨ કલાક ૧૦ મીનીટ
પરિચાલનનું દબાણ: ૧.૨ કિ.ગ્રા. પ્રતિ ચો. સે.મી.	જુલાઈ– સપ્ટેમ્બર	૧ કલાક ૩૦ મીનીટ
પરિચાલનની પુનરાવૃતિ: એકાંતરા દિવસે	ઓકટોબર–નવેમ્બર	૧ કલાક ૪૦ મીનીટ
	ડિસેમ્બર–જાન્યુઆરી	૧ કલાક ૨૫ મીનીટ

(Action: Research Scientist (Sugarcane), Main Sugarcane Research Station, JAU, Kodinar)

No.11.2.1.35

Weed management in *kharif* urdbean

The farmers of South Saurashtra Agro-climatic Zone growing *kharif* urdbean are recommended to apply quizalofop-ethyl 40 g/ha (5 EC 16 ml/10 lit water) at 20 days after sowing (DAS) and hand weeding at 40 DAS for obtaining higher yield and net realization as well as effective weed management.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ચોમાસુ અડદનું વાવેતર કરતા ખેડૂતોને સલાહ આપવામાં આવે છે કે અડદનું મહતમ ઉત્પાદન, નફો અને અસરકારક નીંદણ નિયંત્રણ માટે કવીઝાલોફોપ–ઈથાઈલ ૪૦ ગ્રામ/હે (૫ ઈસી ૧૬મિ.લિ/૧૦ લિ. પાણી) પ્રમાણે વાવણીબાદ ૨૦ દિવસે છંટકાવ કરવો તથા વાવણી બાદ ૪૦ દિવસે હાથ નિંદામણ કરવું.

(Action: Research Scientist (Chickpea), Pulses Research Station, JAU, Junagadh)

No.11.2.1.36

Effect of soil amendments on different genotypes of castor under salt affected soil

The farmers of South Saurashtra Agro-climatic Zone growing castor with saline irrigation water are recommended to select variety GC 3 and apply FYM @ 10 t/ha and gypsum 50% GR (3 t/ha) along with recommended dose of fertilizers.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારના ખારા પાણીથી દિવેલાં ઉગાડતા ખેડૂતોને જીસી–૩ જાત વાવવાની તથા ભલામણ કરેલ રાસાયણિક ખાતર સાથે પ્રતિ હેકટર છાણિયું ખાતર ૧૦ ટન અને જીપ્સમ તેની જરૂરીયાતના ૫૦ ટકા (૩ ટન/હે) પ્રમાણે આપવાની ભલામણ કરવામાં આવે છે.

(Action: Professor & Head, Dept. of Agril. Chem. & Soil Sci., CoA, JAU, Junagadh)

No.11.2.1.37

Effect of integrated nutrient management on yield, quality and nutrient uptake by garlic under salt affected soil

The farmers of South Saurashtra Agro-climatic Zone growing garlic in salt affected soil are recommended to apply 50 % RDF (i.e. 25-25-25 kg N-P_2O_5-K_2O/ha) along with FYM @ 10 t/ha for obtaining higher bulb yield and net return.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ક્ષારમય જમીનમાં લસણ વાવતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે લસણનું વધુ ઉત્પાદન અને નફો મેળવવા માટે ભલામણ કરેલ રાસાયણિક ખાતરના ૫૦ % (૨૫–૨૫–૨૫ કિ.ગ્રા. ના.–ફો.–પો./હે.) જથ્થા સાથે ૧૦ ટન છાણિયું ખાતર પ્રતિ હેકટરે આપવુ.

(Action: Professor & Head, Dept. of Agril. Chem. & Soil Sci., CoA, JAU, Junagadh)

NAVSARI AGRICULTURAL UNIVERSITY

No.11.2.1.38

Study on levels of nitrogen and intra-row spacing on yield of drip irrigated castor (*rabi*)

The farmers of South Gujarat heavy rainfall Agroclimatic Zone-I growing drip irrigated castor (GCH 4) during *rabi* season are recommended to sow their crop at 2.4 m x 0.6 m spacing. Further, they are advised to fertilize @ 160:40 NP kg/ha. The entire quantity of P and 10 % N should be applied as basal and remaining 90 % N should be applied through drip system in 10 equal spilts at an interval of 8-10 days starting from 15 DAS to get higher yield and net return.

System details:

Details	Operating time (Alternate days)	
	Month	Minutes
Lateral spacing: 2.40 m	November-December	1 Hrs. 30 min
Dripper spacing : 60 cm	January-February	2 Hrs.
Dripper discharge : 4lph	March onwards	3 Hrs.
Operating pressure : 1.2 kg/cm^2		

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તાર–૧ માં ટપક પદ્ધતિથી શિયાળુ દિવેલા ૮નહજઢ,૯ વાવતા ખેડૂતોને ૨.૪ મીટર × ૦.૬ મીટર અંતર રાખી વાવેતર કરવાની ભલામણ કરવામાં આવે છે. તેમજ પાકને ૧૬૦ કિ.ગ્રા /હે નાઈટ્રોજન અને ૪૦ કિ.ગ્રા /હે ફોસ્ફરસ ખાતર આપવાની સલાહ આપવામાં આવે છે, જેમાં ૧૦ ટકા નાઈટ્રોજન અને બધો જ ફોસ્ફરસ વાવેતર સમયે પાયામાં આપવો અને બાકીનો ૯૦ ટકા નાઈટ્રોજન ૧૦ સરખા હપ્તામાં વાવેતર બાદ ૧૫ દિવસ પછી ૮ થી ૧૦ દિવસના ગાળે ટપક પદ્ધતિથી આપવો.

ટપક પધ્ધતિની વિગત :

વિગત	પરિચાલનનો સમય (એકાંતરા દિવસે)	
	મહિનો	મીનીટ
બે લેટરલ વચ્ચેનું અંતર : ૨.૪૦ મી	નવેમ્બર–ડિસેમ્બર	૧ કલાક ૩૦ મીનીટ
ટપકણિયાનું અંતર : ૬૦ સે.મી.	જાન્યુઆરી–ફેબ્રુઆરી	૨ કલાક
ટપકણિયાની સ્ત્રાવ ક્ષમતા : ૪ લીટર પ્રતિ કલાક	માર્ચ અને પછી	૩ કલાક
પરિચાલનનું દબાણ : ૧.૨ કિ.ગ્રા. પ્રતિ ચો. સે.મી.		

(Action: Research Scientist, Soil and Water Management Research Unit Farm, NAU, Navsari)

No.11.2.1.39

Feasibility of drip irrigation in pigeon pea *(rabi)* with and without mulch

The farmers of South Gujarat heavy rainfall Agroclimatic Zone-I growing pigeonpea (GT 102) during *rabi* season are advised to follow paired row sowing (60x20:120 cm) with drip

irrigation at 0.4 PEF and mulching with black plastic (50 µ and 56 % coverage) for getting higher yield and net return with 49 % water saving over surface method of irrigation.

System details:

Details	Operating time (Alternate days)	
	Month	**Minutes**
Lateral spacing: 1.80 m	January	1 Hrs. 45 min
Dripper spacing : 60 cm	February	2 Hrs.
Dripper discharge : 3 lph	March -April	2 Hrs. 30 min
Operating pressure : 1.2 kg/cm^2		

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તાર–૧ માં શિયાળુ તુવેર ૮નતઢક્ષડ×૯ વાવતા ખેડૂતોને જોડીયા હારમાં (૬૦×૨૦ઃ ૧૨૦ સેમી) વાવેતર કરીને કાળા પ્લાસ્ટીકના આવરણ (૫૦ માઈક્રોન જાડાઈ , ૫૬ ટકા વિસ્તારમાં આવરણ) સાથે ૦.૪ પીઈએફ ટપક પધ્ધતિથી પિયત આપવાની ભલામણ કરવામાં આવે છે. આમ કરવાથી પુષ્ઠ પિયત પધ્ધતિની સરખામણીએ ટપક પધ્ધતિથી ૪૯ % પાણીની બચત સાથે વધારે ચોખ્ખો નફો મળે છે.

ટપક પધ્ધતિની વિગત :

વિગત	પરિચાલનનો સમય (એકાંતરા દિવસે)	
	મહિનો	**મીનીટ**
બે લેટરલ વચ્ચેનું અંતર : ૧.૮૦ મી	જાન્યુઆરી	૧ કલાક ૪૫ મીનીટ
ટપકણિયાનું અંતર : ૬૦ સે.મી.	ફેબ્રુઆરી	૨ કલાક
ટપકણિયાની સ્ત્રાવ ક્ષમતા : ૩ લીટર પ્રતિ કલાક	માર્ચ – એપ્રીલ	૨ કલાક ૩૦ મીનીટ
પરિચાલનનું દબાણ : ૧.૨ કિ.ગ્રા. પ્રતિ ચો. સે.મી.		

(Action: Research Scientist, Soil and Water Management Research Unit Farm, NAU, Navsari)

No.11.2.1.40

Effect of irrigation and fertigation levels on growth and yield of annatto (*Bixa orllana*)

The farmers of South Gujarat heavy rainfall Agroclimatic Zone-I intended to plant *Annatto* crop are advised to follow the spacing of 5 m x 5 m, apply RDF (60:40:40 kg NPK/ha/year) and give total 18-22 irrigations by surface method with an interval of 9-12 days during summer and 13-17 days during winter for getting higher yield and net return.

Farmers interested to adopt drip irrigation system with a saving of 75 per cent water and 40 per cent N and K fertilizer, are advised to apply 36:40:24 NPK kg/ha fertilizer. Phosphorus should be applied in ring with half dose before two months of monsoon and remaining half dose after cessation of monsoon. Remaining N and K should be applied in 10 equal splits at 10 days interval, of which five splits is to be applied in two months before monsoon and remaining five splits after cessation of monsoon through fertigation.

System details:

Details	Operating time (Alternate days)	
	Month	**Minutes**
Lateral spacing: 5.0 m	October-December	30 min
No. of drippers/plant : 6	January-March	40 min
Dripper discharge : 8 lph	April- June	50 min
Operating pressure : 1.2 kg/cm^2		

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તાર –૧ નાં ૫ × ૫ મીટરનાં અંતરે અનાટા (બીક્ષા/ સીંદુરી) ઉગાડતા ખેડૂતોએ ભલામણ કરેલ રાસાયણિક ખાતર(૬૦:૪૦:૪૦ ના.ફો.પો. કિલો/હે./વર્ષ) આપવુ. તેમજ પૃષ્ઠ પિયત પધ્ધતિથી (રેલાઈને) ઉનાળામાં ૯ થી ૧૨ દિવસે અને શિયાળામાં ૧૩ થી ૧૭ દિવસે કુલ ૧૮ થી ૨૨ પિયત આપવા.

ખેડૂત અનાટા (બીક્ષા) ના પાકને ટપક પધ્ધતિમાં પૃષ્ઠ પિયત પધ્ધતિની સરખામણીએ ૭૫ % પિયત પાણી અને ૪૦ % નાઈટ્રોજન અને પોટાશ ખાતર ની બચત માટે પાકને ૩૬ : ૪૦ : ૨૪ ના. ફો. પો. કિલો/ હેકટર ખાતર આપવાની સલાહ આપવામાં આવે છે. જેમાં અડધો ફોસ્ફરસ ચોમાસાનાં બે મહિના પહેલાં અને બાકીનો ચોમાસા પછી રીંગમાં આપવો. નાઈટ્રોજન અને પોટાશ ૧૦ સરખા હપ્તામાં ૧૦ દિવસનાં અંતરે આપવા જે પૈકી પાંચ હપ્તા ચોમાસાનાં બે મહિના પહેલાં અને પાંચ હપ્તા ચોમાસા પછી ટપક પધ્ધતિથી આપવા.

ટપક પધ્ધતિની વિગત :

વિગત	પરિચાલનનો સમય (એકાંતરા દિવસે)

	મહિનો	મીનીટ
બે લેટરલ વચ્ચેનું અંતર : ૫.૦ મી	ઓકટોબર–ડીસેમ્બર	૩૦ મીનીટ
છોડ દીઠ ટપકણીયાની સંખ્યા : ૬	જાન્યુઆરી–માર્ચ	૪૦ મીનીટ
ટપકણિયાની સ્ત્રાવ ક્ષમતા : ૮ લીટર પ્રતિ કલાક	એપ્રીલ – જુન	૫૦ મીનીટ
પરિચાલનનું દબાણ : ૧.૨ કિ.ગ્રા. પ્રતિ ચો. સે.મી.		

(Action : Research Scientist, Soil and Water Management Research Unit Farm, NAU, Navsari)

No.11.2.1.4 1

Plant geometry in relation to mechanization in sugarcane (plant and ratoon crop)

Sugarcane growers of South Gujarat heavy rainfall Agroclimatic zone -I are recommended to grow sugarcane variety CoN 05071 with 120 cm normal row spacing for securing higher production and net return under mechanized cultivation.

દક્ષિણ ગુજરાતના ભારે વરસાદ ધરાવતા વિસ્તાર –૧ ના શેરડી ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે શેરડીની જાત કો. એન. ૦૫૦૭૧ની રોપણી ૧૨૦ સે.મી.ના અંતરે કરવાથી યાંત્રિકીકરણ સાથે વધુ ઉત્પાદન અને આવક મળે છે.

(Action: Research Scientist, Main Sugarcane Research Station, NAU, Navsari)

No.11.2.1.42

Intercropping in *rabi* sorghum *var.* BP-53 under conserved soil moisture condition

Farmers of South Gujarat Agroclimatic Zone-II growing *grain* sorghum *var*. BP 53 under conserved moisture during *rabi* season, are advised to adopt paired row sorghum (45x20 cm -75 cm) with inter-crop of greengram Co 4 for achieving higher yield and net return.

દક્ષિણ ગુજરાત ખેત આબોહવાકીય વિસ્તાર–૨માં બિન પિયત રવિ જુવાર ઉગાડતા ખેડૂતોને જુવાર (બીપી ૫૩) નું વધુ ઉત્પાદન અને આવક મેળવવા માટે જોડીયા ચાસમાં જુવાર (૪૫ સે.મી. × ૨૦ સે.મી.–૭૫ સે.મી.) સાથે મગનો આંતરપાક (સી ઓ ૪) લેવાની ભલામણ કરવામાં આવે છે.

(Action: Assistant Research Scientist, Agricultural Research Station, NAU, Tanchha)

No.11.2.1.43

Effect of different organic sources on yield and quality of wheat grown on certified organic farm

The farmers of South Gujarat Heavy Rainfall Agro climatic Zone-I growing wheat (*cv.* GW 496) organically, are recommended to apply RDN (120 kg N/ha) through biocompost, vermicompost and castor cake in 1:1:1 proportion on equivalent N basis and spray enriched banana pseudostem sap 1% or cow urine 1% at 15, 45 and 60 days after sowing for achieving higher yield, net return with superior quality of grain.

Note:

- Apply common dose of *Azotobacter* biofertilizer @ 2 kg/ha.
- After 15 days of germination, apply three foliar spray of neem based pesticide at monthly interval.
- Maize should be grown as trap crop at the border.
- Sticky trap should be used @ 40 Nos/ha.

દક્ષિણ ગુજરાત ભારે વરસાદવાળા ખેત અબોહવાકીય વિસ્તાર-૧ ના ખેડૂતો કે જેઓ સેન્દ્રિય ખેતીથી ઘઉં (જાત જી ડબલ્યુ- ૪૯૬) ઉગાડે છે તેઓને સારી ગુણવત્તા વાળુ વધુ ઉત્પાદન અને વળતર મેળવવા ભલામણ મુજબનો ૧૨૦ કિ.ગ્રા. નાઈટ્રોજન/હે. બાયો કંપોસ્ટ, અળસિયાનું ખાતર અને દિવેલી ખોળ (૧:૧:૧ મુજબ્) દ્વારા નાઈટ્રોજનનાં સરખા પ્રમાણમાં આપવો અને ૧% નો કેળનાં થડનો સમ્રુદ્ધ્ રસ અથવા ૧% ના ગૌ મુત્રનો છંટકાવ વાવણી બાદ ૧૫, ૪૫ અને ૬૦મા દિવસે કરવો.

નોંધ:

- સરખી માવજત તરીકે એઝેટોબેકટર ૨ કિ. ગ્રા/હે આપવું.
- ઉગાવાના ૧૫ દિવસ બાદ લીમડાની દવાનો એક મહિનાના આંતરે ત્રણ છંટકાવ કરવા.
- પાક ફરતે મકાઈનો પિંજર પાક ઉગાડવો.
- પ્રતિ હેક્ટર ૪૦ સ્ટીકી ટ્રેપ લગાડવા.

(Action: Professor and Head, Organic Farming Unit, SSAC, ACHF, NAU, Navsari)

No.11.2.1.44

Response of pigeonpea to different sowing methods and organic sources (*cv.* Vaishali)

The farmers of south Gujarat heavy rainfall Agroclimatic Zone-I growing pigeonpea, *cv. Vaishali*, under organic farming are advised to sow the crop at 90 cm x 20 cm and apply 12.5 kg N/ha from bio-compost and 12.5 kg N/ha from NADEP compost for getting higher yield and net return.

Note:

- Soil application of *Tricoderma* and *Pseudomonas* @ 2.0 kg / ha at the time of sowing.
- Spray alternatively 5% Neemastra and neem oil at 15 days interval starting from flowering.
- Keep 50 bird perchers and 40 pheromone traps (*Helicoverpa)* / ha at equal distance.
- Grow marigold as a trap crop in the field.

દક્ષિણ ગુજરાત ના ભારે વારસાદવાળા ખેત અબોહવાકીય વિસ્તાર – ૧ ના ખેડૂતો કે જેઓ સેન્દ્રિય ખેતીથી તુવેર, જાત વૈશાલી, ઉગાડે છે તેઓને વધુ ઉત્પાદન અને વળતર મેળવવા તુવેરનું વાવેતર ૯૦ સેમી x ૨૦ સેમી અંતરે કરવાની અને ૧૨.૫ કિ.ગ્રા. નાઈટ્રોજન/હે. બાયો કંપોષ્ટ દ્વારા અને ૧૨.૫ કિ.ગ્રા. નાઈટ્રોજન/હે. નાડેપ કંપોષ્ટ દ્વારા આપવાની ભલામણ કરવામાં આવે છે.

નોંધ:

- પ્રતિ હેક્ટર ૨ કિ.ગ્રા./હે. ટ્રાયકોડર્મા અને સ્યુડોમોનાશ જમીનમાં વાવણી સમયે આપવા.
- ૫% નીમાંસ્ત્ર અને નીમ ઓઈલનો છંટકાવ ફૂલ અવસ્થાએથી ૧૫ દિવસના અંતરે વારાફરતે કરવો.
- પ્રતિ હેક્ટર ૫૦ પક્ષીને બેસવાના સ્ટેન્ડ અને ૪૦ ફેરોમોન ટ્રેપ (હેલીકોવર્પા) લગાવવા
- પાકમાં ગલગોટાનો પિંજર પાક ઉગાડવો.

(Action: Professor and Head, Organic Farming Unit, SSAC, ACHF, NAU, Navsari)

SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

No.11.2.1.45

Fertigation scheduling in amaranthus

The farmers of North Gujarat Agro climatic Zone-IV growing *amaranthus* under drip system are recommended to irrigate at 0.8 PEF on alternate day to save water and fertilize crop @ 60 kg N/ha i.e. 30 % N as basal and remaining 70% N should be applied through fertigation in two equal splits; 1st at 30 DAS and 2nd at 45 DAS to get higher yield and net return. Besides phosphorus @ 40 kg/ha should be applied as basal.

The detail operation schedule of drip system should be as under.

System Details	Operating Schedule (alternate day)	
	Month	Time(minutes)
Lateral spacing : 90 cm	Nov.	48
Dripper distance : 60 cm	Dec-Jan.	38
Dripper discharge : 4 LPH	Feb.	48
Operating pressure : 1.2 kg/cm^2	Mar. (If needed)	74

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર–૪ ના ટપક પધ્ધતિથી રાજગરામાં પિયત આપતાં ખેડૂતોને ૧૬ ટકા પાણીની બચત તથા રાજગરાના પાકનું હેકટર દીઠ વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે ૦.૮ બાષ્પીભવન ગુણાંકે એકાંતરા દિવસે પિયત આપવા ભલામણ કરવામાં આવે છે. રાજગરાના પાકને ૬૦ કિગ્રા /હે નાઈટ્રોજન આપવો. જે પૈકી ૩૦% નાઈટ્રોજન (૩૯ કિગ્રા યુરિયા) પાયામાં વાવણી સમયે અને બાકીનો ૭૦% નાઈટ્રોજન ફર્ટીગેશનથી બે હપ્તામાં આપવો. જેમાં પ્રથમ હપ્તો (૪૬ કિગ્રા યુરિયા) વાવણી પછી ૩૦ દિવસે અને બીજો હપ્તો (૪૬ કિગ્રા યુરિયા) ૪૫ દિવસે આપવો. તદઉપરાંત પાકની વાવણી વખતે ૪૦ કિગ્રા/હે ફોસ્ફરસ (૨૫૦ કિગ્રા સીંગલ સુપર ફોસ્ફેટ) પાયાના ખાતર તરીકે આપવો.

ટપક પધ્ધતિની વિગતવાર માહિતી તથા તેને ચલાવવાનો સમય નીચે મુજબ રાખવાનો રહે છે.

ટપક પધ્ધતિની વિગત			**પિયતનું પત્રક એકાંતરે દિવસે**	
			માસ	**સમય(મિનીટ)**
પ્રશાખાનું અંતર	:	૯૦ સેમી	**નવેમ્બર**	૪૮
ટપકણીયાનું અંતર	:	૬૦ સેમી	**ડીસેમ્બર–જાન્યુઆરી**	૩૮
ટપકણીયાનો પ્રવાહ દર	:	૪ લીટર/કલાક	**ફેબ્રુઆરી**	૪૮
ટપક સિસ્ટમનું દબાણ	:	૧.૨ કિગ્રા/સેમી^{2}	**માર્ચ (જરુર જણાયતો)**	૭૪

(Action: Research Scientist, Centre for Watershed management, Participatory Research & Rural Engineering, SDAU, Sardarkrushinagar)

No.11.2.1.46

Effect of foliar and soil application of micronutrients on yield of sorghum

The farmers of North Gujarat Agro Climatic Zone-IV growing sorghum under rainfed are recommended to apply 7.5 kg ZnSO4 /ha as soil application along with three sprays of $ZnSO_4$ 0.5 % at 30, 40 and 50 DAS with 0.25 % lime solution besides recommended dose of fertilizer (80+40 N and P_2O_5 kg/ha) for getting higher grain and fodder yield of sorghum as well as net return.

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર–૪ માં જુવારની વરસાદ આધારિત ખેતી કરતાં ખેડૂતોને ભલામણ કરેલ ખાતર (૮૦ત્ર૪૦ કિ.ગ્રા.નાઈટ્રોજન ત્ર ફોસ્ફરસ /હે.) ઉપરાંત ૭.૫ કિ.ગ્રા. ઝિંક સલ્ફેટ/હે. જમીનમાં આપવાની સાથે ઝિંક સલ્ફેટ ૦.૫ ટકાના ત્રણ છંટકાવ ૦.૨૫ ટકા ચૂનાના દ્રાવણ સાથે ૩૦, ૪૦ અને ૫૦ દિવસે વાવણી બાદ કરવાથી વધુ ઉત્પાદન અને આર્થિક વળતર મળે છે.

(Action: Research Scientist, Centre for Watershed Management, Participatory Research & Rural Engineering, SDAU, Sardarkrushinagar)

No.11.2.1.47

Response of micronutrients on yield of clusterbean

The farmers of North Gujarat Agro-climatic Zone – IV growing cluster bean as a rainfed crop on light textured soil deficient in Zn and Fe are recommended to apply 10 kg $ZnSO_4$ and 15 kg $FeSO_4$ per hectare as basal dose along with recommended dose of fertilizer (25-50 kg N-P_2O_5 kg/ha) for getting higher yield and net return.

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર–૪ ની હલકી પ્રતવાળી, જસત તથા લોહ ની ઉણપવાળી જમીનમાં વરસાદ આધારીત ગુવાર નું વાવેતર કરતા ખેડૂતોને વધારે ઉત્પાદન તથા આર્થિક વળતર મેળવવા પાકને જમીનમાં ૧૦ કિ.ગ્રા. ઝીંક સલ્ફેટ અને ૧૫ કિ.ગ્રા. ફેરસ સલ્ફેટ પ્રતિ હેકટર પાયાના ખાતર તરીકે ભલામણ કરેલ રાસાયણીક ખાતર(૨૫–૫૦ ના. ફો. કિ.ગ્રા. પ્રતિ હેકટરે)ની સાથે આપવાની ભલામણ કરવામાં આવે છે.

(Action: Res. Sci., Centre of Excellence for Research on Pulses, SDAU, Sardarkrushinagar)

No.11.2.1.48

Weed Management in Field pea

The farmers of North Gujarat Agro climatic zone – IV are recommended to control the weeds by hand weeding twice at 20 and 40 DAS for getting higher seed yield and net return from fieldpea. Under constraint of labours apply pendimethalin 30 EC @ 1.0 kg/ha as pre emergence. Phytotoxic effect of herbicides was not observed on succeeding crop.

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર–૪ ના ખેડુતોને ભલામણ કરવામાં આવે છે કે વટાણાના પાકમાં વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે પાકને ૨૦ અને ૪૦ દિવસે હાથ નિંદામણ કરવું. જો મજુરોની અછત હોય તો પેન્ડીમીથાલીન ૩૦ ઈ.સી.૧.૦ કિ.ગ્રા. પ્રતિ હેકટરે વાવણી બાદ તુરંત છંટકાવ કરવો. આ નિંદણ નાશક દવાની માવજતની પાછળ ના પાક ઉપર કોઈ આડ અસર જોવા મળતી નથી.

(Action: Res. Sci., Centre of Excellence for Research on Pulses, SDAU, Sardarkrushinagar)

No.11.2.1.49

Weed Management in Rajmash

The farmers of North Gujarat Agroclimatic zone – IV growing rajmash are recommended to apply pendimethalin 30 EC @ 1.0 kg/ha as pre emergence for effective control of weeds as well as obtaining higher seed yield and net return from rajmash. If labour is not a constraint, two hand weeding at 20 and 40 DAS to be followed. Phytotoxic effect of herbicides was not observed on succeeding crop.

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર–૪ ના ખેડૂતોને ભલામણ કરવામાં આવે છે કે રાજમાના પાકમાં નિંદણ નિયંત્રણ માટે પેન્ડીમીથાલીન ૩૦ ઈ.સી ૧.૦ કિ.ગ્રા. પ્રતિ હેકટરે વાવણી બાદ તુરંત છંટકાવ કરવાથી વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવી શકાય છે. જો મજુરોની અછત ના હોય તો પાકમાં ૨૦ અને ૪૦ દિવસે હાથ નિંદામણ કરવું. આ નિંદણનાશક દવાની માવજતની પાછળના પાક ઉપર કોઈ આડ અસર જોવા મળતી નથી.

(Action: Res. Sci., Centre of Excellence for Research on Pulses, SDAU, Sardarkrushinagar)

No.11.2.1.50

Effect of pruning on growth and biomass production of *ardusa* (*Ailanthus excelsa*) in green gram based Agri-Silvi system in North Gujarat region

The farmers of North Gujarat Agroclimatic Zone-IV growing rainfed *ardusa* tree under *ardusa* + greengram based Agri-Silvi system are recommended that the system is not economically viable after seventh year's old *ardusa* plantation. Pruning is not advisable after 7th year old *ardusa* tree.

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર–૪ ના બિનપિયત વિસ્તારમાં અરડુસા સાથે મગની વાવણી કરતા ખેડૂતોએ સાત વર્ષ પછી અરડુસા સાથે મગની કૃષિવન પધ્ધતિ અપનાવવાથી આર્થિક ફાયદો થતો નથી અને સાત વર્ષ પછી અરડુસાની છટણી કરવી હિતાવહ નથી.

(Action: Research Scientist, Center for Agro-forestry, Forage Crops and Green Belt, SDAU, Sardarkrushinagar)

No.11.2.1.51

Fertilizer requirement of cumin after different *kharif* crops

Farmers of North Gujarat Agroclimatic Zone-IV are recommended to adopt the greengram-cumin cropping sequence and fertilize with 100 % RDF(20-40 NP_2O_5 kg/ha) to greengram and 50 % RDF(20-7.5 NP_2O_5 kg//ha) to cumin for obtaining higher seed yield and net return.

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર–૪ ના મગ– જીરૂ પાક પધ્ધતિ અપનાવવાની તેમજ મગના પાકમાં ભલામણ કરેલ ખાતરના૧૦૦ ટકા (૨૦–૪૦ ના–ફો કિ.ગ્રા./ હે.)અને જીરૂના પાકમાં ભલામણ કરેલ ખાતરના ૫૦ ટકા (૨૦–૭.૫ ના–ફો કિ.ગ્રા./ હે.) આપવાથી વધારે ઉત્પાદન અને નફો મળે છે.

(Action: Research Scientist, Centre for Research in Seed Spices, SDAU, Jagudan)

No.11.2.1.52

Feasibility of ajwain as intercrop in cumin

Farmers of North Gujarat Agroclimatic Zone-IV interested to grow ajwain as intercrop in cumin are recommended to adopt cumin + ajwain at 4:1 raw arrangement with cutting of ajwain at 45 days after sowing for getting higher yield and net return.

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર–૪ ના જીરૂ ઉગાડતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે જીરાના પાકની ૪ હારની વાવણી બાદ એક હાર અજમાની આંતરપાક તરીકે વાવણી કરી ૪૫ દિવસે અજમાની છટણી કરવાની ભલામણ કરવામાં આવે છે.

(Action: Research Scientist, Centre for Research in Seed Spices, SDAU, Jagudan)

No.11.2.1.53

Irrigation and fertilizer requirement of ajwain

Farmers of North Gujarat Agro-climatic zone IV growing ajwain are recommended to irrigate the crop with six irrigations each of 50 mm depth at sowing,8-10, 47,85,114 and 135 DAS and fertilize the crop with 20 kg N + 20 kg P_2O_5 /ha for getting higher yield and net return.

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર–૪ ના અજમો ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે અજમાને પ્રથમ પિયત વાવણી વખતે અને ત્યાર બાદ ૮–૧૦, ૪૭, ૮૫, ૧૧૪ અને ૧૩૫ દિવસે મધ્યમ પિયત(૫૦ મી.મી. ની ઉડાઈના) ના કુલ છ પિયત તેમજ ૨૦ કિ.ગ્રા. નાઈટ્રોજન ત્ર ૨૦ કિ.ગ્રા. ફોસ્ફરસ પ્રતિ હેકટરે આપવાથી વધારે ઉત્પાદન અને નફો મળે છે.

(Action: Research Scientist, Centre for Research in Seed Spices, SDAU, Jagudan)

No.11.2.1.54

Nutrient management through resource conservation in cotton-wheat sequence

Farmers of North-Gujarat Agro-climatic Zone-IV adopting cotton-wheat crop sequence are recommended to incorporate cotton stalk with two runs of rotavator. At the time of incorporation, apply 25 kg urea/ha and *Trichoderma viride* (10^6 cfu/g) @ 3 kg/ha in soil for decomposition. Late sown wheat to be sown with recommended dose of fertilizers (80:40 NP_2O_5 kg/ha).

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૪ માં કપાસના પાક પછી ઘઉંનું વાવેતર કરતા ખેડુતોને ભલામણ કરવામાં આવે છે કે કપાસની કરાંઠીઓને રોટાવેટરની બે ખેડથી જમીનમાં દબાવીને કહોવાણ માટે હેકટરે ૨૫ કિગ્રા યુરિયા ખાતર તથા ૩ કિગ્રા *ટ્રાયકોડર્મા વીરીડી* (૧૦^{૬} સીએફયુ/ગ્રામ) જમીનમાં આપવુ. મોડી વાવણી માટેના ઘઉંને ભલામણ કરેલ ખાતરનો ૧૦૦ ટકા જથ્થો (૮૦:૪૦ ના:ફો કિગ્રા/હે) આપીને વાવણી કરવી.

(Action: Research Scientist, Centre of excellence for Research on Wheat, SDAU, Vijapur)

No.11.2.1.55

Phosphorus and zinc management with bio-fertilizers in wheat

Farmers of North-Gujarat Agro-climatic Zone-IV growing wheat crop are recommended to apply 30 kg P_2O_5/ha with PSB @ 30 g / kg seed as a seed treatment + inoculation of 20 kg VAM culture and 20 kg $ZnSO_4$/ha in soil, besides, recommended dose of nitrogen for getting higher yield and net return.

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૪ ના ઘઉં ઉગાડતા ખેડૂતોને વધારે ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે ઘઉંના પાકમાં ભલામણ કરેલ નાઈટ્રોજન ઉપરાંત બિયારણને પીએસબી કલ્ચર 30 ગ્રામ પ્રતિ કિ.ગ્રા. બીજને પટ આપીને જમીનમાં પ્રતિ હેક્ટર ૨૦ કિ.ગ્રા ઈનોક્યુલેટ કરેલ વેસીસ્કુલ્રર એબ્સ્કુલ્રર માઈકોરાઈઝા (સ્થાનિક વામ) કલ્ચર તથા 30 કિલો ફોસ્ફરસ અને ૨૦ કિલો ઝીંક સલ્ફેટ, જમીનમાં આપવાની ભલામણ કરવામાં આવે છે.

(Action: Research Scientist, Centre of excellence for Research on Wheat, SDAU, Vijapur)

No.11.2.1.56

Assess the possibilities of high plant density in late sown Bt. cotton with low Nitrogen application

The farmers of North Gujarat Agro Climatic Zone-IV growing *Bt* cotton are recommended to sow Bt hybrid G. Cot. Hy.8 (BG II) or G. Cot. Hy. 6 (BG II) on onset of monsoon at 60 cm x 45 cm spacing and fertilize with 120 kg N/ha for getting higher yield and net return.

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર–૪માં બીટી કપાસ વાવતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે વધુ ઉત્પાદન અને નફો મેળવવા માટે બીટી ગુ.કપાસ સંકર–૮ (બીજી–૨) અથવા ગુ.કપાસ સંકર–૬ (બીજી–૨) ની વાવણી ચોમાસાની શરૂઆતમાં ૬૦ × ૪૫ સે.મી.ના અંતરે વાવેતર કરી ૧૨૦ કિ.ગ્રા. નાઈટ્રોજન પ્રતિ હેકટરે આપવો.

(Action: Research Scientist, Agricultural Research Station, SDAU, Talod)

No.11.2.1.57

Studies on weed management in Groundnut with special reference to *Commelina benghalensis* "*bokandu*"

The farmers of North Gujarat Agro Climatic Zone-IV growing groundnut are recommended to apply pendimethalin 38.7% CS @ 1.0 kg/ha as pre emergence followed by application of Imazethapyr 10% SL @ 75g /ha as post emergence at 15-20 days after sowing for effective control of *Commelina benghalensis (bokandu*) as well as for higher pod yield and net return. Phytotoxic effect of these herbicides was not observed on succeeding crop.

ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તાર–૪ના મગફળીનુ વાવેતર કરતા ખેડૂતોને મગફળીમાં બોકંદા (શેષમૂળ) ના અસરકારક નિયંત્રણ તેમજ મગફળીનું વધુ ઉત્પાદન અને નફો મુળવવા માટે મગફળીની વાવણી પછી તરત જ પેન્ડીમીથાલીન ૩૮.૭ ટકા સીએસ ૧ કિ.ગ્રા. / હે નો છંટકાવ કરવો. ત્યારબાદ ઊભા પાકમાં વાવણીના ૧૫ થી ૨૦ દિવસે ઈમેઝીથાયપર ૧૦ ટકા એસએલ ૭૫ ગ્રામ / હે નો છંટકાવ કરવો. આ નિંદણનાશકની માવજત બાદ વવાતા પાકમાં દવાની કોઈ આડ અસર થતી નથી.

(Action: Research Scientist, ARS, SDAU, Talod)

B. RECOMMENDATION FOR SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY

No.11.2.1.58

Weed management in kharif greengram

- Pendimethalin @ 500 g/ha as PE
- Imazethapyr @ 75 g/ha as POE (15-20 DAS) fb IC at 30 DAS

Suggestion:

1. At present Imazethapyr @ 75 g/ha as POE (15-20 DAS) was found at par with Pendimethalin @ 500 g/ha as PE, however, its approval by CIB is awaited.

(Action: Agronomist & PI, AICRP-WM, AAU, Anand)

JUNAGADH AGRICULTURAL UNIVERSITY

No.11.2.1.59

Study of uptake pattern of phosphorus in different varieties of castor

In castor crop, phosphorus uptake was 47.6, 33.1 and 19.3 per cent by leaf, stalk and root at branching stage, while at flowering stage 23.8, 13.3, 5.3 and 57.6 per cent and at capsule formation stage 13.7, 16.9, 3.4 and 66.0 per cent by leaf, stalk, root and spike, respectively. Among the different stages of plant growth, the maximum phosphorus uptake was obtained at capsule formation stage (370 mg/plant) followed by flowering stage (118 mg/plant) and branching stage (29 mg/plant). Among the different varieties, maximum phosphorus uptake by crop was observed with GCH-7 at all the growth stages.

(Action: Professor & Head, Dept. of Agril. Chem. & Soil Sci., CoA, JAU, Junagadh)

No.11.2.1.60

Weed management in garlic

The scientific community is informed that application of oxyfluorfen 240 g/ha as pre-emergence followed by hand weeding at 40 days after sowing (DAS) or application of oxadiargyl 90 g/ha as pre-emergence followed by hand weeding at 40 DAS gave higher yield and net realization as well as effective weed management.

(Action: Professor & Head, Department of Agronomy, CoA, JAU, Junagadh**)**

No.11.2.1.61

Weed management in cumin

The scientific community is informed that application of pendimethalin 900 g/ha as pre-emergence followed by hand weeding at 45 days after sowing (DAS) gave higher yield and net realization as well as effective weed management.

(Action: Professor & Head, Department of Agronomy, CoA, JAU, Junagadh)

NAVSARI AGRICULTURAL UNIVERSITY

No. 11.2.1.62

Impact of application of inorganic and organic inputs under rice (*Kharif)*-rice (summer) crop sequence on water stable aggregates and aggregates associated organic carbon

Under south Gujarat heavy rainfall Agroclimatic Zone-I, last three years study on soil quality in an experiment on rice (*kharif*) - rice (summer) crop sequence with inorganic fertilizer in combination with various organic manures like FYM, castor cake, pressmud, poultry manure which was being carried out since 1996, it has been observed that application of pressmud @ 5 t ha^{-1} + ½ recommended dose of NPK to *kharif* and summer rice is superior for maintaining higher content of macro-aggregates, higher aggregates mean weight diameter, better soil organic carbon and lower soil bulk density. Moreover, application of pressmud @ 5 t ha^{-1} + ½ recommended dose of NPK to *kharif* rice has been found superior for storing higher quantum of organic carbon in micro-aggregates.

(Action: Research Scientist, Soil Science Department, NAU, Navsari)

No.11.2.1.63

Evaluating potential of different cropping systems with and without tillage, mulch and fertilizer level for soil organic carbon pool in relation to crop yield in soils of south Gujarat.

Under south Gujarat heavy rainfall Agro-climatic Zone-I, last three years study on soil quality in an experiment with paddy- green manure- summer groundnut , paddy - rabi castor-continue and paddy- sorghum- green gram crop sequence under two type of tillage, mulch and fertilizer which has been carried out since 2009, it has been observed that paddy - castor – continue sequence with residue incorporation and 25% higher dose of RDF under minimum tillage (no puddling, only planking) system is superior for maintaining good soil quality in respect to maintenance of higher organic carbon status and lower soil bulk density. However, for maintaining higher overall content of macro- aggregates and aggregates mean weight diameter, it was observed that either of the tillage or cropping systems with higher dose of fertilizer and mulch application would be helpful.

(Action: Research Scientist, Soil Science Department, NAU, Navsari)

No. 11.2.1.64

Survey of nitrate (NO_3^-) levels and heavy metals in different vegetables available in Navsari market.

The levels of nitrate and heavy metals were found in vegetables within safe limit as prescribed by Food Safety and Standards Authority of India and World Health Organization, (WHO). Handle and cook vegetables properly i.e. keep vegetables under refrigeration if they are not being cooked immediately; blanch high-nitrate vegetables in water and discard the cooking water before consumption.

(Action: Professor and Head, SSAC, NMCA, Navsari)

No.11.2.1.65

Analysis of rainfall variability and trends using 112 years of rainfall data over Navsari and Bharuch region

Rainfall analysis of 112 years rainfall data revealed that Navsari and Bharuch have shown increase trend in annual rainfall. At Navsari, rainfall is increasing @ 1.4 mm per year while at Bharuch, it is increasing @ 0.10 mm per year.

(Action: Agril. Meteorology Cell, NMCA, NAU, Navsari)

No.11.2.1.66

Markov Chain and Incomplete Gamma distribution analysis of weekly rainfall for Navsari Region

The probability analysis of rainfall of Navsari revealed that Navsari get 1025.6 mm rainfall at 90 % probability. There is high probability (> 50 %) of getting sufficient weekly rainfall (40-80 mm) during 27-30 standard meteorological weeks (July 2 to 29).

(Action: Agril. Meteorology Cell, NMCA, NAU, Navsari)

No.11.2.1.67

Analysis of climatic variability at Navsari and Bharuch region

Climatic trend analysis of Navsari and Bharuch stations revealed that maximum and minimum temperature are increasing @ 0.02 to 0.1° C per year. While bright sunshine hour is decreasing @ 0.04 to 0.05 hours per year.

(Action: Agril. Meteorology Cell, NMCA, NAU, Navsari)

No.11.2.1.68

Evaluation of different extractants and methods for the determination of P and K from soils

The soil analysts are suggested to use AB-DTPA as multi-nutrient extractants and ICP-MS as quantifying instrument to get accurate, precise, rapid and predictable results for P and K analysis in soil.

(Action: Professor and Head, Food Quality Testing Laboratory, NAU, Navsari)

No.11.2.1.69

Non Destructive Analysis of Protein, Fibre and Oil in Rice, Pigeon Pea and Soybean by NIR Analyzer

Considering the cost and time of analysis and safety, the laboratory analysts are suggested to use Near Infra-Red analyzer for the accurate and rapid estimation of protein, oil and fiber content from rice, soybean and pigeon pea over routine methods *i.e.* Folin-Lowry method, Soxhlet method and Gravimetric method, when the samples are homogenous in nature.

(Action: Professor and Head, Food Quality Testing Laboratory, NAU, Navsari)

SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

No.11.2.1.70

Delineation of nutrient status of soils of Gandhinagar district and their relationship with soil properties

The soils of Gandhinagar district are sandy to loamy sand in texture, neutral to alkaline in reaction and soluble salt content under safe limit. These soils are low in organic carbon, medium

in available P_2O_5, low to medium in DTPA – Fe and Zn. whereas, medium to high in available K_2O and S content. The available Mn and Cu status of soils are high.

(Action: Assoc. Res. Sci., Central Instrumentation laboratory, SDAU, Sardarkrushinagar)

11.2.2 NEW TECHNICAL PROGRAMMES

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr. No.	Title/Centre	Suggestions	Remarks
11.2.2.1	Comparative efficiency of sulphur containing fertilizers on soybean-onion crop sequence	Accepted with following suggestion/s 1. Recast the title as " Effect of different sources of sulphur" 2. Correct Plot size as : Gross : 3.6 m x 5.0 m Net : 1.8 m x 4.0 m 3. Spacing of Onion : 15 x 15 cm 4. Take observations as per crop	
	Action: Assoc. Res. Sci., Micronutrient project (ICAR), AAU, Anand		
11.2.2.2	Effect of boron and cutting management in seed production of lucerne (*Medicago sativa* L.)	Approved	
	Action: Research Scientist, MFRS, AAU, Anand		
11.2.2.3	Influence of nitrogen levels on yield and quality of guinea grass	Approved	
	Action: Research Scientist, MFRS, AAU, Anand		
11.2.2.4	Revalidation of fertilizer dose of different *rustica* tobacco varieties.	Approved	
	Action: Research Scientist, BTRS, AAU, Anand		
11.2.2.5	Assessment of alternate crop sequences for bidi tobacco growing area of middle Gujarat agro- climatic zone	Approved	
	Action : Research Scientist, BTRS, AAU, Anand		
11.2.2.6	Effect of secondary and micronutrients on growth, yield and quality of tobacco	Accepted with following suggestion/s 1. Give the source of sulphur	
	Action: BTRS, AAU, Anand		
11.2.2.7	Effect of organic manures on yield and quality of Tulsi (Ocimum sanctum) under middle Gujarat conditions.	Approved	
	Action: Research Scientist, Medicinal and Aromatic Research Station., AAU, Anand		
11.2.2.8	Varietal performance of hybrid maize under different levels of nitrogen and phosphorus in kharif season	Accepted with following suggestion/s 1.Delete "Varietal" from the title 2. Locations will be (i) MMRS, Godhra (ii) TRTC, Devgadhbaria (iii) HMS, Dahod	

	Action: Research Scientist, MMRS, AAU, Godhara		
11.2.2.9	Varietal performance of hybrid maize under different levels of nitrogen and phosphorus in rabi Season	Accepted with following suggestion/s 1. Delete "Varietal" from the title 2. Locations will be (i) MMRS, Godhra (ii) RRS, Anand	
	Action: Research Scientist, MMRS, AAU, Godhara		
11.2.2.10	Effect of sowing time and spacing on growth and yield of chickpea for green pod	Accepted with following suggestion/s 1. Calculate economics based on current market price	
	Action: Research Scientist, ARS, AAU, Derol		
11.2.2.11	Response of different nitrogen levels and time of application through fertigation on green cob yield of sweet corn (Zea mays L. Sachharata Strut) under middle Gujarat conditions.	Approved	
	Action Associate Research Scientist, TRTC, AAU, Devghadhbaria		
11.2.2.12	Effect of cow dung and Anubhav biodegradable bacterial consortium (ABBC) on composting of banana pseudo stem and maize fodder (waste) for preparation of vermi compost.	Approved	
	Action: Asstt. Professor, ARS, AAU, Jabugam		
11.2.2.13	Soil test based fertilizer prescriptions through inductive cum targeted yield model for rice.	Approved	
	Action: Asso. Professor, Agri. Wing, AAU, Jabugam		

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGHADH

Sr. No.	Title	Suggestions	Remarks
11.2.2.14	Herbicidal control of purple nut sedge	Accepted with following suggestion/s 1. Replace "cultivated fallow " instead of "Non-cropped condition" 2. In observations : Take initial weed flora	
	Action : *Professor& Head, Department of Agronomy, JAU, Junagadh*		
11.2.2.15	Post-emergence weed management in wheat	Approved	
	Action :*Professor& Head, Department of Agronomy, JAU, Junagadh*		
11.2.2.16	Evaluation of groundnut + sweet corn mix / inter cropping systems	Accepted with following suggestion/s 1. Take sweet corn variety : Sugar- 75	
	Action : *Professor & Head, Department of Agronomy, JAU, Junagadh*		
11.2 2.17	Effect of different irrigation scheduling and irrigation interval through drip on	Accepted with following suggestion/s 1. Write Split Plot Design	

	chickpea (AICRP).		
	Action : *Res. Sci. (Chickpea), Pulses Research Station, JAU, Junagadh*		
11.2 2.18	Nitrogen management in wheat crop	1. Add observation : Nitrogen use efficiency	
	Action : *Res. Sci. (Wheat), Wheat Research Station, JAU, Junagadh*		
11.2 2.19	Recycling of cotton and castor stalks grown in rotation and its effect on yield of succeeding crop and soil health	Accepted with following suggestion/s 1. Change title as "Recycling of cotton stalks and its effect on yield and soil health." 2. In treatments:S_1 to S_5-delete the word "and castor"	
	Action : *Res. Sci., Main Dry Farming Research Station JAU, Targhadia*		
11.2 2.20	Establishment of critical limit of sulphur for pigeonpea crop in medium black calcareous soils	Accepted with following suggestion/s 1. Consider soil rating of sulphur as a note 2.Increase replications from three to four	
	Action: *Prof. & Head, Dept. of Agril. Chemistry & Soil Sci., JAU, Junagadh*		
11.2 2.21	Effect of multi-micronutrient formulations on brinjal	Approved	
	Action: *Prof. & Head, Dept. of Agril. Chemistry & Soil Sci., JAU, Junagadh*		

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Sr. No.	Title/Centre	Suggestions	Remarks
11.2.2.22	Effect of precise application of planting material, irrigation and fertilizer on productivity of sugarcane	Approved	
	Action: Res. Sci. (Soil & Water), SWMRU, NAU, Navsari		
11.2.2.23	Effect of gypsum, integrated nutrient management and land configuration on growth, yield and quality of carrot	Approved	
	Action: Res. Sci. (Soil & Water), SWMRU, NAU, Navsari		
11.2.2.24	Production potential of hybrid rice under different fertility levels in south Gujarat conditions	Approved	
	Action: Res. Sci. (Soil & Water), SWMRU, NAU, Navsari		
11.2.2.25	Effect of levels and sources of silicon on yield and quality of summer paddy	Not Approved	
	Action: Res. Sci. (Soil & Water), SWMRU, NAU, Navsari		
11.2.2.26	Use of plant growth regulators (PGRs) for enhanced yield and quality of sugarcane	Approved	
	Action: Res. Sci. (Sugarcane), Main Sugarcane Research Station, NAU, Navsari		
11.2.2.27	Agronomic requirement of	Not Approved	

	promising hybrid of castor (NCH-1)		
	Action: Nodal Office, Pulses and Castor Res. Station, NAU, Navsari		
11.2.2.28	Optimization of Niger production under resource constraints	Approved	
	Action: Assoc. Res. Sci., Niger Research Station, NAU, Vanarasi		
11.2.2.29	Evaluation of method and levels of irrigation in summer groundnut	Approved with following suggestion 1. Write mini sprinkler instead of sprinkler in treatment M_2.	
	Action: Assoc. Res. Sci., Regional Rice Res. Station, NAU, Vyara		
11.2.2.30	Canopy management through Mepiquate chloride under high density planting system of cotton in irrigated conditions	Approved with following suggestions 1. Increase the intra row spacing i.e. 20 cm in plant density 2. Add two more treatments in plant density i.e. 90 X 20 cm and 120 X 20 cm 3. Delete treatment number 2 and 4 of Mepiquate choride 4. Write design *like* RBD(Factorial)	
	Action: Res. Sci. (Cotton), Main Cotton Res. Station, NAU, Surat		
11.2.2.31	Exploiting the potential of sub soiling in Bt cotton cultivation	Approved with following suggestions 1. Recast the title *like* Effect of sub soiling on Bt. cotton 2. Experiment design should be large plot technique 3. Delete gross & net plot size and kept plot size of 40 m x 10 m 4. Write sampling instead of replication and it must be 4 quadrate	
	Action: Res. Sci. (Cotton), Main Cotton Res. Station, NAU, Surat		
11.2.2.32	Response of fodder sorghum (*Sorghum bicolor* L. Moench) varieties to bio fertilizer and nitrogen levels	Approved with following suggestions 1. Delete objective number 4 and 5 2. Correct treatment B_2 *like* *Azospirillum* + PSB @ 10 ml each per kg seed (seed treatment) 3. Add 40 kg N/ha and delete 100 kg N/ha in treatments	
	Action: Prof. & Head, Dept. of Agronomy, NMCA, NAU, Navsari		
11.2.2.33	Study on critical periods of crop-weed competition in maize	Approved with following suggestions 1. Delete objective number 4 2. Write weed flora study instead of weed species study. 3. Add the observation on grain weight per cob and test weight 4. Delete observation on grain yield/plant.	
	Action: Prof. & Head, Dept. of Agronomy, NMCA, NAU, Navsari		

11.2.2.34	Application of Mixed Statistical Distributions in Fitting Rainfall Data of South Gujarat	Approved	
	Action: Asstt. Prof., Meteorology Dept. ,NMCA, NAU, Navsari		
11.2.2.35	Agronomical evaluation of different pigeon pea genotype under organic farming	Approved with following suggestions 1. Write the word varieties instead of genotypes in title of experiment. 2. Delete objective number 3 3. Delete treatment V_3, V_5, and V_6 and add variety AGT 2 as treatment 4. Recast the treatment of organic sources *like* O_1: 100 % RDN through FYM O_2: 100 % RDN through NADEP compost O_3: 100 % RDN through Vermicopost made from banana pseudostem	
	Action: Assoc. Prof., Dept. of SSAC, ACHF, NAU, Navsari		
11.2.2.36	Agronomical evaluation of promising sugarcane genotypes under organic farming	Approved with following suggestions 1. Recast title of experiment *like* Evaluation of sugarcane varieties under organic farming 2. Delete the treatment V_5 to V_{13} and V_{15}	
	Action: Assoc. Prof., Dept. of SSAC, ACHF, NAU, Navsari		
11.2.2.37	Effect of different systems of nutrient management on nagli	Approved with following suggestions 1. Delete objective number 3 2. Write forest tree leaf litter incorporation @ 5 t/ha in treatment M_1 3. change design as RBD (Factorial) 4. Include the chemical analysis of Zn content in grain.	
	Action: Asstt. Prof., College of Agriculture, NAU, Waghai		
11.2.2.38	Sustaining Castor Productivity in Relation to Green Manures and Fertility Levels	Approved with following suggestions 1. Delete objective number 5 2. Replace greengram with fodder cowpea in treatment G_3 3. Replace clusterbean variety G Guvar 2 with G Guvar 1 4. Delete common application of FYM/Compost 5. Add observation on green biomass yield of green manure crops	
	Action: Prof. and Head, Dept. of Agron., College of Agriculture, NAU, Bharuch		
11.2.2.39	Response of pigeon pea to different liquid fertilizers under various fertility levels	Approved with following suggestions 1. Recast the title of experiment as Response of pigeon pea to nutrient management 2. Factor B recast as Sources of nutrients (S)	

	Action: Prof. and Head, Dept. of Agron., College of Agriculture, NAU, Bharuch		
11.2.2.40	Agronomic requirements of pre released *herbaceum* variety in respect of plant density and fertilizer requirement under rain fed conditions	Not Approved	
	Action: Assoc. Res. Sci., Cotton Research Station, Bharuch		
11.2.2.41	Effect of foliar fertilization on sorghum under conserved moisture conditions	Approved with following suggestion 1. Correct name of organic fertilizer as Nauroji Novel organic fertilizers	
	Action: Asstt. Res. Sci., Agricultural Research Station, NAU, Tanchha		
11.2.2.42	Studies on irrigation scheduling through drip and nitrogen management in cotton var. G. Cot. Hy-8 (BG II)	Approved	
	Action: Assoc. Res. Sci., Cotton Research Sub Station, NAU, Achhalia		
11.2.2.43	Effect of crop residue incorporation and nutrient management on nutrient economy and soil properties of drilled paddy based cropping systems	Approved with following suggestion 1. Delete objective number 3	
	Action: Assoc. Res. Sci., Cotton Research Sub Station, NAU, Achhalia		
11.2.2.44	Study of Land Configuration and Irrigation Scheduling on vegetable Indian bean (Var.: NPS-1)	Approved with following suggestions 1. Delete objective number 4 2. Correct the name of variety as GNIB 21 3. Recast the title of experiment as Response of vegetable Indian bean to land configuration and irrigation schedules.	
	Action: Assoc. Res. Sci., Cotton Research Sub Station, NAU, Achhalia		
11.2.2.45	Response of summer sesame to nutrient management and irrigation scheduling	Approved with following suggestions 1. Correct treatment F_2 as 125% RDF	
	Action: Assoc. Res. Sci., Cotton Research Sub Station, NAU, Achhalia		
11.2.2.46	Effect of foliar spray of silicon on growth and yield of paddy	Approved	
	Action: SMS (Agron.), KVK, NAU, Navsari		

SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SARDAR KRUSHINAGAR

Sr. No.	Title/Centre	Suggestions	Remarks
11.2.2.47	Herbicidal control of *rabi* weeds in castor	Accepted with following suggestion/s 1. T1 and T6, add "of rabi weeds" 2. In obs.3. Replace "rabi season" instead of "next season".	
	Action: Professor, Dept. of Agronomy, C.P.C.A, SDAU, Sardarkrushinagar		

11.2.2.48	Study the response of different biofertilizer carriers and methods of application in greengram	Accepted with following suggestion/s 1. Change title as "Response of different biofertilizer formulations and methods of application in greengram". 2. Replace 2.5 t FYM/ha instead of 5 FYM/ha	
	Action: Professor, Dept. of Agronomy, C.P.C.A, SDAU, Sardarkrushinagar		
11.2.2.49	Effect of different organic sources on seed yield of *rabi* fennel (*Foeniculam vulgare* P. Mill.) under organic farming	Accepted with following suggestion/s 1. In objective.1 replace word combined" with "organic" 2. Note : PSB should be used of SAU.	
	Action: Professor, Dept. of Agronomy, C.P.C.A, SDAU, Sardarkrushinagar		
11.2.2.50	Exploration of production potential of castor (GCH 7) through Fertigation	Accepted with following suggestion/s 1. In sub plot treatments delete doses in bracket 2. Use lateral size of 16 mm, 4 lph and 60 cm 3. Change Observations as under a. Up to first spike harvesting b. Delete observations no. 2 , 7 and 9. c. No. of total branches/plant d. No. of capsules/main spike	
	Action: Research Scientist, Centre for Watershed Management, Participatory Research & Rural Engineering, SDAU, Sardarkrushinagar		
11.2.2.51	Effect of soil application of $MgSO_4$ and foliar application of KNO_3, $FeSO_4$ and $ZnSO_4$ on yield of cotton under rainfed condition	Approved	
	Action: Research Scientist, Centre for Watershed Management, Participatory Research & Rural Engineering, SDAU, Sardarkrushinagar		
11.2.2.52	Pigeonpea based sequential cropping	Accepted with following suggestion/s 1. Consider sole crops as treatments i.e. T9 to T15	
	Action: Res. Sci., Centre of Excellence for Res. on Pulses, SDAU, Sardarkrushinagar		
11.2.2.53	Response of coriander varieties to various levels of fertility under cutting management practices	Accepted with following suggestion/s 1.Observation : Green leaf yield per cutting (kg/ha)	
	Action: Research Scientist, Centre for Research in Seed Spices, SDAU, Jagudan		
11.2.2.54	Response of *kharif* fennel to sowing technique and crop geometry under varying levels of nitrogen	Approved	
	Action: Research Scientist, Centre for Research in Seed Spices, SDAU, Jagudan		

11.2.2.55	Effect of integrated weed management practices on Dill seed	Accepted with following suggestion/s 1. Change title as "Integrated weed management in dilseed". 2.In observation no. 4 "Weed count/m^2 with weed flora"	
	Action: Research Scientist, Centre for Research in Seed Spices, SDAU, Jagudan		
11.2.2.56	Efficacy of pre-emergence herbicides for controlling weeds of rustica tobacco (*Nicotiana rustica* L.) under North Gujarat conditions	Accepted with following suggestion/s 1. Change title as "Efficacy of pre-emergence herbicides in rustica tobaco." 2. Keep dose of pendimethaline @ 0.9 kg/ha in each treatment 3. Replace T5 (Atrazine @0.5 kg/ha) with pendimethaline @ 0.9 kg/ha fb IC + HW at 40 DAT 4. T6 : HW fb IC at 20 and 40 DAT	
	Action: Asso. Res. Sci.,Tobacco Research Station, SDAU, Ladol		

General Suggestions:

1. All are advised to mention the AGRESCO subcommittee number and year in which the technical programme was approved.
2. All the experiments on weed management having more than ten treatments must analyze data with DMRT test.
3. In case of fodder experiments wherein higher dose of nitrogen is used, NO_3 content should be taken.

11.3 PLANT PROTECTION/ CROP PROTECTION

Chairman	:	Dr. A. N. Sabalpara, Director of Research, NAU, Navsari
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Summary of recommendations and new technical programmes

Sr. no.	Name of university	Recommendations for farming community		Recommendations for scientific community		New technical programmes	
		Presented	Approved	Presented	Approved	Presented	Approved
1	AAU	06	05	24	24	**59**	**59**
2	JAU	20	16	01	09	**20**	**19**
3	NAU	08	02	15	21	**34**	**33**
4	SDAU	05	02	01	05	**21**	**21**
	Total	**39**	**25**	**41**	**59**	**134**	**132**

The details of recommendations and new technical programmes presented/ discussed and approved

11.3.1	**RECOMMENDATIONS**
A	**FARMING COMMUNITY**
ANAND AGRICULTURAL UNIVERSITY, ANAND Dr. P. K. Borad, Convener, Plant Protection Sub-Committee presented proposal for recommendations	
AGRICULTURAL ENTOMOLOGY	
11.3.1.1	**Evaluation of effectiveness of auditory bird repeller (Gas canon) to scare birds** Gas (LPG) canon self operated as single blast of 100-125 decibels at 60 second interval in continuous mode is effective to repel the birds (blue rock pigeon) from the one acre area. For better efficiency, the gas canon should be installed at least at 1 m above the crop height in down wind direction and be kept operated on need base period. એલપીજી ગેસ આધારિત સ્વયં સંચાલિત ધડાકા મશીનને ૬૦ સેકન્ડના સમયાંતરે ૧૦૦ - ૧૨૫ ડેસીબલના ધડાકા કરવાથી એક એકર વિસ્તારમાં પક્ષીઓને (કબૂતર) દૂર રાખે છે. સારી અસરકારકતા માટે મશીનને પાકની ઉંચાઈથી ઓછામાં ઓછુ એકાદ મીટર ઉંચાઈએ તેમજ પવનની દિશામાં સ્થાપિત કરવું અને જરૂરિયાતના સમયગાળા દરમ્યાન મશીન ચાલુ રાખવું. **(Action:** Res. Sci. (Ornitho.), AINP on Agril. Ornithology, AAU, Anand)
11.3.1.2	**Evaluation of insecticide molecules against sucking pests of okra** For effective and economical control of jassid in okra, the farmers of middle Gujarat are advised to spray thiamethoxam 25 WG, 0.009%, 3.5 g/ 10 litre water (43.75 g a.i./ha) and for whitefly, spiromesifen 240 SC, 0.02%, 8 ml/ 10 litre water (96 g

a.i./ha) first at the appearance of the pest and second at 10 days interval.

Recommendation for PHI as per CIB guidelines:

Year	Crop	Pest	Pesticides with formulation	Dosage				Appl. schedule	Waiting period /PHI (Days)
				g. a. i./ ha	Quantity of formulation per ha	Conc. (%)	Dilution in water (10 lit)		
2015	Okra	Jassid	Thiamethoxam 25 WG	43.75	175 g	0.009	3.5 g	First foliar spray application at appearance of pests and second at 10 days after first application	3
		Whitefly	Spiromesifen 240 SC	96	400 ml	0.02	8.0 ml		5

મધ્ય ગુજરાત વિસ્તારમાં ભીંડાની ખેતી કરતા ખેડૂતોને લીલા તડતડીયાંના અર્થક્ષમ અને અસરકારક નિયંત્રણ માટે થાયામેથોક્ઝામ ૨૫ વેગ્રે, ૦.૦૦૯%, ૩.૫ ગ્રામ/૧૦ લિટર પાણીમાં (૪૩.૭૫ ગ્રા.સ.ત./ હે.) અને સફેદમાખીના નિયંત્રણ માટે સ્પાયરોમેસીફેન ૨૪૦ એસસી, ૦.૦૨%, ૮ મિ.લિ./૧૦ લિટર પાણીમાં (૯૬ ગ્રા.સ.ત./ હે.) પ્રથમ છંટકાવ જીવાતનો ઉપદ્રવ શરૂ થાય ત્યારે અને ત્યારબાદ બીજો છંટકાવ ૧૦ દિવસના અંતરે કરવાની ભલામણ છે.

(Action: Asstt. Res. Sci. (Ento.), MVRS, AAU, Anand**)**

PLANT PATHOLOGY AND NEMATOLOGY

11.3.1.3 **Management of root-knot nematodes in Mungbean by crop rotation**

The farmers of middle Gujarat (AES III) growing mungbean during *Kharif* season in root-knot nematode infested soil are advised to adopt crop rotation of cabbage in *Rabi* and cluster bean (vegetable purpose) in summer for two years to manage root-knot nematodes effectively and economically.

ગંઠવા કૃમિગ્રસ્ત ખેતરમાં ચોમાસુ મગની ખેતી કરતા મધ્ય ગુજરાત (ઝોન 3) ના ખેડૂતોને ગંઠવા કૃમિના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે શિયાળામાં કોબીજ અને ઉનાળામાં ગુવાર (શાકભાજી માટે) બે વર્ષ સુધી પાકની ફેરબદલી કરવાની ભલામણ કરવામાં આવે છે .

(Action : Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**

11.3.1.4 **Integrated management of root-knot nematode, *Meloidogyne* spp. infecting pomegranate**

The farmers of middle Gujarat growing pomegranate are advised to apply *Paecilomyces lilacinus* (2 x 10^6 spores/g) 20 kg/ha + castor cake @ 2 tonne/ha in root zone, 12 to 18 inch away from tree trunk in approximately 9 inch deep in soil at onset of monsoon and second application at interval of 6 months to manage root-knot nematode with higher fruit yield.

મધ્ય ગુજરાતના દાડમની ખેતી કરતા ખેડૂતોને ગંઠવા કૃમિના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે પેસીલોમાયસીસ લીલાસીનસ (૨ x $૧૦^{૬}$ બિજાણું/ગ્રામ) ૨૦ કિ.ગ્રા./હે + દિવેલી ખોળ ૨ ટન/હે ચોમાસાની શરૂઆતમાં અને ત્યાર બાદ દર ૬ માસના આંતરે થડથી ૧૨ થી ૧૮ ઇંચ દૂર તથા આશરે ૯ ઇંચ ઉંડી રીંગ કરીને જમીનમાં મૂળ નજીક આપવાની ભલામણ કરવામાં આવે છે.

(Action : Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**

11.3.1.5 **Management of damping off using fungicide in bidi tobacco nursery**

Farmers of middle Gujarat (AES III) are advised to apply metalaxyl MZ 68 WP, 2.16 kg a.i./ha, 0.0432%, 6.4 g/10 litre using 5,000 litre water/ha under wet soil conditions, as spray drench with sprayer or 0.0108%, 1.6 g/ 10 litre using 20,000 litre water/ha under dry soil conditions with rose cane on seedlings as and when required

	for effective and economical control of damping-off disease in bidi tobacco nursery. મધ્ય ગુજરાત (ઝોન ૩)ના બીડી તમાકુ ધરૂ ઉગાડતા ખેડૂતોને કોહવારાના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે મેટાલેક્ષીલ એમઝેડ ૬૮ વે.પા., ૨.૧૬ કિ.ગ્રા. સ.ત./હે. ૦.૦૪૩૨%, ૬.૪ ગ્રામ/૧૦ લિટર મુજબ ૫,૦૦૦ લિ.પાણી/હે. પ્રમાણે ભીની જમીનમાં પંપથી ધરૂ ભીંજાય અને દ્રાવણ જમીન ઉપર રેલાય તે રીતે છંટકાવ દ્વારા અથવા ૦.૦૧૦૮%, ૧.૬ ગ્રામ/૧૦ લિટર મુજબ ૨૦,૦૦૦ લિ.પાણી/હે. સૂકી જમીનમાં ઝારાથી રેલાવીને જરૂરિયાત મુજબ આપવાની ભલામણ કરવામાં આવે છે. **(Action :** Res. Sci. (Patho.), BTRS, AAU, Anand**)**
JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH Dr. V. N. Patel, Convener, Plant Protection Sub-Committee presented proposal for recommendations	
AGRICULTURAL ENTOMOLOGY	
11.3.1.6	**Management of sucking pests through insecticides in brinjal** For effective and economical control of brinjal whitefly, three sprays of chlorantraniliprole 18.5 SC, 0.002 %, 1.08 ml/10 litre water at 15 days interval starting from the pest infestation are recommended under South Saurashtra Agro climatic Zone. The PHI for chlorantraniliprole 18.5 SC, 0.002 % is one day. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં રીંગણની સફેદ માખીનાં અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે ક્લોરાન્ટ્રાનીલીપ્રોલ ૧૮.૫ એસસી, ૦.૦૦૨ %, ૧.૦૮ મિ.લિ./૧૦ લિટર પાણીના ત્રણ છંટકાવ દર ૧૫ દિવસના અંતરે કરવાની ભલામણ કરવામાં આવે છે. ક્લોરાન્ટ્રાનીલીપ્રોલ ૧૮.૫ એસસી, ૦.૦૦૨ % ના છંટકાવ અને ફળ ઉતારવા વચ્ચે સમયગાળો એક દિવસ રાખવો. (**Action:** Professor and Head, Dept. of Entomology, CoA, JAU, Junagadh)
11.3.1.7	**Storage potential of bio-agent under refrigerator conditions** Farmers are advised to store the field collected ladybird beetles (*Coccinella septempunctata* (L.)) in jar containing folded papers under domestic refrigerator conditions (6.0 to 7.5 ^{0}C) up to 120 days with the survival rate of 84 per cent without hampering their longevity and fecundity. These stored predatory beetles can be released in field crops for biological control of insect pests. ખેડૂતોને સલાહ આપવામાં આવે છે કે, ખેતરમાંથી એકત્રિત કરેલા પુખ્ત પરભક્ષી લાલ દાળિયાને ગડી પાડેલ કાગળ ધરાવતી બરણીમાં રાખી તેને ફ્રીજમાં (૬.૦ થી ૭.૫° સે.) ૧૨૦ દિવસ સુધી ૮૪ **ટકા** જીવંત દર સાથે, તેની આયુષ્ય અને પ્રજનન શક્તિને કોઈપણ જાતનાં અવરોધ વગર શીત સંગ્રહ કરી શકાય છે અને તેનો ખેતી પાકોની જીવાતોના જૈવિક નિયંત્રણ માટે ઉપયોગમાં લઈ શકાય છે. (**Action:** Professor and Head, Dept. of Entomology, CoA, JAU, Junagadh)
11.3.1.8	**Storability of HaNPV and SNPV under refrigerator condition** Farmers are advised for biological control of *Helicoverpa armigera* and *Spodoptera litura* through Nuclear Polyhedrosis Virus (NPV) to store the field collected NPV infected larvae under domestic refrigerator conditions (6.0 to 7.5 ^{0}C). These NPV infected larvae can be stored up to 8 months of storage period with 100 per cent virulence, which can be utilized for the biological management of respective pest. લીલી ઈયળ તથા લશ્કરી ઈયળોના જૈવિક નિયંત્રણમાં રસ ધરાવતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, વિષાણુ રોગગ્રસ્ત ઈયળોને ઘરાઉ રેફ્રીજરેટરમાં (૬.૦ થી ૭.૫° સે.) ૮ માસ સુધી ૧૦૦ **ટકા** રોગ ઉત્પન્ન કરવાની ક્ષમતા સાથે સંગ્રહ કરી શકાય છે. જેનો સંબંધિત જીવાતનાં જૈવિક નિયંત્રણ માટે વિષાણુયુક્ત દ્રાવણ તૈયાર કરી ઉપયોગમાં લઈ શકાય છે. (**Action:** Professor and Head, Dept. of Entomology, CoA, JAU, Junagadh)
11.3.1.9	**Studies on effect of drip v/s flood irrigation on the incidence of important mango pests.**

	Mango growers of South Saurashtra Agro-climatic Zone are informed that the lower incidence of gall midge, hopper and thrips is found in drip irrigated orchard as compared to flood irrigated orchard. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં આંબાના બગીચા ધરાવતા ખેડૂતોને જણાવવામાં આવે છે કે, ટપક પિયત **પધ્ધતિમાં** ગાંઠીયા માખી, મધિયો અને થ્રીપ્સનો ઉપદ્રવ રેલાવીને પિયત પધ્ધતિ કરતા ઓછો જોવા મળે છે. (**Action:** Professor and Head, Dept. of Entomology, CoA, JAU, Junagadh)
11.3.1.10	**Testing of efficacy of different newer insecticides against shoot fly and stem borer in pearl millet** Farmers of North Saurashtra Agro-climatic Zone growing *kharif* pearl millet are advised to treat the seeds with imidacloprid 600 FS, 8.75 ml/kg seeds, 4.20 g a.i./kg seeds at the time of sowing followed by spray with imidacloprid 17.8 SL, 0.009 % (5.0 ml/10 liter water, 45.39 g a.i./ha) at 35 days after germination of the crop for effective management of shoot fly and stem borer. The PHI for these insecticides is 42 days. ઉત્તર સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ચોમાસુ બાજરી ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે સાંઠામાખી અને ગાભમારાની ઈયળના અસરકારક નિયંત્રણ માટે બાજરીના બીજને વાવેતર વખતે ઈમિડાક્લોપ્રિડ ૬૦૦ એફએસ ૮.૭૫ મિલિ/કિ.ગ્રા. બીજ, ૪.૨૦ ગ્રામ સ.ત./ કિ.ગ્રા. નો પટ આપવો તેમજ પાકના ઉગાવા બાદ ૩૫ દિવસે ઈમીડાક્લોપ્રીડ ૧૭.૮ એસએલ, ૦.૦૦૯ % (૫.૦ મિલિ/૧૦ લિટર પાણી, ૪૫.૩૯ ગ્રામ સ.ત. /હેકટર) નો છંટકાવ કરવો. આ દવાના છેલ્લા છંટકાવ અને કાપણી વચ્ચે ૪૨ દિવસનો સમય ગાળો જાળવવો. (**Action:** Res. Sci. (Pearl millet), Pearl Millet Research Station, JAU, Jamnagar)
11.3.1.11	**Storage study of wheat harvested by combine harvester** The farmers storing wheat are advised that wheat harvested by combine harvester (up to 6 % mechanically damaged grain) to be stored with the treatment of castor oil (15 ml/1.0 kg grain) and can be kept in GI bin container to keep safe against lesser grain borer up to eight months of storage as it reduces pest population, grain damage, weight loss as compared to untreated wheat kept in jute bags. ઘઉં સંગ્રહ કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, કમ્બાઈન્ડ હાર્વેસ્ટર દ્વારા કાપણી કરી તૈયાર થતા ઘઉં (૬ ટકા સુધી યંત્ર દ્વારા નુકસાન પામેલ દાણા)ને કોઈપણ જાતની માવજત વિના શણનાં કોથળામાં સંગ્રહ કરવાને બદલે દિવેલની (૧૫ મિ.લિ./કિ.ગ્રા.) માવજત આપી ગેલ્વેનાઈઝ્ડ પીપમાં સંગ્રહ કરવામાં આવે તો સંગ્રહ દરમ્યાન નુકસાન કરતી જીવાત આંધળા જીવડા, તેનાથી થતુ દાણાનુ નુકસાન તથા વજનમાં થતો ઘટાડો ઓછો જોવા મળે છે અને ૮ માસ સુધી સંગ્રહ કરી શકાય છે. (**Action:** Professor and Head, Dept. of Processing & Food Engg., CAET, JAU, Junagadh)
11.3.1.12	**Testing bio-efficacy of certain insecticides against pod borer complex on urdbean** Farmers of South Saurashtra Agro-climatic zone are advised to apply two sprays of chlorantraniliprole 18.5 SC, 0.006 % (3 ml/ 10 litre water) or flubendiamide 48 SC, 0.0096 % (2 ml/ 10 litre water), first spray at 50 per cent flowering and second at 15 days interval for the control of pod borer complex in urdbean. The PHI for chlorantraniliprole 18.5 SC is 20 days, whereas 11 days for flubendiamide 48 SC. **દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારના** ખેડૂતોને **અડદનાં પાકમાં** શિંગ **કોરી ખાનારી ઈયળોનાં અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે કલોરાન્ટ્રાનીલીપ્રોલ ૧૮.૫ એસસી ૦.૦૦૬ %** (૩ મિ.લિ. / **૧૦** લિટર **પાણીમાં) અથવા ફ્લુબેન્ડીયામાઈડ ૪૮ એસસી ૦.૦૦૯૬ %** (૨ મિ.લિ. /**૧૦** લિટર **પાણીમાં) નાં બે છંટકાવ કરવાની ભલામણ છે. પ્રથમ છંટકાવ ૫૦ ટકા ફૂલ અવસ્થાએ અને બીજો છંટકાવ પ્રથમ છંટકાવ બાદ ૧૫ દિવસે કરવો.** **કલોરાન્ટ્રાનીલીપ્રોલ ૧૮.૫ એસસીના છેલ્લા છંટકાવ અને કાપણી વચ્ચેનો સમયગાળો ૨૦** દિવસનો

	જાળવવો **અને ફ્લુબેન્ડીયામાઈડ ૪૮ એસસીના છેલ્લા છંટકાવ અને કાપણી વચ્ચેનો સમયગાળો ૧૧** દિવસનો જાળવવો. (**Action:** Res. Sci. (Chickpea), Pulses Research Station, JAU, Junagadh)
PLANT PATHOLOGY	
11.3.1.13	**Assessment of *Trichoderma* population in the field under groundnut cultivation** Farmers of North and South Saurashtra Agro-climatic Zone are advised to apply *Trichoderma* every year for the management of stem/pod rot disease in groundnut. **ઉત્તર** અને દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ખેડૂતોને સલાહ આપવામાં આવે છે કે મગફળીના થડના સડાના નિયંત્રણ માટે ટ્રાયકોડર્માની માવજત દર વર્ષે આપવી. (**Action:** Prof. and Head, Dept. of Plant Pathology, CoA, JAU, Junagadh)
11.3.1.14	**Standardization of method and time of application of bio-control agents for management of stem and pod rot of groundnut caused by *Sclerotium rolfsii*** Farmers of South Saurashtra Agro-climatic Zone are advised furrow application of *Trichoderma harzianum* 2 x 10^6 $cfug^{-1}$ @1.25 kg in 125 kg of castor cake/ha at the time of sowing as well as its broadcasting at plant base with same dose at one month after sowing for effective and economic control of stem and pod rot (*Sclerotium rolfsii*) of groundnut. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ખેડૂતોને ભલામણ કરવામાં આવે છે કે મગફળીના થડ અને ડોડવાના સડાના અસરકારક નિયંત્રણ માટે ૧.૨૫ કિ.ગ્રા. ટ્રાયકોડર્મા હારજીયાનમ ૨ x ૧૦^{૬} જીવંત કોષો/ગ્રા. ને ૧૨૫ કિ.ગ્રા. દિવેલીના ખોળમાં ભેળવી વાવેતર સમયે ચાસમાં આપવું અને તેટલો જ જથ્થો વાવેતરના એક મહિના પછી થડની પાસે વેરીને આપવો. (**Action:** Prof. and Head, Dept. of Plant Pathology, CoA, JAU, Junagadh)
11.3.1.15	**Compatibility of *Trichoderma* with different seed dressing agrochemicals used for the management of diseases and pest in groundnut** Farmers of South Saurashtra Agro-climatic Zone are advised that the agrochemicals used for seed treatment in groundnut *viz.*, carbendazim 12 % + mancozeb 63 % - 75 WP @ 3.0 g/kg seed or mancozeb 75 WP @ 4.0 g/kg seed or carboxin 37.5 % + thirum 37.5 % - 75 WP @ 3.0 g/kg seed or tebuconazole 2 DS @ 2.0 g/kg seed or imidacloprid 600 FS @ 3.0 ml/kg seed against seed and soil borne diseases/sucking pests do not reduce the soil population of *Trichoderma*, hence they are compatible with *Trichoderma harzianum.* દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ખેડૂતોને ભલામણ કરવામાં આવે છે કે મગફળીમાં બીજ અને જમીનજન્ય રોગો/ ચૂસીયાં પ્રકારની જીવાતોના નિયંત્રણ માટે બીજ માવજત તરીકે વપરાતા કૃષિ રસાયણો જેવા કે કાર્બેન્ડાઝીમ ૧૨ % + મેન્કોઝેબ ૬૩ % - ૭૫ વેપા ૩.૦ ગ્રામ/કિલો બીજ અથવા મેન્કોઝેબ ૭૫ વેપા ૪.૦ ગ્રામ/કિલો બીજ અથવા કાર્બોક્સીન ૩૭.૫ % + થાયરમ ૩૭.૫ % - ૭૫ વેપા ૩.૦ ગ્રામ/કિલો બીજ અથવા ટેબ્યુકોનાઝોલ ૨ ડીએસ ૨.૦ ગ્રામ/કિલો બીજ અથવા ઈમીડાક્લોપ્રીડ ૬૦૦ એફ્એસ ૩.૦ મિ.લિ./કિલો બીજના દરે આપેલ માવજતથી જમીનમાંની ટ્રાયકોડર્માની સંખ્યા ઘટતી નથી, આમ આ કૃષિ રસાયણો ટ્રાયકોડર્મા હારજીયાનમની સાથે સુસંગત છે. (**Action :** Prof. and Head, Dept. of Plant Pathology, CoA, JAU, Junagadh)
11.3.1.16	**Effect of spawn rates on sporophore production of Oyster mushroom (*Pleurotus sajor-caju*)** Mushroom growers are advised to use 3.0 per cent spawn rate in polyethylene bags (18 × 24 inch) of oyster mushroom (*Pleurotus sajor-caju*) to get the optimum sporophore production with higher biological efficiency. મશરૂમ ઉગાડતા ઉદ્યમીઓને ભલામણ કરવામાં આવે છે કે પ્લાસ્ટિકની કોથળી (૧૮ × ૨૪ ઇંચ) માં ઉગાડાતી ઓય્સટર મશરૂમના અધિક જૈવિક કાર્યક્ષમતા સાથે વધુ ઉત્પાદન માટે ૩ ટકાનો બીજ દર રાખવો. (**Action:** Prof. and Head, Dept. of Plant Pathology, CoA, JAU, Junagadh)

11.3.1.17	**Effect of substrate rates on sporophore production of Oyster mushroom (*Pleurotus sajor-caju*)** Mushroom growers are advised to use 3 kg wheat straw substrate with 3 per cent spawn rate in polyethylene bags (18 × 24 inch) for the optimum sporophore production with higher biological efficiency of oyster mushroom (*Pleurotus sajor-caju*). મશરૂમ ઉગાડતા ઉદ્યમીઓને ભલામણ કરવામાં આવે છે કે પ્લાસ્ટિકની કોથળી (૧૮ × ૨૪ ઇંચ)માં ઉગાડાતી ઓય્સટર મશરૂમના મહતમ જૈવિક કાર્યક્ષમતા સાથે વધુ ઉત્પાદન માટે કોથળી દીઠ ૩ કિલો ઘઉંના પરાળના માધ્યમનો ૩ ટકાના બીજ દર સાથે ઉપયોગ કરવો. (**Action:** Prof. and Head, Dept. of Plant Pathology, CoA, JAU, Junagadh)
11.3.1.18	**Management of cumin wilt (*Fusarium oxysporum f. sp. cumini*)** Farmers of South Saurashtra Agro-climatic Zone are advised to broadcast *Trichoderma harzianum* 2 x 10^6 cfug^{-1} @ 5.0 kg mixed in 1000 kg of FYM/ha at the time of sowing for effective and economical control of cumin wilt. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ખેડૂતોને ભલામણ કરવામાં આવે છે કે જીરૂના સુકારાના અસરકારક નિયંત્રણ માટે ૫.૦ કિ.ગ્રા. ટ્રાયકોડર્મા હારજીયાનમ ૨ x ૧૦^{૬} જીવંત કોષો/ગ્રા.ને ૧૦૦૦ કિ.ગ્રા./હે. ગળતીયા ખાતરમાં ભેળવી વાવણી સમયે જમીનમાં આપવું. (**Action:** Prof. and Head, Dept. of Plant Pathology, CoA, JAU, Junagadh)
11.3.1.19	**Efficacy of different bio-control agents against cumin wilt caused by *Fusarium oxysporum f. sp. cumini*** Farmers of South Saurashtra Agro-climatic Zone are advised to broadcast mixture of *Trichoderma viride* @ 1.70 kg + *T. harzianum* @ 1.70 kg + *Pseudomonas fluorescens* @ 1.70 kg (2 x 10^7 cfug^{-1}) or *T. viride* @ 2.50 kg + *P. fluorescens* @ 2.50 kg (2 x 10^7 cfug^{-1}) mixed in 500 kg of castor cake/ha at the time of sowing for effective and economical control of cumin wilt. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ખેડૂતોને ભલામણ કરવામાં આવે છે કે જીરૂના સુકારાના અસરકારક નિયંત્રણ માટે ૧.૭૦ કિ.ગ્રા. ટ્રાયકોડર્મા વિરીડી + ૧.૭૦ કિ.ગ્રા. ટ્રાયકોડર્મા હારજીયાનમ + ૧.૭૦ કિ.ગ્રા. સ્યુડોમોનાસ ફ્લુરેસન્સ (૨ x ૧૦^{૭} જીવંત કોષો/ગ્રા.) અથવા ૨.૫૦ કિ.ગ્રા. ટ્રાયકોડર્મા વિરીડી + ૨.૫ કિ.ગ્રા. સ્યુડોમોનાસ ફ્લુરેસન્સ (૨ x ૧૦^{૭} જીવંત કોષો/ગ્રા.)ના મિશ્રણને ૫૦૦ કિ.ગ્રા. દિવેલીના ખોળમાં ભેળવી વાવેતર સમયે જમીનમાં વેરીને આપવું. (**Action:** Prof. and Head, Dept. of Plant Pathology, CoA, JAU, Junagadh)
11.3.1.20	**Effect of foliar application of insecticides in cumin on *Trichoderma* applied in soil** Farmers of South Saurashtra Agro-climatic Zone are advised to apply *Trichoderma harzianum* (2 x 10^7 cfug^{-1}) @ 5 kg in 500 kg of castor cake/ha at the time of sowing as well as its broad-casting @ 5 kg/ha Trichoderma in 100 kg sand at one month after germination of crop for effective and economical control of cumin wilt. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ખેડૂતોને ભલામણ કરવામાં આવે છે કે જીરુના સુકારાના અસરકારક નિયંત્રણ માટે ટ્રાયકોડર્મા હારજીયાનમ (૨ x ૧૦^{૭} જીવંત કોષો/ગ્રા.) ૫ કિ.ગ્રા. ને ૫૦૦ કિ.ગ્રા. દિવેલીના ખોળમાં ભેળવી વાવેતર સમયે જમીનમાં આપવું તેમજ ૫ કિ.ગ્રા./હે ને ૧૦૦ કિ.ગ્રા. રેતીમાં ભેળવી પાકના ઉગવાના એક મહિના પછી વેરીને આપવું. (**Action:** Prof. and Head, Dept. of Plant Pathology, CoA, JAU, Junagadh)
11.3.1.21	**Effect of foliar application of herbicides in cumin on *Trichoderma* applied in soil** Farmers of South Saurashtra Agro-climatic Zone are advised that the application of herbicides oxadiargyl 6 EC, 0.075 kg a.i./ha, 25 ml/10 litre at 7 days after sowing in cumin do not reduce the soil population of *Trichoderma harzianum*. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ખેડૂતોને ભલામણ કરવામાં આવે છે કે ટ્રાયકોડર્મા હારજીયાનમ

	જમીનમાં ભેળવ્યા બાદ જીરુમાં નીંદણ નિયંત્રણ માટે વપરાતુ નીંદણનાશક, ઓક્સાડાયાર્જીલ ૬ ઈસી, ૦.૦૭૫ કિલો સ. ત./હે (૨૫ મિ.લિ./૧૦ લિટર) ના દરે વાવેતરના સાત દિવસ પછી આપવાથી જમીનમાંની ટ્રાયકોડર્માની સંખ્યામાં ઘટાડો થતો નથી. (**Action :** Prof. and Head, Dept. of Plant Pathology, CoA, JAU, Junagadh)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Dr. Z. P. Patel, Convener, Plant Protection Sub-Committee presented proposal for recommendations

AGRICULTURAL ENTOMOLOGY

11.3.1.22 **Bio-efficacy of some insecticides and neem products against *Helicoverpa armigera* (Hubner) on tomato**

For effective control of tomato fruit borer, farmers of south Gujarat (AES III) are advised to apply two sprays of flubendiamide 20 WDG, 2.5 g/10 litre or chlorantraniliprole 18.5 SC, 3.0 ml/10 litre, first at the time of flowering and second at 15 days after first spray for obtaining higher yield and better return. Further, the residue content of these insecticides remained below MRL in tomato fruits after three days.

દક્ષિણ ગુજરાતના ટામેટા ઉગાડતા ખેડૂતોને લીલી ઈયળના અસરકારક નિયંત્રણ માટે ભલામણ કરવામા આવે છે કે ફ્લુબેન્ડીયામાઈડ ૨૦ ડબલ્યુ ડી જી (૨.૫ ગ્રામ/ ૧૦ લિટર, ૨૫ ગ્રામ સ.ત./હે) અથવા ક્લોરેન્ટ્રાનીલીપ્રોલ ૧૮.૫ એસસી (૩.૦ મિલિ/ ૧૦ લિટર, ૩૦ ગ્રામ સ.ત./હે) ના બે છંટકાવ કરવા તે પૈકી પ્રથમ છંટકાવ ફૂલ બેસવાની અવસ્થાએ અને બીજો છંટકાવ પંદર દિવસ બાદ કરવાથી વધુ ઉત્પાદન સાથે સારૂ વળતર મળે છે. ટામેટામાં આ દવાના અવશેષો ત્રણ દિવસ બાદ મહત્તમ અવશેષ મર્યાદા માત્રા કરતાં નીચે જોવા મળે છે.

Recommendation for PHI as per CIB guidelines:

Year	Crop	Pest	Pesticide with formulation	Dose			Waiting period (days)
				Quantity of formulation	Conc. (%)	Dilution in water	
2015	Tomato	Fruit borer	Flubendiamide 20 WDG	25 g a.i./ha	0.005%	500 L	3
2015	Tomato	Fruit borer	Chlorantraniliprole 18.5 % SC	30 g a.i./ha	0.006%	500 L	3

વર્ષ	પાક	જીવાત	જંતુનાશક	માત્રા			વેઈટીંગ પીરીયડ (દિવસ)
				ગ્રા.સ.ત/ હે	સાંદ્રતા %	પાણીમાં મિશ્રણ	
૨૦૧૫	ટામેટા	ફળ કોરનાર ઈયળ	ફ્લુબેન્ડીયામાઈડ ૨૦ ડબ્લ્યુડીજી	૨૫ ગ્રામ	૦ ૦૦૫.%	૫૦૦ લી.	૩
૨૦૧૫	ટામેટા	ફળ કોરનાર ઈયળ	ક્લોરેન્ટ્રાનીલીપ્રોલ ૧૮એસસી. ૫.	૩૦ ગ્રામ	૦ ૦૦૬.%	૫૦૦ લી.	૩

(Action: Asstt. Prof. (Ento)., Polytechnic (Horti.), NAU.,Navsari)

11.3.1.23 **Residues and dissipation of deltamethrin 2.8 EC in okra**

The okra growers of South Gujarat Heavy Rainfall Agro-climatic Zone (AES III) are advised to observe one day pre harvest interval after the last spray of deltamethrin 2.8 EC when applied at 0.028% (10 ml in 10 litre water).

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા ખેત આબોહવાકીય વિસ્તારના ભીંડા ઉગાડતા ખેડૂતોને ડેલ્ટામેથ્રીન ૨.૮ ઈસી, ૦.૦૨૮% (૧૦ મિ.લિ./૧૦ લિટર પાણી) ના છેલ્લા છંટકાવ અને ઉતાર વચ્ચે એક દિવસનો સમયગાળો રાખવાની સલાહ આપવામાં આવે છે.

Recommendation for PHI as per CIB guidelines:

Year	Crop	Pest /Diseases	Pesticide with formulation	Doses			Waiting Period (days)
				Quantity of formulation	Conc. (%)	Dilution in water	

2015	Okra	Fruit borer, shoot borer and jassid.	Deltamethrin 2.8 EC	11.2 g a.i/ha	0.028 %	400 L	1.0

વર્ષ	પાક	જીવાત	જંતુનાશક	માત્રા			વેઈટીંગ પીરીયડ (દિવસ)
				સ.ત/ હે	સાંદ્રતા %	પાણીમાં મિશ્રણ	
૨૦૧૫	ભીંડા	ફળ અને દુંખવેધક અને લીલા તડતડીયા	ડેલ્ટામેથ્રીન ૨.૮ ઈ.સી	૧૧.૨ ગ્રામ	૦.૦૨૮%	૪૦૦	૧

(Action: Asstt. Prof. (Pesticide Residue), FQTL., NAU., Navsari)

SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SK NAGAR

Dr. B. R. Patel, Convener, Plant Protection Sub-Committee presented proposal for recommendations

AGRICULTURAL ENTOMOLOGY

11.3.1.24 Insecticidal seed treatment against maize stem borer

To minimize the damage of stem borer in maize, the farmers of North Gujarat Agro-climatic zone are advised to apply seed treatment before sowing with thiamethoxam 70 WS @ 5 g per kg seeds by preparing slurry with 50 ml water at the time of sowing.

ઉત્તર ગુજરાત ખેત હવામાન વિભાગના મકાઈનુ વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ગાભમારાની ઈયળનુ નુકસાન ઘટાડવા માટે બીજને વાવતા પહેલા થાયામેથોકઝામ ૭૦ ડબલ્યુએસ ૫ ગ્રામ / કિલો બીજ પ્રમાણે ૫૦ મિ.લિ. પાણીમાં રગડો બનાવીને માવજત આપવી.

(**Action :** SMS (Ento.), KVK, SDAU, Khedbrahma and Assistant Res. Sci. ARS, SDAU, Bhiloda)

PLANT PATHOLOGY

11.3.1.25 Effect of date of sowing on the development of bacterial blight of clusterbean

Farmers of North Gujarat Agro-climatic zone are advised to grow the vegetable cluster bean during the first week of August to minimize the intensity of bacterial leaf blight for getting the maximum green pod yield and net return.

ઉત્તર ગુજરાત ખેત –હવામાન વિભાગના શાકભાજી ગુવારનું વાવેતર કરતા ખેડૂતોને કાળીયા **રોગની તીવ્રતા ઘટાડવા માટે તથા લીલી** શિંગોના **વધુ ઉત્પાદન અને નફો મેળવવા માટે શાકભાજી ગુવારનું વાવેતર ઓગષ્ટ માસના પ્રથમ અઠવાડીયામાં કરવાની ભલામણ કરવામાં આવે છે.**

(**Action:** Asstt. Res. Scientist (Pl. Path.), CRSS, SDAU, Jagudan)

B SCIENTIFIC COMMUNITY/INFORMATION

ANAND AGRICULTURAL UNIVERSITY, ANAND

Dr. P. K. Borad, Convener, Plant Protection Sub-Committee presented proposal for recommendations

AGRICULTURAL ENTOMOLOGY

11.3.1.26 Study on biodiversity of insect fauna through light traps

Among the different types of light used in the light trap, visible and ultra violet lights found more effective and efficient to monitor the insects under field conditions. The coleopterans and dipterans insects were maximum in ultraviolet light, while, hemipteran and hymenopteran insects in visible light.

(Action : Prof. and Head, Dept. of Ento., BACA, AAU, Anand**)**

11.3.1.27 Screening of *Brassica* species against aphid

The genotypes RAYAD 9602, NRCM 120, NRCM 353 (*Brassica juncea*) and PUSA

	SWARNIM (*B. carinata*) found highly resistant to aphid, *Lipaphis erysimi* Kalt. under field condition. **(Action:** Prof. and Head, Dept. of Ento., BACA, AAU, Anand**)**
11.3.1.28	**Evaluation of jute string as physical barrier to prevent entry of Indian peafowl into the feeding site** In order to restrict the movement of peafowl in the fields, it is suggested to tie parallel two strings firmly, one above other at 30 and 50 cm above the ground. **(Action:** Res. Sci. (Ornitho.), AINP on Agril. Ornithology, AAU, Anand**)**
11.3.1.29	**Evaluation of effectiveness of acoustic device as bird repeller from feeding site** Acoustic device operated playing birds call of 3-5 khz frequency (Two calls : Predator – pigeon) per cycle at 1 minute interval is not effective to repell the birds from the one acre area. **(Action:** Res. Sci. (Ornitho.), AINP on Agril. Ornithology, AAU, Anand**)**
11.3.1.30	**Residue and persistence of monocrotophos 36 SL in castor** Two foliar sprays of monocrotophos 36 SL in castor at 15 days interval @ 157.32 and 314.64 g a.i. ha^{-1} starting from flowering stage resulted in its residue below the limit of quantitation of 0.05 µg g^{-1} in castor oil and cake if harvested 84 days after the second spray. Therefore, PHI of 84 days could be suggested if monocrotophos 36 SL is recommended on castor with MRL of 0.05 µg g^{-1} in oil and cake. **(Action :** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.1.31	**Residue and persistence of monocrotophos 36 SL in pigeon pea** Two foliar sprays of monocrotophos 36 SL in pigeonpea at 15 days interval @ 450 and 900 g a.i. ha^{-1} starting from pod formation stage resulted in its residue below determination level of 0.05 µg g^{-1} in seeds 45 days after the last spray. Therefore, PHI of 45 days could be suggested if monocrotophos 36 SL is recommended on pigeon pea with MRL of 0.05 µg g^{-1} in grains. **(Action :** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.1.32	**Residue and persistence of monocrotophos 36 SL in mustard** Two foliar sprays of monocrotophos 36 SL in mustard at 10 days interval @ 135 and 270 g a.i. ha^{-1} starting from pod formation stage resulted in its residue below the limit of quantitation of 0.05 µg g^{-1} in mustard oil and cake if harvested 43 days after the second spray. Therefore, PHI of 43 days could be suggested if monocrotophos 36 SL is recommended on mustard with MRL of 0.05 µg g^{-1} for oil and cake. **(Action :** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.1.33	**Residue and persistence of phosphamidon 40 SL in mustard** Two foliar sprays of phosphamidon 40 SL in mustard at 10 days interval @ 200 and 400 g a.i. ha^{-1} starting from flowering stage resulted in its residue below the limit of quantitation of 0.05 µg g^{-1} in mustard oil and cake if harvested 43 days after the second spray. Therefore, PHI of 43 days could be suggested if phosphamidon is recommended on mustard with MRL of 0.05 µg g^{-1} for oil and cake. **(Action :** Residue Analyst, AINP on pesticide residues, AAU, Anand**)**
11.3.1.34	**Residue and persistence of phenthoate 50 EC in cotton** Three foliar sprays of phenthoate 50 EC in cotton at 15 days interval @ 1000 and 2000 g a.i. ha^{-1} starting from flowering and square formation stage resulted in its residue below the limit of quantitation of 0.05 µg g^{-1} in cotton oil, lint and cake if harvested 29 days after the third spray. Therefore, PHI of 29 days could be suggested if phenthoate 50 EC is recommended on cotton with MRL of 0.05 µg g^{-1} for oil, lint and cake. **(Action :** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.1.35	**Residue and persistence of ipconazole 25 % + metalaxyl 20 % - 45 ME in maize**

	Seed treatment of a combination product ipconazole 25% + metalaxyl 20% - 45 ME in *rabi* maize @ 0.25 + 0.20 and 0.50 + 0.40 g a.i per kg seed did not result in their residues in immature grains with cob as well as matured grains at harvest. The residues persisted in the seedlings only up to the 20 days from the date of treatment. The combination product if registered for maize can be considered safe from residue point of view. **(Action :** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.1.36	**Residue and persistence of penflufen 154 + trifloxystrobin 154 - 308 FS in chickpea** Seed treatment of the combination product penflufen 154 + trifloxystrobin 154 - 308 FS @ 15.4 + 15.4 and 30.8 + 30.8 g a.i./100 kg seed in chickpea neither revealed residues of any molecule of the mixture nor the metabolite of trifloxystrobin above determination in the green pods collected at pod formation stage or matured grains and soil collected at the time of harvest. **(Action :** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.1.37	**Residue and persistence of flonicamid 15 % + fipronil 15 % - 30 WG in cotton** Two foliar applications of the combination product of flonicamid 15 % + fipronil 15 % - 30 WG @ 60 + 60 and 120 + 120 g a.i. ha^{-1} in cotton at 15 days interval starting from flowering and boll formation stage revealed residues of either product below their determination levels in cotton seed, lint, oil and cake 35 days after the last application. Therefore, the PHI of 35 days can be recommended if a mixture of flonicamid 15% + fipronil 15% - 30 WG is recommended in cotton. **(Action :** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.1.38	**Residue and persistence of spirotetramate 150 OD in brinjal** Three foliar applications of spirotetramate 150 OD in brinjal at 10 days interval @ 90 g a.i. ha^{-1} starting from flowering stage resulted in its residue below determination level in brinjal fruits within one hour of the last application. Considering the MRL of spirotetramate at the limit of quantitation, i.e. 0.05 µg g^{-1}, PHI of 1 day can be recommended if the insecticide is registered on brinjal. **(Action :** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.1.39	**Residue and persistence of chlorpyriphos 20 EC in okra** Two foliar sprays of chlorpyriphos 20 EC in okra at 10 days interval @ 300 g a.i. ha^{-1} starting from fruiting stage resulted in its residue below the limit of quantitation of 0.01 µg g^{-1} in okra if fruits are harvested from 3 days after the second spray. Therefore, PHI of 3 days could be suggested if chlorpyriphos 20 EC is recommended on okra with MRL of 0.01 µg g^{-1}. **(Action :** Residue Analyst, AINP on pesticide residues, AAU, Anand**)**
11.3.1.40	**Residue and persistence of quinalphos 25 EC in okra** Two foliar sprays of quinalphos 25 EC in okra at 10 days interval @ 250 g a.i. ha^{-1} starting from fruiting stage resulted in its residue below the limit of quantitation of 0.01 µg g^{-1} in okra if fruits are harvested from 3 days after the second spray. Therefore, PHI of 3 days could be suggested if quinalphos 25 EC is recommended on okra with MRL of 0.01 µg g^{-1}. **(Action :** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.1.41	**Residue and persistence of ethion 50 EC in okra** Two foliar sprays of ethion 50 EC in okra at 10 days interval @ 500 g a.i. ha^{-1} starting from fruiting stage resulted in its residue below the limit of quantitation of 0.01 µg g^{-1} in okra if fruits are harvested from 10 days after the second spray. Therefore, PHI of 10 days could be suggested if ethion 50 EC is recommended on okra with MRL of 0.01µg g^{-1}.

	(Action : Residue Analyst, AINP on pesticide residues, AAU, Anand**)**
11.3.1.42	**Residue and persistence of carbendazim 50 WP in okra** Two foliar sprays of carbendazim 50 WP in okra at 10 days interval @ 250 g a.i. ha^{-1}starting from fruiting stage resulted in its residue below the limit of quantitation of 0.01 µg g-1 in okra if fruits are harvested from 20 days after the second spray. Therefore, PHI of 20 days could be suggested if carbendazim 50 WP is recommended on okra with MRL of 0.01 µg g-1. **(Action :** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.1.43	**Residue and persistence of chlorpyriphos 20 EC in brinjal** Two foliar sprays of chlorpyriphos 20 EC in brinjal at 10 days interval @ 300 g a.i. ha^{-1} starting from fruiting stage resulted in its residue below the limit of quantitation of 0.01 µg g^{-1} in brinjal if fruits are harvested from 5 days after the second spray. Therefore, PHI of 5 days could be suggested if chlorpyriphos 20 EC is recommended on brinjal with MRL of 0.01 µg g^{-1}. **(Action :** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.1.44	**Residue and persistence of quinalphos 25 EC in brinjal** Two foliar sprays of quinalphos 25 EC in brinjal at 10 days interval @ 250 g a.i. ha^{-1} starting from fruiting stage resulted in its residue below the limit of quantitation of 0.01 µg g^{-1} in brinjal if fruits are harvested from 5 days after the second spray. Therefore, PHI of 5 days could be suggested if quinalphos 25 EC is recommended on brinjal with MRL of 0.01 µg g^{-1}. **(Action :** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.1.45	**Residue and persistence of ethion 50 EC in brinjal** Two foliar sprays of ethion 50 EC in brinjal at 10 days interval @ 500 g a.i. ha^{-1} starting from fruiting stage resulted in its residue below the limit of quantitation of 0.01 µg g^{-1} in brinjal if fruits are harvested from 15 days after the second spray. Therefore, PHI of 15 days could be suggested if ethion 50 EC is recommended on brinjal with MRL of 0.01 µg g^{-1}. **(Action :** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.1.46	**Residue and persistence of carbendazim 50 WP in brinjal** Two foliar sprays of carbendazim 50 WP in brinjal at 10 days interval @ 250 g a.i. ha^{-1} starting from fruiting stage resulted in its residue below the limit of quantitation of 0.01 µg g^{-1} in brinjal if fruits are harvested from 23 days after the second spray. Therefore, PHI of 23 days could be suggested if carbendazim 50 WP is recommended on brinjal with MRL of 0.01 µg g^{-1}. **(Action :** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.1.47	**Evaluation of insecticide molecules against sucking pests of chilli** Foliar application of milbectin 1 EC 0.0003%, 2.5 ml/ 10 liter water (1.25 g a.i./ha) or abamectin 1.9 EC, 0.0006%, 3 ml/10 litre water (2.85 g a.i./ha) found effective against thrips and mite infesting chilli. **(Action:** Asstt. Res. Sci. (Ento.), MVRS, AAU, Anand**)**
PLANT PATHOLOGY AND NEMATOLOGY	
11.3.1.48	**Management of early blight of potato** Treatment of cut tubers with mancozeb 75 WP @ 1 kg/ 100 kg potato + 5 kg talc powder as dry seed treatment before 12 hours of planting along with 5 sprays of propiconazole 25 EC, 0.025% first at the disease initiation at about 35 days after sowing and remaining sprays at 12 days interval found effective for the management of early blight of potato. **(Action :** Prof. and Head, Dept. of Plant Pathology, BACA, AAU, Anand**)**
11.3.1.49	**Screening of green gram genotypes against Bean Common Mosaic (BCMV)**

	disease LGG 460 and GM 02-19 genotypes of green gram found resistant against Bean Common Mosaic (BCMV) disease. **(Action:** Asst. Res. Sci. (Ento.), Agril. Research Station, AAU, Derol**)**
JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH Dr. V. N. Patel, Convener, Plant Protection Sub-Committee presented proposal for recommendations	
AGRICULTURAL ENTOMOLOGY	
11.3.1.50	**Management of sucking pests through insecticides in brinjal** Three sprays of bifenthrin 10 EC, 0.02 %, 20 ml /10 litre water or buprofezin 25 SC, 0.06 %, 24 ml/10 litre of water at 15 days interval starting from the pest infestation found effective for the control of brinjal whitefly. The PHI for bifenthrin 10 EC, 0.02 % and buprofezin 25 SC, 0.06 % is 1 and 7 days, respectively. (**Action:** Professor and Head, Dept. of Entomology, CoA, JAU, Junagadh)
11.3.1.51	**Population dynamics of important pests of mango** The incidence of mango hopper, thrips and flower bug was found high during December to February while, leaf gall midge and shoot borer were found active during September to October. (**Action:** Professor and Head, Dept. of Entomology, CoA, JAU, Junagadh)
11.3.1.52	**Population dynamics of important pests of pomegranate** *Anar* butterfly was found high during November to May while, thrips was found active during August to November in pomegranate. (**Action:** Professor and Head, Dept. of Entomology, CoA, JAU, Junagadh)
11.3.1.53	**Testing of efficacy of different newer insecticides against shoot fly and stem borer in pearl millet** Seed treatment with imidacloprid 600 FS @ 8.75 ml/kg, 4.20 g a.i./kg at the time of sowing followed by spray with spinosad 45 SC, 0.009 % @ 2.0 ml/10 litre at 35 days after germination of the crop found effective for the management of shoot fly and stem borer. The PHI for these insecticides is 42 days. (**Action:** Research Scientist (Pearl millet), Pearl millet Research Station, JAU, Jamnagar)
11.3.1.54	**Incidence of insect pests of chickpea through the cropping period and monitoring of pod borer moths using pheromone traps** Normal and late sowing of chickpea varieties showed sustainable population of *Helicoverpa armigera* at 60 days after sowing. (**Action:** Res. Sci. (Chickpea), Pulses Research Station, JAU, Junagadh)
PLANT PATHOLOGY	
11.3.1.55	**Effect of fungicides application in cumin on *Trichoderma* applied in soil** Soil drenching of carbendazim 50 WP @ 2 kg in 2000 litre water/ha or foliar spray of mancozeb 75 WP @ 30 g/10 litre or hexaconazole 5 EC @ 10 ml/ 10 litre against soil borne diseases do not reduce the population of *Trichoderma harzianum* applied in soil. (**Action:** Prof. and Head, Dept. of Plant Pathology, CoA, JAU, Junagadh)
11.3.1.56	**Effect of foliar application of insecticides in cumin on *Trichoderma* applied in soil** Foliar spray of imidacloprid 17.8 SL @ 3 ml/10 litre or dimethoate 30 EC @ 10 ml/10 litre in cumin against sucking pests do not reduces the population of *Trichoderma harzianum* applied in soil.

	(**Action:** Prof. and Head, Dept. of Plant Pathology, CoA, JAU, Junagadh)
11.3.1.57	**Effect of foliar application of herbicides in cumin on *Trichoderma* applied in soil** Herbicides used as pre-emergence or early post emergence in cumin *viz.*, pendimethalin 30 EC, 0.9 kg a.i./ha, 60 ml/10 litre at 2 DAS or glyphosate 41 SL, 0.75 kg a.i./ha, 37 ml/10 litre at 2 DAS reduces the soil population of *Trichoderma* up to one month after sowing but *Trichoderma* population was increased at later stage. While application of oxyfluorfen 23.5 EC, 0.240 kg a.i./ha, 20 ml/10 litre at 2 DAS do not reduce the population of *Trichoderma harzianum* applied in soil. (**Action:** Professor and Head, Dept. of Plant Pathology, JAU, Junagadh)
11.3.1.58	**Disease management through organic practices for organic groundnut cultivation** Blanket furrow application of FYM @ 7.5 tonne/ha followed by *Trichoderma viride* as seed treatment @ 10 g/kg seed, and *T. viride* @ 4.0 kg enriched in 250 kg FYM and as spray @ 2.5 kg/ha (5 g/litre of water) at 30 and 45 DAS found effective for the management of diseases of groundnut. **(Action:** Res. Sci. (G'nut), Main Oilseed Research Station, JAU, Junagadh**)**
NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI Dr. Z. P. Patel, Convener, Plant Protection Sub-Committee presented proposal for recommendations	
AGRICULTURAL ENTOMOLOGY	
11.3.1.59	**Residues of some insecticides in/on Indian bean pods** Following foliar application of thiamethoxam 25 WG (35 g a.i. /ha), novaluron 10 EC (33.5 g a.i. /ha), indoxacarb 14.5 SC (60 g a.i. /ha), spinosad 45 SC (75 g a.i. /ha), acetamiprid 20 SP (20 g a.i. /ha) and flubendiamide 39.35 SC (50 g a.i. /ha), PHI of 7 days was observed while, imidacloprid 17.8 SL (25 g a.i. /ha) it was ten days in Indian bean pods. **(Action :** Assoc. Prof. (Ento), Dept. of Ento., ACHF, NAU, Navsari)
11.3.1.60	**Status of residues of insecticides in/on Indian bean after *Ubadia* preparation** The residues of imidacloprid 17.8 SL (25 g a.i. /ha), thiamethoxam 25 WG (35 g a.i. /ha), novaluron 10 EC (33.5 g a.i. /ha), indoxacarb 14.5 SC (60 g a.i. /ha), spinosad 45 SC (75 g a.i. /ha), acetamiprid 20 SP (20 g a.i. /ha) and flubendiamide 39.35 SC (50 g a.i. /ha) were observed below detectable level in *Ubadia* prepared from Indian bean. **(Action :** Assoc. Prof.(Ento), Dept. of Ento., ACHF,NAU, Navsari)
11.3.1.61	**Integrated pest management in mango** IPM package consisting of first spray of spinosad 45 SC, 0.004%, 0.88 ml/10 litre water at panicle emergence stage followed by second spray with thiamethoxam 25 WG, 0.008%, 3.2 g/10 litre water at 21 days after first spray and third need based spray of Azadirachtin 1 EC, 30 ml /10 litre of water found effective for the management of mango hopper and thrips. **(Action:** Asstt. Res. Sci.(Ento), AES., Paria)
11.3.1.62	**Management of banana rust thrips, *Chaetanophothrips signipennis*** For effective control of rust thrips in banana, inject the bud with one ml solution of 0.6 ml imidacloprid 17.8 SL (2 ml solution of 5 ml azadirachtin 10000 ppm mixed in one lit of water) at the time of emergence of flower (upright position). **(Action :** Asstt.Res.Scientist (Ento.), FRS., NAU, Gandevi)
11.3.1.63	**Management of sapota seed borer *Trymalitis margarias* Meyrick** Sapota growers of South Gujarat Heavy Rainfall Zone-I AES-III are advised to apply three sprays of profenophos 50 EC, 15 ml or novaluron 10 EC, 5 ml per 10 litre water at 20 days interval from October for effective management of seed borer.

	(Action : Asstt.Res.Scientist (Ento.), FRS., NAU, Gandevi)
11.3.1.64	**Survey of natural enemies and occurrence of indigenous egg parasitoid, *Trichogramma* spp. using *Corcyra* egg cards in different vegetable crops** The activity of egg parasitoid, *Trichogramma* spp. found in Indian bean, cowpea, chilli, okra and tomato ecosystem while in brinjal ecosystem it did not appear under south Gujarat condition. **(Action :** Prof. and Head, Dept. of Ento., NMCA., Navsari)
11.3.1.65	**Screening of carnation cultivars for the resistance to *Tetranychus urticae* Koch** Under the polyhouse conditions the carnation variety Domingo was highly tolerant to spider mite attack, while variety Famosa and Cherry Solar were medium tolerant and Gaudina and Garuda were tolerant whereas the variety Rubisco was highly susceptible to spider mite attack. **(Action :** Prof. and Head, Dept. of Ento., NMCA., Navsari)
11.3.1.66	**Seasonal incidence of spider mite *Tetranychus urticae* (Koch.) (Tetranychidae: Acarina) infesting carnation under polyhouse conditions** The two spotted red spider mite, *Tetranychus urticae* Koch (Tetranychidae: Acarina) remains active throughout the crop season on carnation with the peak activities during first week of April. A significant positive correlation exist between spider mite population and average temperature whereas a significant negative correlation existed between mite population and average relative humidity under polyhouse conditions on carnation. **(Action :** Prof. and Head, Dept. of Ento., NMCA., Navsari)
11.3.1.67	**To test out feasibility of mass rearing of *Chrysoperla zastrowi sillemi* (Esben-Petersen) under laboratory conditions** The teared accordance white coloured paper stripes (5 x 2 cm) found the best and feasible alternative method for group rearing of *Chrysoperla zastrowi sillemi* under laboratory conditions. **(Action :** Prof. and Head, Dept. of Ento., NMCA., Navsari)
11.3.1.68	**Residue and dissipation pattern of bifenthrin, fipronil, chlorpyrifos and imidacloprid in clayey and sandy loam soils and their downward movement and leaching potential** Considering the leaching potential and depth wise distribution and chances of contamination of water, bifenthrin 10 EC, chlorpyrifos 20 EC and fipronil 5 SC should be preferred over imidacloprid 17.8 SL for the control of soil pests in sandy loam and clay soils. Bifenthrin, chlorpyrifos, fipronil and imidacloprid can be used to control soil pests in sandy loam and clay soils due to their moderate persistency and strong adsorption in the soil. **(Action:** Asstt. Prof.(Pesticide Residue), FQTL, Navsari)
11.3.1.69	**Screening of sugarcane varieties for early shoot borer resistance** Sugarcane genotypes viz., Co 08008, Co 08020, Co 08001 and 2007 N 469 are found less susceptible to early shoot borer. **(Action:** Asstt. Res. Sci.(Ento), MSRS, Navsari)
11.3.1.70	**Screening of sugarcane varieties for scale insect resistance** Sugarcane genotypes viz., Co 08008, 2007 N 535, 2007 N 469, CoSnk 08101, Co 08016 and VSI 08122 are found less susceptible to scale insect**.** **(Action**: Asstt. Res.Sci.(Ento), MSRS, Navsari**)**
PLANT PATHOLOGY	
11.3.1.71	**Management of powdery mildew of niger** Two sprays of wettable sulphur 80 WP @ 2.5 g/litre, first at the disease initiation and

	second after 15 days found effective for the management of powdery mildew of niger. **(Action :** Asstt.Res.Scientist (Patho), Niger Research Station, NAU, Vanarasi)
11.3.1.72	**Screening for Resistance to *Fusarium* wilt in tomato varieties** Tomato genotypes viz., NTL-2, NTL-6, NTL-7 and NTL-10 are resistant, while genotype N TL-1, NTL-8, NTL-9, and GT-2 are moderately resistant against tomato *Fusarium* wilt. **(Action :** Assoc. Prof. (Pl. Path), Dept. of Pl. Patho., ACHF, NAU., Navsari)
11.3.1.73	**Detection of fungal pathogen from forest tree seeds *in vitro*** *Alternaria* sp, *Aspergillus* sp., *Fusarium* sp, *Trichoderma* sp are found the most frequently associated fungal genera with six forest trees *viz., Tectona grandis* (Teak), *Leucaena leucocephala* (Subabul), *Delonia regia* (Gulmohar), *Acacia mangium* (Mangium), *Adenanthera pavonina* (Ratangunj) and *Cassia fistula* (Garmalo) using blotter and agar plate method**.** **(Action:** Assoc. Prof. (Pl. Path), Dept. of Pl. Patho., ACHF, NAU. Navsari)
11.3.1.74	***In vitro* efficacy of isolated probiotic organism** *Enterococcus faecium strain LAB1, Leuconostoc mesenteroides and Leuconostoc pseudomesenteroides* shows the antimicrobial properties as well as produce good quality curd. Thus, these strains can be used for probiotic curd preparation. **(Action :** Assoc. Prof. (Pesticide Residue), FQTL, NAU, Navsari)
11.3.1.75	**Screening of sugarcane varieties for red rot resistance** Sugarcane varieties viz., Co 08008, CoSnk 08101, PI 08131 and 2007 N 469 are found to be moderately resistant to red rot by plug method. **(Action:** Asstt. Res. Sci. (Pl.Path.), MSRS, NAU, Navsari)
11.3.1.76	**Screening of sugarcane varieties for smut resistance** Sugarcane varieties viz., Co 08020, Co Snk 08101, 2007 N 535, 2007 N 469, 2007 N 390 and 2007 N 510 showed resistant reaction. While, Co 08001, VSI 08121 and Co 08016 exhibited moderately resistant reaction against smut disease. **(Action:** Asstt. Res. Sci. (Pl.Path.), MSRS, NAU, Navsari**)**
11.3.1.77	**Studies on mango malformation** The mango variety Himsagar showed consistently higher malformation. Therefore, this variety can be used as a susceptible check for screening of mango germplasms against mango malformation. **(Action:** Asso. Prof. (Pl. Path.), AES, NAU, Paria)
11.3.1.78	**Bio-efficacy of fungicides against sorghum ergot** Effective and economic management of sorghum ergot can be done with two sprays of hexaconazole 5 SC @ 0.005% at an interval of 15 days commencing from 15 days after emergence of earheads. **(Action:** Asstt. Res. Sci. (Pl. Path.), MSRS, NAU, Surat)
11.3.1.79	**Bio-efficacy of fungicides against sorghum grain mold** Effective and economic management of grain mold in sorghum is done with three sprays of carbendazim 12% + mancozeb 63% - 75 WP @ 0.2% at an interval of 15 days commencing from 15 days after emergence of earheads. **(Action:** Asstt. Res. Sci. (Pl. Path.), MSRS, NAU, Surat)
SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, S.K. NAGAR Dr. B. R. Patel, Convener, Plant Protection Sub-Committee presented proposal for recommendations	
AGRICULTURAL ENTOMOLOGY	
11.3.1.80	**Chemical control of fruit borer in ber**

	Three sprays of profenophos 50 EC 0.05 % (10 ml/10 litre water) or Azadirachtin–3000 ppm, 25 ml/10 litre water or NSKE 5 % (Neem Seed Kernel powder 500 g/10 litre water) at 15 days interval, starting from pea size of ber found effective for control of fruit borer in ber crop. The PHI for profenophos 50 EC 0.05 % is 27 days. (**Action:** Asso. Res. Sci. (Ento), AFRS, SDAU, Sardarkrushinagar)
11.3.1.81	**Management of seed wasp, *Systole albipennis* Walker infesting fennel** Two sprays of thiamethoxam 25 WG, 0.0084%, 3.36 g/10 litre water; 42 g a.i./ha or acetamiprid 20 SP, 0.004%, 2 g/10 litre water; 20 g a.i./ha found effective for management of seed wasp, *Systole albipennis* Walker of fennel. First foliar spray should be made at appearance of seed wasp damage and second spray at 10 days after first spray. The PHI of both the insecticides is 66 days. (**Action:** Asso. Res. Sci.(Ento), CRSS, SDAU, Jagudan)
11.3.1.82	**Insecticidal seed treatment against maize stem borer** To minimize the damage of stem borer in maize apply seed treatment before sowing with imidacloprid 70 WS, 5 g or clothianidin 50 WDG, 2 g per kg seeds by preparing slurry with 50 ml water. (**Action:** SMS (Ento.), KVK, Khedbrahma and Asst. Res. Sci. ARS, SDAU, Bhiloda)
PLANT PATHOLOGY	
11.3.1.83	**Effect of seed dresser/s for the management of root rot of moth bean** Seed treatment of moth bean with fungicide carboxin 37.5 % + thiram 37.5% - 75 WS, 3 g/kg or captan 50 WP, 2 g/kg found effective for the management of root rot. **(Action:** Asstt. Res. Sci. (Path), CERP, SDAU, SKN)
11.3.1.84	**Biological control of powdery mildew of ber** Three sprays of bioagent *Trichoderma* sp. CIAH 240 @ 0.5 % (1 x 10^8 cfu/ml) at 15 days interval starting from the initiation of the powdery mildew disease in ber *i.e.* last week of September to first week of October was found effective for the control of powdery mildew in ber. (**Action:** Asstt. Res. Sci.(Path), AFRS, SDAU, Sardarkrushinagar)

11.3.2	**NEW TECHNICAL PROGRAMME**	
ANAND AGRICULTURAL UNIVERSITY		
AGRICULTURAL ENTOMOLOGY		
Sr. No.	**Title/Centre**	**Suggestions**
Dept. of Agril. Entomology, BACA, AAU, Anand		
11.3.2.1	Bio-efficacy of selected insecticides against pink bollworm in *Bt* cotton	**Accepted with following suggestions :** 1. The trial may be conducted at surat (Dr. H. R. Desai), Junagadh (Mr. R. K. Vekaria) and Talod (Shri. M. M. Patel) and Dr. C. C. Patel (Anand) will act as PI of all the centers. 2. All the centers except Anand will have to make survey. 3. Code of experiment is required. 4. Use cotton variety G. Cot. BG 6. 5. Observations on larval population should be recorded. 6. Year of start should be 2015-2016. **(Action:** All the above scientists and Prof. and

		Head, Dept. of Agril. Ento., BACA, AAU, Anand**)**
AICRP on Biological control, AAU, Anand		
11.3.2.2	Bio-efficacy of microbial insecticides against sucking pest in *Bt* cotton	**Accepted with following suggestions :** 1. Variety G. Cot. BG 6 should be used. 2. Include thiamethoxam as T-9 **(Action:** Principal Res. Sci., AICRP on Biological control, AAU, Anand**)**
11.3.2.3	Bio-efficacy of microbial insecticides against *Spodoptera litura* Fabricius in cabbage	**Accepted with following suggestion :** 1. Record observations on number of egg mass and gregarious form of larvae per plant. **(Action:** Principal Research Scientist, AICRP on Biological control, AAU, Anand**)**
Bidi Tobacco Research Station, AAU, Anand		
11.3.2.4	Evaluation of insecticidal toxicity against parasitoid of tobacco mealy bug, *Phenacoccus solenopsis* Tinsley under field and laboratory	**Approved** **(Action:** Asso. Res. Sci. (Ento.), BTRS, AAU,Anand**)**
11.3.2.5	Screening of rustica tobacco genotypes against leaf eating caterpillar (*Spodoptera litura* Fabricius) in nursery	**Approved** **(Action:** Asso. Res. Sci. (Ento.), BTRS,AAU, Anand**)**
AINP on Pesticide Residues, AAU, Anand		
11.3.2.6	Residues and persistence study of dimethoate 30 EC in cotton	**Approved** **(Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.2.7	Residues and persistence study of Afidopyropen 5 DC in brinjal	**Approved** **(Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.2.8	Residues and persistence study of Afidopyropen 5 DC in cotton	**Approved** **(Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.2.9	Residues and persistence study of pyraclostrobin 2.5 % + fipronil 25 % + thiophanate methyl 22.5 % - 50 FS in soybean	**Approved** **(Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.2.10	Residues and persistence study of pyraclostrobin 2.5 % + fipronil 25 % + thiophanate methyl 22.5 % – 50 FS in groundnut	**Approved** **(Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.2.11	Residues and persistence study of fluopyram 200 + tebuconazole 200 – 400 SC in mango	**Approved** **(Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**

11.3.2.12	Residues and persistence study of fosetyl Al 80 WP in tomato	**Approved** **(Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.2.13	Residues and persistence study of fluopyrum 400 SC in tomato	**Approved** **(Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
11.3.2.14	Monitoring of pesticide residues at national level	**Approved** **(Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
11.3.2.15	Studies on pesticide residues from surface and ground water under SSP phase - I area	**Approved** **(Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
11.3.2.16	Studies on pesticide residues from surface and ground water under SSP phase - II area Kheda, Ahmedabad and Gandhinagar region	**Approved** **(Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
11.3.2.17	Studies on pesticide residues from surface and ground water under SSP phase - II area Saurashtra region	**Approved** **(Action:** Residue Analyst, AINP on Pesticide Residues, AAU, Anand**)**
Main Vegetable Research Station, AAU, Anand		
11.3.2.18	Integrated Pest Management in okra	**Accepted with following suggestion** **1.** Revise the module as IPM, organic and chemical suggested in the house **(Action:** Asst. Res. Sci. (Ento.), MVRS, AAU, Anand**)**
Agricultural Research Station, AAU, Derol		
11.3.2.19	Impact of sowing periods an variety on the population of thrips in summer green gram	**Accepted with following suggestion** 1. Observations on Yellow Mosaic (YMV) is required to be recorded **(Action:** Asst. Res. Sci. (Ento.), ARS, AAU, Derol
PLANT PATHOLOGY AND NEMATOLOGY		
Dept. of Plant Pathology, BACA, AAU, Anand		
11.3.2.20	Field evaluation of fungicides for the management of pyricularia leaf spot/ blast disease of pearl millet	**Accepted with following suggestion** 1. Treatment T-5, kresoxim methyl and T-6, carbendazim should be replaced with *P. fluorescence* (NAU culture) and *T. viridae*, respectively. **(Action:** Prof. and Head, Dept. of Plant Pathology, BACA, AAU, Anand**)**
11.3.2.21	Management of early blight of potato	**Accepted with following suggestion** 1. Residue analysis is required **(Action:** Prof. and Head, Dept. of Plant Pathology, BACA, AAU, Anand**)**
11.3.2.22	Evaluation of seed treatment with bioagents	**Accepted with following suggestion** 1. Two sets of main treatment with 12 combinations

	for management of soil borne diseases in mungbean	should be finalized by Dr. R. N. Pandey. **(Action:** Prof. and Head, Dept. of Plant Pathology, BACA, AAU, Anand**)**
11.3.2.23	Management of cumin blight disease through fungicide application	**Approved** **(Action:** Prof. and Head, Dept. of Plant Pathology, BACA, AAU, Anand**)**
11.3.2.24	Investigations on the prevalence of designated objectionable diseases of pearl millet under the changing climate situations through fixed plot survey	**Approved** **(Action:** Prof. and Head, Dept. of Plant Pathology, BACA, AAU, Anand**)**
Department of Nematology, BACA, AAU, Anand		
11.3.2.25	Screening of pigeonpea lines/germplasm against root- knot nematodes	**Accepted with following suggestion** 1. Include T 15 – 15 as check **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.26	Plant parasitic nematodes infecting major crops in the State and pest risk analysis - Cereals & Millets	**Accepted with following suggestion** 1. Details about locations and treatments should be mention. **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.27	Plant parasitic nematodes infecting major crops in the State and pest risk analysis - Pulse crops	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.28	Plant parasitic nematodes infecting major crops in the State and pest risk analysis - Fruit crops	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.29	Plant parasitic nematodes infecting major crops in the State and pest risk analysis - Fibre crops	**Approved** **(Action:** Professor and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.30	Plant parasitic nematodes infecting major crops in the State and pest risk analysis - Spices	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.31	Plant parasitic nematodes infecting major crops in the State and pest risk analysis - Protected Cultivation Systems	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.32	Plant parasitic nematodes infecting major crops in the State (newer areas not covered so far) and pest risk analysis - Vegetable crops	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.33	Impact of economically	**Approved**

	important nematode populations on crop yield from the identified hot spot areas - Cereals	**(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.34	Impact of economically important nematode populations on crop yield from the identified hot spot areas – Pulses	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.35	Impact of economically important nematode populations on crop yield from the identified hot spot areas – Oilseeds & Fibre crops	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.36	Impact of economically important nematode populations on crop yield from the identified hot spot areas - Fruit crops	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.37	Estimation of avoidable yield losses due to economically important nematodes under nematode infested conditions	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.38	Screening, confirmation and field evaluation of promising resistant germplasms of Vegetable Crops against root-knot nematode & reniform nematode	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.39	Evaluation of bio-pesticides for the management of root – knot nematodes (*Meloidogyne* spp.) in tomato	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.40	Evaluation of bio-pesticides for the management of root - knot nematodes (*Meloidogyne* spp.) in okra	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.41	Screening, confirmation and field evaluation of promising resistant germplasm of pulse crops against important nematodes - mung	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.42	Screening, confirmation and field evaluation of	**Approved**

	promising resistant germplasm of pulse crops against important nematodes - blackgram	**(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.43	Screening, confirmation and field evaluation of promising resistant germplasm of pulse crops against important nematodes - chickpea	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.44	Screening, confirmation and field evaluation of promising resistant germplasm of pulse crops against important nematodes - cowpea	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.45	Screening, confirmation and field evaluation of promising resistant germplasm of pulse crops against important nematodes - pigeonpea	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.46	Screening of oilseeds and fibre crops against key nematode pests - Groundnut	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.47	Screening of oilseeds and fibre crops against key nematode pests - Castor	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.48	Screening of oilseeds and fibre crops against key nematode pests - Sunflower	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.49	Screening of oilseeds and fibre crops against key nematode pests - Cotton	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.50	Management of *Meloidogyne javanica* on groundnut by using non host / antagonistic crops	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.51	Management of root-knot nematode, *M. javanica* pt. 2 in groundnut	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.52	Management of *R. reniformis* in castor	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.53	Effect of organic amendments and bio-control agents in citrus against *M. indica*	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**

11.3.2.54	Basic studies on root-knot nematodes, *Meloidogyne* spp. infecting crops in India	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.55	Co-ordinated trial on exploitation of potential bio-control agents from different agro-climatic regions of India	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
11.3.2.56	Impact of climate change on plant parasitic nematode density in different agro-Climatic zone	**Approved** **(Action:** Prof. and Head, Dept. of Nematology, BACA, AAU, Anand**)**
AICRP on Biological control, AAU, Anand		
11.3.2.57	Biological control of chilli anthracnose disease	**Accepted with following suggestions** 1. Include *T. harzianum* and *P. fleuroscence* of AAU/TNAU as treatments. 2. Dr. R. G. Parmar should be Co-PI from Dept. of Plant Pathology. 3. Observations on disease on branches/ fruits should be recorded as per standard. 4. Variety GBC-11 should be used. 5. Ancillary observations on alternaria/ fruit rot should be recorded. **(Action:** Principal Res. Sci., AICRP on Biological control, AAU, Anand**)**
Bidi Tobacco Research Station, AAU, Anand		
11.3.2.58	Monitoring resistance development in *pythium aphanidermatum* to azoxystrobin	**Approved** **(Action:** Res. Sci. (Patho.), BTRS, AAU, Anand**)**
11.3.2.59	Effect of planting dates and topping levels on occurrence of diseases in bidi Tobacco cv. GABT 11 (Modification in Technical Programme Approved in 10th PPSC)	**Approved** **(Action:** Res. Sci. (Patho.), BTRS, AAU, Anand**)**
JUNAGADH AGRICULTURAL UNIVERSITY		
AGRICULTURAL ENTOMOLOGY		
11.3.2.60	Microbial management of white grubs in groundnut	**Accepted with following suggestions.** 1.Mention the strain of bioagent 2. In T-2 and T-4 apply the bioagent with castor cake before sowing and use 1000 liter water/ ha in case of drenching 3. T-1 imidacloprid 17.8 SL should be replaced with chlorpyriphos 20 EC, 25 ml/ kg seed 4. Include imidacloprid 17.8 SL @ 0.1 g a.i./ kg as T-2 and consider T-2 of above point 2 as T-3 5. In T-5 use the bioagent @ 2.5 kg/ha and keep the

		interval 30 days instead of 45 days (**Action:** Professor and Head, Dept. of Entomology, CoA, JAU, Junagadh)
11.3.2.61	Survey of major insect-pests and their natural enemies in seed spices of Junagadh district	**Accepted with following suggestion.** 1. Remove per plant from observation No. 1. (**Action:** Professor and Head, Dept. of Entomology, CoA, JAU, Junagadh)
11.3.2.62	Population dynamics of important pests of seed spices	**Accepted with following suggestions.** 1. Keep plot size 20 x 20 m 2. Correlation of weather parameters to be studied. 3. Egg mass and gregarious form of larvae should be counted. (**Action:** Professor and Head, Dept. of Entomology, CoA, JAU, Junagadh)
11.3.2.63	Management of sucking pest in cumin	**Accepted with following suggestions.** 1. Use 40 g product instead of 60 g in T-1 and T-2. 2. Title should be modified adding the words "by bioagents." 3. Remove all chemicals from the treatment 4. Add combination of T-1 and T-2 as treatment (**Action:** Professor and Head, Dept. of Entomology, CoA, JAU, Junagadh)
11.3.2.64	Testing the bio-efficacy of newer insecticides against castor defoliators	**Accepted with following suggestions.** 1. Remove observation number 5 from methodology. 2. In T-1 write common name of Rynaxypyr as chlorantraniliprole 0.04%. 3. Apply only 2 sprays first at appearance of the pest and second after 15 days. **(Action:** Research Scientist (G'nut), Main Oilseed Research Station, JAU, Junagadh**)**
11.3.2.65	Efficacy of insecticides and botanicals against storage insects of seeds and their influence on seed viability during storage under ambient condition	**Approved** (**Action:** Research Scientist (Pearl millet), Pearl Millet Research Station, JAU, Jamnagar)
11.3.2.66	Management of groundnut pod borer (*Caryodon serratus*) in groundnut pods	**Approved** (**Action:** Research Scientist (Pearl millet), Pearl Millet Research Station, JAU, Jamnagar)
11.3.2.67	Bio-efficacy of newer insecticides against major sucking pests in Bt cotton	**Accepted with following suggestions.** 1. Remove the word newer from title 2. Apply three sprays at 15 days interval (**Action:** Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh)
PLANT PATHOLOGY		
11.3.2.68	Testing the nutritional efficiency of Azotobacter isolates on cotton under field condition	**Accepted with following suggestions.** 1. Title should be modified as "Impact of Azotobacter isolates on cotton under field conditions" 2. Treatment of 50 % RD of N may be included.

		3. Initial and final population of microbes at harvest to be recorded. 4. Select only two isolates for study. (**Action:** Professor and Head, Department of Plant Pathology, CoA, JAU, Junagadh)
11.3.2.69	Testing the nutritional efficiency of Phosphate Solubilizing microorganism isolates in cotton under field conditions	**Accepted with following suggestions.** 1. Title may be changed in line of experiment no. 9 2. Specify the strain of PSB 11, 12, 13 3. Initial and final population of microbes at harvest be recorded 4. Treatment of 50 % RD of N to be included 5. Select only two isolates for study (**Action:** Professor and Head, Department of Plant Pathology, CoA, JAU, Junagadh)
11.3.2.70	Testing the nutritional efficiency of Rhizobium isolates in groundnut under field conditions	**Accepted with following suggestions.** 1. Title may be changed in line of experiment no. 9. 2. Treatment of 50 % RD of N should be included. 3. Mention the species of Rhizobium. 4. Initial and final population of the microbes at harvest to be recorded. 5. Select only two isolates for study. (**Action:** Professor and Head, Department of Plant Pathology, CoA, JAU, Junagadh)
11.3.2.71	Survey and status of diseases of crops grown under protected cultivation	**Accepted with following suggestions.** 1. Include "pests" also in the title. 2. Record the diseases and pests in open field conditions simultaneously. (**Action:** Professor and Head, Department of Plant Pathology, CoA, JAU, Junagadh)
11.3.2.72	Management of bulb rot complex of garlic	Suggested to drop the experiment as the disease was not appeared. (**Action:** Professor and Head, Department of Plant Pathology, CoA, JAU, Junagadh)
11.3.2.73	Distribution pattern of aflatoxin producing organism, *Aspergillus flavus* in groundnut growing area of Saurashtra region	**Approved** **(Action:** Research Scientist (G'nut), Main Oilseed Research Station, JAU, Junagadh**)**
11.3.2.74	Evaluation of promising groundnut genotypes against *Aspergillus flavus* under sick plot	**Accepted with following suggestion.** 1. Resistant and susceptible check to be included. **(Action:** Research Scientist (G'nut), Main Oilseed Research Station, JAU, Junagadh**)**
11.3.2.75	Integrated management practice to minimize *Aspergillus flavus* infection in groundnut	**Accepted with following suggestion** 1. Include *T. harzianum* (JAU culture) as check (T-11). **(Action:** Research Scientist (G'nut), Main Oilseed Research Station, JAU, Junagadh**)**
11.3.2.76	Biological control of root rot of castor	**Accepted with following suggestion** 1. Include *T. harzianum* (JAU culture) as check (T-9). **(Action:** Research Scientist (G'nut), Main Oilseed

		Research Station, JAU, Junagadh**)**
11.3.2.77	Developing IDM modules for the management of cotton diseases	**Approved** (**Action:** Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh)
11.3.2.78	Management of fungal foliar diseases of cotton	**Accepted with following suggestion** 1. Number of sprays, interval and combination formulations should be revised in consultation with Professor of Plant Pathology, JAU, Junagadh. (**Action:** Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh)
11.3.2.79	IDM package for tomato diseases	**Approved** (**Action:** Research Scientist (G&O), Vegetable Research Station, JAU, Junagadh)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI		
AGRICULTURAL ENTOMOLOGY		
Sr. No.	**Title/Centre**	**Suggestions**
Dept. of Entomology, NMCA, NAU, Navsari		
11.3.2.80	Survey of Acari associated with different stored grains and by-products	**Approved** **(Action:** Prof. and Head, Dept. of Ento., NMCA, NAU, Navsari)
11.3.2.81	Effect of cropping system on the population build-up of *Tetranychus urticae* (Koch.) infesting okra	**Accepted with following suggestions** 1. Release mites on 30 days old crop 2. Replace Foxtail millet with fingermillet **(Action:** Prof. and Head, Dept. of Ento., NMCA, NAU, Navsari)
11.3.2.82	Survey for native entomopathogenic fungi (EPF) in south Gujarat condition.	**Approved** **(Action:** Prof. and Head, Dept. of Ento., NMCA, NAU, Navsari)
11.3.2.83	Testing the compatibility of banana pseudostem enriched sap with insecticides against mango hopper	**Accepted with following suggestions** 1. Remove the word enriched from the treatment **(Action:** Prof. and Head, Dept. of Ento., NMCA, NAU, Navsari)
11.3.2.84	5(A): Survey of pollinator fauna in South Gujarat	**Accepted with following suggestions** 1. Combine experiment 5A and 5B 2. Also include niger crop 3. Record observation of honeybees species wise **(Action:** Prof. and Head, Dept. of Ento., NMCA, NAU, Navsari)
	5(B): Studies on the floral diversity in south Gujarat	**Accepted with following suggestion** 1**.** Combine experiment 5A and 5B **(Action:** Prof. and Head, Dept. of Ento., NMCA, NAU, Navsari)
11.3.2.85	Study the activity period of honeybees in pointed gourd	**Accepted with following suggestion** 1. Observations on weather parameters may be recorded

		(Action: Prof. and Head, Dept. of Ento., NMCA, NAU, Navsari)
Gujarat Agril. Biotech Institute (GABI), NAU, Surat		
11.3.2.86	Molecular identification and genetic diversity of *Trichogramma chilonis*	**Approved** **(Action:** Asstt. Prof. (Ento), GABI, NAU, Surat)
Food Quality Testing Laboratory, NAU, Navsari		
11.3.2.87	Disssipation and persistence of combi-product of profenofos 40 % + cypermethrin 4 % in sapota and its distribution in edible parts of fruit	**Accepted with following suggestion** 1. Also record observations on ripen fruits **(Action:** Asstt. Prof. (Pesticide Residue), FQTL, NAU, Navsari)
11.3.2.88	Disssipation and persistence of combi-product of chlorpyrifos 50 % + cypermethrin 5 % in sapota and its distribution in edible parts of fruit	**Accepted with following suggestion** 1. Also record observations on ripen fruits **(Action:** Asstt. Prof. (Pesticide Residue), FQTL, NAU, Navsari)
Main Rice Research Station, NAU, Navsari		
11.3.2.89	Study on assessment of losses due to insect-pest and diseases of rice crop	**Accepted with following suggestion** 1. Roving survey in rice growing areas of south Gujarat should be carry out **(Action:** Assoc. Res. Sci. (Ento), MRRS, NAU, Navsari)
11.3.2.90	Study on losses in paddy due to store grain pests and diseases in storage	**Approved** **(Action:** Assoc. Res. Sci. (Ento), MRRS, NAU, Navsari)
Main Cotton Research Station, NAU, Surat		
11.3.2.91	Survey for assessment of losses due to Mealy bug infestations in the farmers' fields	**Accepted with following suggestions** 1. Experiment should be conducted for three years 2. Record observations grade-wise 3. Observations on pink bollworm should be recorded **(Action:** Assoc. Res. Sci. (Ento), MCRS, NAU, Surat)
11.3.2.92	Survey for assessment of losses due to pink bollworm infestations in the farmers' fields	**Approved** **(Action:** Assoc. Res. Sci. (Ento), MCRS, NAU, Surat)
Main Sorghun Research Station, NAU, Surat		
11.3.2.93	Assessment of the crop loss due to insect-pests and diseases in sorghum	**Approved** **(Action:** Assoc. Res. Sci. (Ento), MSRS, NAU, Surat)
11.3.2.94	Studies on bio efficacy of insecticides and botanicals against shoot fly and stem borer infesting sorghum crop	**Approved** **(Action:** Assoc. Res. Sci. (Ento), MSRS, NAU, Surat)

11.3.2.95	To know the losses in sorghum due to store grain pests in storage	**Approved** **(Action:** Assoc. Res. Sci. (Ento), MSRS, NAU, Surat)
KVK, NAU, Vyara		
11.3.2.96	Standardization of number of pheromone traps for mass trapping of *Earias vitella* Fabricius in Okra	**Accepted with following suggestions** 1. Use the word validation instead of standardization in title 2. Use the traps 50/60/70 instead of 20/40/60 per ha 3. Remove the trade name (PCI) **(Action:** SMS (Pl. Prot.), KVK, NAU, Vyara)
11.3.2.97	Studies on species composition of sugarcane shoot borer	**Approved** **(Action:** SMS (Pl. Prot.), KVK, NAU, Vyara)
PLANT PATHOLOGY		
Dept. of Pl. Pathology, NMCA, NAU, Navsari		
11.3.2.98	Study of Plant Parasitic Nematodes (PPNs) in major crops of South Gujarat.	**Accepted with following suggestions** 1. Put the word root knot in place of plant parasitic in title and remove PPNs 2. Exclude the sugarcane **(Action:** Prof. and Head, Dept. of Pl. Patho., NMCA, NAU, Navsari)
11.3.2.99	Isolation, identification, evaluation and mass production of native *Bacillus* spp.	**Approved** **(Action:** Prof. and Head, Dept. of Pl. Patho., NMCA, NAU, Navsari)
Aspee College of Horti. And Forestry, NAU, Navsari		
11.3.2.100	Assessment of crop loss due to complex of diseases and pests in bottle gourd	**Accepted with following suggestions** 1. Replace carbendazim and benomyl with dinocap and hexaconazole for powdery mildew disease 2. Replace thiophenate methyl and zineb with matalaxyl MZ and COC **(Action:** Assoc. Prof. (Pl. Path), ACHF, NAU, Navsari)
Main Rice Research Station, NAU, Navsari		
11.3.2.101	Study on assessment of yield losses due to diseases in rice crop	It was suggested to drop the experiment **(Action:** Assitt. Res. Sci.(Pl.Path), MRRS, NAU, Navsari)
AES, NAU, Paria		
11.3.2.102	Management of mango hoppers and thrips	**Accepted with following suggestion** 1. Replace RBD with CRD **(Action:** Asstt. Res. Sci.(Pl. Path), AES, NAU, Paria)
11.3.2.103	Crop loss assessment by major insect-pests and diseases of mango	**Accepted with following suggestions** 1. Remove the trade name of Saaf with common name 2. Apply carbaryl 50 WP 0.2% on tree trunk in the month of October 3. Follow latest recommended schedule of patho and ento and remove all listed chemicals from the treatment

		(Action: Asstt. Res. Sci.(Pl. Path), AES, NAU, Paria)
College of Agriculture, NAU, Bharuch		
11.3.2.104	Evaluation of Bio-inoculants against Anthracnose of Banana	**Accepted with following suggestions** 1. Change the title as Isolation and *in-vitro* testing of bio-inoculants against Anthracnose of Banana **(Action:** Assoc. Prof. (Pl. Path), College of Agri., NAU, Bharuch)
FRS, NAU, Gandevi		
11.3.2.105	Assessment of yield losses due to pest and diseases in Banana	**Approved** **(Action:** Asstt. Res. Sci.(Pl. Path), FRS, NAU, Gandevi)
11.3.2.106	Assessment of yield losses due to pest and diseases in Papaya	**Approved** **(Action:** Asstt. Res. Sci.(Pl. Path), FRS, NAU, Gandevi)
KVK, NAU, Waghai		
11.3.2.107	Assessment of yield losses due to diseases in finger millet crop under Dangs district of South Gujarat	**Approved** **(Action:** SMS (Pl. Prot.), KVK, NAU, Waghai)
Regional Rice Research Station, NAU, Vyara		
11.3.2.108	Evaluation of Groundnut genotypes to identify the sources of resistance against stem rot caused by *Sclerotium rolfsii*	**Accepted with following suggestion** 1. Record the observation as per AICRP groundnut for screening **(Action:** Asstt. Res. Sci.(Pl. Path), RRRS, NAU, Vyara)
AES, NAU, Paria		
11.3.2.109	Cost effective management of post-harvest anthracnose of mango by pre and post harvest treatments	**Accepted with following suggestion** 1. Use the design CRD **(Action:** Assoc. Res. Sci. (Pl .Path), AES, NAU, Paria)
11.3.2.110	Management of Mango malformation at farmer's field	**Accepted with following suggestion** 1. Remove the words at farmers field from title **(Action:** Assoc. Res. Sci. (Pl. Path), AES, NAU, Paria**)**
Agroforestry, NAU, Navsari		
11.3.2.111	Influence of weather parameters on foraging activity of stingless bees (*Tetragonula iridipennis* Smith) near the nests	**Approved** **(Action:** Asstt. Prof. (Agroforestry), NAU, Navsari)
11.3.2.112	Nesting habitat and nest architecture of stingless bees (*Tetragonula iridipennis* Smith) in South Gujarat condition	**Approved** **(Action:** Asstt. Prof. (Agroforestry), NAU, Navsari)
11.3.2.113	Pilot study on domestication of stingless bees (*Tetragonula*	**Approved** **(Action:** Asstt. Prof. (Agroforestry), NAU, Navsari

	iridipennis Smith)	

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SARDARKRUSHINAGAR		
AGRICULTURAL ENTOMOLOGY		
Sr. No.	**Title /Centre**	**Suggestions**
Department of Ento., CPCA, SDAU, SKNagar		
11.3.2.114	Management of white grub in groundnut	**Accepted with following suggestion** **1.** Use chlorpyriphos 20 EC as check **(Action :** Prof. and Head, Dept. of Ento., CPCA, SDAU, Sardarkrushinagar)
Pulse Research Station, SDAU, SKNagar		
11.3.2.115	Evaluation of IPM module for management of sucking pest and borer complex of mung bean	**Approved** **(Action**: Asstt. Res. Sci. (Ento.) Pulse Res. Station, SDAU, Sardarkrushinagar)
CRSS, SDAU, Jagudan		
11.3.2.116	Bio efficacy of newer molecules of insecticides against cumin aphid	**Approved** **(Action:** Assoc. Res. Sci. (Ento.), CRSS, SDAU, Jagudan)
Polytechnic in Agriculture, SDAU, Khedbrahma		
11.3.2.117	Development of biocontrol based management practices for mustard aphid in the tribal area of North Gujarat	**Accepted with following suggestions** 1. Remove the words "in the tribal area of North Gujarat" from title 2. Use the dose 2 kg/ ha instead of 2.5 kg/ ha in treatment 1 and 2 3. Use the dose 1 kg/ ha instead of 1.25 kg/ ha in treatment 5 to 8 4. Correct the net plot size **(Action:** Asso. Res. Sci. (Pl. Path.), Polytechnic in Agri., SDAU, Khedbrahma)
11.3.2.118	Chemical control of sucking pests of mustard	**Accepted with following suggestions** 1. Revise T-3 as T_1 + Flonicamid 2. Revise T-4 as T1 + Dimethoate 3. Revise T-5 as T2 + Flonicamid 4. Remove T-6 **(Action:** Asso. Res. Sci. (Pl. Path.), Polytechnic in Agri., SDAU, Khedbrahma)
11.3.2.119	Survey and monitoring of major insect pests and diseases of mustard in the tribal areas of North Gujarat	**Approved** **(Action:** Asso. Res. Sci. (Pl. Path.), Polytechnic in Agri., SDAU, Khedbrahma)
KVK, SDAU, Khedbrahma		
11.3.2.120	Survey, surveillance and monitoring of sucking pest and its natural enemies of Bt cotton hybrids in Sabarkantha District	**Accepted with following suggestions** 1. Remove the word "hybrid" from title 2. Remove the word "surveillance and monitoring from title **(Action :** SMS (Pl. Prot.), KVK, SDAU,

		Khedbrahma**)**
PLANT PATHOLOGY		
Department of Plant Pathology, CPCA, SDAU, SKNagar		
11.3.2.121	Management of foliar disease of groundnut through fungicide	**Approved** **(Action :** Prof. and Head, Dept. of Pl. Path., CPCA, SDAU, Sardarkrushinagar)
Department of Nematology, CPCA, SDAU, SKNagar		
11.3.2.122	Integrated management of root knot nematode (*Meloidogyne incognita*) in potato	**Accepted with following suggestions** 1. Revise the treatments as under T1: Seed treatment with carbosulfan 25 EC T2: Castor cake @ 2 t/ ha T3: Poultry manure @ 15 t/ ha T4: *Paecilomyces lilacinus* @ 2 kg/ ha (talc formulation) T5: T1 + T2 T6: T1 + T3 T7: T1 + T4 T8: Control 2.Conduct the expt. with LR variety 3. Remove scientific name from title 4. Keep replication 3 using RBD 5. Remove observation point 2, 3 and 4 **(Action :** Prof. and Head, Dept. of Nemato., CPCA, SDAU, Sardarkrushinagar)
11.3.2.123	Integrated management of root knot nematode (*Meloidogyne incognita*) in Pomegranate	**Accepted with following suggestions** 1. Remove scientific name from title 2. Revise the treatments as under T1: Carbofuran 3G @ 1 kg a.i. / ha T2: Neem cake @ 2 t/ ha T3: Castor cake @ 2 t/ ha T4: Poultry manure @ 5 t/ ha T5: *T. viride* @ 2.5 kg/ ha enriched with 250 kg FYM T6: *Paecilomyces lilacinus* @ 2.5 kg/ ha enriched with 250 kg FYM T7: Pseudomonas flourescences @ 2.5 kg/ ha enriched with 250 kg FYM T8: Control 3. Remove observation point 3 and 4 4. Add fruit yield 5. Plot size such that 5 plants/ plot **(Action :** Prof. and Head, Dept. of Nemato., CPCA, SDAU, Sardarkrushinagar)
Department of Microbiology, CPCA, SDAU, SKNagar		
11.3.2.124	Evaluation of various PGP (Plant Growth Promoting) agents on nodulation, protein content and seed yield of green gram	**Accepted with following suggestions** 1. PGPR to be included in title 2. Treatment Azotobacter to be replaced with rhizobium @ 10 ml/ kg seed in all the treatments; 3. Application of VAM should be 10 kg/ ha 4. All the observations related to PGR should be

		recorded (Root length, germination, chlorophyll etc.); Nodulation number and fresh and dry weight; ancillary observations of all the diseases; initial and harvest time population of biotypes **(Action:** Asstt. Prof., Dept. of Micro., CPCA, SDAU, Sardarkrushinagar)
11.3.2.125	Evaluation of various PGP (Plant Growth Promoting) agents on nodulation, protein content and seed yield of chickpea	**Accepted with following suggestion** 1. Treatments and observations should be followed as per Expt-11 **(Action:** Asstt. Prof., Dept. of Micro.,CPCA, SDAU, Sardarkrushinagar)
11.3.2.126	Effect of different concentrations of pendimethalin and glyphosate on soil microbial communities and soil enzymatic activity	**Approved** **(Action:** Asstt. Prof., Dept. of Micro.,CPCA, SDAU, Sardarkrushinagar)
College of Horticulture, SDAU, SKNagar		
11.3.2.127	Management of Foot rot of papaya	**Approved** **(Action:** Asso. Prof. (Pl. Path.), College of Horti., SDAU, Sardarkrushinagar)
11.3.2.128	*In vitro* and *in situ* Effect of seed bio-priming techniques on seed germination and seedling vigor of vegetable crops	**Accepted with following suggestions** 1. Bio-priming methods to be standardized and timing to be decided accordingly 2. All the observation related to PGR should be recorded for the plants **(Action:** Asso. Prof. (Pl. Path.),College of Horti., SDAU, Sardarkrushinagar)
Pulse Research Station, SDAU, SKNagar		
11.3.2.129	Management of root rot of cowpea	**Approved** **(Action:** Asstt. Res. Sci. (PI. Path.), Pulse Res. Station, SDAU, Sardarkrushinagar)
Arid Zone Fruit Research Station, SDAU, SKNagar		
11.3.2.130	Cost effective control of powdery mildew of Ber	**Approved** **(Action:** Asstt. Res. Sci. (PI. Path.), AFRS, SDAU, SKNagar)
Agricultural Research Station, SDAU, Ladol		
11.3.2.131	Management of fungal foliar diseases of potato through chemicals	**Approved** **(Action:** Asstt. Res. Sci. (PI. Path.), Agril. Res. Station, Ladol and Potato Res., Station, Deesa)
CRSS, SDAU, Jagudan		
11.3.2.132	Chemical management schedule for cumin blight	**Accepted with following suggestion** 1. One recommended treatment should be added **(Action:** Assoc. Res. Sci. (Pl. Path.), CRSS, SDAU, Jagudan**)**
Potato Research Station, SDAU, Deesa		
11.3.2.133	Studies on rate of degeneration of potato varieties due to virus	**Accepted with following suggestion** 1. Difference in characters due to degeneration should be recorded for all the varieties

	incidence	**(Action:** Asstt. Res. Sci. (Pl. Path.), Potato Res. Station, SDAU, Deesa)
Polytechnic in Agri., SDAU, Khedbrahma		
11.3.2.134	Management of mustard disease through biocontrol based management practices in tribal areas of North Gujarat	**Approved** (**Action**: Asso. Res. Sci. (Pl. Path.), Polytechnic in Agri., SDAU, Khedbrahma)

11.3.3 General suggestions:

1. Treatments should be presented in table form in future.
2. For all the chemical IRAC/ FRAC code should be included.
3. CIB guidelines should be followed for recommending pesticides.
4. Possibilities of irradiation to sterilize the soil may be carried out.
5. Consider scientific recommendations for farmer's in future on availability of molecule in market calculating ICBR of the treatments and following CIB guidelines.
6. Mention the quantity of the product per tree in fruit crops.
7. Mention date of harvest in pesticides residue trials.

11.4 HORTICULTURE & AGRO-FORESTRY

Chairman	**:**	Dr. N. L. Patel, Dean, Horti., NAU
Co-Chairmen	**:**	Dr. A. V. Barad, Dean, Agri., JAU Dr. L. R. Verma, Dean, Horti., SDAU
Rapporteurs	**:**	Dr. B. N. Patel, NAU Dr. M. J. Patel, AAU

The details of recommendations and new technical programmes presented, discussed and approved during the session are as under.

Universities	Recommendations				New Technical Programmes	
	Farming Community		Scientific Community			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU	4	4	---	---	8	8
JAU	4	4	---	---	3	3
NAU	22	17	10	10	59	58
SDAU	8	8	---	---	11	11
Total	38	33	10	10	81	80

11.4.1 RECOMMENDATIONS FOR FARMING COMMUNITY

ANAND AGRICULTURAL UNIVERSITY	
11.4.1.1	**Water and nutrient management through fertigation in sapota *Achras sapota* Mill cv. Kalipatti**
	The farmers of middle Gujarat Agro-climatic zone III growing sapota (cv. Kalipatti) are advised to irrigate the crop through drip at 7 hours and 30 minutes during October, 6 hours and 5 minutes during November to February at an alternate day and 7 hours and 10 minutes during March to June daily and apply 75% NPK of RDF (675+337.5+337.5 NPK g/tree) through fertigation as 25% each in 2nd and 4thweek of June and 25% each in 2nd and 4th week of October for getting higher yield and net return with saving of 25% fertilizer. The system should be laid out in sapota orchard planted at 10 x 10 m with lateral of 16 mm and having 12 drippers (8 LPH) per tree. The system should be operated at a pressure of 1.2 kg/cm^2. મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૩ માં ટપક સિંચાઇ પધ્ધતિ થી ચીકુ (જાત: કાલીપત્તી ની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ઓક્ટોબર માસ દરમ્યાન ૭ કલાક અને ૩૦ મિનિટ& નવેમ્બર થી ફેબ્રુઆરી માસ દરમ્યાન ૬ કલાક અને ૫ મિનિટ એકાંતરે દિવસે અને માર્ચ થી જુન માસ દરમ્યાન દરરોજ ૭ કલાક અને ૧૦ મિનિટ ટપક પધ્ધતિ ચલાવવાથી અને ભલામણ કરેલ ના.ફો.પો .નો ૭૫ %જથ્થા) ૬૭૫ + ૩૩૭.૫ + ૩૩૭.૫ ના.ફો.પો .ગ્રામ/ ઝાડ (પૈકી દરેકના ૨૫ % જૂનના બીજા અને ચોથા સપ્તાહમાં અને દરેકના ૨૫ % ઓક્ટોબર ના બીજા અને ચોથા સપ્તાહમાં ફર્ટીગેશન દ્વારા આપવાથી વધુ નફા સાથે ૨૫ %ખાતરનો બચાવ થાય છે . આ માટે ૧૦ x૧૦ મીટરના અંતરે રોપેલ ચીકુમાં ૧૬ મી.મી .માપની લેટરલ ગોઠવી ઝાડ

	દીઠ ૮ લિટર/કલાકની ક્ષમતાવાળા ૧૨ ડ્રીપર ગોઠવીને ટપક પધ્ધતિ ૧.૨ કિ.ગ્રા/ .સેમી^{2} દબાણે ચલાવવી . (Action: Professor & Head; Department of Horticulture; BACA, AAU, Anand)
11.4.1.2	**Performance evaluation of guava under drip system of irrigation**
	The farmers of middle Gujarat Agro-climatic zone-III growing guava (cv. L 49) are advised to adopt drip method of irrigation at 0.7 FPE for saving 34 % water without adverse effect on fruit yield as compared to surface irrigation. The system should be operated 3.0 hrs in October and February and 2.0 hrs 30 min from November to January at alternate day. **System details** 1. Main pipe size : 75 mm 2. Sub main pipe size : 63 mm 3. Lateral spacing : 6.0 m 4. Dripper spacing : 60 cm 5. No. drippers per plant : 8 6. Dripper discharge : 8 lph 7. Operating pressure : 1.2 kg/cm^{2} 8. Operating frequency : Alternate day મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર ૩ ના જામફળી (જાત : એલ-૪૯) ઉગાડતા ખેડૂતોએ ટપક સિંચાઇ પધ્ધતિ ૦.૭ એફપીઇ અપનાવવાથી ઉત્પાદનને અસર કર્યા વગર ૩૪ ટકા પાણીનો બચાવ થાય છે. આ માટે ટપક પ્રણાલી એકાંતરે દિવસે ઓક્ટોબર અને ફેબ્રુઆરી માસમાં ૩ કલાક અને નવેમ્બર થી જાન્યુઆરી માસમાં ૨ કલાક અને ૩૦ મિનિટ ચલાવવી. આ ટપક પધ્ધતિમાં ઝાડ દીઠ ૮ લિટર પ્રતિ કલાકની ક્ષમતા પ્રતિ ડ્રીપરના ૮ ડ્રીપર અને ડ્રીપ લાઇન ૬ મી.ના અંતરે ગોઠવી ટપક પ્રણાલીને ૧.૨ કિ,ગ્રા/.સે.મી.^{2} ના દબાણે ચલાવવાની ભલામણ છે. (Action: Assoc. Res. Sci. (Agro); Agricultural Research Station; AAU; Thasra)
11.4.1.3	**Integrated nutrient management in potato var. Kufri Badshah**
	The farmers of middle Gujarat Agro climatic zone III growing potato crop are advised to fertilize their crop with 260-130-260 NPK kg/ha in addition to this apply poultry manure @ 3 t/ha and in case of unavailability of poultry manure, apply FYM @ 20 t/ha to get higher net return (50% Nitrogen as basal and remaining 50% at the time of earthing up and poultry manure 20 days before planting should be applied). મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૩ ના બટાટાનું વાવેતર કરતા ખેડૂતોને વધુ ઉત્પાદન અને વધુ નફો મેળવવા માટે બટાટાના પાકમાં ૨૬૦-૧૩૦-૨૬૦ કિ.ગ્રા .ના.ફો.પો .પ્રતિ હેક્ટર્ ઉપરાંત મરઘાનું ખાતર ૩ ટન અને મરઘાના ખાતરની અછતમાં ૨૦ ટન પ્રમાણે છાણિયું ખાતર પ્રતિ હેક્ટર્ આપવાની ભલામણ કરવામાં આવે છે) .૫૦ ટકા નાઈટ્રોજન રોપણી સમયે પાયામાં અને બાકીનો ૫૦ ટકા નાઈટ્રોજન પાળા ચઢાવતી વખતે અને મરઘાનું ખાતર રોપણી ના ૨૦ દિવસ અગાઉ આપવું. (Action: Research Scientist (Veg), MVRS, AAU, Anand)
11.4.1.4	**Effect of nitrogen and phosphorus on growth and flower yield of jasmine (*Jasminum sambac* Ait) cv. Double**
	The farmers of middle Gujarat Agro-climatic zone-III growing jasmine (*Mogra*) crop are advised to apply 20 t/ha FYM as basal dose and 75 g nitrogen with 30 g phosphorus per plant in three equal splits at 15, 45 and 90 days interval after

	pruning (2nd week of January) at 30 cm plant height from ground level for getting higher flower yield and net realization. મધ્ય ગુજરાત કૃષિ આબોહવાકીય વિભાગ–૩ વિસ્તારમાં મોગરાની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે આ પાક ને હેકટરે ૨૦ ટન છાણીયું ખાતર પાયાના ખાતર તરીકે તથા છોડ દીઠ ૭૫ ગ્રામ નાઈટ્રોજન અને ૩૦ ગ્રામ ફોસ્ફરસ ખાતરો ત્રણ સરખા ભાગમાં છોડની એક ફૂટ ઉંચાઈએથી છાંટણી (જાન્યુઆરીના બીજા અઠવાડિયામાં) કર્યા બાદ ૧૫, ૪૫ અને ૯૦ દિવસે આપવાથી ફૂલોનું વધુ ઉત્પાદન તથા મહત્તમ નફો મેળવી શકાય છે. (Action: Professor & Head; Department of Horticulture; BACA, AAU, Anand)
JUNAGADH AGRICULTURAL UNIVERSITY	
11.4.1.5	**Effect of different sources of nitrogen with graded levels of inorganic fertilizer on papaya cv. Madhubindu**
	Farmers of South Saurashtra Agro-climatic Zone growing papaya (Madhubindu) crop are advised to apply 25 per cent N from FYM (6 kg FYM), and remaining 75 per cent N (150 g), 200g P and 250g K per plant from chemical fertilizers during 2nd, 3rd and 4th month after transplanting in equal splits for getting higher yield and net return. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના પપૈયા જાત મધુબિંદુ ઉગાડતા ખેડૂતોને આથી ભલામણ કરવામાં આવે છે કે પપૈયાના પાકમાં ૨૫ ટકા નાઈટ્રોજન છાણીયા ખાતરમાંથી (૬ કિ.ગ્રા. છાણીયુ ખાતર) અને બાકીનો ૭૫ ટકા નાઈટ્રોજન (૧૫૦ ગ્રામ નાઈટ્રોજન), ૨૦૦ ગ્રામ ફોસ્ફરસ તેમજ ૨૫૦ ગ્રામ પોટાશ પ્રતિ છોડ દીઠ રાસાયણિક ખાતર ફેર રોપણી બાદ બીજા, ત્રીજા અને ચોથા મહિને એકસરખા હપ્તામાં આપવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે. (Action: Professor & Head, Dept. of Horticulture, CoA, JAU, Junagadh)
11.4.1.6	**Effect of micro nutrients on growth, yield and quality of papaya cv. Madhubindu**
	Farmers of South Saurashtra Agro-climatic Zone are advised to spray micronutrients *viz.*, zinc sulfate 24.0 g (Zn 0.5 %) and Borax 10.0 g (B 0.1 %) per liter of water during 2nd and 4th month after transplanting for getting higher yield and net return in papaya cv. Madhubindu. દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ખેડૂતોને આથી ભલામણ કરવામાં આવે છે કે પપૈયા જાત મધુબીંદુને સુક્ષ્મ તત્વોમાં ઝીંક સલ્ફેટ ૨૪.૦ ગ્રામ (ઝીંક ૦.૫ %) અને બોરેક્ષ ૧૦.૦ ગ્રામ (બોરોન ૦.૧ %) પ્રતિ લીટર મુજબ ફેર રોપણીના બીજા અને ચોથા મહીને છંટકાવ કરવાથી વધુ ઉત્પાદન અને આવક મળે છે. (Action: Professor & Head, Dept. of Horticulture, CoA, JAU, Junagadh)
11.4.1.7	**Dehydration of sapota slices**
	Fruit processors are advised to dry the sapota slices of 0.5 cm thickness in solar dryer up to 33 per cent recovery to maintain quality in storage up to six months at room temperature. ફળોની બનાવટોના ઉત્પાદકોને ભલામણ કરવામાં આવે છે કે ચીકુની ૦.૫ સે.મી. જાડાઈની સ્લાઈસને સોલાર ડ્રાયર ધ્વારા ૩૩ ટકા રીકવરી મળે ત્યાં સુધી સુકવી સંગ્રહ કરવાથી ૬ માસ સુધી સારી ગુણવત્તા જળવાઈ રહે છે. (Action: Professor & Head, Dept. of Horticulture, CoA, JAU, Junagadh)
11.4.1.8	**Effect of soil amendment with organic materials on yield and quality of tomato (cv. Junagadh Tomato-3) under sodic soil & brackish water condition**
	The farmers of South Saurashtra Agro-climatic Zone growing *Rabi* Tomato (JT-3) under sodic soil (EC 1.48 dS/m, pH 7.81, ESP 21.84 %) and brackish water (EC 4.34 to 4.88 dS/m) condition are advised to apply FYM 5 t/ha + 50 per cent R.D.F. (37.5+18.75+ 31.25NPK kg/ha) + poultry manure (3700 kg/ha) for securing higher yield and net return. આથી દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ભાસ્મીક જમીન (ઈસી ૧.૪૮ ડે.સા./મી પી.એચ. ૭.૮૧, ઈએસપી ૨૧.૮૪ %) અને ભાંભરા પાણીમાં (ઈસી ૪.૩૪ થી ૪.૮૮ ડે.સા./મી) શિયાળુ ટામેટા (જેટી–૩) ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે છાણીયું ખાતર ૫ ટન/હે. સાથે ભલામણ કરેલ રાસાયણિક ખાતરનો ૫૦ ટકા જથ્થો (૩૭.૫ + ૧૮.૭૫ + ૩૧.૨૫ ના.ફો.પો. કિ.ગ્રા./હે.) તેમજ મરઘાની ચરક ૩૭૦૦ કિ.ગ્રા./હે આપવાથી વધારે ઉત્પાદન અને ચોખ્ખો નફો મળે છે. (Action: Res Sci. (FC), Agriculture Research Station, JAU, Mahuva)

NAVSARI AGRICULTURAL UNIVERSITY	
11.4.1.9	**Effect of post-shooting bunch spray of fertilizers on banana (*Musa paradisiaca* L.) cv. Grand Naine**
	The farmers of South Gujarat Heavy Rainfall Zone growing banana cv. Grand Naine are advised to apply two spray of 1.5% Sulphate of Potash (SOP) on bunch after complete emergence and 15 days after first spray to get higher yield with quality fruits. Keep the bunch covered with blue polythene sleeve (18 µ). દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તારમાં કેળની ગ્રાન્ડ નૈન જાત ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, સારી ગુણવત્તાવાળા ફળોનું વધુ ઉત્પાદન મેળવવા માટે સલ્ફેટ ઓફ પોટાશ ૧.૫ ટકાના દ્રાવણનાં બે છંટકાવ ,કેળની લૂમ પૂરેપૂરી નીકળ્યા બાદ અને પ્રથમ છંટકાવનાં ૧૫ દિવસ બાદ લૂમ ઉપર ૧૮ માઈક્રોનની ભુરા રંગના પ્લાસ્ટિકની બાંય ચઢાવવી. **(Action:-** Research Scientist, RHRS, ACHF, NAU, Navsari)
11.4.1.10	**Effect of different organics on growth, yield and quality of mango cv. Kesar under high density plantation**
	The farmers of South Gujarat Heavy Rainfall Zone intend to adopt organic farming in high density plantation (5 m x 5 m) adult mango cv. Kesar are advised to apply N 80 % of RDN from Neem Cake at 11.5 kg/ tree (5.22 % nitrogen) with *Azotobacter* + PSB (10^8 cfu) 50 ml each /tree in the month of June to get higher yield with quality production. It also improves the soil properties. દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તારમાં ઘનિષ્ઠ વાવેતર પધ્ધતિમાં) ૫ × ૫ મી (. આંબાની કેસર જાતમાં સેન્દ્રિય ખેતી પધ્ધતિ અપનાવવા માંગતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, સારી ગુણવત્તાવાળા ફળોનું વધુ ઉત્પાદન મેળવવા તેમજ જમીનની ગુણવત્તામાં સુધારા માટે પુખ્ત વયના કેસર ઝાડને ૮૦ ટકા નાઈટ્રોજનનો જથ્થો લીંબોળીના ખોળ ૧૧.૫૦ કિલો/ઝાડ) ૫.૨૨ % નાઈટ્રોજન (ના રૂપમાં તેમજ ૫૦ મિ.લિ. એઝોટોબેકટર અને ૫૦ મિ.લિ. પી .એસ .બી) .૧૦૮ સીએફયુ (પ્રતિ ઝાડ જુન માસમાં આપવું. (Action:- Research Scientist, RHRS, ACHF, NAU, Navsari)
11.4.1.11	**Effect of heading back and training on growth, flowering, yield and quality of fruit in old orchard of mango cv. Kesar**
	The farmers of South Gujarat Heavy Rainfall Zone are advised to head back their high density planted (5 m x 5 m) old mango tree cv. Kesar at 4 to 5 m height from ground level and maintain 6 newly emerged tertiary limbs to get higher yield with quality production. **Note:** 1. Rejuvenation should be done after completion of monsoon (in month of October). 2. For rejuvenation slant cut should be made and cut portion should be treated with copper fungicide. 3. Care should be taken for controlling stem borer by frequent visit of rejuvenated orchard. દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તારમાં ઘનિષ્ઠ વાવેતર પધ્ધતિમાં) ૫ x ૫ મી (.જુના કેસર આંબાના ઝાડ ધરાવતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, સારી ગુણવત્તાવાળા ફળોનું વધુ ઉત્પાદન મેળવવા માટે જુના આંબાના ઝાડને જમીનથી ૪ થી ૫ મીટર ઉંચાઈથી કાપી નવી નીકળતી ડાળીઓ માંથી ૬ ડાળીઓની કેળવણી કરવી . નોંધ -: **1.** નવીનીકરણ ચોમાસુ પૂર્ણ થયા પછી કરવું) ઓક્ટોબર માસમાં .(

2. નવીનીકરણ માટે ત્રાંસો કાપ મૂકી કપાયેલા ભાગ ઉપર તાંબાયુકત ફૂગનાશક દવા લગાવવી.

3. નવીનીકરણ કરેલ આબાંવાડીમાં આંબાના મેઢનાં નિયંત્રણ માટે નિયમિત મુલાકાત લેતા રહેવું .

(Action:- Research Scientist, RHRS, ACHF, NAU, Navsari)

11.4.1.12 **Varietal trial in mango**

The farmers of South Gujarat growing mango are advised to grow varieties Alphonso, Sonpari, Kesar and Banglora for higher production with good economic return. However, Malgoa, Mankurad, Fernandin, Bombay Green and Kishen Bhog are not economical under south Gujarat condition. Varieties Alphonso and Sonpari gave higher TSS.

દક્ષિણ ગુજરાતમાં આંબાની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવેછે કે, આંબાવાડીયામાં વધુ ઉત્પાદન સાથે આવક મેળવવા હાફુસ, સોનપરી, કેસર અને બેંગ્લોરા જાતનું વાવેતર કરવું .જ્યારે મલગોવા, માનકુરાદ, ફર્નાનડીન, બોમ્બે ગ્રીન અને કિષ્નભોગ દક્ષિણ ગુજરાતનાં વાતાવરણમાં નફાકારક નથી . હાફુસ અને સોનપરી જાતોમાં કુલ દ્રવ્ય ક્ષારનું પ્રમાણ સૌથી વધુ જોવા મળે છે.

(Action:- Research Scientist, AES, NAU, Paria)

11.4.1.13 **Nutrient requirement under high density planting in banana cv. Grand Naine**

The farmers of south Gujarat heavy rainfall zone (AES-III) growing banana cv. Grand Naine are advised to plant three (3) suckers/hill (in triangle fashion at 30 cm.) at 2x3 m (7x10 feet) spacing and apply 75 per cent recommended dose of fertilizers i.e. 225:67.5:150 N:P_2O_5:K_2O g/plant) for getting higher yield with higher net return. 10 kg FYM and 67.50 g P_2O_5/plant should be apply at planting, while 225 g N and 150 g K_2O/plant should be applied in three equal splits at 90, 120 and 150 days after planting.

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તારમાં કેળની ગ્રાન્ડ નૈન જાતની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે કેળની રોપણી ખામણા દીઠ ત્રણ(૩) છોડ) ત્રિકોણાકાર પધ્ધિતમાં ૩૦ સે.મી.ના અંતરે (૨ x ૩ મીટર(૭x ૧૦ ફૂટ) ના અંતરે કરવાથી અને સાથે ભલામણ કરેલ રસાયણિક ખાતરના ૭૫ ટકા ખાતર એટલે કે ૨૨૫ -૬૭.૫-૧૫૦ ગ્રામ ના:ફો:પો પ્રતિ છોડ દીઠ આપવાથી વધુ ઉત્પાદન સહિત વધુ નફો મળે છે. છોડ દીઠ છાણિયુ ખાતર ૧૦ કિ.ગ્રા .અને ૬૭.૫ ગ્રામ ફોસ્ફરસ રોપતી વખતે ખાડામાં આપવો જયારે છોડ દીઠ ૨૨૫ ગ્રામ નાઈટ્રોજન અને ૧૫૦ ગ્રામ પોટાશ રોપણી બાદ ૯૦, ૧૨૦ અને ૧૫૦ દિવસે ત્રણ સરખા હપ્તામાં આપવા .

(Action:- Associate Res. Scientist, FRS, NAU, Gandevi)

11.4.1.14 **Fertigation studies in banana cv. Grand Naine**

The farmers of south Gujarat heavy rainfall zone (AES-III) growing banana cv. Grand Naine and using drip irrigation system are advised to apply 75 per cent recommended dose of N and K_2O fertilizers i.e. 225 g N and 150 g K_2O/plant through drip at 15 days interval during the various growth stage as under for getting higher yield with higher net profit with 25 % saving of N and $K_2O$and 22 per cent saving of irrigation water.

Sr. No.	Growth stages	N and K_2O g/plant		No. of split
		N	K_2O	
1	During 3 and 4 month	67.5	30	4
2	During 5 and 6 month	112.5	60	4
3	During 7 month to flowering	45	48	2
4	Post shooting	00	12	1

10 kg FYM and 90 g P_2O_5 should be applied in pit at planting. The drip system should be operated for 90 minutes in winter and 150 minutes in summer everyday

having two drippers of 4 lph spaced at 30 cm either side of pseudostem.

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તારમાં ટપક સિંચાઈ પદ્ધતિથી કેળની ગ્રાન્ડ નૈન જાતની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે ,કેળના પાકમાં ભલામણ કરેલ રસાયણિક ખાતર નાઈટ્રોજન અને પોટાશના ૭૫ ટકા એટલે કે ૨૨૫ ગ્રામ નાઈટ્રોજન અને ૧૫૦ ગ્રામ પોટાશ પ્રતિ છોડ નીચે મુજબના તબક્કા દરમ્યાન ૧૫ દિવસના આંતરે ટપક પદ્ધતિ સાથે આપવાથી વધુ ઉત્પાદન અને નફો મળે છે અને ૨૫ ટકા નાઈટ્રોજન અને પોટાશ યુકત ખાતરનો અને ૨૨ ટકા પાણીનો બચાવ થાય છે.

અનન	વૃદ્ધિ વિકાસના તબક્કા	નાઈટ્રોજન અને પોટાશ ગ્રામ પ્રતિ છોડ		હપ્તા
		નાઈટ્રોજન	પોટાશ	
૧	૩ અને ૪ માસ દરમ્યાન	૬૭.૫	૩૦	૪
૨	૫ અને ૬ માસ દરમ્યાન	૧૧૨.૫	૬૦	૪
૩	૭ માસથી લુમનો ડોડો નીકળે ત્યાં સુધી	૪૫	૪૮	૨
૪	લુમ નીકળ્યા બાદ	૦૦	૧૨	૧

છોડ દીઠ છાણિયુ ખાતર ૧૦ કિ.ગ્રા .અને ૯૦ ગ્રામ ફોસ્ફરસ રોપતી વખતે ખાડામાં આપવો. ટપક સિંચાઈ પધ્ધતિમાં કલાકે ૪ લિટરની ક્ષમતાવાળા બે ડ્રીપર છોડના થડની બંને બાજુ ૩૦ સે.મી .દૂર મૂકી પદ્ધતિ શિયાળામાં ૯૦ મિનિટ અને ઉનાળામાં ૧૫૦ મિનિટ સુધી દરરોજ ચલાવવી.

(Action:- Associate Res. Scientist, FRS, NAU, Gandevi)

11.4.1.16 **Integrated Nutrient Management in Little gourd**

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone (AES III) cultivating little gourd cv. Gujarat Navsari Little Gourd-1 (GNLG-1) are advised to follow INM to fertilize the crop as per the schedule given below to get higher better quality fruits and net realization.

Basal dose:Apply 10 t/ha well decomposed FYM, 25 kgN/ha through Bio compost on equivalent N basis along with 50 kg/ha each of P and K by chemical fertilizer.

Top dressing: Apply 25 kg N/ha in two splits through chemical fertilizer at 30 and 60 days after Planting .

Note: 1. In subsequant years, apply fertilizer as above schedule.

2. Prunning should be done in month of December.

દક્ષિણ ગુજરાતમાં ટીંડોળાની ગુજરાત નવસારી ટીંડોળા–૧ જાતની ખેતી કરતા ખેડૂતોને ટીંડોળાનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે સંકલિત ખાતર વ્યવસ્થા દ્વારા પાકને ખાતરનો જથ્થો નીચે મુજબ આપવો.

પાયામાં: ૧૦ ટન છાંણીયુ ખાતર, ૨૫ કીગ્રા નાઈટ્રોજન બાયો કમ્પોસ્ટના સ્વરૂપમાં (બાયો કમ્પોસ્ટમાં રહેલા નાઈટ્રોજન તત્વના પ્રમાણનાં આધારે) તથા ૫૦ કિગ્રા ફોસ્ફરસ / હે અને ૫૦ કિગ્રા પોટાશ / હે રાસાયણિક ખાતર દ્વારા આપવો.

પૂર્તિ ખાતરમાં: બાકી રહેલો ૨૫ કિ.ગ્રા. નાઈટ્રોજન / હે રોપણી કર્યાના ૩૦ અને૬૦ દિવસે બે સરખા હપ્તામાં રાસાયણિક ખાતર દ્વારા આપવો.

નોંધ: ૧. પછીના વર્ષોમાં ઉપર મુજબ ખાતર આપવું.

૨. પાકની છટણી ડિસેમ્બર માસમાં કરવી.

(Action:- Res. Scientist, Veg. Sci, ACHF, NAU, Navsari)

11.4.1.17 **Effect of different organics on growth and yield of brinjal cv. *Surti Ravaiya* (pink)**

The farmers of South Gujarat heavy rainfall agro-climatic zone (AES III) intend to grow brinjal variety Surti Ravaiya (Pink) organically are advised to apply castor cake (4.5 % N ; dry weight basis) in two equal proportion to supply N @ 100 kg/ha for achieving higher yield and net income as well as to improve the soil health.

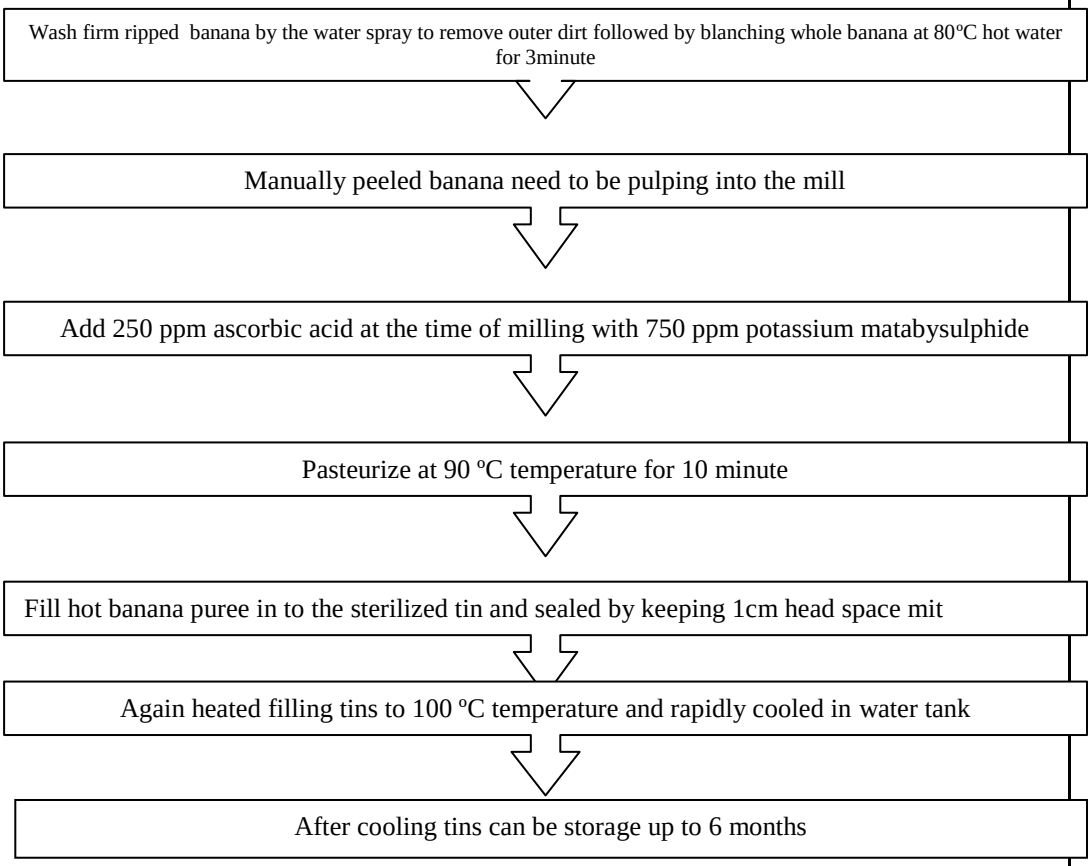
	Apply 4.5 t/ha castor cake in two equal splits at the time of transplanting and one month after transplanting. **Note :** – *Trichoderma viride* should be applied at the rate of 5 kg/ha at the time of transplanting. – Maize should be grown as trap crop on the border. – Sticky trap should be used @ 40/ha. – Tricho card should be used @ 5/ha. After transplanting apply foliar spray of neem based pesticide and cow urine at monthly intervals. **દક્ષિણ ગુજરાતના ભારે વરસાદીય વાતાવરણ વિસ્તાર (એઈએસ ૩) ના સેન્દ્રિય ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે રીંગણ જાત *સુરતી રવૈયા* (ગુલાબી) ને દિવેલી ખોળ (૪.૫ ટકા નાઈટ્રોજન ; સૂકાં વજન આધારિત) બે સરખાં ભાગમાં ૧૦૦ કિ.ગ્રા./ હેકટરના દરે નાઈટ્રોજન આપવાથી વધુ ઉત્પાદન અને ચોખ્ખી આવક તેમજ જમીનની તંદુરસ્તીમાં સુધારો થાય છે.** **૪.૫ ટન/હેકટર દિવેલી ખોળ ફેરરોપણી સમયે અને ફેરરોપણી બાદ એક મહીને બે સરખાં ભાગમા આપવો.** **નોંધ :** • **૫ કિ.ગ્રા./હેકટર ફેરરોપણી સમયે આપવું.** • **રીંગણ પાક ફરતે મકાઈનો પિંજર પાક ઉગાડવો.** • **સ્ટીકી ટ્રેપ ૪૦ પ્રતિ હે.*ટ્રેપ ૪૦ પ્રતિ હેકટર લગાડવા.*** • **ટ્રાયકો કાડ ૫ પ્રતિ હે.*હેકટર લગાડવા.*** **ફેરરોપણી બાદ મહીનાના અંતરે લીમડા આધારીત દવા અને ગૌમુત્રનો છંટકાવ કરવો.** (Action:- Res. Scientist, Veg. Sci, ACHF, NAU , Navsari)
11.4.1.18	**Response of seed sowing on germination, growth, flowering and yield of Spine gourd (*Momordica dioica* Linn.) cv. Local**
	The farmers of South Gujarat Heavy Rainfall Agro-climatic zone (AES-II and AES-III) interested to grow spine gourd cv. Local through seed are advised to sow five seeds per dibble on raised bed in last week of March and mulch with paddy straw for higher fruit yield. **દક્ષિણ ગુજરાતમા કંકોડાની ખેતી બીજ દ્વારા કરવામાં રસ ધરાવતા ખેડૂતોને કંકોડાનુ વધુ ઉત્પાદન મેળવવા માટે ગાદી કયારા બનાવી, ખામણા દીઠ કંકોડાના પાંચ બીજનુ માર્ચ માસના અંતિમ અઠવાડિયામાં વાવેતર કરી ડાંગરના પરાળનું આવરણ કરવાની ભલામણ કરવામાં આવે છે.** (Action:- Res. Scientist, Veg. Sci, ACHF, NAU , Navsari)
11.4.1.19	**Performance of greater yam (*Dioscorea alata* L.) under different stacking systems.**
	The farmers of south Gujarat Heavy Rainfall Agro-climatic Zone (AES III) growing greater yam cv. Local Round are advised to plant greater yam at the distance of 90 cm × 90 cm with elephant foot yam cv. Local as a live stacking crop in-between two rows of greater yam at a distance of 90 cm × 90 cm and train the vines of greater yam on the plants of elephant foot yam with application of 15 tonne of FYM and 120:90:120 kg NPK/ha to obtain higher yield and net return. **દક્ષિણ ગુજરાતમાં રતાળુની લોકલ ગોળ જાતનું વાવેતર કરતાં ખેડૂતોને વધુ ઉત્પાદન તથા ચોખ્ખો નફો મેળવવા માટે રતાળુની રોપણી ૯૦ × ૯૦ સે.મી. ના અંતરે કરવા તથા રતાળુની બે હાર વચ્ચે દેશી સુરણનું પણ ૯૦ × ૯૦ સે.મી. ના અંતરે વાવેતર કરવા અને રતાળુના વેલાને સુરણના છોડ પર કેળવણી કરવાની તથા ૧૫ ટન છાણિયું ખાતર અને ૧૨૦:૯૦:૧૨૦ કિલો નાઃફોઃપો. તત્વો પ્રતિ હેકટર આપવાની ભલામણ કરવામાં આવે છે.** (Action:- Asstt. Res. Scientist, Tuber crops, ACHF, NAU, Navsari)
11.4.1.20	**Effect of rates of castor cake and Banana Pseudostem sap on yield and quality of organically grown Garlic (*Allium sativum* L.)**
	The farmers of South Gujarat Heavy Rainfall Zone (AES III) growing garlic

	organically are advised to apply recommended 100 kg N/ha through organic manures as per schedule given below to get higher yield and net profit. • Apply 1.4 t/ha biocompost and 3.3 t/ha vermicompost at the time of sowing and 0.7 t/ha castor cake one month after sowing. • Apply 2000 lit/ha banana pseudostem sap at 35 and 55 days after sowing **Note:** • Apply common dose of *Azotobacter* biofertilizer @ 2 kg/ha. • After sowing, apply foliar spray of neem based insecticide and cow urine at monthly interval. • Maize should be grown as trap crop at the border. • Sticky trap should be used @ 40/ha. દક્ષિણ ગુજરાત ભારે વારસાદવાળા ખેત અબોહવાકીય વિસ્તારના ખેડૂતો કે જેઓ સેન્દ્રિય ખેતી થી લસણ ઉગાડે છે તેઓને વધુ ઉત્પાદન અને વળતર મેળવવા ભલામણ મુજબનો ૧૦૦ કિ.ગ્રા . નાઈટ્રોજન/હે .સેન્દ્રિય ખાતર દ્વારા નીચે જણાવેલ સમય પત્રક મુજબ આપવું. • રોપણી સમયે ૧.૪ ટન/હે બાયો કંપોસ્ટ અને ૩.૩ ટન/હે અળસિયાનું ખાતર આપવું . રોપણીબાદ એક મહીને દિવેલીનો ખોળ ૦.૭ ટન/હે આપવો. • રોપણીબાદ ૩૫ અને ૫૫ દિવસે કેળના થડનો રસ ૨૦૦૦ લિ/.હે .પ્રમાણે આપવો. નોંધ : • એઝેટોબેકટર ૨ કિગ્રા/હે ફેરરોપણી સમયે આપવું. • રોપણીબાદ એક-એક મહિનાના અંતરે લીમડા યુકત દવા અને ગૌમુત્રનો છંટકાવ કરવો. • પાક ફરતે મકાઈનો પિંજર પાક ઉગાડવો. પ્રતિ હેક્ટર ૪૦ સ્ટીકી ટ્રેપ લગાડવા. (Action: Professor, NRM,ACHF, NAU, Navsari)
11.4.1.21	**Study of year round flower production in French marigold and its growth and development in relation to weather.**
	The farmers of south Gujarat Heavy Rainfall Zone-I (AES-III) cultivating marigold are advised to transplant seedlings of French marigold cv. Sparky Mix in first week of July to first week of August for higher flower production, better quality and economic return. **દક્ષિણ ગુજરાતના ભારે વરસાદીય ઝોન–૧ ખેત આબોહવાકીય પરિસ્થિતિ–૩ માં ગલગોટાની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ફ્રેન્ચ ગલગોટાની સ્પાર્કી મિકસ જાતના ધરૂની જુલાઈના પ્રથમ અઠવાડિયાથી ઓગષ્ટના પ્રથમ અઠવાડિયા સુધીમાં ફેરરોપણી કરવાથી સારી ગુણવત્તાવાળા ફૂલોનું વધુ ઉત્પાદન મેળવી વધુ આવક મેળવી શકાય છે.** (Action: Professor, Floriculture Department, ACHF, NAU, Navsari)
11.4.1.22	**Study of year round flower production in African marigold and its growth and development in relation to weather.**
	The farmers of south Gujarat Heavy Rainfall Zone-I (AES-III) cultivating marigold are advised to transplant seedlings of African marigold cv. Pusa Narangi Gainda in first week of July to first week of August for higher flower production, better quality and economic return. **દક્ષિણ ગુજરાતના ભારે વરસાદીય ઝોન–૧ ખેત આબોહવાકીય પરિસ્થિતિ–૩ માં ગલગોટાની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે આફ્રિકન ગલગોટાની પુસા નારંગી ગૈંદા જાતના ધરૂની જુલાઈના પ્રથમ અઠવાડિયાથી ઓગષ્ટના પ્રથમ અઠવાડિયા સુધીમાં ફેરરોપણી કરવાથી સારી ગુણવત્તાવાળા ફૂલોનું વધુ ઉત્પાદન મેળવી વધુ આવક મેળવી શકાય છે.** (Action: Professor, Floriculture Department, ACHF, NAU, Navsari)
11.4.1.23	**Standardization of colour extraction technique from Palash (*Butea***

	monosperma)* flowers for preparing herbal *gulal.
	It is recommended that, the Palash (*Butea monosperma)* flower could be used for colour material extract using 50% methanol water based v/v solution at 60ºC temperature and 4h process time. The extracted dye can be used for production of herbal '*gulal'.* **આથી ભલામણ કરવામાં આવે છે કે કેસુડાના ફૂલ માંથી કલર ડાઈ કાઢવા તેને ૫૦% મિથેનોલના દ્રાવણમાં ૬૦° સે. તાપમાને ૪ કલાક સુધી રાખવુ. તેથી નીકળેલ ડાઈ દ્વારા હરબલ ગુલાલ બનાવી શકાય છે.** (Action: Professor, PHT,ACHF, NAU, Navsari)
11.4.1.24	**Preparation of Ready to Serve (RTS) beverage from banana pseudostem sap.**
	It is recommended to the farmers, processors and house-wives that, the RTS beverage can be prepared from blend of banana psedostem sap and aonla fruit juice having 3.5% and 8% TSS, respectively with the ratio of 90:10 which could be stored up to six months at ambient temperature. **આથી ખેડૂતો, પ્રસંસ્કરણકારો તેમજ ગૃહિણીઓને ભલામણ કરવામાં આવે છે કે, કેળાના થડના રસ અને આમળાના રસ કે જેના ટી.એસ.એસ. અનુક્રમે ૩.૫% અને ૮.૦% હોય તેને ૯૦:૧૦ પ્રમાણમાં ભેળવી તેનો આર.ટી.એસ. પીણુ બનાવવાથી તે ૬ માસ સુધી રૂમ તાપમાને સંગ્રહ કરી શકાય છે.** **(NOTE: This recommendation differed from Engg. Sub committee so delet from Horti. Sub committee)** (Action: Professor, PHT,ACHF, NAU, Navsari)
11.4.1.25	**Standardization of Technology for Processing of Banana Central Core Jam**
	Recommendation for House wives / processors: The processors and house wives are recommended to prepare banana pseudostem central core jam by replacing up to 50% fruits (mango, guava, papaya, pineapple) with central core. However, mix fruit jam with central core is most acceptable combination which not only reduce the production cost but also increase the fibre content of the jam without affecting jam quality. **ગૃહિણીઓ / પ્રોસેર્સસ માટે ભલામણ:** **ગૃહિણીઓ અને પ્રોસેર્સસને ભલામણ કરવામાં આવે છે કે, કેળના થડના મધ્યગરમાંથી જામ બનાવવા માટ વધુમાં વધુ ૫૦% મધ્યગરને ફળ (કેરીં, જમરુખ, પપૈયા, અને અનાનસ) સાથે મિશ્ર કરીં ઉત્તમ કક્ષાનો જામ બનાવી શકાય છે. આમ છતા, મિશ્રફળો સાથેનો જામ વધુ સ્વીકાર્ય છે. જામમાં મધ્યગર ઉમેરતા તે આર્થીક દ્રષ્ટીએ સસ્તો પડે છે તથા ગુણવત્તા પર અસર કર્યા વગર જામમાં ફાઈબરનું પ્રમાણ વધારી શકાય છે.** (Action: Res. Scientist, SWM, NAU, Navsari)
11.4.1.26	**Optimization of Level of Temperature and KMS in Processing of Banana Puree' From Ripe Banana at Pilot Scale**

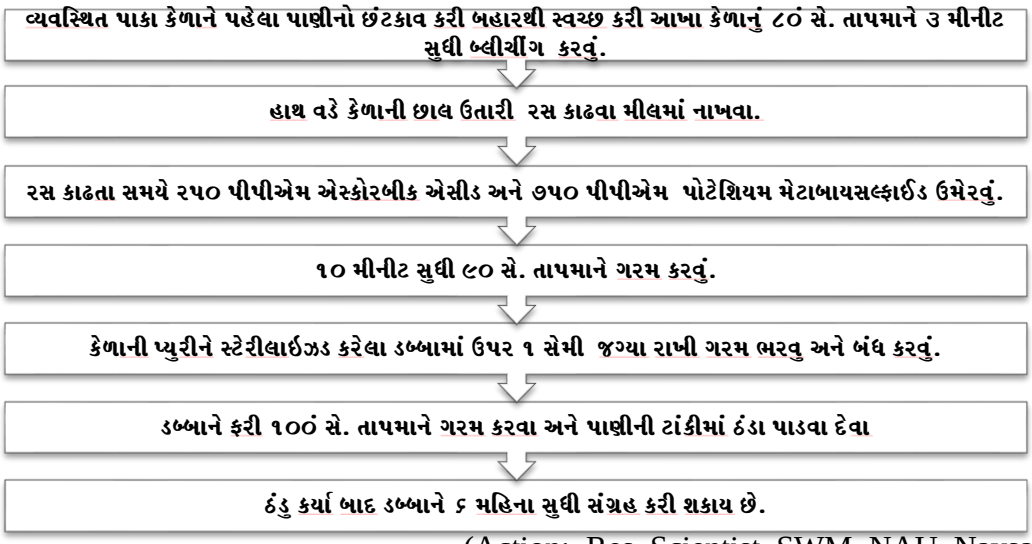
Recommendation for processors:

Processors are recommended to make banana with puree under aseptic plant following below procedure:



પ્રોસેર્સસ માટે ભલામણઃ

પ્રોસેર્સસને ભલામણ કરવામાં આવે છે કે, એસેપ્ટીક પ્લાંટમાં કેળાની પ્યુરી બનાવવા માટે નીચે જણાવેલ પધ્ધતિ અનુસરવીઃ



(Action: Res. Scientist, SWM, NAU, Navsari)

11.4.1.27	**Residues of Some Insecticides in/On Indian Bean Pod**
	Indian bean growers of South Gujarat (AES-III) are advised to keep waiting

	period of seven days after spray of thiamethoxam 25 WG (35 g a.i. /ha), novaluron 10 EC (33.5 g a.i. /ha), indoxacarb 14.5 SC (60 g a.i. /ha), spinosad 45 SC (75 g a.i. /ha), acetamiprid 20 SP (20 g a.i. /ha) and flubendiamide 39.35 SC (50 g a.i. /ha) and ten days for imidacloprid 17.8 SL (25 g a.i. /ha). દક્ષિણ ગુજરાતના વાલ પાપડી ઉગાડતા ખેડૂતોને સલાહ આપવામાં આવે છે કે થાયામેથોક્ષામ ૨૫ ડબ્લ્યુજી) ૩૫ ગ્રા.સક્રિય તત્વ/હે(લ નોવાલ્યુરોન ૧૦ ઇસી) ૩૩.૫ ગ્રા.સક્રિય તત્વ/હે(લ ઇન્ડોક્ઝાકાર્બ ૧૪.૫ એસસી) ૬૦ ગ્રા.સક્રિય તત્વ/હે(લ સ્પીનોસાડ ૪૫ એસસી) ૭૫ ગ્રા.સક્રિય તત્વ/હે(લ એસીટામીપ્રીડ ૨૦ એસપી) ૨૦ ગ્રા.સક્રિય તત્વ/હે (અને ફ્લુબેન્ડીયામાઇડ ૩૯.૩૫ એસસી) ૫૦ ગ્રા.સક્રિય તત્વ/હે(નો છંટકાવ બાદ સાત દિવસનો પ્રતિક્ષા સમય રાખવો અને ઈમીડાકલોપ્રીડ ૧૭.૮ એસએલ) ૨૫ ગ્રા.સક્રિય તત્વ/હે (નો દસ દિવસનો પ્રતિક્ષા સમય રાખવોઈ (Action: Assoc. Prof., Ento., ACHF, NAU, Navsari)
11.4.1.28	**Status of residues of insecticides in/on Indian bean after *Ubadia* Preparation**
	The residues of imidacloprid17.8 SL (25 g a.i. /ha), thiamethoxam 25 WG (35 g a.i. /ha), novaluron 10 EC (33.5 g a.i. /ha), indoxacarb 14.5 SC (60 g a.i. /ha), spinosad 45 SC (75 g a.i. /ha), acetamiprid 20 SP (20 g a.i. /ha) and flubendiamide 39.35 SC (50 g a.i. /ha) observed below detectable level in Indian bean after *Ubadia* preparation. ઉબાડીયુ બનાવ્યા બાદ ઈમીડાકલોપ્રીડ ૧૭.૮ એસએલ (૨૫ ગ્રા.સક્રિય તત્વ/હે), થાયામેથોક્ષામ ૨૫ ડબ્લ્યુજી (૩૫ ગ્રા.સક્રિય તત્વ/હે), નોવાલ્યુરોન ૧૦ ઇસી (૩૩.૫ ગ્રા.સક્રિય તત્વ/હે), ઇન્ડોક્ઝાકાર્બ ૧૪.૫ એસસી (૬૦ ગ્રા.સક્રિય તત્વ/હે), સ્પીનોસાડ ૪૫ એસસી (૭૫ ગ્રા.સક્રિય તત્વ/હે), એસીટામીપ્રીડ ૨૦ એસપી (૨૦ ગ્રા.સક્રિય તત્વ/હે) અને ફ્લુબેન્ડીયામાઇડ ૩૯.૩૫ એસસી (૫૦ ગ્રા.સક્રિય તત્વ/હે)ના અવશેષો વાલ પાપડીમાં જોવા મળતાં નથી. (Action: Assoc. Prof., Ento., ACHF, NAU, Navsari)
11.4.1.29	**Bioefficacy of some insecticides and neem products against *Helicoverpa armigera* (Hubner) on Tomato**
	For effective control of tomato fruit borer, farmers of south Gujarat (AES III) are advised to apply any one of following insecticides, first at the time of flowering and second at 15 days after first spray for obtaining higher yield and better return. Further, the residue content of this insecticide remained below MRL in tomato fruits after three days. Flubendiamide 20 WDG @ 2.5 g/10 lit. Chlorantraniliprole 18.5 SC @ 3.0 ml/10 lit. ટામેટામાં લીલી ઇયળ ના અસરકારક નિયંત્રણ માટે દક્ષિણ ગુજરાતના ટામેટા ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે નીચેની જંતુનાશક દવાઓ પૈકી કોઈપણ એકનો પ્રથમ છંટકાવ ફૂલ બેસવાની અવસ્થાએ અને બીજો છંટકાવ પ્રથમ છંટકાવના પંદર દિવસ બાદ કરવાથી વધુ ઉત્પાદન મેળવી સારૂ વળતર મળે છે. • ૧ .ફ્લુબેન્ડીયામાઇડ ૨૦ ડબ્લ્યુડીજી ૨.૫ ગ્રા/.૧૦ લી. • ૨ .કલોરેન્ટ્રાનીલીપ્રોલ ૧૮.૫ એસસી ૩ મી.લી/.૧૦ લી. (Action: Assoc. Prof., Ento., ACHF, NAU, Navsari) Recommendation No. 11.4.1.27 to 29 delete from Horti. Subcommittee due to its

	considered in plant protection group.
11.4.1.30	**Growth and yield of Tannia (*Xanthosoma sagittifolium* L. Schott.) as affected by different pruning intensities of tree crops**
	The farmers of South Gujarat heavy rainfall zone (AES- III) growing *Terminalia arjuna*- Arjun Sadad, *Mitragyna parvifolia* -Kalam and *Adina cordifolia*- Haldu at 10 X 2.5 m spacing and growing Tannia as an intercrop are advised to remove side branches up to 1/3 height of trees from ground level which is helpful in maximum utilization of land with additional income. દક્ષિણ ગુજરાતના ભારે વરસાદીય ઝોન , ખેત આબોહવાકીય પરિસ્થિતી ૩ માં અર્જુન સાદડ, હલ્દુ તેમજ કલમ જેવા વૃક્ષોને ૧૦ × ૨.૫ મીટરે ઉછેરી તેની સાથે આંતરપાક તરીકે અળવીની ખેતી કરતા ખેડુતોને ભલામણ કરવામાં આવે છે કે જમીનથી વૃક્ષને તેમની ઉંચાઈના ૧/૩ ભાગની ડાળીઓની છટણી કરી વૃક્ષોની વચ્ચેની જગ્યાનો મહત્તમ ઉપયોગ કરવાથી વધુ આવક મેળવી શકે છે. (Action: Principal, College of Forestry , ACHF, NAU, Navsari)

RECOMMENDATION FOR SCIENTIFIC COMMUNITY

NAVSARI AGRICULTURAL UNIVERSITY	
11.4.1.31	**Study of genetic variability in tamarind (*Tamarindus indica* L.) from South Gujarat.**
	On the basis of overall performance, tamarind genotypes GT-1 and GT-5 were found to be promising among all genotypes for yield and quality parameters, respectively. Whereas, for pulp recovery of above 45 percentage, tamarind genotypes GT-1, GT-2, GT-5, GT-10, GT-11 and GT-12 were found to be promising, so these genotypes may further assessed on different locations after propagating vegetative or may be exploited as potential parents to develop qualitative and high yielding stable genotypes. (Action:- KVK, Waghai, NAU and AES, Paria)
11.4.1.32	**Optimization of Level of TSS and Anti-Caking Agent in Spray Solution for Preparing Powder from Ripe Banana at Pilot Scale**
	For preparing spray dried banana powder, use 10 ^{o}Brix spray solution of banana puree after adding 15 % Maltodextrin as anti-caking agent. Spray should be done by keeping feed flow rate 35.0 kg/hr, feed temperature 70 ^{0}C, inlet temperature 170 ^{0}C and outlet temperature 100 ^{0}C for minimizing the sticking issue of banana puree in the inner chamber of spray drier. (Action: Res. Scientist, SWM, NAU, Navsari)
11.4.1.33	**Characterization of pectate lyase in banana**
	1. Best stage for maximum recovery of pectate lyase (PEL) enzyme from Grand Naine banana pulp is 4 days after 5% ethrel treatment. 2. Optimum activity of PEL enzyme is obtained in 20mM sodium phosphate buffer at pH 8.5 and temperature 37^{o}C. 3. PEL enzyme activity was increased by two thiol group chemicals (cystine and cysteine at 5.0 mM concentration) and one metal ion i.e. Mg^{2+} as $MgCl_2$ (0.6 mM concentration), where as phenolics (ferulic acid, caffeic acid, ρ-Coumaric acid and salicylic acid), reducing agents (ascorbic acid and sodium metabisulphite), thiol groups (β-ME and DTT) and metal ions (Ba^{2+}, Co^{2+}, Cu^{2+}, Fe^{2+} and Zn^{2+}) were identified as inhibitor of PEL enzyme.

	(Action: Professor, Biotech, ACHF, NAU, Navsari)
11.4.1.34	**Effect of nano-micronutrients (Zn and Cu) on physiology and stevioside production in stevia.**
	In the micropropagation of stevia, nano particles(< 50 nm) of ZnO (10 μM) and CuO (0.05 μM) can be incorporated in place of $ZnSO_4$ & CuSO4 in the MS medium for getting more number of shoots per culture, higher fresh weight, dry weight & stevioside content (1.40% FW). (Action: Professor, Biotech, ACHF, NAU, Navsari)
11.4.1.35	**Screening for Resistance to *Fusarium* wilt in Tomato varieties**
	Tomato genotypes, NTL-2, NTL-6, NTL-7 and NTL-10 are resistant against *Fusarium* wilt, while, genotypes N TL-1, NTL-8, NTL-9, and GT-2 are moderately resistant against tomato wilt. (Action: Assoc. Prof., Patho., ACHF, NAU, Navsari)
11.4.1.36	**Detection of fungal pathogens from forest tree seeds *in vitro***
	Alternaria sp, *Aspergillus* sp., *Fusarium* sp, *Trichoderma* sp are found the most frequently associated fungal genera with six forest trees *viz., Tectona grandis* (Teak), *Leucaena leucocephala* (Subabul), *Delonix regia* (Gulmohar), *Acacia mangium* (Mangium), *Adenanthera pavonina* (Ratangunj) and *Cassia fistula* (Garmalo) using blotter and agar plate method. (Action: Assoc. Prof., Patho., ACHF, NAU, Navsari)
11.4.1.37	**Rapid multiplication of *Bambusa vulgaris* through in vitro regeneration techniques from juvenile explant**
	It is recommend to scientific community and tissue culture industries involved bamboo tissue culture that to get rapid multiplication of *Bamboosa vulgaris L*. through *in vitro* regeneration from juvenile explants using tissue culture technique to use auxiliary bud as explants source and absolute alcohol (100%) for 30 Sec + mercuric chloride (0.1%) for 4 min. for contamination control and maximum establishment. Whereas, for shoot multiplication, culture established on simple MS media followed MS + 1mg/l BAP + 0.25 Kin. However, for rooting it is advice to use MS + 20mg/l IBA which gives highest rooting percentage and for acclimatization FYM + Soil + Cocopeat (1:1:1). (Action: Principal Forestry , ACHF, NAU, Navsari
11.4.1.38	**Rapid multiplication of *Dendrocalamus strictus* Nees. through *in vitro* regeneration techniques from juvenile explant**
	It is recommend to scientific community and tissue culture industries involved bamboo tissue culture that to get rapid multiplication of *Dendrocalamus srtictus L.* through in vitro regeneration from juvenile explants using tissue culture technique for large scale multiplication of the plantlets in which farmers can get true to type plants with all the advantages of vegetative propagation (clonal propagation). it is recommended to use auxiliary bud as explants source and absolute alcohol (100%) for 30 Sec + mercuric chloride (0.1%) for 4 min. for contamination control and maximum establishment. Whereas, for culture establishment and for shoot multiplication it is advise to use MS liquid media with 2.0 mg/lit BAP. However, for rooting it is advice to use MS + 1.5mg/l NAA + 3mg/l IBA and for acclimatization it is advice to use FYM+ Soil + Cocopeat

	(1:1:1). (Action: Principal Forestry , ACHF, NAU, Navsari
11.4.1.39	**Collection and evaluation of *Mucuna* germplasm from South Gujarat for L-DOPA and protein content.**
	For higher L-DOPA (L-3, 4-dihydroxyphenylalanine) it is advisable to collect Mucuna from Valsad, Chikhali, Budhakeshwar village (Navsari Mahuva road), Bardoli and Vyara. Breeders willing to enhance L-DOPA content in *Mucuna pruriens* may incorporate accessions namely 29, 10, 14 and 13 in breeding stock. (Action: Principal Forestry , ACHF, NAU, Navsari
11.4.1.15	**Chemical manipulation for higher yield and quality of banana cv. Grand Naine**
	Application of 250:90:250 g N:P_2O_5:K_2O/plant and one spray of 10 ppm 2,4-D five days after complete opening of bunch in banana cv. Grand Naine recorded higher productivity, net realization and BCR under drip irrigation system. The significant improvement in physical as well as qualitative properties of fruits was also reported in the said treatment. 10 kg FYM and 90 g P_2O_5 were applied at planting, while N and K_2O each @ 250 g/plant were applied in three equal splits at 90, 120 and 150 days after planting. (Action:- Associate Res. Scientist, FRS, NAU, Gandevi)
SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR	
11.4.1.40	**Varietal evaluation of garlic (*Allium sativum* L.) under North Gujarat condition**
	Garlic growing farmers of North Gujarat and North West Gujarat Agroclimatic regions are recommended to grow the Agrifound White variety in order to obtain the maximum yield per hectare. ઉત્તર અને ઉત્તર પશ્ચિમ ગુજરાતના લસણ ઉગાડતા ખેડૂતોને વધારે ઉત્પાદન માટે એગ્રીફાઉન્ડ વાઈટ જાતની ભલામણ કરવામાં આવે છે. (Action: Professor & Head; Department of Horticulture; CPCA, SDAU, SKNagar)
11.4.1.41	**Effect of severity of pruning and different types of mulching materials on flowering and fruiting of custard apple**
	The farmers of North Gujarat Agro climatic Zone (AES-1) growing custard apple in rainfed condition are advised to prune custard apple during second fortnight of March at 30 cm terminal and spread *bajra* husk mulch @ 5 kg per m^2 per plant according to the plant canopy at the time of withdrawal of monsoon for getting maximum yield, net income and conserve soil moisture. ઉત્તર ગુજરાત ખેત આબોહવાકીય વિસ્તારના વરસાદ આધારીત સીતાફળની ખેતી કરતા ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા તથા જમીન માં વધુ ભેજ નો સંગ્રહ કરવા માર્ચ માસના બીજા પખવાડીયામા ઝાડની ડાળીના ટોચના ભાગેથી ૩૦ સે.મી. છટણી કરી અને ઝાડ ના ઘેરાવા મુજબ ૫ કિલો પ્રતિ ચો.મી. પ્રમાણે બાજરાના ભૂસાનુ વરસાદની ઋતુ પુરી થયેથી આવરણ કરવા ભલામણ કરવામાં આવે છે. (Action: Principal; College of Horticulture; SDAU; Sardarkrushinagar)
11.4.1.42	**Standardization of leaf: bunch ratio in date palm cv. Halawy and Barhee.** The date palm (cv. Barhee & Halawy) growers of Kachchh region are advised to maintain the one bunch per eight leaves per palm for realizing higher productivity and net return. કચ્છમાં ખારેક ઉગાડતા ખેડૂતોને ભલામણ છે કે ખારેકના ઝાડ (જાત હલાવી અને બરહી) ઉપર ઓછામાં ઓછા ૮ પાન દીઠ ૧ લુમ રાખવામાં આવે તો મહત્તમ ઉત્પાદન અને નફો મળે છે. (Action: Associate Research Scientist (Horticulture); Date Palm Research Station;

	SDAU; Mundra – Kachchh)
11.4.1.43	**Fertigation and mulching study in Papaya**
	The farmers of North Gujarat Agro Climatic Zone (AES-I) growing papaya are advised to irrigate their crop through drip system at 1.0 PEF on alternate day and fertilize crop (312-250-312 g of NPK/plant) as fertigation in form of soluble fertilizers in six equal splits at one month interval starting from one month after transplanting for obtaining higher Papaya yield and net profit compared to surface method of irrigation (1.0 IW /CPE with 100% RDF). Drip system should be operated for 5 minutes during July to September (according to rain fall), 50 minutes during October to February and 2 hours during March to June on alternate days with 2 drippers per plant (8 lph) at 1.2 kg/ cm^2 operating pressure. **ઉત્તર ગુજરાત ખેત હવામાન વિભાગ–૧ ના પપૈયાની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ૧.૦ બાષ્પીભવન ગુણાંકે એકાંતરા દિવસે ટપક પધ્ધતિથી પિયત આપવુ અને ખાતરોમાં (૩૧૨ – ૨૫૦ – ૩૧૨ એન.પી.કે. ગ્રામ/છોડ) ઓગળી શકે તેવા ખાતરોના રૂપમાં ફેર રોપણી કર્યાના એક માસ બાદ થી શરૂ કરી દર માસના સમય ગાળે ટપક પધ્ધતિ મારફત આપવાથી વધારે ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.** **ટપક પધ્ધતિ જુલાઈ થી સપ્ટેમ્બર માસ દરમ્યાન ૫ મીનીટ (વરસાદ ની પરિસ્થિતી આધારીત), ઓકટોબર થી ફેબ્રુઆરી દરમ્યાન ૫૦ મીનીટ અને માર્ચ થી જૂન માસ દરમ્યાન બે કલાક એકાંતરે દિવસે ચલાવવી. ઝાડ દીઠ ૮ લિટર પ્રતિ કલાકની ક્ષમતાવાળા બે ટપકીયા રાખવા તથા ટપક પધ્ધતિ ૧.૨ કિગ્રા/સે.મી.^{2} ના દબાણ થી ચલાવવી.** (Action: Research Scientist; CWMPR&RE, SDAU, Sardarkrushinagar)
11.4.1.44	**Effect of spacing and nitrogen fertilizer on growth and yield of marigold cv. Local**
	Farmers of North Gujarat Agro climatic Zone (AES-IV) growing African marigold are advised to follow the spacing of 60 cm × 30 cm and apply 250 kg/ha nitrogen fertilizer. The half dose of nitrogen fertilizer (125 kg) as a basal dose and remaining half dose of nitrogen fertilizer (125 kg) in two equal splits (62.5 kg) as a top dressing at 30 and 45 days after transplanting along with recommended dose of phosphorus and potash fertilizers @ 100 kg/ha each as basal should be applied to obtain higher yield and net return**.** ઉત્તર ગુજરાત ખેત હવામાન **(AES -IV)** વિસ્તારમાં ગલગોટા ની ખેતી કરતા ખેડૂતોને સલાહ આપવામાં આવે છે કે, ગલગોટાના રોપાની ફેરરોપણી ૬૦ સે.મી. × ૩૦ સે.મી. ના અંતરે કરવી અને ૨૫૦ કિલો/હેક્ટર નાઈટ્રોજન ખાતર આપવું. જે પૈકી નાઈટ્રોજન ખાતરનો અડધો જથ્થો (૧૨૫ કિલો) પાયામાં અને બાકી રહેલ નાઈટ્રોજન ખાતરનો અડધો જથ્થો (૧૨૫ કિલો) બે સરખા ભાગમાં (૬૨.૫ કિલો) ફેરરોપણીના ૩૦ અને ૪૫ દિવસ પછી પૂર્તી ખાતર તરીકે તેમજ ભલામણ કરેલ ૧૦૦ કિલો/હેક્ટર ફોસ્ફરસ અને ૧૦૦ કિલો/હેક્ટર પોટાશ ખાતર પાયામાં આપવાથી વધુ ઉત્પાદન અને વળતર મેળવી શકાય છે. (Action: Asstt. Res. Sci. (Horticulture); Fruit Research Station; SDAU; Dehgam)
11.4.1.45	Effect of spacing and nitrogen fertilizer on flower production of rose *cv.* Gladiator
	Farmers of North Gujarat Agro climatic Zone (AES-IV) growing rose cv. Gladiator are advised to follow the spacing of 150 cm × 60 cm × 60 cm paired row system and apply nitrogen fertilizer @ 200 kg/ha. The 20 % dose of nitrogen fertilizer (40 kg) should be applied in October and remaining 80 % dose of nitrogen fertilizer should be applied (160 kg) in 10 equal splits (*i.e.* 16 kg/ha/month) from November to August along with recommended dose of phosphorus and potash fertilizers @ 200 kg/ha each as a basal dose to obtain higher yield and net return. ઉત્તર ગુજરાત ખેત હવામાન **(AES -IV)** વિસ્તારમાં ગુલાબની ગ્લેડીયેટર જાતની ખેતી કરતા ખેડૂતોને સલાહ આપવામાં આવે છે કે, ગુલાબના છોડની રોપણી ૧૫૦ સે.મી. × ૬૦ સે.મી. × ૬૦ સે.મી. અંતરે જોડીયા હારમાં કરવી અને ૨૦૦ કિલો પ્રતિ હેક્ટર નાઈટ્રોજન ખાતર આપવું. જે પૈકી પ્રતિ હેક્ટરે ૨૦ % (૪૦ કિલો) નાઈટ્રોજન ખાતરનો જથ્થો ઓક્ટોબર માસમાં અને બાકીનો ૮૦ % (૧૬૦

	કિલો) નાઈટ્રોજન ખાતરનો જથ્થો ૧૦ સરખા ભાગમાં (૧૬ કિલો) નવેમ્બર થી ઓગસ્ટ સુધી પ્રતિ માસે પૂર્તી ખાતર તરીકે તેમજ ભલામણ કરેલ ૨૦૦ કિલો/હેક્ટર ફોસ્ફરસ અને ૨૦૦ કિલો/હેક્ટર પોટાશ ખાતર જમીન તૈયાર કરતી વખતે પાયામાં આપવાથી વધુ ઉત્પાદન અને વળતર મેળવી શકાય છે. (Action: Asstt. Res. Sci. (Horticulture); Fruit Research Station; SDAU; Dehgam)
11.4.1.46	Influence of plant density and nitrogen fertilizer on growth and flower production of golden rod
	Farmers of North Gujarat Agro climatic Zone (AES-IV) growing golden rod are advised to plant stools at a distance of 45 cm × 45 cm and apply nitrogen fertilizer @ 200 kg/ha to get maximum production of golden rod panicle and net return. The half dose of nitrogen fertilizer (100 kg) should be applied at 10 DAT and remaining half dose of nitrogen fertilizer (100 kg) should be applied at 40 DAT along with recommended dose of phosphorus and potash fertilizers @ 100 kg/ha each at the time of planting in first year. From second year and onwards, half of nitrogen along with phosphorus and potash fertilizers @ 100 kg/ha each should be applied in the month of July and remaining half dose of nitrogen should be applied in the month of September**.** ઉત્તર ગુજરાત ખેત હવામાન **(AES -IV)** વિસ્તારમાં ગોલ્ડનરોડ (સોનાસળી)ની ખેતી કરતા ખેડૂતોને સલાહ આપવામાં આવે છે કે, ગોલ્ડનરોડ ના પુષ્પદંડનું વધુ ઉત્પાદન અને આવક મેળવવા માટે ગોલડન રોડ ના સ્ટુલસની રોપણી ૪૫ સે.મી. × ૪૫ સે.મી. અંતરે કરવી અને તેમાં ૨૦૦ કિલો નાઈટ્રોજન ખાતર પ્રતિ હેક્ટરે આપવું. પ્રથમ વર્ષે નાઈટ્રોજન ખાતરનો અડધો જથ્થો (૧૦૦ કિલો) રોપણીના ૧૦ દિવસ બાદ તથા બાકી રહેલ નાઈટ્રોજન ખાતરનો અડધો જથ્થો (૧૦૦ કિલો) રોપણીના ૪૦ દિવસ બાદ તેમજ ભલામણ કરેલ ૧૦૦ કિલો/હેક્ટર ફોસ્ફરસ અને ૧૦૦ કિલો/ હેક્ટર પોટાશ ખાતર પાયામાં આપવો અને તે પછી દર વર્ષે નાઈટ્રોજન ખાતરનો અડધો જથ્થો (૧૦૦ કિલો) તથા ૧૦૦ કિલો/હેક્ટર ફોસ્ફરસ અને ૧૦૦ કિલો/ હેક્ટર પોટાશ ખાતર જુલાઈ માસમાં તથા બાકી રહેલ નાઈટ્રોજન ખાતરનો અડધો જથ્થો સપ્ટેમ્બર માસમાં આપવો. (Action: Asstt. Res. Sci. (Horticulture); Fruit Research Station; SDAU; Dehgam)
11.4.1.47	Performance of rainfed aonla (*Emblica officinalis* L.) in Agroforestry with moisture conservation technique
	The farmers of North Gujarat Agro Climatic Zone (AES-I) growing rainfed green gram- cluster bean in rotation under aonla (8 X 6 m) based agroforestry system are advised to apply organic mulch of equal quantity of castor shell and mustard shell (10 kg each) under aonla canopy area before onset of monsoon to get higher net return. **જે ખેડૂતમિત્રોએ ઉત્તર ગુજરાત ખેત હવામાન વિસ્તારમાં બિનપિયત મગ–ગુવાર પાક ફેર બદલી, આમળા (૮ x ૬ મી.) આધારીત કૃષિવનીકરણ પધ્ધતિ અપનાવેલ છે તેમને સલાહ આપવામા આવે છે કે, આમળા નીચે દિવેલા અને રાયડાની ફોતરી સરખા હિસ્સામાં (૧૦ કિગ્રા) સેન્દ્રીય આવરણ ના રૂપમાં ચોમાસાના આગમન પહેલાં વાપરવાથી વધુ ચોખ્ખો નફો મળે છે.** (Action: Research Scientist (Agroforestry); Centre for Agroforestry, Forage crops & Green Belt, SDAU, Sardarkrushinagar)

11.4.2 NEW TECHNICAL PROGRAMMES

ANAND AGRICULTURAL UNIVERSITY

Sr. No.	Title/Centre	Suggestions	Remarks
	Centre: Department of Horticulture,BACA, AAU, **Anand**		
11.4.2.1	Comparative performance of leafy vegetables under net house conditions	Accepted with following suggestions 1) Expt. time Oct-January and March-June 2) Use only line sowing 3) Amaranthus –local, Pusa Kiran or any other improved varieties	

		4) Use white colour net (50% shade) 5) T3- Palak (*Beta vulgaris* var. *bengalensis*) instead of Spinach (Action: Professor & Head; Department of Horticulture; BACA)	
11.4.2.2	Effect of rejuvenation on growth, yield and quality of mango cv. Rajapuri in old orchard under Middle Gujarat agro climatic conditions	Accepted with following suggestions 1) Delete treatment T4 and add one treatment as 'Heading back 3 m from ground level' 2) Heading back of mango trees will be carried out in October instead of August 3) Follow the guide line of heading back like immediately irrigation after heading back, slant cut should be made, Bordeaux paste or COC on cutting surface, frequent visit to orchard and maintain 6 tertiary limb in each secondary branch. (Action: Professor & Head; Department of Horticulture; BACA)	
	Centre: College of Horticulture (Wing), BACA, AAU, **Anand**		
11.4.2.3	Effect of Nitrogen and Plant growth regulators on growth, flowering and corm yield of gladiolus (*Gladiolus grandiflorus L.)* cv. American Beauty under middle Gujarat Agro climatic conditions	Accepted with following suggestions 1) Title recast as "Effect of nitrogen and phosphorus on growth, flowering and yield of gladiolus (*Gladiolus grandiflorus L.)* cv. American Beauty under middle Gujarat Agro climatic conditions 2) Spacing 30 X 30 cm instead of 40 X 30 cm 3) Delete plant growth regulators treatment and add phosphorus level i.e. P_1 0 kg/ha, P_2 50 kg/ha and P_3 100 kg/ha 4) **Note:** K_2O 100 kg/ha is common dose for all treatments 5) **Add observations like** Spike length (cm) and Insitu longevity (Action: OSD; College of Horticulture (Wing), AAU, Anand)	
	Centre: ARS, AAU, Thasra		
11.4.2.4	Nutrient management through fertigation in guava	Accepted with following suggestion 1) Delete first objective (Action: Assoc. Res. Sci., ARS, AAU, Thasra)	
	Centre: HRS, AAU, Khambholaj		
11.4.2.5	Performance of different varieties of potato under different spacing for middle Gujarat	Accepted with following suggestions 1. Delete no. of shoots/ meter row length observation 2. Economics is to be worked out on grade basis (Action: Research Scientist (Veg), MVRS, AAU, Anand)	

11.4.2.6	Performance of different varieties of papaya under different spacing for middle Gujarat agro climatic conditions	Accepted with following suggestion **1)** Observation of YVMV is to be taken (Action: Research Scientist (Veg), MVRS, AAU, Anand)	
	Centre: Polytechnic Horticulture, AAU, Vadodara		
11.4.2.7	Effect of grafting height and cultivars on performance of soft - wood grafting in mango	Accepted with following suggestions 1) Delete cultivars like Mallika, Dashehari 2) Use 'Height of scion" instead of 'Height of graft' 3) At least 20 graft in a treatment (Action: Principal; Polytechnic in Horticulture, AAU, Vadodara)	
11.4.2.8	Effect of chemical fertilizers and bio-organics on growth, yield and quality of okra (*Abelmoschus esculentus* L. Moench) cv. Gujarat Anand Okra-5	Accepted with following suggestion 1) Add pest and diseases observations (Action: Principal; Polytechnic in Horticulture, AAU, Vadodara)	

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title/Centre	Suggestions	Remarks
	Centre: Department of Horticulture; CA, JAU, Junagadh		
11.4.2.9	Influence of weather parameters through date of planting on growth, flowering, yield and quality of papaya (*Carica papaya L.*) cv. Madhubindu	Accepted with following suggestion/s 1) Treatment recast as T_1 Transplanting at 2nd week of February T_2 Transplanting at 2nd week of March T_3 Transplanting at 2nd week of April T_4 Transplanting at 2nd week of May T_5 Transplanting at 2nd week of June T_6 Transplanting at 2nd week of July T_7 Transplanting at 2nd week of August (Action: Professor & Head, Dept. of Horticulture, CoA, JAU, Junagadh)	
	Centre: Fruit Research Station JAU, Mangrol		
11.4.2.10	Integrated Nutrient Management in Gaillardia (*Gaillardia aristata)* flowering crop Cv. Yellow Double under saline water irrigation condition.	Accepted with following suggestions 1) Title recast as 'Integrated Nutrient Management in Gaillardia (*Gaillardia pulchella var. Lorengiana)* cv. Yellow Double under saline water irrigation condition. 2) Organic manure should be given on the base of nutrient content in source 3) Delete Note : 2 and 3 (Action: Assistant Res. Sci., Fruit Research Station JAU, Mangrol)	

11.4.2.11	Varietal Evaluation of Drumstick (*Moringa oleifera)* under saline water irrigation condition	Accepted with following suggestions 1) Delete plot size (Action: Assistant Res. Sci., Fruit Research Station JAU, Mangrol)	

NAVSARI AGRICULTURAL UNIVERSITY

SN	Title/Centre	Suggestions	Remarks
	Centre: RHRS, NAU, Navsari		
11.4.2.12	Effect of time and growing condition on success of softwood grafting in mango and sapota	**Accepted with following suggestion/s** 1. Age of rootstock 4 to 14 months instead of 6-18 month 2. Use word poly house instead if green house (Action:- Res. Sci., RHRS, NAU, Navsari)	
11.4.2.13	Effect of time of inarch grafting on success and survival in mango cv. Kesar	**Approved as such** (Action:- Research Scientist, RHRS, NAU, Navsari)	
11.4.2.14	Evaluation of bio agent, fungicides and physical method on germination and survival of mango (*Mangifera indica* L.) stone.	**Accepted with following suggestion/s** 1. Media should be sterilize (Bed & Poly bag) (Action:- Research Scientist, RHRS, NAU, Navsari)	
11.4.2.15	Effect of bio fertilizers on soil health, fruit yield and quality of Sapota cv. Kalipatti	**Accepted with following suggestion/s** **1.** Title should be recast as " Integrated nutrient management on Sapota cv. Kalipatti **2.** Objective should be recast (Action:- Research Scientist, RHRS, NAU, Navsari)	
11.4.2.16	Screening of rootstock for salt tolerance in mango from South Gujarat region	**Accepted with following suggestion/s** **1.** S_1 should be treated as control (Action:- Research Scientist, RHRS, NAU, Navsari)	
11.4.2.17	Assessment of genetic diversity through D^2 analysis and molecular markers in mango (*Mangifera indica* L.)	**Approved as such** (Action:- Research Scientist, RHRS, NAU, Navsari)	
11.4.2.18	Hybridization in mango using L X T analysis	**Approved as such** (Action:- Research Scientist, RHRS, NAU, Navsari)	

11.4.2.19	Survey and seedling selection of mango	**Accepted with following suggestion/s** **1.** Observations to be recorded on growth parameters of mother plant **2.** Objectives should be specific for Phase I and the states are Gujarat, Maharashtra, MP and Uttar Pradesh (Action:- Research Scientist, RHRS, NAU, Navsari)	
11.4.2.20	Study the management efficiency of mango and sapota growers in Navsari district	**Approved as such** (Action:- Research Scientist, RHRS, NAU, Navsari)	
11.4.2.21	Standardization of foam mat drying process for preparation of mango powder.	**Approved as such** (Action:- Research Scientist, RHRS, NAU, Navsari)	
11.4.2.22	Standardization of suitable formulation for preparation of instant mango milk shake powder.	**Approved as such** (Action:- Research Scientist, RHRS, NAU, Navsari)	
11.4.2.23	Standardization of protocol for the extension of shelf life of fresh sapota fruit.	**Accepted with following suggestion/s** **1.** Observation to be recorded on PME (Action:- Research Scientist, RHRS, NAU, Navsari)	
11.4.2.24	Effect of post flowering sprays on fruit retention and yield of mango cv. Kesar	**Accepted with following suggestion/s** **1.** Title should be recast as " Effect of post flowering sprays of chemicals on fruit retention and yield of mango cv. Kesar" **2.** Objectives should be recast as per the title. (Action:- Research Scientist, RHRS, NAU, Navsari)	
11.4.2.25	Effect of foliar spray of KNO_3 and plant growth regulators on flowering and fruiting behavior of mango cv. Alphonso	**Approved as such** (Action:- Research Scientist, RHRS, NAU, Navsari)	
11.4.2.26	Study the status and knowledge level of mango growers regarding mango malformation in Navsari district	**Approved as such** (Action:- Research Scientist, RHRS, NAU, Navsari)	
	Centre: FRS, NAU, Gandevi		
11.4.2.27	Precision farming in banana cv. Grand	**Approved as such** (Action:- Asso. Res. Sci., FRS, NAU,	

	Naine	Gandevi)	
11.4.2.28	Effect of biofertilizers, growth regulators and nutrients on fruit growth, yield and quality of sapota cv. Kalipati	**Accepted with following suggestion/s** **1.** Add micro word before nutrients **2.** Correct Treatment : 9 and Replications : 3 (Action:- Asso. Res. Sci., FRS, NAU, Gandevi)	
	Centre: AES, NAU, Paria		
11.4.2.29	Effect of micronutrients on yield and quality of mango	**Approved as such** (Action:- Research Scientist, AES, NAU, Paria)	
11.4.2.30	Testing of exotic varieties of mango	**Accepted with following suggestion/s** **1.** T_8, T_9 and T_{10} treated as local check (Action:- Res. Sci., AES, NAU, Paria)	
11.4.2.31	Assessing the effect of climatic aberrations on mango flowering and yield	**Approved as such** (Action:- Research Scientist, AES, NAU, Paria)	
11.4.2.32	Survey and selection of superior genotypes of Chironji (*Buchanania lanzan* Sperg.) from South Gujarat.	**Approved as such** (Action:- Research Scientist, AES, NAU, Paria)	
11.4.2.33	Management of mango malformation at farmer's field	**Approved as such** (Action:- Research Scientist, AES, NAU, Paria)	
11.4.2.34	Effect of irrigation on flowering and yield of mango cv. Kesar	**Accepted with following suggestion/s** **1.** Modify second objective with To study the effect of irrigation on yield 2. T_1 treatment should be On bud breaking time (2^{nd} fortnight of October) 3. T_2 treatment should be Initiation of flowering 4. Add one treatment On bud breaking time (2^{nd} fortnight of October) + Initiation of flowering **5.** Remove the soil properties observations (Action:- Res. Sci., AES, NAU, Paria)	
	Centre: COA, NAU, Bharuch		
11.4.2.35	Effect of chemicals on fruiting behavior, yield and quality of mango cv. Kesar.	**Approved as such** (Action:- Principal, COA, NAU, Bharuch)	
11.4.2.36	Effect of foliar	**Accepted with following suggestion/s**	

	application of novel organic liquid fertilizer and micronutrients on yield and quality of Mango cv. Kesar	**1.** In treatment add word Micronutrient before mixture Grade IV **2.** Add pulp : peel ratio observation (Action:- Principal, COA, NAU, Bharuch)	
	Centre: COA, NAU, Bharuch and ARS, NAU, Tanchha		
11.4.2.37	Effect of moisture conservation techniques on old ber orchard.	**Accepted with following suggestion/s** **1.** Delete economics from objective **2.** Use silver plastic mulch instead of black plastic mulch **3.** Location Bharuch and Tanchha (Action:- Principal, COA, NAU, Bharuch and Asst. Res. Sci., NAU, Tanchha)	
11.4.2.38	Effect of foliar fertilization on old ber orchard	**Accepted with following suggestion/s** **1.** Treatment T_2 and T_5 should be merge. **2.** Add treatment GA_3 20 ppm **3.** Location Bharuch and Tanchha (Action:- Principal, COA, NAU, Bharuch and Asst. Res. Sci., NAU, Tanchha)	
	Centre: VRS, RHRS, ACHF, NAU, Navsari		
11.4.2.39	Integrated Nutrient Management in Cabbage (*Brassica oleracea* L.var Capitata)	**Accepted with following suggestion/s** **1.** Spacing should be 45 cm x 45 cm instead of 60 cm x 45cm (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.40	Comparative performance of different parthenocarpic cultivars of cucumber through vegetative propagation	**Accepted with following suggestion/s** **1.** Add words in title "under poly house conditions" at the end (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.41	Evaluation of parthenocarpic cultivars of cucumber under protected conditions for yield and other horticultural traits.	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.42	Evaluation of tomato cultivars under NVPH for yield and other horticultural traits.	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.43	PET in CHILLI	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.44	Tomato (Determinate) IET	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF,	

		NAU, Navsari)	
11.4.2.45	Tomato (Determinate) AVT-I	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.46	Tomato (Determinate) AVT-II	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.47	Tomato (Indeterminate) AVT-II	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.48	Chillies AVT-I	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.49	Chillies AVT-II	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.50	Ash gourd AVT-II	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.51	Pumpkin IET	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.52	Bitter gourd hybrid- IET	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
	Centre: Department of Floriculture, ACHF, NAU, Navsari		
11.4.2.53	Exploration and evaluation of local flora for value addition through dehydration.	**Accepted with following suggestion/s** **1.** Add common name of weed (Action:- Professor (Flori), ACHF, NAU, Navsari)	
11.4.2.54	Standardization of dehydration technique in Rose var. Top secret, Gold strike and Rewine.	**Accepted with following suggestion/s** **1.** In treatment silica and sand grade should be mention (Action:- Professor (Flori), ACHF, NAU, Navsari)	
11.4.2.55	Assessment of genetic diversity of pot roses in soilless media under Greenhouse conditions	**Not approved** (Action:- Professor (Flori), ACHF, NAU, Navsari)	
11.4.2.56	Genetic variability studies in Adenium using soilless media under Greenhouse condition	**Accepted with following suggestion/s** **1.** Recast the title as " Evaluation studies in Adenium using soilless media under green house condition	

		2. Remove the name of Sachin Chavan **3.** Add observation on hardening of Adenium (Action:- Professor (Flori), ACHF, NAU, Navsari)	
	Centre: Department of PHT, ACHF, NAU, Navsari		
11.4.2.57	Processing and Value Addition Of Watermelon [*Citrullus lanatus*]"	**Accepted with following suggestion/s** **1.** Add observation on Viscosity in Part 2 **2.** Use inner albeno portion of rind instead of rind in Part 3 (Action:- Professor (PHT), ACHF, NAU, Navsari)	
11.4.2.58	Standardization of technology for foam mat dehydration of sapota for powder making	**Accepted with following suggestion/s** **1.** Use Repetition instead of replication (Action:- Professor (PHT), ACHF, NAU, Navsari)	
11.4.2.59	Standardization of technology for foam mat dehydration of mango for powder making	**Accepted with following suggestion/s** **1.** Use Repetition instead of replication (Action:- Professor (PHT), ACHF, NAU, Navsari)	
11.4.2.60	Study the effect of hot water dip treatment on the irradiation fruit fly, ripening and quality of mango for export purpose (cv. Kesar and Alphonso)	**Accepted with following suggestion/s** **1.** Treatments should be divided in two factors with two controls Factor I: Temperature- 48,50, 52 and 55^0 C Factor II Dipping time- 5, 10, 15 & 20 min. **2.** Design FCRD instead of CRD 3. Storage period upto 20 days (Action:- Professor (PHT), ACHF, NAU, Navsari)	
	Centre: Organic Farm, ACHF, NAU, Navsari		
11.4.2.61	Effect of liquid manures on quality and productivity of banana and papaya grown under alternate row system.	**Approved as such** (Action:- Assoc. Professor, Organic Farm, ACHF, NAU, Navsari)	
	Centre: Department of Plant Molecular Biology and Bio-Technology, ACHF, NAU, Navsari		
11.4.2.62	Standardization of microspore culture in egg plant	**Approved as such** (Action:- Professor (Bio-Tech), ACHF, NAU, Navsari)	
11.4.2.63	Effect of exogenous application of brassinosteroid on yield	**Approved as such** (Action:- Professor (Bio-Tech), ACHF,	

	and quality of tomato *(Solanum lycopersicum* L.)	NAU, Navsari)	
11.4.2.64	Effect of pre-harvest water stress on yield and post harvest quality of cabbage (*Brassica oleraceae var. capitata* L.)	**Accepted with following suggestion/s** **1.** Add observation on head cracking (%) (Action:- Professor (Bio-Tech), ACHF, NAU, Navsari)	
	Centre: Department of Plant Pathology, ACHF, NAU, Navsari		
11.4.2.65	Assessment of crop loss due to complex of diseases and pests in bottle gourd	**Approved as such** (Action:- Professor (Patho), ACHF, NAU, Navsari)	
	Centre: Forestry College, ACHF, NAU, Navsari		
11.4.2.66	Annual biomass, volume and carbon stock estimation of *Melia composita* Willd. through destructive method	**Accepted with following suggestion/s** **1.** Add treatment 1.5 m x 1.5 m and 1.5 m x 2.0 m **2.** Design RBD **3.** Replications should be 5 (Action:- Principal, Forestry College, NAU, Navsari)	
11.4.2.67	Refinement o**f** protocol for mass multiplication of Teak	**Approved as such** (Action:- Principal, Forestry College, NAU, Navsari)	
11.4.2.68	Influence of weather parameters on foraging activity of stingless bees (*Tetragonula iridipennis* Smith) near the nests	**Approved as such** (Action:- Principal, Forestry College, NAU, Navsari)	
11.4.2.69	Nesting habitat and nest architecture of stingless bees (*Tetragonula iridipennis* Smith) in South Gujarat condition	**Approved as such** (Action:- Principal, Forestry College, NAU, Navsari)	
11.4.2.70	Pilot study of Domestication of stingless bees (*Tetragonula iridipennis* Smith)	**Approved as such** (Action:- Principal, Forestry College, NAU, Navsari)	

SARDAR KRISHUNAGAR DANTIWADA AGRICULTURAL UNIVERSITY

Sr. No.	Title/Centre	Suggestions	Remarks
	Centre: Department of Horticulture; CPCA, SDAU, SK Nagar		
11.4.2.71	Influences of integrated		

	use of organic and inorganic sources of nutrients on growth, yield and quality of garden pea (*Pisum sativum* L.) cv. Bonneville	**Approved as such** (Action: Professor & Head; Department of Horticulture; CPCA)	
11.4.2.72	Influences of organic nutrients in combination with biofertilizers on growth, yield and quality of garden pea (*Pisum sativum* L.) cv. Bonneville	**Approved as such** (Action: Professor & Head; Department of Horticulture; CPCA)	
	Centre: College of Horticulture, SDAU, Sardarkrushinagar		
11.4.2.73	Effect of plant growth substances and antioxidants on growth, yield and quality of garden Pea (P*isum sativum* L.) cv. bonneville"	Accepted with following suggestion/s 1. Add 'Total sugar (%)' observation (Action: Principal; College of Horticulture, SDAU, Sardarkrushinagar)	
4**11.4.2.74**	Influence of different date of sowing and varieties of Garden Pea (*Pisum sativum* L.) under North Gujarat conditions	Accepted with following suggestion/s 1. Use 'Time of sowing' instead of 'Date of sowing' in title as well as in expt. details. As 3rd week of Oct., 4th week of Oct., 2nd week of Nov (Action: Principal; College of Horticulture, SDAU, SKNagar)	
11.4.2.75	Effect of different shoot portion and media on multiplication of pomegranate in plug tray under control condition	**Approved as such** (Action: Principal; College of Horticulture, SDAU, Sardarkrushinagar)	
11.4.2.76	Effect of foliar application of plant growth substances on multiplication of pomegranate through cutting in plug tray under control condition	**Approved as such** (Action: Principal; College of Horticulture, SDAU, Sardarkrushinagar)	
11.4.2.77	Effect of levels of IBA and different media on multiplication of ixora (*Ixora chinensis*) through apical cutting in plug tray under control condition	**Approved as such** (Action: Principal; College of Horticulture, SDAU, Sardarkrushinagar)	
11.4.2.78	Effect of chilling treatment and media on propagation of thuja (*Thuja occidentalis*) by seed in plug tray under control condition	**Approved as such** (Action: Principal; College of Horticulture, SDAU, Sardarkrushinagar)	

11.4.2.79	Effect of GA_3 and time of seed soaking on germination of sandalwood (*Santalum album* L.) in plug tray under control condition	**Approved as such** (Action: Principal; College of Horticulture, SDAU, Sardarkrushinagar)	
	Centre: CWMPR&RE, SDAU, Sardarkrushinagar		
11.4.2.80	Fertigation in Pomegranate (Bhagva)	**Approved as such** (Action: Research Scientist; CWMPR&RE, SDAU, Sardarkrushinagar)	
	Centre: Centre for Agroforestry, Forage Crops & Green Belt, SDAU, Sardarkrushinagar		
11.4.2.81	Studies on litter fall production in Olive (*Oleae europaea* L.) and Neem (*Azadirachta indica*) Under North Gujarat Agro climatic Zone	**Approved as such** (Action: Research Scientist (Agroforestry); Centre for Agroforestry, Forage Crops & Green Belt, SDAU, Sardarkrushinagar)	

PROCEEDINGS OF THE XI COMBINED JOINT AGRESCO MEETING OF AGRICULTURAL ENGINEERING AND AIT / AGRIL. ENGINEERING, DAIRY AND FOOD TECHNOLOGY / DAIRY SCIENCE AND FPT & BE / AGRIL. ENGINEERING OF STATE AGRICULTURAL UNIVERSITIES OF GUJARAT HELD AT AAU, ANAND DURING 7-9 APRIL, 2015

11.5 AGRICULTURAL ENGINEERING AND AIT / AGRIL. ENGINEERING, DAIRY AND FOOD TECHNOLOGY / DAIRY SCIENCE AND FPT & BE / AGRIL. ENGINEERING

Chairman	:	Dr. N. C. Patel, Hon'ble VC, AAU
Co-Chairmen	:	Dr. D. C. Joshi, Dean, FPT & BE, AAU Dr. N. K. Gontia, Dean, Agri. Engg., JAU
Rapporteurs	:	Dr. R. F. Sutar, AAU Dr. R. Subbaiah, JAU

The details of recommendations and new technical programmes presented, discussed and approved during the session are as under:

Universities	Recommendations				New Technical Programmes	
	Farming/Industry Community		Scientific Community			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU	20	20	5	4	36	36
JAU	6	6	3	2	7	7
NAU	6	2	1	1	10	9
SDAU	1	0	5	5	10	7
Total	33	28	14	12	63	59

11.5.1 RECOMMENDATIONS

A. FARMING/INDUSTRY COMMUNITY

ANAND AGRICULTURAL UNIVERSITY	
11.5.1.1	**Manufacture of dairy/non-dairy processed cheese and Mozzarella cheese analogue**
	An acceptable quality Mozzarella cheese analogue (MCA) can be produced utilizing rennet casein and vegetable fat employing the formulation and process technology developed by AAU, Anand. The MCA had required baking qualities when used as a pizza topping and was cheaper than natural cheese by 22%.
	રેનેટ કેસિન પ્રોટીન સ્ત્રોત અને વેજીટેબલ ફેટ, ફેટ સ્રોત તરીકે ઉપયોગ કરી મોઝરેલા ચીઝ એનાલોગ ઉત્પાદનની આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ ટેકનોલોજીની ભલામણ કરવામાં આવેછે. જે પીઝા ટોપીંગ માટે દૂધ આધારિત કુદરતી મોઝરેલા ચીઝથી ચઢિયાતી બેકિંગ લાક્ષણિકતાઓ ધરાવેછે. આ મોઝરેલા ચીઝ એનાલોગ કુદરતી ચીઝ કરતા ૨૨ ટકા સસ્તી છે. **(Action: Prof. & Head, DT, DSC, Anand)**
11.5.1.2	**Studies on utilization of sweet cream buttermilk solids in the manufacture of frozen delicacies**
	The procedure developed for manufacture of acceptable quality *Kulfi*byAnand Agricultural University recommends replacing 20% of whole milk with sweet cream buttermilk (SCBM) and adopting vacuum pan concentration instead of open

	pan concentration.Use of SCBM to partly replace whole milk led to reduction in the raw material cost by 7%.
	આણંદ કૃષિ યુનિવર્સિટી દ્વારા કુલ્ફીના ઉત્પાદન માટે પ્રક્રિયા વિકસાવવામાં આવેલ છે. જેમાં કુલ્ફી બનાવવા દૂધમાં ૨૦% સ્વીટક્રીમ બટર મીલ્કનો ઉપયોગ તથા ઓપન પાન સંકેન્દ્રણ પધ્ધતિની સરખામણીમાં વેક્યુમ પાન સંકેન્દ્રણ પધ્ધતિનો ઉપયોગ કરવાથી કુલ્ફીમાં સંતોષકારક ગુણવત્તાની સાથેસાથે રોમટેરીયલની કિંમતમાં ૭% નો ઘટાડો મેળવી શકાય છે. **(Action: Prof. & Head, DT, DSC, Anand)**
11.5.1.3	**Iron Fortification in *Kulfi*** It is recommended to prepare acceptable quality iron fortified *kulfi* by addition of ferric ammonium citrate (30 ppm iron) just before freezing of *kulfi* mix and the product was acceptable up to 90 days at -18±2°C.
	સ્વીકાર્ય ગુણવત્તાવાળી આયર્ન ફોર્ટિફાઇડ કુલ્ફી ફેરિક એમોનિયમ સાઇટ્રેટ (૩૦પીપીએમઆયર્ન) ફ્રીજીંગ પહેલાં ઉમેરીને બનાવવાની ભલામણ કરવામાં આવે છે. આ કુલ્ફી-૧૮±૨° સે તાપમાને ૯૦ દિવસ સુધી જાળવી શકાય છે. **(Action: Prof. & Head, DT, DSC, Anand)**
11.5.1.4	**Preparation of '*Choco-cheese*' Ice cream** Acceptable '*Choco-cheese*' ice cream can be produced utilizing processed cheese shreds coated with chocolate syrup as flavouring and utilizing 'cheese flavour' as background flavouring according to the method developed at AAU, Anand.
	આણંદ કૃષિ યુનિવર્સિટી,આણંદ દ્વારા વિકસાવવામાં આવેલ પદ્ધતિ અનુસાર ચોકલેટ સીરપ સાથે લેપિત પ્રોસેસ્ડ ચીઝ શ્રેડ અને સ્વાદ તરીકે 'ચીઝફ્લેવર' ના ઉપયોગથી સ્વીકાર્ય 'ચોકો-ચીઝ' આઇસક્રીમ બનાવવાની ભલામણ કરવામાં આવે છે. **(Action: Prof. & Head, DT, DSC, Anand)**
11.5.1.5	**Standardization of formulations for preparation of ice candy type frozen product using whey** The process technology developed by Anand Agricultural University, Anand is recommended for preparation of paneer whey candy by utilizing 70% whey. This candy had better quality than candy prepared from water.
	આણંદ કૃષિ યુનિવર્સિટી,આણંદ દ્વારા વિકસાવેલ પનીર વ્હે કેન્ડી બનાવવા માટેની પધ્ધતિમાં ૭૦% પનીર વ્હે વાપરવાની ભલામણ કરવામાં આવેછે. આવી કેન્ડીની ગુણવત્તા પાણીમાંથી બનાવેલી કેન્ડી કરતાં સારી હોય છે. **(Action: Prof. & Head, DC, DSC, Anand)**
11.5.1.6	**Formulation of dried probiotic mix containing *Lactobacillus helveticus* MTCC 5463** A dried probiotic mix formulation of *Lactobacillus helveticus* MTCC 5463 (C) developed by AAU is recommended. It can be prepared by mixing it with L-ascorbic acid as reducing agent (R) and skim milk powder as bulking agent (B) in the ratio of C: R: B = 20: 20: 60 (w/w). The formulation when packed and stored in aluminium foil sachets showed shelf-life up to 18 months at 5±2°C (8.90 log cfu/g) and up to 2 months at 25±2°C (8.19 log cfu/g).
	લેક્ટોબેસિલસ હેલ્વેટીક્સ MTCC 5463 (C) નું પ્રોબાયોટીક પાઉડર મિશ્રણ બનાવવા માટે તેમાં એસ્કોર્બીક એસિડ(R) રીડયુસીંગ એજન્ટ અને સ્કીમ મીલ્ક પાઉડર (B) જથ્થા વર્ધક તરીકે C:R:B=૨૦:૨૦:૬૦(W/W)ના પ્રમાણમાં ભેળવવાની ભલામણ છે. સદર મિશ્રણ જ્યારે

	એલ્યુમિનિયમ વરખ પેકેટમાં સંગ્રહિત રાખીયે તો, ૫±૨°સે તાપમાને ૧૮ મહિના સુધી (8.90log cfu/g) તથા ૨૫±૨°સે તાપમાને ૨મહિના સુધી (8.19 log cfu/g) જાળવી શકાય છે. **(Action: Prof. & Head, DM, DSC, Anand)**
11.5.1.7	**Development of probiotic/*dahi*culture dosage forms - tablets, sachets, capsules**
	Entrepreneurs and dairy processors interested in manufacturing culture in appropriate dosage forms (tablets, capsules, sachets) are advised to adopt the technology developed by Anand Agricultural University, Anand. Such dosage form contains dahiculture and probiotic cultures as active ingredients, the live cells is $>10^7$cfu/g having a shelf life of 6 months at refrigerated temperature. For making fermented milk, one unit of dosage form, i.e., 1 sachet/1 capsule/1tablet of 300 mg as inocula per 100 ml of milk requires overnight incubation at 37^0C.
	ઔદ્યોગિક સાહસિકો અને ડેરીપ્રોસેસર્સ જે યોગ્ય ડોઝ સ્વરૂપોમાં કલ્ચર ઉત્પાદનમાં રસ ધરાવે છે તેમના માટે આણંદ કૃષિ યુનિવર્સિટી,આણંદ દ્વારા દહીં કલ્ચર તેમજ પ્રોબાયોટીક કલ્ચરને ટીક્ડી,કેપ્સ્યુલ કે પડીકી જેવા સ્વરૂપમાં તબદીલ કરવાની ટેક્નોલોજી વિક્સાવવામાં આવી છે કે જેની સંગ્રહ ક્ષમતા રેફ્રીજરેટરના તાપમાને ૬ મહિના અને તેમાં પ્રતિગ્રામ ૧૦૯ કરતા વધારે જીંવત બેક્ટેરીયા જળવાઈ રહે છે. ૩૦૦ મી.ગ્રા. ની ૧ ટીકડી/કેપ્સ્યુલ/પડીકીને ૧૦૦ મીલી દૂધમાં મેળવી ૩૭°સે તાપમાને રાખવાથી સારું ફરમેંટેડ મીલ્ક બનાવી શકાય છે. **(Action: Prof. & Head, DM, DSC, Anand)**
11.5.1.8	**Iron fortification of buttermilk and selected fermented dairy products**
	Acceptable quality iron fortified probiotic fermented milk can be manufactured by fortifying milk with ferric ammonium citrate (15 ppmiron) without adverse effect on probiotic count. The product has a keeping quality of 12 days when stored at 4 ± 2^oC.
	સ્વીકાર્ય ગુણવત્તાવાળું આયર્ન ફોર્ટિફાઇડ પ્રોબાયોટિક ફરમેંટેડ મિલ્કનું ફેરિક એમોનિયમ સાઇટ્રેટ (૧૫પીપીએમ આયર્ન) ઉમેરીને પ્રોબાયોટિક બેક્ટેરીયા પર પ્રતિકૂળ અસર વિના ઉત્પાદન કરી શકાય છે. આ ફરમેંટેડ મિલ્કને ૪±૨°સે તાપમાને ૧૨દિવસ સુધી જાળવી શકાય છે. **(Action: Prof. & Head, DM, DSC, Anand)**
11.5.1.9	**Drying behavior of carrots and its utilization in preparation of ethnic food products**
	Vacuum tray drying with blanching technique is recommended for drying of carrot (red variety) shreds over other methods of drying. Acceptable quality of carrot *halwa*can be prepared using dried carrot shreds. Dried carrot shreds can be stored for about five months in HDPE or metalized polyester film bags at ambient conditions.
	બ્લાન્ચિંગ ટેકનિક સાથે વેક્યૂમ ટ્રે સૂકવણી પદ્ધતિ ગાજર(લાલ)ના છીણને સૂકવવા માટે ભલામણ કરવામાં આવે છે. સૂકા ગાજરના છીણમાંથી સ્વિકૃત ગુણવત્તા વાળો ગાજરનો હલવો બનાવી શકાયછે.સૂકા ગાજરના છીણને સામાન્ય વાતાવરણની પરિસ્થિતિમાં એચડીપીઇ અથવા મેટલાઈજ્ડ પોલિએસ્ટર ફિલ્મ બેગમાં લગભગ પાંચ મહિના માટે સંગ્રહ કરી શકાય છે. **(Action: Prof. & Head, DE, DSC, Anand)**
11.5.1.10	**Mechanization and optimization of parameters for the preparation of *Burfi* in multipurpose scraped surface heat exchanger**
	*Burfi*can be prepared from buffalo milk using modified Scraped Surface Heat

	Exchanger (SSHE) having spring loaded Teflon scraper blade. The operating conditions of the SSHE required are 2.5 kg/cm^2 steam pressure, 30 rpm scraper speed, 30 kg loading per batch and 1 h 40 min time. The steam consumption during manufacturing of *Burfi* is 1.45 kg per kg of water evaporated and electricity consumption is 0.12 kWh per kg of product.
	ભેંસના દૂધમાંથી બરફી બનાવવા માટે સ્પ્રિંગ આધારીત ટેફલોનબ્લેડ ધરાવતા નવીનીકૃત સ્ક્રેપસ ર્ફેસ હીટ એક્સ્ચેન્જર (એસએસએચઇ) નો ઉપયોગ કરી શકાય છે. આ રીતે૧ કલાક અને ૪૦ મીનીટમાં બરફી બનાવવા માટે ૨.૫કિ.ગ્રા./ચો.સે.મી. વરાળ દબાણ, ૩૦આર.પી.એમ. સ્ક્રેપરસ્પીડ અને એક બેચમાં ૩૦કિ.ગ્રા. દૂધનો જથ્થો લેવામાં આવે છે. આ સ્ક્રેપસર્ફેસ હીટ એક્સ્ચેન્જરમાં બરફી બનાવતી વખતે દૂધમાંથી ૧કિ.ગ્રા. પાણી બાષ્પીભવન કરવા ૧.૪૫કિ.ગ્રા. વરાળ વપરાય છે જ્યારે ૧કિ.ગ્રા. બરફી બનાવવા ૦.૧૨યુનીટ (kWh) વીજળીનો વપરાશ થાય છે. **(Action: Prof. & Head, DE, DSC, Anand)**
11.5.1.11	**Bottle gourd based blended juice**
	The entrepreneurs and food processors interested in production of bottle gourd based blended juice are advised to use technology developed by Anand Agricultural University. Developed technology involves blanching, formulation, thermal processing and storage stability. The technology enables production of blended juice from bottle gourd, aonla, lemon and ginger without addition of chemical preservatives. The formulated product can be stored up to 180 days under ambient conditions.
	ઉદ્યોગકારો અને સાહસિકોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ દૂધીના બ્લેન્ડ જ્યુસ ઉત્પાદન અંગેની ટેકનોલોજીનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. વિકસીત ટેકનોલોજીમાં બ્લાંચીંગ, ફોર્મ્યુલેશન, થર્મલ પ્રોસેસીંગ અને સ્ટોરેજ સ્ટેબીલીટીનો સમાવેશ થાય છે. આ ટેકનોલોજી થકી દૂધી, આમળા, લીંબુ અને આદુના બ્લેન્ડ જ્યુસનું ઉત્પાદન કોઈ પણ જાતના રાસાયણિક પ્રિઝર્વેટીવ ઉમેર્યા સિવાય થઇ શકે છે. આ રીતે તૈયાર થયેલ બ્લેન્ડ જ્યુસની સંગ્રહશક્તિ સામાન્ય તાપમાને ૧૮૦ દિવસ સુધીની હોય છે. **(Action: Prof. & Head, PHE, FPT & BE, Anand)**
11.5.1.12	**Ohmic heating system for thermal processing of papaya pulp**
	The entrepreneurs and fruit pulp processors interested in preservation of papaya pulp are advised to use ohmic heating processing technology developed by Anand Agricultural University. The processing technology showed that the ohmic processed pulpcould retain better nutrients,was stable and acceptable upto 84 days of storage under refrigerated condition at 7±2°C.
	પપૈયાના પલ્પના પરિરક્ષણમાં રસ ધરાવતા ઉધોગસાહસિકો અને ફળોના પલ્પનાં ઉત્પાદકોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ ઓમીંક હીટીંગ પ્રક્રીયાનો ઉપયોગ કરવાની સલાહ છે. આ પ્રક્રીયાથી બનાવેલ પલ્પમાં વધારે પોષક તત્વો જાળવી શકાય છે અને રેફ્રીજરેટેડ (૭±૨^{0}C) તાપમાને ૮૪ દિવસ સુધી ગુણવતા સાથે જાળવણી કરી શકાય છે. **(Action: Prof. & Head, FE, FPT & BE, Anand)**
11.5.1.13	**Starter cultures for the production of superior quality *Idli***
	The entrepreneurs and producers interested in production of uniform quality *Idli*batterare advised to use combination of *Lactobacillus rhamnosus* MTCC 5462 + *Leuconostocmesenteroides* 029 + *Candida versatilis* NCIM 3431 + *Saccharomyces cerevisiae* starter cultures suggested by Anand Agricultural

	University for the controlled fermentation of *idli* batter.
	એક સરખી ગુણવતાવાળી ઈડલીનું ખીરું બનાવવામાં રસધરાવતા ઉધોગસાહસિકો અને ઉત્પાદકોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા ઈડલી ખીરા માટે વિકસાવેલ ખાસ મેળવણ દ્વારા આથવણ કરી ખીરું બનાવવાની તકનીકનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. **(Action: Prof. & Head, FQA, FPT & BE, Anand)**
11.5.1.14	**Antioxidants for the keeping quality of fried banana chips**
	Food entrepreneurs interested in manufacturing banana chips are recommended to add Tertiary Butyl Hydro Quinone (TBHQ) as antioxidant in frying oil as suggested by Anand Agricultural University and advised to pack in MetPET pouches to enhance its shelf life by 4 weeks.
	કેળાની ચિપ્સના ઉત્પાદનમાં રસ ધરાવતા ઉધોગસાહસિકો અને ઉત્પાદકોને તળવાના તેલમાં ટી.બી.એચ.કયું.એન્ટિઓક્સીડન્ટ ઉમેરવાની ભલામણ કરવામાં આવે છે. આ રીતથી તળેલ કાતરીને મેટપેટ પાઉચમાં પેક કરવાથી આશરે ૪ અઠવાડિયા સુધી વધારે સંગ્રહી શકાય છે. **(Action: Prof. & Head, FQA, FPT & BE, Anand)**
11.5.1.15	**Super critical fluid extraction of essential oils from ginger and turmeric**
	The entrepreneurs and food processors interested in production of volatile oils from ginger and turmeric are advised to use supercritical extraction technology developed by Anand Agricultural University. This technology involves better recovery of volatile oils using blanching, slicing, drying, sieving and supercritical fluid extraction at controlled pressure and temperature. The process results in better quality essential oils as compared to conventional extraction methods.
	આદુ અને હળદર માંથી વોલેટાઈલ ઓઈલના ઉત્પાદનમાં રસ ધરાવતા ઉધોગ સાહસિકો અને ઉત્પાદકોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ સુપરક્રીટીકલ એકસ્ટ્રેકશન તકનીકનો ઉપયોગ કરવાની સલાહ આપવામાં આવેછે. આ તકનીકમાં વધારે વોલેટાઈલ ઓઈલ મેળવવા માટેની બ્લાન્ચીંગ, સ્લાઈસીંગ, સુકવણી, ચાળણી અને નિયંત્રિત પ્રેસર અને તાપમાન પર સુપરક્રીટીકલ ફલુઈડએકસ્ટ્રેકશન બાબતનો સમાવેશ કરેલ છે. આ પ્રક્રીયાથી પરંપરાગત એકસ્ટ્રેકશનની રીત કરતા ઉત્તમ ગુણવતાવાળુ એસેંશીયલ ઓઈલ પ્રાપ્ત કરી શકાય છે. **(Action: Prof. & Head, FQA, FPT & BE, Anand)**
11.5.1.16	***Kajukatli* with artificial sweetener/s**
	The sugar free *kajukatli* can be prepared satisfactorily using artificial sweetener sucralose and bulking agent,isomalt by using technology developed by Anand Agricultural University.
	બલ્કિંગ એજંટ તરીકે આઇસોમાલ્ટ અને કૃત્રિમ સ્વીટનર સુક્રાલોઝનો ઉપયોગ કરીને આણંદ કૃષિ યુનિવર્સિટી ટેકનોલોજી દ્વારા સુગર ફ્રી કાજુકતલી સંતોષકારક રીતે બનાવી શકાય છે. **(Action: Prof. & Head, FQA, FPT & BE, Anand)**
11.5.1.17	**Development of nutri-rich health bar**
	The bakery industry and entrepreneurs interested in production of nutritious “Health Bar” using oat, barley and whole wheat flour as well as selected nuts and honey are advised to adopt the formula and procedure developed by Anand Agricultural University. The product packed in aluminium foil has a storage life of about 2 months at ambient temperature.
	બેકરી વાનગીઓના ઉત્પાદકો અને ઉદ્યોગ સાહસિકોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા ઓટ,જવ

	અને ઘઉંનો લોટ તેમજ સુકા મેવા અને મધનો ઉપયોગ કરી વિકસાવવામાં આવેલ પૌષ્ટિક "હેલ્થબાર"ના ઉત્પાદન અંગેની ટેકનોલોજીનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે. આ હેલ્થ બાર સામાન્ય વાતાવરણમાં એલ્યુમિનિયમ ફોઇલમાં ૨મહિના સુધી સંગ્રહી શકાય છે. **(Action: Prof. & Head, PFSHE, FPT & BE, Anand)**
11.5.1.18	**Low cost millet based supplementary food**
	A millet based supplementary mix developed by Anand Agricultural University is nutritionally rich. Supplementary mix of 100 gper day is recommended to meetpartlythe nutritional requirement of infants. The product can be stored for 4 months under ambient conditions.
	આણંદ કૃષિ યુનિવર્સિટી દ્વારા ધાન્ય માંથી વિકસાવેલ પૂરક આહાર સારૂ પોષણ મૂલ્ય ધરાવે છે. નવજાત શિશુના રોજિંદા પોષણની કેટલીક જરૂરિયાત સંતોષવા માટે દૈનિક ૧૦૦ ગ્રામ પુરક આહારની ભલામણ કરવામાં આવે છે. સામાન્ય વાતાવરણમાં આપુરક આહારને ૪ મહિના સુધી સંગ્રહી શકાય છે. **(Action: Prof. & Head, PFSHE, FPT & BE, Anand)**
11.5.1.19	**Performance evaluation of different sowing methods for *rabi*maize (GM-3)**
	Farmers of middle Gujarat region are recommended to use tractor drawn multi crop planter having inclined plate type seed metering mechanism and 60 cm row to row distance for sowing of *rabi* maize crop to save time (@ 60 man-hours/ha) and cost (@ 67.9%) as compared to manual dibbling.
	મધ્ય ગુજરાત વિસ્તારના ખેડૂતો માટે ટ્રેકટરથી ચાલતાં તિરછીપ્લેટવાળા બીજ મીટરિંગ મેકનીઝમ અને ૬૦ સે.મી.ના બે ચાસ વચ્ચેના અંતરે રવી મકાઈની વાવણી કરવામાટે મલ્ટીક્રોપ પ્લાન્ટર ઉપયોગમાં લેવા માટે ભલામણ કરવામાં આવે છે, જેનાથી હાથ વડે કરવામાં આવતા ડીબલીંગની સરખામણીમાં સમયમાં પ્રતિ હેકટરે ૬૦ માનવ કલાકો અને ખર્ચમાં ૬૭.૯ ટકાની બચત થાય છે. **(Action: Prof. & Head, Department of FMPE, CAET, AAU, Godhra)**
11.5.1.20	**Fertilizer dose recommendation for the Web Based Soil Health Card Portal (Adding one new module to existing application)**
	Soil Health Card portal developed by Anand Agricultural University is recommended for use of farmers of Gujarat, who are interested to supplement Nitrogen, Phosphorus and Potash (NPK) through use of urea, DAP and MOP fertilizers.
	આણંદ કૃષિ યુનિવર્સિટી દ્વારા બનાવવામાં આવેલ જમીન આરોગ્ય પત્રક પોર્ટલ દ્વારા નાઈટ્રોજન, ફોસ્ફરસ અને પોટાશ તત્વોને યુરિયા, ડીએપી અને મ્યુરેટ ઓફ પોટાશ ખાતર દ્વારા પૂર્તિ કરવા ઈચ્છતા ખેડૂતોને જમીન આરોગ્ય પત્રક પોર્ટલનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે. **(Action: Director of IT, ITC, AAU, Anand)**
JUNAGADH AGRICULTURAL UNIVERSITY	
11.5.1.21	**Impact of irrigation regimes and mulching on the economic productivity of drip irrigated cotton**
	Farmers of South Saurashtra Agro-climatic Zone growing Bt. Cotton are advised to adopt drip irrigation (with 1.2m lateral spacing, 40 cm dripper spacing and emitter discharge of 2 lph) in raised bed covered with silver black plastic mulch of 20 micron and irrigate every alternate day at 0.8 ET_c level (or to operate system for 2 to 3.5 hrs, 2.25 to 3.25 hrs and 1.25 to 3 hrs during September-October, November-December and January, respectively) for acquiring higher yield (33 %) and water

	use efficiency (79 %), higher water productivity (91 %) and higher net return over no mulch.
	દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ખેડૂતોને ભલામણ કરવામાં આવે છે કે, બીટી કપાસના વાવેતરમાં ટપક પિયત પધ્ધતિ (બે લેટરલ વચ્ચેનું અંતર: ૧.૨ મી, ડ્રીપર વચ્ચેનું અંતર: ૪૦ સે.મી., ડ્રીપર ડીસ્ચાર્જ: ૨ લીટર/કલાક) સાથે બેડ બનાવી તેના ઉપર ૨૦ માઈક્રોનનું સિલ્વર કાળું પ્લાસ્ટિક પાથરી તેને એકાંતરે દિવસે ૦.૮ ઈટીસી લેવલે (અથવા સપ્ટેમ્બર-ઓક્ટોબર માસમાં ૨-૩.૫ કલાક, નવેમ્બર-ડીસેમ્બર માસમાં ૨.૨૫-૩.૨૫ કલાક અને જાન્યુઆરી માસમાં ૧.૨૫-૩ કલાક) ચલાવવાથી મલ્ચીંગ વગરના કપાસની સરખામણીમાં વધુ ઉત્પાદન (૩૩ %), પાણી વપરાશની કાર્યક્ષમતા (૭૯ %) તથા પાણીની ઉત્પાદકતા (૯૧ %) તેમજ વધારે આવક મેળવી શકાય છે. **(Action: Research Scientist (Agril. Engg.), RTTC, JAU, Junagadh)**
11.5.1.22	**Extraction of Pectin from Kesar Mango Peel by Resins**
	Mango processors are recommended to adopt a process technology developed by Junagadh Agricultural University for the production/extraction of pectin from mango peel using cation exchange resin as an extracting medium with peel to extracting medium ratio of 1:4, extraction pH of 2.56, extraction temperature of 80 °C, extraction time of 60 min and two extractions. This method can give better yield and quality of pectin with benefit cost ratio (BCR) of 1.17.
	કેરીનું પ્રોસેસીંગ કરતા પ્રોસેસરોને કેરીની છાલમાંથી પેકટીન મેળવવા માટે જૂનાગઢ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ પધ્ધતિથી, કેટાયન એક્ષચેન્જ રેઝીનનો એકસટ્રેકશન માધ્યમ તરીકે ઉપયોગ કરી, છાલ તથા નિષ્કર્ષણ માધ્યમનું પ્રમાણ ૧:૪, પી.એચ. આંક ૨.૫૬ અને નિષ્કર્ષણ પ્રક્રિયા દરમિયાનનું તાપમાન ૮૦ °સે જાળવી ૬૦ મિનિટ સુધી બે વખત આ પ્રક્રિયા કરવાની ભલામણ કરવામાં આવે છે. આ પધ્ધતિથી સારી ગુણવત્તા ધરાવતા પેકટીનનું વધુ ઉત્પાદન મેળવી શકાય છે, જેમાં લાભ અને ખર્ચનો ગુણોતર ૧.૧૭ મળે છે. **(Action: Prof. & Head, Dept. of Processing and Food Engg., CAET, JAU, Junagadh)**
11.5.1.23	**Storage study of wheat harvested by Combine Harvester**
	The recommendation was approved in Plant Protection group; hence it is deleted from here.
	(Action: Prof. & Head, Dept. of Processing and Food Engg., CAET, JAU, Junagadh)
11.5.1.24	**Development and performance evaluation of low cost greenhouse fertigation irrigation system**
	The greenhouse / net house growers are advised to use low cost greenhouse fertigation system developed by Junagadh Agricultural University to apply fertilizer through drip irrigation as well as interested manufacturers are recommended for manufacturing this system.
	ગ્રીનહાઉસ / નેટહાઉસ આધારિત ખેતી કરતા ખેડૂતોને ટપક પદ્ધતિથી ખાતર આપવા માટે જૂનાગઢ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ લો કોસ્ટ ગ્રીનહાઉસ ફર્ટિગેશન સીસ્ટમનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. તદ્ઉપરાંત રસ ધરાવતા ઉત્પાદકોને આ સીસ્ટમનાં ઉત્પાદન હેતુ પણ ભલામણ કરવામાં આવે છે. **(Action: Prof. & Head, Dept. of Renewable Energy & Rural Engg., CAET, JAU, Junagadh)**

11.5.1.25 **Studies on microclimate and plant growth of capsicum under different type of Shade net**

The farmers of South Saurashtra Agro-climatic Zone are recommended to adopt white coloured 50 per cent shade net house for cultivation of capsicum. This type of net house results in early production approximately 10-12 days, protection from insects/pests, diseases and higher yield of capsicum as compared to use of green, black and blue coloured shade net house.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારનાં કેપ્સીકમ (શીમલા મીર્ચ) ઉગાડતા ખેડૂતોને સફેદ કલરના ૫૦ ટકા શેડવાળા નેટહાઉસ વાપરવાની ભલામણ કરવામાં આવે છે. આ પ્રકારનાં નેટહાઉસ વાપરવાથી અંદાજીત ૧૦-૧૨ દિવસ પાકનું વહેલું ઉત્પાદન આવે છે, રોગ-જીવાતથી પાકનું રક્ષણ થાય છે તેમજ લીલા, કાળા અને ભુરા કલરનાં નેટહાઉસ કરતા વધુ ઉત્પાદકતા મેળવી શકાય છે.

(Action: Prof. & Head, Dept. of Renewable Energy & Rural Engg., CAET, JAU, Junagadh)

11.5.1.26 **Effect of mulch and irrigation level by drip on water use efficiency and yield of water melon**

The farmers of South Saurashtra Agro-climatic Zone are advised to use silver black plastic mulch (20 µm) with drip irrigation at 0.6 ETc level to achieve higher crop production of water melon in summer season.

Details of mulching technology :		**Details of irrigation system :**	
1	Mulch film: 20 µm silver black plastic	1	Lateral spacing : 180 cm
2	Bed size: (a) Top width : 40 cm (b) Bottom width : 70 cm (c) Height : 30 cm	2 3 4	Dripper spacing : 40 cm Dripper discharge : 2 lph Irrigation scheduling : Feb. : 20 to 45 min/day March: 30 to 95 min/day April : 70 to 105 min/day May : 70 to 90 min/day
3	No. of row per bed : 2		
4	Spacing : (a) Bed spacing : 180 cm (b) Row spacing : 20 cm (c) Plant spacing : 40 cm		

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ખેડૂતોને ઉનાળુ ઋતુ દરમ્યાન તરબૂચના પાકનું વધુ ઉત્પાદન મેળવવા માટે ૨૦ માઈક્રોન જાડાઈવાળુ સીલ્વર બ્લેક કલરની પ્લાસ્ટીક મલ્ચનો ઉપયોગ કરી અને ૦.૬ ઈટીસી લેવલે ટપક પધ્ધતિ દ્વારા પીયત આપવાની ભલામણ કરવામાં આવે છે.

બેડ અને પ્લાસ્ટીક મલ્ચ અંગેની માહિતી :		**ટપક પધ્ધતિ અંગેની માહિતી :**	
૧	પ્લાસ્ટીક ફિલ્મ : ૨૦ માઈક્રોન સીલ્વર બ્લેક કલર	૧ ૨ ૩ ૪	લેટરલનુ અંતર : ૧૮૦ સે.મી. ડ્રીપરનુ અંતર : ૪૦ સે.મી. ડ્રીપર ડિસ્ચાર્જ રેઈટ : ૨ લીટર/કલાક ડ્રીપ ચલાવવાનો સમય : ફેબ્રુઆરી: ૨૦ થી ૪૫ મીનીટ/દિવસ માર્ચ: ૩૦ થી ૯૫ મીનીટ/દિવસ એપ્રિલ: ૭૦ થી ૧૦૫ મીનીટ/દિવસ મે: ૭૦ થી ૯૦ મીનીટ/દિવસ
૨	બેડનું માપ : અ. ઉપરની પહોળાઈ : ૪૦ સે.મી. બ. નીચેની પહોળાઈ : ૭૦ સે.મી. ક. ઉચાઈ: ૩૦ સે.મી.		
૩	પ્રતિ બેડ હારની સંખ્યા : ૨		
૪	અંતર : અ. બેડનું અંતર : ૧૮૦ સે.મી. બ. બે હાર વચ્ચેનું અંતર : ૨૦ સે.મી.		

	ક. બે છોડ વચ્ચેનું અંતર : ૪૦ સે.મી.
	(Action: Prof. & Head, Dept. of Renewable Energy & Rural Engg., CAET, JAU, Junagadh)
NAVSARI AGRICULTURAL UNIVERSITY	
11.5.1.27	**Preparation of ready to serve (RTS) beverage from banana pseudostem sap**
	House suggested to present this recommendation next year after incorporating following suggestions next year 1. Ingredients combinations should have been used at a time in all treatments. 2. Vitamin C, PH, TSS should be reassessed. 3. Thermal process parameters require optimization. **(Action: I/c, CE on PHT, Navsari)**
11.5.1.28	**Study of effect of drainage on banana production in South Gujarat**
	House suggested to present this recommendation in next year after incorporating following suggestions 1. Surface drainage coefficient for banana is to be calculated. 2. Amount of runoff to be given based on rainfall to design the trench. 3. Trench detail design is to be provided. (**Action: I/c Prof. & Head, Dept. of Agril. Engg., NMCA, Navsari)**
11.5.1.29	**Effect of laser leveling on crop water requirement and growth of castor crop**
	House suggested to present this recommendation in next year after incorporating following suggestions 1. Leveling index is to be defined 2. Slope recommended should be matched with the slope or border irrigation design **(Action: I/c Prof. & Head, Dept. of Agril. Engg., NMCA, Navsari)**
11.5.1.30	**Study on levels of nitrogen and intra-row spacing on yield of drip irrigated castor (*rabi*)**
	The recommendation was approved in Crop Production group; hence it is deleted from here. **(Action: Research Scientist, SWMRU, Navsari)**
11.5.1.31	**Design, development and evaluation of biomass based cook stove**
	Design of funnel shaped cooked stove developed by NavsariAgricultural University is recommended to rural artisans, manufacturers and general public for community cooking of 60-70 number of meal using dry wood branches, which can reduce the fuel consumption by 3.97 kg/hr with average thermal efficiency of 20.19 % as compared to three bricks cooking chulha system.
	સુકા જલાઉ લાકડાનો ઉપયોગ કરી ૬૦-૭૦ થાળી સામુદાયીક રસોઈ બનાવવા નવસારી કૃષિ યુનીવર્સીટીધ્વારા તૈયાર કરેલ નળીયા આકારના રસોઈ ચુલા વાપરવાની ભલામણ ગ્રામ્ય કારીગરો,ઉત્પાદન કર્તાઓ અનેપ્રજા માટેકરવામાં આવે છે. આમ કરવાથી ત્રણ ઈંટ રસોઈ ચૂલ્હાની સરખામણીમાં ૩.૯૭ કિ.ગ્રા/કલાક ઈંધણની બચતની સાથે ૨૦.૧૯ % ઉષ્મા ઉપયોગ ક્ષમતા મળે છે. **(Action: Dean, CAET, Dediapada)**
11.5.1.32	**Development and evaluation of low cost solar still**
	House suggested to present this recommendation next year after incorporating following suggestions 1. Higher transmittance covering material should be used. 2. Change the shape giving more surface area facing the sun. **(Action: Dean, CAET,Dediapada)**

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY	
11.5.1.33	**Development of value added kalakand using papaya fruit**
	The programme is to be presented next year with incorporation of value adding parameters. **(Action: Prof. & Head, LPT Dept., Veterinary College, SDAU, Sardarkrushinagar)**

B. SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY	
11.5.1.34	**Energy assessment in onion dehydration plant**
	The cost of production of the dehydrated onion products largely depends upon the consumption of electricity during processing. An onion dehydration plant producing onion powder, onion kibbled and granulated dehydrated onion units are advised to carry out energy audit of their plants frequently and are advised to follow the electrical energy conservation measures like (i) frequent maintenance of existing machines, (ii) avoiding higher HP units than required. **(Action: Prof. & Head, FE, FPT & BE, Anand)**
11.5.1.35	**Comparative study on various drying techniques of cluster bean**
	The scientists working in thin layer drying are advised to use following Midilli model (a = 0.97892, k=0.00422, n=1.04471, b=1.16502) as compared to Lewis, Hendersons and Pabis, Modified Hendersons and Pabis, Logarithmic, Two-term, Verma, Page, Parabolic, Weibull and Wang and Singh to predict the moisture ratio of vegetable cluster bean. **(Action: Prof. & Head, PAE, AAU, Dahod)**
11.5.1.36	**Investigation on Spatial & Temporal Variability of Infiltration under Real Field Conditions**

Based upon experimental findings, the Horton's and Kostiakov'sinfiltrationmodelsare recommended as best choices for use by Hydrologist/Watershed Managers/NGO's and Command area/ Irrigation Engineers respectively for predicting soil infiltration rates (mm/hr) in middle Gujarat region. The regionalised parametric values of models are given below, which could be utilized for alike ungauged locations in the region.

Soils/Test Location		Horton's Model $f = f_c + (f_0-f_c)*e^{-k*t}$				Kostiakov's Model $f = \alpha . c . t^{\alpha-1}$		
Soils	Test locations	f_0	f_c	k	*Eff (%)*	α	c	*Eff (%)*
Clay loam (Red)	*Vadodara* (Khanda, Mangrol, Atali, Bodaka, Handod, Ganpatpur, Sankheda, Bhildar, Novar, Jambusar, Kadana, Khank) *Panchmahal*(Godhra, Parvadi, Kotda, Chanchopa, Kansudi, Kakanpur, Thambhia, Aerandi, Dholakuva) *Dahod*(Zalod, Chotrodiya, Thekra, Dhevadiya) *Kheda* (Radhu, Kathvada, Mahiji)	224.2	54.9	2.67	73	0.67	119	85
Sandy loam (Medium black)	*Vadodara* (Bhilapur, Dhabhoi, Bhilodiya, Asodara, Koked, Navapur, Sankheda, Ambapura, Bhatpur, Dhardi, Ganeshvad) *Anand* (Khabhoraj, Boriavi, Vadod, Vasad, Napad) *Panchmahal* (Kakanpur, Padhiyar, Kaniyanamuvada, Harinamuvada, Andaranamuvada)	246.4	35.7	8.84	86	0.54	70.6	86

Loamy Sand (Black-Goradu)	*Dahod* (Pethapur, Ghamdi, Vagela, Chakaliya, Mundaheda, Vasiya, Karanba, Varod, Bajarvada) Gandhinagar (Zak, Vadod, Bahiyal, Karoli)	127	39.1	2.27	83	0.71	79.8	70

(Action: Prof. & Head, Department of SWE, CAET, AAU, Godhra)

11.5.1.37 **Performance evaluation of canal irrigation in Panchmahal and Vadodara area**

Irrigation managers, engineers and canal scheduling co-operatives of command areas of Middle Gujarat region are advised to adopt deficit irrigation concept to mitigate the gap between supply and demand as the prevailing canal performance indices viz. adequacy, dependability, equity and efficiency, vary in the range of 0.69 – 0.81, 0.28 – 0.49, 0.29 – 0.44 and 0.79 – 0.95 respectively. For enhancing canal performance, suitable remedial measures are recommended because the command area in study region yields relatively less annual groundwater recharge, in the range from 246 to 704 mm with an average value of 463 mm. The recharge rate in the region could be taken in the range of 0.0007 – 0.0019 m/d with an average of 0.001 m/d.

(Action: Prof. & Head, SWE, CAET, AAU, Godhra)

11.5.1.38 **Development of Online Objective/MCQ examination for students of Anand Agricultural University**

Web based Online examination system is recommended for use at the State Agricultural Universities as it is easy to use,transparent,time saving and user friendly for faculties as well as students.**(Action: Director of IT, ITC, AAU, Anand)**

JUNAGADH AGRICULTURAL UNIVERSITY

11.5.1.39 The Impact of Seawater Intrusion on the Qualitative Parameter of Ground Water

The following scientific information as models developed for rainfall and groundwater EC are released for the scientific communities/Line Departments of State/Central Governments/NGOs working in the coastal belts of the Saurashtra region.

SN	Costal belt region	Best fit model	R^2
1	0-5 km	$EC_{PM} = 0.6364(EC_{bm}) -0.00166(RF) +2.9495$	0.83
2	5-10km	$EC_{PM} = 0.6965(EC_{bm})-0.000359(RF)+1.2837$	0.64
3	10-15km	$EC_{PM} = 0.4171(EC_{bm})-0.000267(RF)+ 1.5592$	0.64
4	15-20km	$EC_{PM} = -0.3577(EC_{bm})-0.0000683(RF)+1.8636$	0.82

(Action: Prof. & Head, Dept. of Soil & Water Engg., CAET, JAU, Junagadh)

11.5.1.40 An assessment of suitability of groundwater for drip irrigation in Saurashtra region

The following scientific information is released for the scientific community. The pH of the groundwater was observed higher (more than 7) in all districts of the Saurashtra region. The maximum ground water samples (99.14 %) were found in category scale forming but non corrosive class.

Based on the EC, SAR and RSC of the groundwater, 56.24, 18.4, 6.64 and 18.68 per cent samples were found under categories of good water, saline water, high SAR saline water and alkali water class, respectively.

The hardness of the groundwater in Jamnagar, Rajkot, Surendranagar, Junagadh and Porbandar districts were varying from 9 to 177, 12 to 206, 12 to 292, 10 to 221 and 12-176, respectively.

(Action: Prof. & Head, Dept. of Soil & Water Engg., CAET, JAU, Junagadh)

11.5.1.41 Performance of MIS in Canal Command Area

Note: House suggested to continue the study for one more year and bring detailed analytical information.

(Action: Principal, Post Graduate Institute in Agri Business Management, JAU, Junagadh)

NAVSARI AGRICULTURAL UNIVERSITY	
11.5.1.42	**Data Mining approach for improvement in co-operative operations: A case of Amalsad co-operative with special reference to Sapota value chain**
	The software developed by NAU using Amalsad co-operative with special reference to Sapota value chain case study can be replicated for other co-operative societies of south Gujarat region trading in Sapota. **(Action: Director of IT, NAU, Navsari)**
SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY	
11.5.1.43	**Study on wetting pattern of trickle source in loamy sand soils**
	In loamy sand soils of North Gujarat, it is recommended for the scientists to consider low capacity drippers (≤ 4 lph) to minimize deep percolation losses of irrigation water while designing drip system in field crops with dripper spacing of ≤ 50 cm. **(Action: Research Scientist, Center for Watershed Mgmt. Participatory Research & Rural Engineering, Sardarkrushinagar)**
11.5.1.44	**Study on roof water harvesting for ground water recharge**
	In North Gujarat (AES-I) rainfall conditions, the roof water harvesting and ground water recharging are suggested for sustainability of ground water. The system for roof water harvesting using PVC conveyance system and percolation pit @ 0.0232 m^3 capacity per m^2 roof area can be constructed @ Rs. 102 / m^2 roof area. **(Action: Research Scientist, Center for Watershed Mgmt. Participatory Research & Rural Engineering, Sardarkrushinagar)**
11.5.1.45	**Utilization of goat milk for preparation of value added indigenous milk products**
	Goat milk Dahi with acceptabale sensory attributes can be prepared using 2% mixed dahi culture NCDC 167 (*Lactococus lactis* ssp *lactis*, *Lactococus lactis* ssp *cremoris*, *Lactococus lactis* ssp *diacetyl lactis* along with *Leuconostoc* ssp.) at 30°C for 12 hours. At refrigeration temperature (4±1°C), the product can be stored without affecting sensory quality up to 10 days. **(Action: Prof. & Head, Dept. of LPT, College of Vety. Sc. and AH, SKNagar)**
11.5.1.46	**Studies on fresh and stored goat meat patties fortified with dietary fibres**
	Fibre enriched goat meat patties can be prepared by incorporating 4 % Psyllium husk and using conventional electrical oven at 180°C for 15 min. Psyllium husk fortified meat patties had better sensory attributes as compared to 5 % wheat and barley bran fortified patties. Vacuum packaged product had better sensory scores compared to conventional packaged products up to 20 days of storage at Refrigeration temperature (4±1°C). **(Action: Prof. & Head, Dept. of LPT, College of Vety. Sc. and AH, SKNagar)**
11.5.1.47	**Studies on chicken seekh kabab incorporated with citrus fruit by-products**
	Good quality chicken seekh kabab can be prepared by using either 8% Mosambi or 4 % orange (pomace and juice mixture). Vacuum packaged product had better sensory scores compared to conventional packaged products up to 18 days of storage at refrigeration temperature (4±1°C). **(Action: Prof. & Head, Dept. of LPT, College of Vety. Sc. and AH, SKNagar)**

11.5.2 NEW TECHNICAL PROGRAMMES

ANAND AGRICULTURAL UNIVERSITY

Sr. No.	Centre/Title	Suggestions	Remarks
	Centre: SMC College of Dairy Science, Anand		
11.5.2.1	Title: Study on use of *Mulberry in* development	Approved with following suggestion/s: 1. Rate of addition of mulberry, treatment	-

	of Natural Ice cream	and procedure to be included. (**Action: Prof. & Head, DT, DSC, Anand**)	
11.5.2.2	Comparative appraisal of physical, chemical, instrumental and sensory evaluation methods for monitoring oxidative deterioration of ghee	Approved with following suggestion/s: 1. Incorporate sampling plan for ghee. **(Action: Prof. & Head, DC, DSC, Anand)**	-
11.5.2.3	Development of methods for detection of adulteration in Milk and Milk Products	House approved the project. **(Action: Prof. & Head, DC, DSC, Anand)**	-
11.5.2.4	Utilization of paneer whey in cultured buttermilk	Approved with following suggestion/s: 1. Include PET bottle along with glass bottle as packaging material. **(Action: Prof. & Head, DC, DSC, Anand)**	-
11.5.2.5	Preparation of ghee from camel milk and evaluation of shelf life	Approved with following suggestion/s: 1. In sensory analysis of ghee, body and texture parameter need to be incorporated. **(Action: Prof. & Head, DC, DSC, Anand)**	-
11.5.2.6	Engineering interventions for commercial production of *'kheer & doodhpak'*	House approved the project. (**Action: Prof. & Head, DE, DSC, Anand)**	-
11.5.2.7	Process re-engineering for the manufacture of '*shrikhand'*	House approved the project. (**Action: Prof. & Head, DE, DSC, Anand)**	-
11.5.2.8	Energy efficient innovative process for manufacture of long-life *'carrot halwa*& *bottle gourd halwa'*	Approved with following suggestion/s: 1. Simplify the title as "Development of commercial process for manufacture of *'carrot halwa* & *bottle gourd halwa*". 2. Include the carrot variety from Junagadh, if feasible. (**Action: Prof. & Head, DE, DSC, Anand)**	-
11.5.2.9	Optimization of biomass production for probiotic *Lactobacillus helveticus* MTCC 5463	House approved the project. (**Action: Prof. & Head, DM, DSC, Anand)**	-
11.5.2.10	Development of value added fermented milk containing drumstick	Approved with following suggestion/s: 1. Include two more dairy products i.e. ice cream and buttermilk. 2. The revised title is "Development of value added buttermilk, dahi and ice cream containing drumstick". (**Action: Prof. & Head, DM, DSC, Anand)**	-

11.5.2.11	Evaluation of bacterial culture for treatment of dairy effluent	House approved the project. (**Action: Prof. & Head, DM, DSC, Anand)**	-
11.5.2.12	Bio-prospecting of lactic cultures from north-eastern regions to develop functional fermented soya foods with potential health benefits	House approved the project. (**Action: Prof. & Head, DM, DSC, Anand)**	-
	Centre: FPT & BE, Anand		
11.5.2.13	Development of whey based RTS fruit beverage from musk melon and lemon	House approved the project. **(Action: Prof. & Head, PHE, FPT & BE, Anand)**	-
11.5.2.14	Design and development of SSHE for *kajukatli* manufacturing	House approved the project. **(Action: Prof. & Head, FE, FPT& BE, Anand)**	-
11.5.2.15	Ohmic heating of mango pulp	House approved the project. **(Action: Prof. & Head, FE, FPT& BE, Anand)**	-
11.5.2.16	Design and development of DELTA robot for handling of food products	House approved the project. **(Action: Prof. & Head, FE, FPT & BE, Anand)**	-
11.5.2.17	Study on water use and conservation in food industry	Approved with following suggestion/s: 1. Category of target industry and capacity need to be incorporated. 2. Revised title as "Study on effective water utilization in food industry". **(Action: Prof. & Head, FE, FPT & BE, Anand)**	-
11.5.2.18	Super critical fluid extraction of oleoresins from red chilli	Approved with following suggestion/s: 1. Analysis of antimicrobial and antioxidant activity to be incorporated in the text. **(Action: Prof. & Head, FQA, FPT & BE, Anand)**	-
11.5.2.19	Prevalence and antimicrobial resistant pattern of Salmonella in raw milk in Anand town	House approved the project. **(Action: Prof. & Head, FQA, FPT & BE, Anand)**	-
11.5.2.20	Ready to eat extruded food product from tomato pomace	Approved with following suggestion/s: 1. Revise the title as "Development of ready to eat extruded food product from tomato pomace". **(Action: Prof. & Head, FPT, FPT & BE, Anand)**	-
11.5.2.21	Development of juice extraction process of wood apple fruit	Approved with following suggestion/s: 1. Incorporate TSS analysis of pulp. 2. Temperature and time of treatments need to be modified. **(Action: Prof. & Head, FPT, FPT & BE,**	-

		Anand)	
11.5.2.22	Process development of micronutrient rich powder for women	Approved with following suggestion/s: 1. Modify the text of objective number one. **(Action: Prof. & Head, FPT, FPT& BE, Anand)**	-
11.5.2.23	Supercritical fluid extraction of carotenoid from vacuum dried pumpkin powder	House approved the project. **(Action: Prof. & Head, FPT, FPT& BE, Anand)**	-
11.5.2.24	Canning of mango slices	Approved with following suggestion/s: 1. Revise the title as "Preservation technology for mango slices". 2. Modify the treatments. 3. Analysis of yeast and mold need to be attempted. **(Action: Prof. & Head, FPT, FPT& BE, Anand)**	-
11.5.2.25	Study on *in vitro*antioxidant and antidiabetic activity of garden cress seed (*Lepidiumsativum*)	House approved the project. **(Action: Prof. & Head, PFEHE, FPT & BE, Anand)**	-
	Centre: CAET, Godhra		
11.5.2.26	Production technology for preparation of banana powder	House deferred with the presented project and suggested a new project entitled, "Development of appropriate harvest and post-harvest technology for custard apple for tribal area of Gujarat". **(Action: Prof. & Head, APE, CAET, Godhra)**	-
11.5.2.27	Integrated land and water resources management in the Panam canal command for maximization of net annual return	Approved with following suggestion/s: 1. Recast the title as "Evaluating canal scheduling approaches for optimum productivity" in Panam irrigation command area. **(Action: Prof. & Head, SWE, CAET, Godhra)**	-
11.5.2.28	**To modify three point linkage system of sowing machines drawn my medium tractors to facilitate their operation by using mini tractor**	Approved with following suggestion/s: 1. Recast the title as "Modification of three point linkage system of tractor drawn sowing machine suitable for the use by mini tractor". 2. Objectives may be suitably recasted. **(Action: Prof. & Head, FMP, CAET, Godhra)**	-
11.5.2.29	**Modification and field evaluation of mini tractor drawn semiautomatic potato planter**	Approved with following suggestion/s: 1. Recast the title as "Development and evaluation of mini tractor drawn semi-automatic potato planter". 2. Objectives may be suitably recasted.	-

		(Action: Prof. & Head, FMP, CAET, Godhra)	
11.5.2.30	**Development and evaluation of electric motor operated vertical feed maize sheller**	Approved with following suggestion/s: 1. A small gear box may be used for speed reduction in place of multiple chain drives. 2. Manual feeding should be replaced with hopper based feeding mechanism. **(Action: Prof. & Head, FMP, CAET, Godhra)**	-
	Centre: AIT, Anand		
11.5.2.31	**Web based application for analysis of Randomized Block Design and Split-Plot design**	House approved the project. **(Action: Dean, AIT, Anand)**	-
	Centre: DIT, Anand		
11.5.2.32	Development of web based Procurement Management System	House approved the project. **(Action: DIT, Anand)**	-
11.5.2.33	Development of web based Online Tour Program	House approved the project. **(Action: DIT, Anand)**	-
11.5.2.34	Development of mobile based application for farmers	Approved with following suggestion/s: 1. Recast the objective as "To develop a mobile application for dissemination of information to the farmers". **(Action: DIT, Anand)**	-
11.5.2.35	Development of web based Online Billing System	Approved with following suggestion/s: 1. Recast the title as "Development of web based online bill processing system". **(Action: DIT, Anand)**	-
11.5.2.36	Development of Web Based PG Module of Student Corner for Anand Agricultural University	House approved the project. **(Action: DIT, Anand)**	-

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Centre/Title	Suggestions	Remarks
11.5.2.37	**Centre: CAET, Junagadh**		
	Development and performance evaluation of a low cost plastic mulch laying machine	House approved the project. **(Action: Prof. & Head, Dept. of Farm Machinery & Power, CAET, JAU, Junagadh)**	-
11.5.2.38	Enzymatic pre-treatment in the processing of pigeon pea	Approved with following suggestion/s: 1. Cooking time, broken percentage and cost saving should be recorded. **(Action: Prof. & Head, Dept. of Processing & Food Engg., CAET, JAU, Junagadh)**	-

11.5.2.39	Role expectation of farm women in harvest and post-harvest activities of groundnut crop in Junagadh district	House approved the project. **(Action: Prof. & Head, Dept. of Agril Engg. & Ext. Edu., CAET, JAU, Junagadh)**	-
11.5.2.40	Effect of coloured plastic mulches on cultivation of tomato crop	House approved the project. **(Action: Prof. & Head, Dept. of Renewable Energy & Rural Engg., CAET, JAU, Junagadh)**	-
11.5.2.41	Effect of protected environment on off-season seedling raising of papaya	House approved the project. **(Action: Prof. & Head, Dept. of Renewable Energy & Rural Engg., CAET, JAU, Junagadh)**	-
11.5.2.42	Evaluation of mulching technology for bunch type groundnut crop	Approved with following suggestion/s: 1. Water saving should be recorded. **(Action: Prof. & Head, Dept. of Renewable Energy & Rural Engg., CAET, JAU, Junagadh)**	-
11.5.2.43	Development and standardization of *Burfi* using buffalo milk and *Cucurbita pepo* pulp	House approved the project. **(Action: Principal & Dean, College of Vet. Sci. & A.H., JAU, Junagadh)**	-

NAVSARI AGRICULTURAL UNIVERSITY

Sr. No.	Centre/ Title	Suggestions	Remarks
11.5.2.44	**Centre:Department of Natural Resource Management, ACHF, Navsari**		
	Irrigation Scheduling of teak seedling grown in nurseries	Approved with following suggestion/s: 1. Irrigation must be given at every day, every alternate day, every 2 day interval and every 3 day interval. 2. Irrigation must be given in control treatment by *zara*. 3. Total no. of plots must be 4. **(Action: Prof. & Head, NRM, ACHFNavsari)**	-
11.5.2.45	**Centre: Center of Excellence on PHT, Navsari**		
	Packaging studies of freshly roasted immature sorghum 'Sorghum Bicolor' seed (Pauk)	Approved with following suggestion/s 1. In place of glass jar, use PET jar. 2. Observations must be taken upto 2 months or till the product is acceptable. **(Action: I/c, CE on PHT, Navsari)**	-
11.5.2.46	Packaging and storage studies of drumstick *'Moringaoleifera'* and its pulp.	Approved with following suggestion/s: 1. Treatment T5, T6 should be removed for 6 cm size drumstick preservation. 2. Add above treatments for whole drumstick. 3. Take the observations of only moisture content, tenderness, organoleptic evaluation and microbial count.	-

		4. For pulp, study chemical spoilage and organoleptic evaluation. 5. Add one more treatment of shrinkage wrapping of 40 µ LDPE film. 6. For pulp, only tin can must be used. 7. Observations must be taken weekly. **(Action: I/c, CE on PHT, Navsari)**	
11.5.2.47	Design of Card Board box for Packaging of Kesar Mango	House suggested to drop the experiment due to existence of the design of such boxes in market. **(Action: I/c, CE on PHT, Navsari)**	-
11.5.2.48	**Centre: Department of Agricultural Engineering, NMCA, Navsari**		
	Determining feasibility of an on farm reservoir for rice based cropping system in south Gujarat under climatic change scenario	House approved the project. **(Action: I/c Prof.& Head, Dept. of Agril. Engg., NMCA, Navsari)**	-
11.5.2.49	Evaluation of the laser leveled land leveling technology on crop yield, water use productivity & growth of Banana crop in South Gujarat	Approved with following suggestion/s: 1. Leveling index must be calculated. 2. Slope is to be matched with the design of furrow irrigation. 3. Define whether blocked or open furrow. **(Action: I/c Prof.& Head, Dept. of Agril. Engg., NMCA, Navsari)**	-
11.5.2.50	**Centre: College of Agricultural Engineering and Technology, Dediapada**		
	Modeling yield and Evapotranspiration (*Oryza sativa* L.) of rice as influenced by transplanting date and weather parameters	Approved with following suggestion/s: 1. Use software ORIZA instead of DSSAT 2. Weather parameters accounted to predict yield should be spelled. 3. Spell whether AET or PET modeling. **(Action: Dean, CAET, Dediapada)**	-
11.5.2.51	**Centre: College of Agriculture, Waghi**		
	Quantitative Determination of Soil Erosion and Prioritization of Micro-watersheds using Remote Sensing and GIS	Approved with following suggestion/s: 1. Use the software MUSLE in place of USLE. **(Action: Dean, College of Agriculture, Waghai)**	-
11.5.2.52	Assessment of Water Resources of Navsari and Dang Districts using water Quality Index and GIS	Approved with following suggestion/s: 1. Revise the title as "Assessment of quality and quantity ofWater Resources of Navsari and Dang Districts using GIS and water Quality Index. 2. In place of PRM and POM, use the words pre-monsoon and post-monsoon. **(Action: Dean, College of Agriculture, Waghai)**	-
11.5.2.53	**Centre: LPT, College of Veterinary Science & A.H., Navsari**		
	Studies on development of	Approved with following suggestion/s:	-

	burfi utilizing watermelon (*Citrullus lanatus*) rind	1. Remove the words 'Studies on' in the title. **(Action: Prof. & Head, Dept. of LPT, College of Veterinary Science & A.H., Navsari)**	

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

Sr. No.	Centre / Title	Suggestions	Remarks
	Centre: Center for PHT and Agro Industries, Sardarkrushinagar		
11.5.2.54	Dehydration of date palm halves using different drying methods	Approved with following suggestion/s: 1. Only two treatments have been suggested (i) Hot air dryer and (ii) Solar dryer as control. 2. Experiment to be taken with three loading rates, four levels of temperature and two levels of air flow rate. **(Action: Prof. & Head, Centre for PHT & AI, Sardarkrushinagar)**	Looking to the facilities available in the College three levels of temperature and one level of air flow rate may please be incorporated.
Centre: Center for watershed mgmt. participatory research & rural engineering, SKNagar			
11.5.2.55	Enhancing RWUE of castor crop with use of hydrogel under dryland condition	Approved with following suggestion/s: 1. In title RWUE shall be expanded. **(Action: Research Scientist, CWMPR & RE, Sardarkrushinagar)**	-
	Center: College of Renewable Energy & Environmental Engineering, SKNagar		
11.5.2.56	Techno-economic feasibility of Solar Water Pumping System in Northern Part of Gujarat, India	Approved with following suggestion/s: 1. Evaluate techno economic feasibility of solar system in farmer fields. 2. How much crop area will be covered under surface and drip should be mentioned. 3. Mention auxiliary water storage structure, if any. **(Action: Dean, College of RE & EE, Sardarkrushinagar)**	-
11.5.2.57	Design & Development of dual axis solar tracker for photo-voltaic panel	House suggested to drop the experiment. **(Action: Dean, College of RE & EE, Sardarkrushinagar)**	-
11.5.2.58	Performance Assessment of Prototype Savonius Wind Turbine in Low Speed Wind Tunnel	Approved with following suggestion/s: 1. Recast title as 'Design and development of Prototype Savonius Wind Turbine'. **(Action: Dean, College of RE & EE, Sardarkrushinagar)**	-
11.5.2.59	Design and Development of Prototype Kitchen Waste Based Fiber Rigid	House suggested to dropthe project and suggested to continue same project at university level. **(Action: Dean, College of RE & EE,**	-

	Plastic (FRP) Biogas Plant	**Sardarkrushinagar)**	
	Center: Shree G N Patel College of Dairy Science and Food Tech., Sardarkrushinagar		
11.5.2.60	Utilization of Milk fat fractions in Selected Bakery products	Approved with following suggestion/s: 1. Procure AMF from market. 2. Use high melting & medium melting triglycerides instead of low melting. **(Action: Dean, DS & FT, SKNagar)**	-
	Centre: College of Veterinary Science and Animal Husbandry, SKNagar		
11.5.2.61	Development of yoghurt from goat milk by selected lactic acid bacteria	House approved the project. **(Action: Prof. & Head,Dept. of LPT, College of Veterinary Science and Animal Husbandry, SKNagar)**	-
	Center: ASPEE College of Home Science and Nutrition, Sardarkrushinagar		
11.5.2.62	Development of value added nutritious biscuits by incorporation of *Ber* Fruit Crush	Approved with following suggestion/s: 1. Recast title as 'Development of value added nutritious biscuits by incorporation of macerated*Ber* Fruit'. **(Action: Dean, ASPEE College of Home Science and Nutrition, SKNagar)**	-
	Center: College of Horticulture, SDAU, Jagudan		
11.5.2.63	Design, Development & evaluation of lemon harvesting device	House suggested to drop the experiment since it has already beendeveloped by JAU. **(Action: Dean, College of Horticulture, SDAU, Jagudan)**	-

11.5.3 General Suggestions

A. Scientists having more numbers of recommendations/ new technical programs should be allowed/ deputed to the combined joint AGRESCO meeting.

B. The process followed during experimentation should be simple and commercially feasible so as to help in faster adoption of the recommendations.

11.6 BASIC SCIENCE & HUMANITIES / BASIC SCIENCE / PLANT PHYSIOLOGY, BIO-CHEMISTRY AND BIOTECHNOLOGY

Chairman	:	Dr. C. J. Dangaria, Hon'ble V.C., NAU
Co-Chairmen	:	Dr. S. R. Vyas, Dean, Basic Science, SDAU Dr. J. G. Talati, HoD, Bio-Chemistry, AAU
Rapporteurs	:	Dr. Sushil Kumar, AAU Dr. Diwakar Singh, NAU

The details of recommendations and new technical programmes presented, discussed and approved during the session are as under:

Universities	Recommendations				New Technical Programmes	
	Farming Community		Scientific Community			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU	1	1	3	3	8	8
JAU	4	4	5	5	9	9
NAU	-	-	3	3	10	10
SDAU	-	-	-	-	9	9
Total	**5**	**5**	**11**	**11**	**36**	**36**

11.6.1 RECOMMENDATIONS

A. FARMING COMMUNITY

ANAND AGRICULTURAL UNIVERSITY	
11.6.1.1	**Canopy manipulation to study yield and quality in Ashwagandha (*Withania somnifera*)**
	The farmers of middle Gujarat Agro-climatic zone-III growing ashwagandha crop are recommended for canopy manipulation of 50% leaf removal randomly at 75 days after sowing for getting higher dry quality root yield as well as net return
	મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૩ ના અશ્વગંધા પાકનું વાવેતર કરતા ખેડૂતોને વધુ ગુણવત્તા સભર મૂળનું ઉત્પાદન અને ચોખ્ખો નફો મેળવવા પાકની વાવણી બાદ ૭૫ દિવસે ૫૦% પાંદડા યદ્દચ્છ રીતે ચુટીં કાઢવાની ભલામણ કરવામાં આવે છે. **(Action: Res. Sci., Medicinal and Aromatic Crop Res. Station, AAU, Anand)**
JUNAGADH AGRICULTURAL UNIVERSITY	
11.6.1.2	**Effect of Brassinolide foliar spray on yield and yield attributing characters of wheat**
	The farmers of South Saurashtra Agro-climatic Zone growing wheat under irrigated condition are recommended to spray growth promoter Brassinolide (BS) @ 0.01mgL^{-1} (12.5 ml Brassinolide dissolved in 5 litres water, from which 150 ml is taken and diluted to 15 litres solution) at milk dough stage to obtain higher grain yield and net return.
	દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારમાં પિયત ઘઉંનું વાવેતર કરતા ખેડૂતોને વધારે ઉત્પાદન અને આર્થિક વળતર મેળવવા માટે ઘઉંમાં દૂધિયા દાણાની અવસ્થાએ ૦.૦૧ મિલીગ્રામ/લિટર ૦.૦૪ % w/w (૧૨.૫ મિલી લિટર બ્રાસિનોલાઇડ લઇ ૫ લિટર પાણીમાં ઓગાળી, તેમાંથી ૧૫૦ મિલીલિટર

	લઇ ૧૫ લિટર દ્રાવણ બનાવવું) વૃધ્ધિ વર્ધક બ્રાસિનોલાઇડનો છંટકાવ કરવાની ભલામણ કરવામાં આવે છે. **(Action: Prof. and Head, Dept. of Genetics and Plant Br., CoA, JAU, Junagadh)**
11.6.1.3	**Response of sesame (*Sesamum indicum* L.) to growth regulators**
	The farmers of North Saurashtra Agro-climatic Zone growing sesame in *kharif* season are recommended for foliar spray of Indole Acetic Acid (IAA) 100 ppm (1 gram/10 liter water) at flowering stage for obtaining higher yield and net return.
	ઉત્તર સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તાર (ખેત આબોહવાકીય પરિસ્થિતિ–૬)માં ખરીફ ઋતુમાં તલનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે તલના પાકમાં ઈન્ડોલ એસેટીક એસીડ (આઈ.એ.એ.)૧ ગ્રામ પ્રતિ ૧૦ લિટર પાણીમા (૧૦૦ પી.પી.એમ. ના) દ્રાવણનો ફૂલ આવવાની અવસ્થાએ છંટકાવ કરવાથી વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવી શકાય છે. **(Action: Res. Sci. (Dry Farming), Dry Farming Res. Station, JAU, Targhadia)**
11.6.1.4	**Effects of foliar application of organic and inorganic substances on the yield of chick pea (GJG-3) under limited water supply**
	The farmers of North Saurashtra Agro-climatic Zone (AES-VI) growing chickpea (Var.GJG-3) in *rabi* season are recommended to apply two irrigation (one at flowering and second at pod development stage) along with recommended dose of fertilizer (20:40 NP kg/ha) and foliar application of KNO_3 @ 2 per cent twice at flowering and pod development stages for obtaining higher yield and maximum net return.
	ઉત્તર સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તાર (ખેત આબોહવાકીય પરિસ્થિતિ–૬) માં રવિ ઋતુમાં ચણા (ગુજ. જૂનાગઢ ચણા–૩)નું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે ચણામાં બે પિયત (પ્રથમ ફુલ આવવાના સમયે અને બીજુ પોપટાના વિકાસના તબકકે) આપવાની સાથે પોટેશિયમ નાઇટ્રેટ ૨ ટકા દ્રાવણના બે છંટકાવ (પ્રથમ ફુલ આવવાના અને બીજુ પોપટાના વિકાસના સમયે) કરવાથી વધુ ઉત્પાદન અને વધુ ચોખ્ખી આવક મેળવી શકાય છે. **(Action: Res. Sci. (Dry Farming), Dry Farming Res. Station, JAU, Targhadia)**
11.6.1.5	**Effect of foliar spray of plant growth retardants on growth and yield parameters of kharif groundnut**
	The farmers of South Saurashtra Agro-climatic Zone growing *kharif* groundnut are recommended for foliar spray of cycocel (50 % SL) @ 1000 ppm (2.0 ml/lit) at 30 Days after sowing (DAS) or foliar application of paclobutrazol (23 % w/w SC) @ 500 ppm (2.5 ml/lit) at 60 DAS to suppress the excess vegetative growth and to get higher pod yield and net return.
	દક્ષિણ સૌરાષ્ટ્ર ખેત–આબોહવાકિય વિસ્તારના ચોમાસુ મગફળી ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે વધુ પડતી વાનસ્પતિક વૃધ્ધિ અટકાવવા તથા વધુ ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે વાવણી બાદ ૩૦ દિવસે ૧૦૦૦ પી.પી.એમ. (૨ મિલીલિટર પ્રતિ લિટર) સાઈકોસીલ (૫૦ % એસ.એલ.) અથવા ૬૦ દિવસે ૫૦૦ પી.પી.એમ. (૨.૫ મિલીલિટર પ્રતિ લિટર) પેકલોબ્યુટ્રાઝોલ (૨૩ % ડબલ્યુ/ડબલ્યુ એસ.સી.) ના દ્રાવણનો છંટકાવ કરવો. **(Action: Res. Sci. (G'nut), Main Oilseed Research Station, JAU, Junagadh)**
NAVSARI AGRICULTURAL UNIVERSITY	
	Nil
SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY	
	Nil

B. SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY	
11.6.1.6	**Mining and validation of EST-SSR for gum (Galactomannan) in Guar**

	There is narrow genetic base and low genetic variability in cultivated varieties of cluster bean (guar) for gum content as revealed by EST-SSR markers and thus there is need to create variability artificially and further assess it in germplasm through Genomic-SSR markers. **(Action: Research Scientist, Agril. Biotechnology, AAU, Anand)**
11.6.1.7	**Mining and validation of EST-SSR for fibre development in Cotton**
	EST-SSR markers associated with fibre quality traits can easily distinguish *Gossypium herbaceum* from *Gossypium arboreum* and thus can be successfully utilized for identification of interspecific hybrids between these two species followed by their use in marker assisted breeding of desi cotton. **(Action: Research Scientist, Agril. Biotechnology, AAU, Anand)**
11.6.1.8	**Effect of Benzyl adenine (BA) on water deficit stress in wheat seedling**
	It is recommended that to avoid adverse effects of drought stress, wheat seeds should be pre-soaked with 100 ppm benzyladenine for 6 hours to retain higher drought tolerant molecules such as relative water content, total chlorophyll, and total carotenoids with low membrane injury at seven days after germination. **(Action: Prof. & Head, Biochemistry Dept., BACA, AAU, Anand)**
JUNAGADH AGRICULTURAL UNIVERSITY	
11.6.1.9	**Biochemical Characterization of *Trichoderma* spp. for Inhibition of *Macrophomina phaseolina* causing Root Rot in Castor**
	It is recommended to the scientific community that among seven *Trichoderma* spp., *T. koningi* MTCC 796 was found the best antagonist to inhibit the growth of pathogen *Macrophomina phaseolina* followed by *T. harzianum* NABII Th 1 on PDA media. Cell wall degrading enzymes - chitinase and β-1, 3 glucanase are positively correlated to inhibit *in vitro* growth of fungal pathogen *M. phaseolina*. Two species specific SCAR primers, JAU-KON856-4 (F:5'ACCTTTCTGTCACTGCCCTG3'; R:5'AGGAGAAAGGAGTGGTCGGT3') for *T. koningii* MTCC 796 and JAU-HAR395-3 (F:5'CTTTTGGTTTGACACGGTTCT3'; R:5'AAGCTTTGAAGTTGCGAGGA3') for *T. harzianum* NABII Th 1, were developed from sequenced, species specific, RAPD bands of OPA16. These two SCAR markers identified best antagonists inhibiting test pathogen *M. phaseolina.* **(Action: Prof. & Head, Dept. of Biochemistry & Biotech., CoA, JAU, Junagadh)**
11.6.1.10	**QTL mapping and development of SCAR marker for Fusarium wilt (*Fusarium oxysporum* f. sp. *ricini*) in Castor**
	JAUC1 to JAUC5 series of primers can be used in castor breeding programme to identify Fusarium wilt resistant genotypes in Marker Assisted Selection (MAS) or Marker Assisted Backcrossing (MAB). **Action: Prof. & Head, Dept. of Biochemistry & Biotech., CoA, JAU, Junagadh)**
11.6.1.11	**Sex Determination of Papaya (*Carica papaya*) through Molecular Markers**
	The scientific community involved in papaya improvement are recommended to use JAUP1 to JAUP4 series of primers for sex determination at pre-flowering stage in '*Madhubindu'* variety of papaya. **Action: Prof. & Head, Dept. of Biochemistry & Biotech., CoA, JAU, Junagadh)**
11.6.1.12	**QTL mapping and development of SCAR marker for *Macrophomina* root rot in Castor**
	JAUC6 to JAUC10 series of primers can be used in castor breeding programme to identify root rot resistant genotypes in Marker Assisted Selection (MAS) or Marker Assisted Backcrossing (MAB). **Action: Prof. & Head, Dept. of Biochemistry & Biotech., CoA, JAU, Junagadh)**
11.6.1.13	**Yield assessment of some drought tolerant groundnut genotypes**
	It is recommended to the scientific community that the genotypes DRT-2004-7 and J-

	53 possessed drought tolerance under unirrigated condition. Both genotypes recorded higher pod, haulm and biological yield. Harvest index and partitioning to pod were also highest along with high LAI and number of nodules at 70 DAS, thereby having better assimilation of photosynthates towards sink under rainfed condition. These genotypes may be used as parents in breeding programme for development of drought tolerant varieties. **(Action: Res. Sci. (G'nut), Main Oilseeds Research Station, JAU, Junagadh)**
NAVSARI AGRICULTURAL UNIVERSITY	
11.6.1.14	**Screening of cotton genotypes for water stress tolerance**
	Cotton entries GSHV-162 and H-1454/12 were found drought tolerant, whereas RHC-0717 and BS-79 were found drought susceptible based on physiological parameters, yield stability index, drought susceptibility index, root length and yield related factors. **(Action: Research Scientist, MCRS, NAU, Surat)**
11.6.1.15	**Characterization of pectate lyase in banana**
	Best stage for maximum recovery of pectate lyase (PEL) enzyme from G-9 variety of banana pulp is 4 days after 5% etheral treatment. Optimum activity of PEL enzyme is obtained in 20mM sodium phosphate buffer at pH 8.5 and temperature 37oC. PEL enzyme activity was increased by two thiol group chemicals (cystine and cysteine at 5.0 mM concentration) and one metal ion i.e. Mg2+ as MgCl2 (0.6 mM concentration). Major inhibitors of PEL enzyme are phenolics (ferulic acid, caffeic acid, ρ-Coumaric acid and salicylic acid), reducing agents (ascorbic acid and sodium metabisulphite), thiol groups (β-ME and DTT) and metal ions (Ba2+, Co2+, Cu2+, Fe2+ and Zn2+), which may increase shelf life of banana variety G-9. **(Action: Prof. and Head, Dept. of Plant Molecular Biology and Biotechnology, ACHF, NAU, Navsari)**
11.6.1.16	**Effect of nano-micronutrients (Zn and Cu) on physiology and stevioside production in stevia**
	In the micropropagation of stevia, nano particles(< 50 nm) of ZnO (10 µM) and CuO (0.05 µM) can be incorporated in place of $ZnSO_4$ & CuSO4 in the MS medium for getting more number of shoots per culture, higher fresh weight, dry weight and stevioside content (1.40% FW). **(Action: Prof. and Head, Dept. of Plant Molecular Biology and Biotechnology, ACHF, NAU, Navsari)**
SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY	
	Nil

11.6.2 NEW TECHNICAL PROGRAMME

ANAND AGRICULTURAL UNIVERSITY

Sr. No.	Title / Centre	Suggestions	Remarks
11.6.2.1	**Centre: Regional Research Station, AAU, Anand**		
	Effect of different packaging materials and plant growth regulators on germinability and vigour of cotton (*Gossypium hirsutum* L)	---- **(Action: Research Scientist, RRS, AAU, Anand)**	Approved
11.6.2. 2	**Centre: Regional Research Station, AAU, Anand**		
	Effect of different	----	Approved

	packaging materials and plant growth regulators on germination and vigour of Green gram (*Vigna radiata* L. Wileczek.) Var. Meha.	**(Action: Research Scientist, RRS, AAU, Anand)**	
11.6.2. 3	**Centre: Department of Agril. Biotechnology, AAU, Anand**		
	Development of Single Nucleotide Polymorphisms in diploid Cotton (*Gossypium herbaceum*) through Genotyping-by-Sequencing (GBS) technique	Approved with following suggestion/s 1. Mention the number of genotypes and criteria of genotype selection. **(Action: Research Scientist, Agril. Biotechnology, AAU, Anand)**	Approved with suggestions
11.6.2. 4	**Centre: Department of Agril. Biotechnology, AAU, Anand**		
	Development and validation of highly sensitive LC-MS/MS method for plant metabolite quantification and confirmation.	Approved with following suggestion/s 1. Modify title as, "Development and validation of highly sensitive LC-MS/MS method for plant metabolite quantification and confirmation from medicinal and aromatic plants". **(Action: Research Scientist, Agril. Biotechnology, AAU, Anand)**	Approved with suggestions
11.6.2. 5	**Centre: Department of Agril. Biotechnology, AAU, Anand**		
	Isolation and validation of root knot nematode disease resistance *Mi* gene from tomato cultivar SL-120	---- **(Action: Research Scientist, Agril. Biotechnology, AAU, Anand)**	Approved
11.6.2. 6	**Centre: Department of Agril. Biotechnology, AAU, Anand**		
	Identification of QTL conferring nematode resistance in tomato	Approved with following suggestion/s 1. Mention the type of crosses to be made (inter or intra species). **(Action: Research Scientist, Agril. Biotechnology, AAU, Anand)**	Approved with suggestions
11.6.2. 7	**Centre: Plant Tissue Culture Lab, Department of Agril. Biotechnology, AAU, Anand**		
	Development of molecular markers for clonal fidelity testing of tissue culture raised plants of date palm (*Phoenix dactylifera* L.) Variety Barhee.	---- **(Action: Research Scientist, Plant Tissue Culture Lab, Agril. Biotechnology, AAU, Anand)**	Approved
11.6.2. 8	**Centre: Dept. of Biochemistry, BACA, AAU, Anand**		
	Assessment of different Soybean genotypes for biochemical and metabolite variability	Approved with following suggestion/s 1. Modify the title as, "Assessment of different	Approved with suggestions

		Soybean genotypes for biochemical variability". **(Action: Prof. & Head, Dept. of Biochemistry, BACA, AAU, Anand)**	

JUNAGADH AGRICULTURAL UNIVERSITY

11.6.2.9	**Centre: Department of Genetics and Plant Breeding, JAU, Junagadh**		
	Effect of pre-sowing treatment on germination and vigour of Ashwagandha (*Withania somnifera* L. Dunal.)	Approved with following suggestions. 1. Mention dry root/shoot ratio in analysis. 2. Use word "repetition" instead of "replication". **(Action: Professor and Head, Dept. of Genetics and Pl. Br., CoA, JAU, Junagadh)**	Approved with suggestions
11.6.2.10	**Centre: Department of Genetics and Plant Breeding, JAU, Junagadh**		
	Effect of pre-treatment of seeds on seed emergence and seedling vigour of coriander (*Coriandrum sativum* L.)	Approved with following suggestions. 1. Mention 12 hours instead of overnight. 2. Include one biochemical parameter each for germination and growth, in observations to be recorded. **(Action: Prof. and Head, Dept. of Genetics and Pl. Br., CoA, JAU, Junagadh)**	Approved with suggestions
11.6.2.11	**Centre: Department of Biochemistry and Biotechnology, JAU, Junagadh**		
	Phytochemical, antidiabetic and molecular characterization of custard apple (*Annona squamosa* L.) genotypes.	**----** **(Action: Prof. and Head, Dept. of Biochemistry and Biotechnology, CoA, JAU, Junagadh)**	Approved
11.6.2.12	**Centre: Department of Biochemistry and Biotechnology, JAU, Junagadh**		
	Qualitative and nutritional evaluation of promising genotypes of groundnut.	Approved with following suggestion. 1. Include fibre content in biochemical analysis. **(Action: Prof. and Head, Dept. of Biochemistry and Biotechnology, CoA, JAU, Junagadh)**	Approved with suggestion
11.6.2.13	**Centre: Department of Biochemistry and Biotechnology, JAU, Junagadh**		
	Genome sequencing of pathogenic *Macrophomina phaseolina* isolated from castor.	**----** **(Action: Prof. and Head, Dept. of Biochemistry and Biotechnology, CoA, JAU, Junagadh)**	Approved
11.6.2.14	**Centre: Pearl millet Research Station, JAU, Jamnagar**		
	Varietal characterization in pearl millet on the basis of	**----** **(Action: Res. Sci. (Pearl millet),**	Approved

	root shoot traits.	**Pearl millet Research Station, JAU, Jamnagar**)	
11.6.2.15	**Centre: Pearl millet Research Station, JAU, Jamnagar**		
	Physiological mechanism of drought tolerance in pearl millet at early seedling stage using PEG	**----** **(Action: Res. Sci. (Pearl millet), Pearl millet Research Station, JAU, Jamnagar**)	Approved
11.6.2.16	**Centre: Dry Farming Research Station, JAU, Targhadia**		
	Effect of growth regulator, organic and inorganic foliar nutrition on the growth and yield of black gram (*Vigna mungo* L.) under rainfed condition.	**----** **(Action: Res. Sci. (Dry Farming), Dry Farming Research Station, JAU, Targhadia**)	Approved
11.6.2.17	**Centre: Cotton Research Station, JAU, Junagadh**		
	Influence of weather parameters on cotton (*Gossypium hirsutum* L.) phenology and seed cotton yield.	**----** **(Action: Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh**)	Approved

NAVSARI AGRICULTURAL UNIVERSITY

Sr. No.	Title / Centre	Suggestions	Remarks
11.6.2.18	**Centre: Principal and Dean, GABI, NAU, Surat**		
	Effects of water stress on critical stages of banana cultivar (*Musa acuminata* cv G-9)	Approved with following suggestion/s 1. Fourth open leaf from top should be used for biochemical analysis. 2. Include SOD enzyme in biochemical analysis. 3. Biochemical analysis should be carried out using standard procedures **(Action: Principal and Dean, GABI, NAU, Surat**)	Approved with suggestions
11.6.2.19	**Centre: Dept. of Plant Molecular Biology and Biotechnology, ACHF, NAU, Navsari**		
	Effects of Exogenous application of brassinosteroid on yield and quality of tomato (*Solanum lycopersicum* L.)	Approved with following suggestion/s 1. Replace ppm with mg l^{-1}. 2. Include SOD enzyme in biochemical analysis. 3. Mention Net and Gross plot size. 4. Experiment may be modified to include additional variety and reduce number of sprays after reviewing first year results, if necessary. **(Action: Prof. and Head, Dept. of**	Approved with suggestions

		Plant Molecular Biology and Biotech., ACHF, NAU, Navsari)	
11.6.2.20	**Centre: Dept. of Plant Molecular Biology and Biotechnology, ACHF, NAU, Navsari**		
	Effect of pre-harvest water stress on yield and post harvest quality of cabbage (*Brassica oleraceae* var. *capitata* L.)	Approved with following suggestion/s 1. Include moisture content in biochemical analysis. 2. Include Net and Gross plot size. 3. Replace "water content" by "water quantity" **(Action: Prof. and Head, Dept. of Plant Molecular Biology and Biotech., ACHF, NAU, Navsari**)	Approved with suggestions
11.6.2.21	**Centre: GABI, NAU, Surat**		
	Structural and functional studies of NAL1 Protein using Bioinformatics approach in various cereal crops	Approved with following suggestion/s 1. Modify title as, "*In-silico* studies of NAL1 Protein using Bioinformatics approach in various cereal crops". 2. Include minor millet and pearl millet in the study, if genome sequence information is available. **(Action: Principal and Dean, GABI, NAU, Surat**)	Approved with suggestions
11.6.2.22	**Centre: Dept. of Plant Molecular Biology and Biotechnology, ACHF, NAU, Navsari**		
	Microspore culture in eggplant for crop improvement	Approved with following suggestion/s 1. Mention year and season wise programme. 2. Include the following in objectives: - Development of double haploids (DH) after colchicine treatment. **(Action: Prof. and Head, Dept. of Plant Molecular Biology and Biotech., ACHF, NAU, Navsari**)	Approved with suggestions
11.6.2.23	**Centre: GABI, NAU, Surat**		
	Isolation and Characterization of endophytic bacterium from various plants	Approved with following suggestion/s 1. Submit isolated new bacterial cultures for identification at MTCC, Chandigarh. 2. Mention the plant parts from where samples are to be	Approved with suggestions

		collected. **(Action: Principal and Dean, GABI , NAU, Surat)**	
11.6.2.24	**Centre: GABI, NAU, Surat**		
	Molecular Variability of *Trichogramma chilonis* strains	---- **(Action: Principal and Dean, GABI , NAU, Surat)**	Approved
11.6.2.25	**Centre: MCRS, NAU, Surat**		
	Identification and validation of molecular marker linked to Genetic male sterility in cotton (*G. hirsutum*)	---- **(Action: Research Scientist (Cotton), MCRS, NAU, Surat)**	Approved
11.6.2.26	**Centre: Food Quality Testing Laboratory, NAU, Navsari**		
	Exploring microbes for their siderophore production and their biocontrol potential	---- **(Action: Professor & Head, Food Quality Testing Laboratory, NAU, Navsari)**	Approved
11.6.2.27	**Centre: Food Quality Testing Laboratory, NAU, Navsari**		
	Exploring microbes for their exopolysaccharides (EPS) production	Approved with following suggestion/s 1. Modify the title as, "Exploring microbes for exopolysaccharides (EPS) production". 2. Mention the source of water and site of soil collection. **(Action: Professor & Head, Food Quality Testing Laboratory, NAU, Navsari)**	Approved with suggestions

SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

Sr. No.	Title / Centre	Suggestions	Remarks
11.6.2.28	**Centre: Central Instrumentation Laboratory, SDAU, S K Nagar**		
	Identification of putative target genes for Iron and Zinc concentrations in bread wheat	Approved with following suggestion/s 1. Modify the title as, "Real time expression analysis of genes for iron and zinc concentration in wheat". 2. Contrast genotypes should be identified on the basis of biochemical analysis for Fe and Zn followed by RT-PCR analysis with 2 or 3 genotypes only. **(Action: Professor, I/C Central Instrumentation Laboratory, SDAU, S K Nagar)**	Approved with suggestions
11.6.2.29	**Centre: College of Basic Science & Humanities, SDAU, S. K. Nagar**		
	Elucidation of antioxidant potentials of Custard Apple.	Approved with following suggestion/s	Approved with

		1. In methodology, mention appropriate stage of fruit harvest like, physiological maturity stage. 2. In observation also include seed to pulp ratio. 3. Include total phenols in biochemical analysis. 4. Mention the period of storage. **(Action : Dean, College of Basic Science & Humanities, SDAU, S. K. Nagar)**	suggestions
11.6.2.30	**Centre: College of Basic Science & Humanities, SDAU, S. K. Nagar**		
	Proteomics of buffalo milk fat globule membrane during different stages of lactation.	---- **(Action : Dean, College of Basic Science & Humanities, SDAU, S. K. Nagar)**	Approved
11.6.2.31	**Centre: College of Basic Science & Humanities, SDAU, S. K. Nagar**		
	Molecular characterization of wilt resistance in Cumin (*Cuminum cyminum* L.).	Approved with following suggestion/s 1. Modify the title, as "Induced mutagenesis and molecular characterization of wilt resistant Cumin (*Cuminum cyminum* L.). 2. Use high yielding genotype for mutagenesis. 3. Screening and selection should be at M_3 generation without any selection pressure (without disease inoculation). 4. Select superior 50 mutants from M_3 followed by their molecular characterization. **(Action : Dean, College of Basic Science & Humanities, SDAU, S. K. Nagar)**	Approved with suggestions
11.6.2.32	**Centre: College of Basic Science & Humanities, SDAU, S. K. Nagar**		
	Development of microbial consortium for growth promotion of Cumin GC-4 plant.	Approved with following suggestion/s 1. Microbial characterization of PGPR should be carried out as per standard procedures. 2. Finalize and implement the programme in consultation with Dr. R.V. Vyas, Professor and Head, Department of Agri. Microbiology, AAU, Anand. **(Action : Dean, College of Basic**	Approved with suggestions

		Science & Humanities, SDAU, S. K. Nagar)	
11.6.2.33	**Centre: Dept. of Genetics and Pl. Breeding, CPCA, SDAU, S. K. Nagar**		
	Identification of molecular marker for wilt resistance in castor *(Ricinus communis* L)	Approved with following suggestion/s 1. Identify contrast castor genotypes (other than RG 2800 and JC 18) in consultation with Research Scientist, Castor and Mustard, SDAU, SK Nagar. **(Action : Professor & Head, Dept. of Genetics and Pl. Breeding, CPCA, SDAU, S. K. Nagar)**	Approved with suggestions
11.6.2.34	**Centre: Castor & Mustard Research Station, SDAU, S. K. Nagar**		
	Evaluate yield performance of Castor in relation to bud topping agro-technique and harvesting of spikes at different maturity stages.	Approved with following suggestion/s 1. Modify the title as, "Effect of harvesting of recemes at different maturity stages on yield performance in castor". 2. Remove T_1 treatment and also T_1 from T_3 treatment. 3. Rectify the spacing as per the recommendation. 4. Remove 1st observation related to bud topping. **(Action: Research Scientist, Castor & Mustard Research Station, SDAU, S. K. Nagar)**	Approved with suggestions
11.6.2.35	**Centre: Seed Spices & Referral Lab, SDAU, Jagudan**		
	Estimation of dithiocarbamate residues in cumin seed during storage period.	Approved with following suggestion/s 1. Under sample collection, mention "collection of farmer's stored seeds" instead of "farmer's field". 2. Collect current year fresh seeds only. **(Action: Res. Sci., Seed Spices & Referral Lab, SDAU, Jagudan.)**	Approved with suggestions
11.6.2.36	**Centre: Seed Spices & Referral Lab, SDAU, Jagudan**		
	Effect of physico-chemical treatment on germination of cumin seed.	Approved with following suggestion/s 1. Replace title of treatment T_1 as, "Pre-soaking of cumin seeds with organic solvents". 2. Mention the duration in T_2 and T_3 treatments. **(Action: Res. Sci., Seed Spices & Referral Lab, SDAU, Jagudan.)**	Approved with suggestions

11.6.3 General Suggestions

1. The new technical programmes and recommendations should be submitted in the prescribed format only.
2. The text in report and presentation should be similar.
3. In case of recommendation for scientific community avoid use of words, “It is recommended to/for”.
4. In future technical programmes concentration of chemicals should be given in M (Molar) concentration.
5. Action taken reports of recommendations as well as new technical programmes should be submitted by the indicated Scientist / Unit Head through the Convener of the sub-Committee to the Director of Research of respective University.

11.7 SOCIAL SCIENCE

Chairman : Dr. Ashok Patel, Hon'ble VC, SDAU
Co-Chairman : Dr. P. P. Patel, DEE, AAU
Rapporteurs : Dr. R. S. Pundir, AAU
: Dr. R. D. Pandya, NAU

The details of recommendations and new technical programmes presented, discussed and approved during the session are as under:

Name of University	Recommendations				New Technical Programmes	
	Farming Community		Scientific Community			
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU	-	-	4	3	44	44
JAU	-	-	-	-	7	7
NAU	2	0	6	3	32	32
SDAU	-	-	-	-	30	30
Total	2	0	10	6	113	113

11.7.1 RECOMMENDATIONS

A. FARMING COMMUNITY

Two recommendations were proposed by NAU, Navsari and both were not approved.

B. SCIENTIFIC COMMUNITY

Out of ten recommendations, six recommendations were approved which are given below.

Anand Agricultural University

11.7.1.1 The yard stick of CV% for accepting the results of Medicinal and Aromatic crop experiments

The yard stick of CV% for accepting the results of Medicinal and Aromatic crop experiments is 23 per cent for economic characters at Anand.

(Action: Prof. & Head, Dept. of Agri. Stat., BACA, AAU, Anand)

11.7.1.2 The Scale to measure attitude of extension functionaries towards ATMA

The following scale to measure attitude of extension functionaries towards ATMA is recommended :

No	Statements	Responses & Scoring				
		SA	A	UN	DA	SDA
1	I think that ATMA is the perfect platform to coordinate agricultural research and extension activities at district level. (+) મને લાગે છે કે જિલ્લા કક્ષાએ કૃષિ સંશોધન અને વિસ્તરણ પ્રવૃત્તિઓના સમન્વય માટે 'આત્મા' આદર્શ મંચ છે.	5	4	3	2	1
2	I think that ATMA is impractical way to develop rural India.(-) હું માનું છું કે 'આત્મા' ગ્રામીણ ભારતનાં વિકાસ માટે કામ કરવાની અવ્યવહારુ પદ્ધતિ છે.	1	2	3	4	5
3	I believe ATMA is in real sense bottom-up approach to develop rural India. (+) હું માનું છું કે 'આત્મા' વાસ્તવિક અર્થમાં ગ્રામીણ ભારતનાં વિકાસના કાર્યોમાં	5	4	3	2	1

		હિસ્સેદારીની દ્રષ્ટિએ પાયાનાં સ્તરથી શરુ થઈ ઉપરનાં સ્તરે પહોંચતો અભિગમ છે.					
	4	I believe that ATMA means too many cooks spoil the broth. (-) મને લાગે છે કે 'આત્મા' એટલે ઝાઝા રસોઈયાઓ રસોઈ બગાડે તેવી વ્યવસ્થા છે.	1	2	3	4	5
	5	I feel that ATMA is an ideal instrument for the development of district. (+) મને લાગે છે કે 'આત્મા' જિલ્લાના વિકાસ માટે એક આદર્શ માધ્યમ છે.	5	4	3	2	1
	6	I feel that ATMA creates conflicts among neighbouring farmers. (-) હું માનુ છું 'આત્મા' ખેડૂતોમાં અંદરોઅંદર મતભેદો ઉભા થાય તેવો અભિગમ છે.	1	2	3	4	5
	7	ATMA in real sense is a decentralized model of development. (+) સાચા અર્થમાં 'આત્મા' વિકાસ માટેની એક વિકેન્દ્રિત વ્યવસ્થા પદ્ધતિ છે.	5	4	3	2	1
	8	I feel that ATMA is more theoretical and less practical. (-) મને લાગે છે કે 'આત્મા' વધુ પડતો તર્ક આધારીત અને ઓછો વ્યવહારુ અભિગમ છે.	1	2	3	4	5
	9	I believe that ATMA is the best agency to encourage Farmer's Interest Groups. (+) હું માનુ છું કે આત્મા ખેડૂત હિત જૂથોને પ્રોત્સાહિત કરવા માટેનું શ્રેષ્ઠ માધ્યમ છે.	5	4	3	2	1
	10	I feel that ATMA is an effective attempt joining all the stakeholders to develop district. (+) મને લાગે છે કે 'આત્મા' કૃષિ અને સંલગ્ન હિસ્સેદારોના સહિયારા પ્રયાસ દ્વારા જિલ્લાના વિકાસ માટેનો અસરકારક પ્રયાસ છે.	5	4	3	2	1
		SA: Strongly Agree, **A**: Agree, **UN**: Undecided, **DA**: Disagree, **SDA**: Strongly Disagree					

Suggestion:

1. The house approved the recommendation for Gujarat State.

(Action: Prof. & Head, Dept. of Ext. Edu., BACA, AAU, Anand)

11.7.1.3 The scale to measure attitude of farmers toward Kankrej cow

The following scale to measure attitude of farmers toward Kankrej cow is recommended :

No	Statements	Responses & Scoring				
		SA	A	UN	DA	SDA
1	Adopting Kankrej cow is the wise approach to get better income. (+) સારી આવક મેળવવા માટે કાંકરેજ ગાયને અપનાવી એ ડહાપણભર્યો અભિગમ છે.	5	4	3	2	1
2	I understand that Kankrej cow keeping is expensive. (-) હું માનું છું કે કાંકરેજ ગાય રાખવી તે ખર્ચાળ બાબત છે.	1	2	3	4	5
3	I think that Kankrej is competent cow to get higher milk production. (+) મને લાગે છે કે કાંકરેજ ગાય વધારે દૂધ ઉત્પાદન આપતી સમર્થ ગાય છે.	5	4	3	2	1
4	I visualize limited scopes of Kankrej as compared to foreign breeds. (-) વિદેશી ઓલાદોની સરખામણીમાં કાંકરેજ ગાયનું કાર્યક્ષેત્ર	1	2	3	4	5

		મર્યાદિત છે તેમ હું સમજું છું.					
	5	I believe that Kankrej is the best dual purpose breed for milch and agricultural work. (+) હું માનું છુ કે કાંકરેજ દૂધ અને ખેતી એમ બેવડા કાર્યોમાં ઉપયોગમાં આવે તેવી શ્રેષ્ઠ ઓલાદ છે.	5	4	3	2	1
	6	I think raising Kankrej cow is practical only in the North Gujarat. (-) હું માનું છું કે કાંકરેજ ગાય રાખવી તે માત્ર ઉત્તર ગુજરાતમાં વ્યવહારુ છે.	1	2	3	4	5
	7	I think that wise animal keeper is one, who keeps Kankrej cow. (+) હું માનું છું કે દૂરંદેશી પશુપલક એ છે જે કાંકરેજ ગાય રાખે છે.	5	4	3	2	1
	8	I feel that raising Kankrej cow is feasible to even common farmer. (+) હું માનું છું કે કાંકરેજ ગાયનો ઉછેર દરેક પ્રકારના પશુપાલકો માટે કરવો શક્ય છે.	5	4	3	2	1
	SA: Strongly Agree, **A**: Agree, **UN**: Undecided, **DA**: Disagree, **SDA**: Strongly Disagree						
	Suggestion : 1. The house approved the recommendation for the areas having Kankrej cows. **(Action: Prof. & Head, Dept. of Ext. Edu., BACA, AAU, Anand)**						
NAVSARI AGRICULTURAL UNIVERSITY							
11.7.1.4	**Optimum plot size in banana crop**						
	For obtaining reasonable low C.V. % in Banana crop (cv. Grand Naine) experiment, it is advised to conduct field experiment with net plot size of 4.8 m x 2.4 m i.e. 2 x 2 plants when spacing is 2.4 m x 1.2 m for Navsari conditions. **(Action:- Associate Professor (Ag. Stat.), ACHF, NAU, Navsari)**						
11.7.1.5	**Uniformity trial in rainfed Pigeon Pea**						
	To achieve more precision in field experiment on rainfed pigeon pea (variety GT-1), scientists are advised to conduct their experiment with net plot size of 5.4 m × 4.8 m for AES-V of SGHRZ. **(Action: - Associate Professor (Ag. Stat.), CoA, NAU, Bharuch)**						
11.7.1.6	**Data mining approach for improvement in co-operative operations: A case of Amalsad co-operative with especial reference to Sapota value chain**						
	It is recommended to give feedback to respective AGRESCO subcommittee for developing appropriate package of practices to realize better prices of sapota during the months of December and January. **(Action:- Director of IT, NAU, Navsari)**						

11.7.2 NEW TECHNICAL PROGRAMMES

ANAND AGRICULTURAL UNIVERSITY

Sr. No.	Title/Centre	Suggestions	Remarks
11.7.2.1	**Centre:** Dept. of Ag. Eco., BACA, AAU		
	Socio-Economic Analysis of Agricultural Labourers in Anand and Dahod District of Central Gujarat	Accepted (Action: Prof. & Head, Dept. of Ag. Eco., BACA, AAU, Anand)	
11.7.2.2	**Centre:** Dept. of Ag. Eco., BACA, AAU		
	A Study of Minimum Support	Accepted	

	Price (MSP), Farm Harvest Price (FHP) and their Effect on Area of Major Oilseeds and Commercial Crops of Gujarat	(Action: Prof. & Head, Dept. of Ag. Eco., BACA, AAU, Anand)	
11.7.2.3	**Centre:** Principal, IABMI, AAU		
	A Study on Prospects and Problems of Fruit and/or Vegetables Exporters from Gujarat	Accepted with the suggestion that "or" word should be omitted. (Action: Principal, IABMI, AAU, Anand)	
11.7.2.4	**Centre:** Principal, IABMI, AAU		
	Export Potential and Trade Competitiveness of Cotton with Focus in Gujarat	Accepted with the suggestion that "with focus on Gujarat" words should be omitted. (Action: Principal, IABMI, AAU, Anand)	
11.7.2.5	**Centre:** Principal, IABMI, AAU		
	Marketing of Inland Fish in Anand District of Gujarat	Accepted (Action: Principal, IABMI, AAU, Anand)	
11.7.2.6	**Centre:** Dept. of DBM, SMCCDS, AAU		
	AICT Awareness among the Students of AAU coming from the Farming Community	Accepted (Action: Krunal Kamani, Asstt. Prof., and Dr. A. K. Makwana, Assoc. Prof., Dept. of DBM, SMCCDS, AAU, Anand)	
11.7.2.7	**Centre:** Hort. Wing, BACA, AAU		
	A study on the scale of finance of major crops of middle Gujarat	Accepted with the following suggestions: 1. Title should be changed to: "A study on the scale of finance of major crops in Anand and Vadodara districts of middle Gujarat" 2. Papaya crop should be omitted (Action: Dr. B. L. Dudhat, Asstt. Prof., Hort. Wing, BACA, AAU, Anand)	
11.7.2.8	**Centre:** FPT & BE, AAU		
	Evaluation of consumer perception towards ready-to-serve fruit-nut-milk based smoothie using concept testing technique	Accepted (Action: Dr. Samit Dutta, Asso. Prof., and Deval Patel, Asstt. Prof., FPT & BE, AAU, Anand)	
11.7.2.9	**Centre:** FPT & BE, AAU		
	Consumer response towards ready-to-eat food products in selected cities of Gujarat	Accepted with the following suggestions: 1 Name of cities and food products to be studied should be specified.	

		2 Convenient sampling method should be followed. (Action: Deval Patel, Asstt. Prof., FPT & BE, AAU, Anand)	
11.7.2.10	**Centre:** FPT & BE, AAU		
	Optimization of daily nutritional balanced diet chart for adults (men and women) in selected villages of Anand District	Accepted (Action: Dr. S. K. Meher, Asstt. Prof., FPT & BE, AAU, Anand)	
11.7.2.11	**Centre:** FPT & BE, AAU		
	Study of supply chain of selected vegetables in domestic market	Accepted (Action: Er. K. V. Vala, Asstt. Prof., FPT & BE, AAU, Anand)	
11.7.2.12	**Centre:** ARS, Jabugam, AAU		
	An Economic Analysis of Watermelon in Orsang River Bed area of Chhotaudepur District of Middle Gujarat	Accepted with suggestion that the title of the study should be: An Economic Analysis of Watermelon and muskmelon in Orsang River Bed area of Chhotaudepur District of Middle Gujarat (Action: Mr. H. C. Parmar, Astt. Prof., ARS, AAU, Jabugam)	
11.7.2.13	**Centre:** Dept. of Ag. Stat., BACA, AAU		
	Study on variability in field experiments of Bhal and Coastal Zone crops (Arnej and Dhandhuka)	Accepted (Action: Prof. & Head, Dept. of Ag. Stat., BACA, AAU, Anand)	
11.7.2.14	**Centre:** Dept. of Ag. Stat., BACA, AAU		
	Comparison of selection indices using different weights for biometrical characters in forage crops	Accepted (Action: Prof. & Head, Dept. of Ag. Stat., BACA, AAU, Anand)	
11.7.2.15	**Centre:** Dept. of Ag. Stat., BACA, AAU		
	Development of forewarning model for pests of cotton using different statistical methods	Accepted (Action: Prof. & Head, Dept. of Ag. Stat., BACA, AAU, Anand)	
11.7.2.16	**Centre:** Dept. of Ag. Stat., BACA, AAU		
	Modernization of In-House Statistical Programs for Contemporary Computing Environment	Accepted with the suggestion that computer language should be specified. (Action: Prof. & Head, Dept. of Ag. Stat., BACA, AAU, Anand)	
11.7.2.17	**Centre:** Dept. of Ag. Met., BACA, AAU		
	Prediction of Monthly Rainfall of Anand by Double Fourier series (DFS)	Accepted (Action: Dr. Manjusha Kulshrestha, Dept. of Ag. Met., BACA, AAU, Anand)	

11.7.2.18	**Centre:** MRRS, Nawagam, AAU		
	Application of AMMI model in rice	Accepted (Action: Dr. A. N. Khokhar, Assoc. Res. Sci., MRRS, AAU, Nawagam)	
11.7.2.19	**Centre:** Dept. of Ext. Edu., BACA, AAU		
	Development and standardization of scale to measure the attitude of farmers towards Farmers Interest Group (FIG)	Accepted (Action: Prof. & Head, Dept. of Ext. Edu., BACA, AAU, Anand)	
11.7.2.20	**Centre:** Dept. of Ext. Edu., CVS & AH, AAU		
	Study on adoption of package of practices for dairy animals in Ahmedabad district	Accepted (Action: Dr. A. C.Vaidya, Assoc. Prof. & Head, Dept. of Ext. Edu., CVS & AH, AAU, Anand)	
11.7.2.21	**Centre:** IDE, AAU		
	Attitude of rural youths towards application of distance education in vocational agricultural education	Accepted (Action: The Director, IDE, AAU, Anand)	
11.7.2.22	**Centre:** PFS & HE, AAU		
	Assessment of Nutritional status of ICDS (Integrated Child Development Services) beneficiary children less than 6 years of age	Accepted (Action: Smt. H. H. Chawda, Assoc. Prof. PFS & HE, AAU, Anand)	
11.7.2.23	**Centre:** Poli. Agri., Vaso, AAU		
	Information needs of Potato growers of Kheda and Anand Districts of Gujarat state	Accepted (Action: Dr. A. R. Makwan and Dr. B. M. Christian, Asstt. Educationists, Poli. Agri., AAU, Vaso)	
11.7.2.24	**Centre:** EEI, AAU		
	Development and Standardization of Scale to Measure Attitude of Extension Personnel towards Training Programmes Organized by EEI, Anand	Accepted (Action: Dr. C. P. Desai, Ext. Educationist and Dr. A. C. Patel, Assoc. Ext. Educationist, EEI, AAU, Anand)	
11.7.2.25	**Centre:** EEI, AAU		
	Evaluation of training programmes conducted by EEI, Anand	Accepted (Action: Dr. M. R. Patel, Assoc. Prof., and and Dr. A. A. Patel, EEI, AAU, Anand)	
11.7.2.26	**Centre:** EEI, AAU		
	Skill acquired by the participants regarding use of PRA tools during the training	Accepted (Action: Dr. A. A. Patel, Director, EEI, AAU, Anand)	

	programme conducted by EEI Anand		
11.7.2.27	**Centre:** EEI, AAU		
	Attitude of Extension Functionary towards Agricultural FM radio	Accepted (Action: Prof. B. D. Patel, Asstt. Ext. Educationist, EEI, AAU, Anand)	
11.7.2.28	**Centre:** DoEE, AAU		
	Content analysis of Anand Agricultural University Research Recommendations for farmers (Year 2004-2014)	Accepted with suggestion that title should be: "Content analysis of farmers' research recommendations of Anand Agricultural University (Year 2004-2014)" (Action: Dr. B. S. Patel, Training Asso. (Agro.) & Dr. H. B. Patel, Asso. Ext. Educationist, DoEE, AAU, Anand)	
11.7.2.29	**Centre:** SSK, DOEE, AAU		
	Study on assessment of skill of the farmers on important aspects related to tissue cultured raised banana	Accepted (Action: Dr. M. R. Patel, Asstt. Ext. Educationist (Info.), SSK, DOEE, AAU, Anand)	
11.7.2.30	**Centre:** R.B.R.Unit, College of Vet. Sci. & AH, AAU		
	Conservation of Surti Buffalo population by creating awareness in breeders	Accepted (Action: Dr. Ankita Killedar, Res. Sci. & Head, R.B.R.Unit, College of Vet. Sci. & AH, AAU, Anand)	
11.7.2.31	**Centre:** Training centre, College of Agri., Jabugam, AAU		
	Perception of UG students of agricultural faculty about educational environment of AAU	Accepted (Action: Dr. S. R. Patel, Assoc. Prof., Training centre, College of Agri., AAU, Jabugam)	
11.7.2.32	**Centre:** KVK, Arnej, AAU		
	Health Awareness of Rural Adolescent Girls of Adopted Villages of KVK Arnej: An Intervention Study	Accepted with following suggestions: 1. The title should be : Health Awareness among Rural Adolescent Girls in Adopted Villages of KVK Arnej: An Intervention Study 2. The third objective should be: To study the impact of health awareness interventions regarding health aspects of the adolescent girls (Action: Dr. Gayatree R. Jadeja, SMS (HS), KVK, AAU, Arnej)	
11.7.2.33	**Centre:** KVK, AAU		
	Knowledge and adoption of Banana Production Technology by Banana growers in Anand district	Accepted (Action: Dr. G. G. Patel, Prog. Co-ordinator, KVK, AAU, Devataj)	

11.7.2.34	**Centre:** KVK, AAU		
	Knowledge and adoption regarding use of bypass fat in livestock feeding	Accepted (Action: Dr. S. B. Katole, SMS, KVK, AAU, Devataj)	
11.7.2.35	**Centre:** KVK, Mangal Bharati, Golagamdi, Dist-Vadodara		
	Knowledge and adoption of improved animal husbandry practices by milk producers in Chhotaudepur District of Gujarat	Accepted (Action: Dr. B. L. Dhayal (SMS-Ext.), Dr. B. M. Maheta, Prog. Co-ordinator, KVK, Mangal Bharati, Golagamdi, Dist-Vadodara)	
11.7.2.36	**Centre:** SMS, KVK, Gujarat Vidyapeeth, Dethali, Dist-Kheda		
	A study on impact of FLDs on Brinjal (GJB-3) growers in Kheda and Mahemdavad talukas of Kheda district	Accepted (Action: Mr. Mukesh Chaudhary, SMS, KVK, Gujarat Vidyapeeth, Dethali, Dist-Kheda)	
11.7.2.37	**Centre:** KVK (ICAR), Vejalpur, Dist-Panchamahal		
	A study on mineral mixture feeding to cattle of Panchamahal district	Accepted with the suggestion that title should be modified as: "Awareness of mineral mixture feeding by cattle owners of Panchamahals district" (Action: Dr. Kanak Lata, Prog. Co-ordinator, KVK (ICAR), Vejalpur, Dist-Panchamahal)	
11.7.2.38	**Centre:** KVK, AAU, Dahod		
	Technological gaps in adoption of improved Pigeon pea production technology by Pigeon pea growers in Dahod district	Accepted (Action: Dr. Umesh Patel, Prog. Co-ordinator, KVK, AAU, Dahod)	
11.7.2.39	**Centre:** Pashu Vigyan Kendra, AAU, Limkheda		
	Participation of tribal women in Animal Husbandry practices	Accepted with the suggestion that "relation to" words should be deleted from second objective. (Action: Dr. S. G. Vohra, Asso. Prof., Pashu Vigyan Kendra, AAU, Limkheda)	
11.7.2.40	**Centre:** Ext. Edu., FTTC, AAU, Sansoli-Nenpur		
	Knowledge and adoption of recommended practices of castor crop in Kheda district	Accepted (Action: Shri N. M. Vegad, Asstt. Ext. Edu., FTTC, AAU, Sansoli-Nenpur)	
11.7.2.41	**Centre:** TRTC, AAU, Devgadh-Baria		
	Training need of tribal farm women in crop production technology of Soybean & Maize crops	Accepted (Action: Shri D. B. Ramjani, Res. Asso. (Agri.Ext.), TRTC, AAU, Devgadh-Baria)	
11.7.2.42	**Centre:** TFWTC, AAU, Devgadh-Baria		

	A study on Knowledge of Nutritional Facts of Tribal Women	Accepted with the suggestion that the title should be modified as: "A study on Knowledge of Nutritional practices among the Tribal Women" and second objective should be changed accordingly. (Action: Miss Dipti P. Patel, Res. Assoc. (HS), TFWTC, AAU, Devgadh-Baria)	
11.7.2.43	**Centre:** SMC College of Dairy Science, AAU		
	Participation of women in Animal Husbandry Activities	Accepted (Action: Dr. J. K. Patel, Asso. Prof., SMC College of Dairy Science, AAU, Anand)	
11.7.2.44	**Centre:** Dept. of Ent., BACA, AAU		
	Demonstration of IPM Strategy for the Control of *Helicoverpa armigera* (Hubner) Hardwick in Chickpea	Accepted (Action: Prof. & Head, Dept. of Ent., BACA, AAU, Anand)	

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title	Suggestions	Remarks
11.7.2.45	**Centre:** Dept. of Agri. Econ., JAU		
	An economic analysis of groundnut productivity differentials in Saurashtra	Approved with the suggestion that the sample size should be doubled. (Action: Prof. & Head, Dept. of Agri. Econ., JAU, Junagadh)	
11.7.2.46	**Centre:** Dept. of Agri. Econ., JAU		
	An economic analysis of coconut in Saurashtra region of Gujarat state	Approved with the suggestion that the sample size should be doubled. (Action: Prof. & Head, Dept. of Agri. Econ., JAU, Junagadh)	
11.7.2.47	**Centre:** Dept. of Agri. Stat., JAU		
	Effective number of replications for field experiment on wheat crop (*Triticum aestivum* L.)	Approved (Action: Prof. & Head, Dept. of Agri. Stat., JAU, Junagadh)	
11.7.2.48	**Centre:** AIBM, JAU		
	Impact of mobile phones on agriculture	Approved with following suggestions: The study should be on: "Utilization pattern of mobile phones in farming community". 1. Fifth objective should be deleted. 2. Instead of 120 sample size should be 160. (Action: Principal, AIBM, JAU, Junagadh)	

11.7.2.49	**Centre:** Dept. of Agri. Ext., JAU		
	Training needs of pesticide retailers in Saurashtra region	Approved with following suggestions: 1. Title should be changed to: "Comparative study between agricultural and non- agricultural pesticide dealers". 1. Study area should be extended to whole Gujarat State and sample size should be fixed accordingly. 2. Objectives should be reframed accordingly. (Action: Prof. & Head, Dept. of Agri. Ext., JAU, Junagadh)	
11.7.2.50	**Centre:** Dept. of Agri. Ext., JAU		
	Impediments perceived by cotton growers in adoption of drip irrigation system in Junagadh district	Accepted (Action: Prof. & Head, Dept. of Agri. Ext., JAU, Junagadh)	
11.7.2.51	**Centre:** Department of Agril. Engineering Extension, CAET, JAU		
	Role expectation of farm women in harvest and post harvest activities in groundnut crop in Junagadh district	Approved with following suggestion: First objective should be deleted and village and sample size should be doubled. (Action: Prof. & Head, Dept. of Agril. Engineering Extension, CAET, JAU, Junagadh)	

NAVSARI AGRICULTURAL UNIVERSITY

Sr. No.	Title/Centre	Suggestions	Remarks
11.7.2.52	**Centre**: KVK, NAU, Vyara		
	Impact of KVK Activities in Adopted Villages of Tapi district	Accepted with the suggestion that the objective should be: To ascertain the relationship between impact and profile of the respondents. (Action: PC, KVK, NAU, Vyara)	
11.7.2.53	**Centre**: KVK, NAU, Waghai		
	Change in cropping pattern in tribal area of Dang district	Accepted with the following suggestions: Title should be : The study on Change in cropping pattern in tribal area of Dang district Third objective should be added as : To study the socio economic factors responsible in changing the cropping pattern in tribal area (Action : PC, KVK, NAU, Waghai)	
11.7.2.54	**Centre**: KVK, NAU, Surat		

	Cropping pattern adopted by the farmers in coastal region of South Gujarat	Accepted with following suggestions: The title should be: Study on Cropping pattern adopted by the farmers in coastal region of South Gujarat The third objective should be: To study the different constraints faced by the farmers in adoption of cropping pattern and preventive measures. (Action : PC, KVK, NAU, Surat)	
11.7.2.55	**Centre**: KVK, NAU, Surat		
	Status and prone factors of milch animals in tribal areas	Accepted with the suggestion that the Title should be: Study on knowledge of owners of milch animals about animal breeding (Action : PC, KVK, NAU, Surat)	
11.7.2.56	**Centre**: KVK, NAU, Dediapada		
	Impact of FLDs on improved paddy production technology	Accepted (Action : PC, KVK,NAU, Dediapada)	
11.7.2.57	**Centre**: KVK, NAU, Dediapada,		
	Tribal farm Women's Knowledge and Status of Human Nutrition	Accepted with the suggestion that the Title should be: Knowledge and status of tribal farm women about human nutrition (Action : PC, KVK,NAU, Dediapada)	
11.7.2.58	**Centre**: AES, NAU, Paria		
	Influence of training programme on mango growers of Valsad district	Accepted with the suggestion that the Title should be: Impact of training on mango growers of Valsad district (Action : Res. Sci., AES, NAU, Paria)	
11.7.2.59	**Centre**: Deptt. of Ext. Edu., ACHF, NAU, Navsari		
	Perception of the Horticulture and Forestry students regarding various aspects of computer applications in education	Accepted with the suggestion that the Title should be: Awareness about AICT among the students of ACHF. (Action: Assoc. Prof., (Ext.), ACHF, NAU, Navsari)	
11.7.2.60	**Centre**: Deptt. of Vet. Ext., VCVS & AH, NAU, Navsari		
	Perception of Farmers towards activities of *Krishi Mahotsav* in South Gujarat	Accepted (Action : Assoc. Prof. & Head, Deptt. of Ext. Edu., VCVS & AH, NAU, Navsari)	
11.7.2.61	**Centre**: ATIC, DEE, NAU, Navsari		
	Usefulness of ATIC as Perceived by the Farmers	Accepted (Action : DEE, NAU, Navsari)	
11.7.2.62	**Centre**: Educatorium, DEE, NAU, Navsari		
	Training needs of Agricultural input dealers in transfer of agriculture technology	Accepted (Action : DEE, NAU, Navsari)	
11.7.2.63	**Centre**: Deptt. of Ext. Edu., CoA,NAU, NAU, Bharuch		

	Knowledge and adoption of Pigeon Pea growers about recommended production technologies in Bharuch district of South Gujarat	Accepted (Action: Asstt. Prof.(Ext.), CoA, NAU, Bharuch)	
11.7.2.64	**Centre**: Deptt. of Ext. Edu., CoA, NAU, Waghai		
	Study on Expectations and Motivational Sources of enrolled students of College of Agriculture, Waghai	Accepted with the suggestion that aspects concerning to academic, residence, infrastructure and teaching staff should be covered under aspect of expectations. (Action : Prof. (Ext.), CoA, NAU, Waghai)	
11.7.2.65	**Centre**: SSK, NAU, Navsari		
	Comparative study on successful and unsuccessful SHGs of Navsari	Accepted with the suggestion that word "personal" and "constraints and suggestions for getting benefits from various institutions as perceived by successful and" should be deleted from the objective one and four respectively. (Action : PO, SSK, Navsari)	
11.7.2.66	**Centre**: Department of Agricultural Economics, NMCA, NAU, Navsari		
	Economic assessment of post harvest losses in Kesar mango in South Gujarat	Accepted (Action : Professor & Head, Agril.Eco., NMCA, NAU, Navsari)	
11.7.2.67	**Centre**: Department of Agricultural Economics, ACHF, NAU, Navsari		
	Climate change impacts on livestock and adaptation strategies for sustainable production.	Accepted (Action: Associate Professor, Agril. Eco., ACHF, NAU, Navsari)	
11.7.2.68	**Centre**: Director of Research and Dean, PG Studies, NAU, Navsari		
	Analysis of fund allocation and expenditure under plan schemes of NAU	Accepted (Action: Planning officer and Assoc. Res. Sci. (Agril. Eco.) , Directorate of Research, NAU, Navsari)	
11.7.2.69	**Centre**: Department of Agricultural Economics ,College of Agriculture, NAU, Bharuch		
	Economics and marketing of major flower crops in Bharuch district of South Gujarat	Accepted with the suggestion that sample size should be 25 respondents per crop. (Action : Asso. Prof.& Head, Deptt of Agril Eco, CoA, NAU, Bharuch)	
11.7.2.70	**Centre**: ASPEE Agribusiness Management Institute, NAU, Navsari		
	Technical efficiency of sugarcane production in South Gujarat	Accepted (Action : Dean, AABMI, NAU, Navsari)	
11.7.2.71	**Centre**: ASPEE Agribusiness Management Institute, NAU, Navsari		
	An appraisal of rice flakes (Poha) processing units in Navsari district of South	Accepted (Action : Dean, AABMI, NAU,	

	Gujarat".	Navsari)	
11.7.2.72	**Centre**: ASPEE Agribusiness Management Institute, NAU, Navsari		
	A comparison of consumer perception towards organized and unorganized retailing in South Gujarat	Accepted (Action : Dean, AABMI, NAU, Navsari)	
11.7.2.73	**Centre**: ASPEE Agribusiness Management Institute, NAU, Navsari		
	Title: Market acceptability and preference for Ready to Cook foods in Navsari district	Accepted with following suggestion: Growing word should be deleted from objective one and selection word should be replaced by preference. (Action : Dean, AABMI, NAU, Navsari)	
11.7.2.74	**Centre**: Polytechnic in Agriculture, NAU, Waghai		
	Analysis of crop insurance for notified crops in Dang district	Accepted with the suggestion that the third objective should be deleted. (Action : I/c Principal, Polytechnic in Agriculture, NAU, Waghai)	
11.7.2.75	**Centre**: Polytechnic in Agriculture, NAU, Waghai		
	An economic analysis of value addition and collective marketing of major agricultural commodities in Dang district of South Gujarat	Accepted (Action : I/c Principal, Polytechnic in Agriculture, NAU, Waghai)	
11.7.2.76	Polytechnic in Agriculture, NAU, Waghai		
	Title: Awareness of farmers about organic farming and its marketing in Dang district	Accepted (Action : I/c Principal, Polytechnic in Agriculture, NAU, Waghai)	
11.7.2.77	**Centre**: Dept. of Agril. Statistics, NMCA, NAU, Navsari		
	Growth and instability of major field crops of South Gujarat	Accepted with the suggestion that the second objective should be : To compare the exponential model and intrinsically non linear models (Action: Professor & Head,Ag. Stat., NMCA, NAU, Navsari)	
11.7.2.78	**Centre**: Dept. of Agril. Statistics, NMCA, NAU, Navsari		
	A study on some useful correlation techniques in social sciences	Accepted with the suggestion that the first objective should be reframed as: To investigate the applicability of point- biserial, Biserial and tetrachoric correlation in various characteristics of the farmers of South Gujarat. (Action : Professor & Head,Ag. Stat., NMCA, NAU, Navsari)	
11.7.2.79	**Centre**: Dept. of Agril. Statistics, ACHF, NAU, Navsari		
	Effect of intercropping in banana under organic farming	Accepted (Action : Associate Professor (Ag. Stat.), ACHF, NAU, Navsari)	
11.7.2.80	**Centre**: Department of ICT, AABMI, NAU, Navsari		

	A study on technical feasibility and development of Mobile App for Agricultural Information Dissemination to the farming community	Accepted (Action : Dean, AABMI, NAU, Navsari)	
11.7.2.81	**Centre**: Department of ICT, AABMI, NAU, Navsari		
	A study on technical feasibility and development of the KIOSK system for the information dissemination to the farmers	Accepted (Action : Dean, AABMI, NAU, Navsari)	
11.7.2.82	**Centre**: Department of ICT, AABMI, NAU, Navsari		
	Developing mobile App for strengthening co-operative operations	Accepted (Action : Dean, AABMI, NAU, Navsari)	
11.7.2.83	**Centre**: Department of ICT, AABMI, NAU, Navsari		
	Title: A study on perception and satisfaction of agricultural information delivered by the KVK through SMS	Accepted (Action : Dean, AABMI, NAU, Navsari)	

SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

Ag.Exten. Edu.			
Sr. No.	Title	Suggestion	Remarks
11.7.2.84	**Centre:** KVK, SDUA, Khedbrahma		
	Farmers' View Perception on Climate Smart Agriculture	Accepted with following suggestions: 1 Title should be: Perception of farmers about climate smart agriculture. 2 First objective should be deleted. 3 Add third objective as: To study the ill effects of climate change. (Action: Programme coordinator, KVK, Khedbrahma)	
11.7.2.85	**Centre:** Polytechnic in Agriculture, SDAU, Deesa		
	Farmers' View Perception on farm Mechanization	Accepted with following suggestions: 1 Title should be: Perception of farmers about farm mechanization. 2 The second objective should be as: To know the adoption level about agricultural farm mechanization. (Action: Principal, Polytechnic in Agriculture, SDAU, Deesa)	
11.7.2.86	**Centre:** Extension Education Department, CPCA, SDUA, SK Nagar		
	Farmers' View Perception on Micro Irrigation System	Accepted with following suggestions: 1 Title should be: Perception of farmers about Micro Irrigation System	

		2 Specific objectives should be reframed. (Action: HOD, Extension Education Dept., CPCA, SDUA, SK Nagar)	
11.7.2.87	**Centre:** Extension Education Department, CPCA, SDUA, SK Nagar		
	Farmers' View Perception on Soil Health	Accepted with following suggestions: 1 Title should be: Perception of farmers about Soil Health 2 The third objective should be as: To study the suggestions of farmers to mitigate the soil health problems (Action: HOD, Extension Education Department, CPCA, SDUA, SK Nagar)	
11.7.2.88	**Centre:** Extension Education Department, CPCA, SDUA, SK Nagar		
	Farmers' View Perception on Quality Seeds	Accepted with following suggestion: 1 Title should be: Perception of farmers about quality seeds (Action: HOD, Extension Education Department, CPCA, SDUA, SK Nagar)	
11.7.2.89	**Centre:** DEE, SDUA, SK Nagar		
	Farmers' View Perception on Organic Farming	Accepted with following suggestions: 1 Title should be: Perception of farmers about organic farming 2 First objective should be deleted 3 The second objective should be: To determine the farmers perception about organic farming (Action: DEE, SDUA, SK Nagar)	
11.7.2.90	**Centre:** DSW office, SDUA, SK Nagar		
	Farmers' View Perception on Water Use Efficiency	Accepted with following suggestions: 1 Title should be: Perception of farmers about water use efficiency in potato. 2 Second objective should be: To study the extent of adoption regarding water use efficiency. (Action: Dr. S. P. Pandya, Asstt. Prof., DSW office, SDUA, SK Nagar)	
11.7.2.91	**Centre:** College of Veterinary Science, SDAU, SK Nagar		
	Farmers' View Perception on Family Farming.	Accepted with following suggestions: 1 Title should be: Factors responsible for leaving farming as a family occupation 2 Third and fifth objectives should be deleted	

		3 The second objective should be taken only with 'opinion' of farmers 4 There should be separate objective to study the reasons (Action: Principal, College of Vet. Sci., SDAU, SK Nagar)	
11.7.2.92	**Centre:** DEE, SDUA, SK Nagar		
	Farmers' View Perception on Agricultural Technology Information Center (ATIC) Sardarkrushinagar	Accepted with following suggestions: 1 Title should be as : Scale to develop an attitude towards ATIC of Sardarkrushinagar 2 Objectives should be reframed accordingly (Action: DEE, SDUA, SK Nagar)	
11.7.2.93	**Centre:** DEE, SDUA, SK Nagar		
	Knowledge and Adoption of MIS among the Farmers in North Gujarat Agro-climatic Zone of Gujarat	Accepted with following suggestions: 1 Title should be changed to "Knowledge and adoption of MIS among the farmers of pomegranate in North Gujarat Agro-climatic Zone of Gujarat". 2 Objectives should be reframed accordingly. (Action: DEE, SDUA, SK Nagar)	
11.7.2.94	**Centre:** CPCA, SDUA, SK Nagar		
	Attitude of farmers towards Soil Health Card in North Gujarat	Accepted with following suggestions: 1 An objective should be added as: To study the adoption of Soil Health Card 2 The portion of the suggestions and constraints should be omitted from the objective. (Action: Dean, CPCA, SDUA, SK Nagar)	
11.7.2.95	**Centre:** Polytechnic in Agriculture, SDAU, Deesa		
	Assessment of utilization of Chaff cutter by the Dairy farmers of Banaskantha District	Accepted with following suggestion: Words “as perceived” should be omitted from second objective (Action: Principal, Polytechnic in Agriculture, SDAU, Deesa)	
11.7.2.96	**Centre:** Polytechnic in Agriculture, SDAU, Khedbrama,		
	Constraints faced by the ATMA Beneficiaries Farmers in adoption of Recommended Cotton Production Technology in Gandhinagr District	Accepted with following suggestions: 1 House suggested to change the study as : Assessment of methods followed by the wheat growers. 2 The specific objectives to assess the	

		knowledge, adoption and constraints of wheat cultivation should be developed (Action: Principal, Polytechnic in Agriculture, SDAU, Khedbrama)	
11.7.2.97	**Centre:** CPCA, SDUA, SK Nagar		
	Assessment of Work Environment Among Extension Personnel in ATMA Project	Accepted with following suggestions: 1 'Work' word should be replaced by 'working' in the title 2 Specific objectives should be developed on farmers participation, team work, organisational communication and job satisfaction. (Action: Dean, CPCA, SDUA, SK Nagar)	
11.7.2.98	**Centre:** HECM Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar		
	Knowledge and adoption level of post harvest grain storage technologies among farm women of Deesa taluka	Accepted with following suggestion: 1 'Post harvest' word should be deleted from the title as well as specific objectives of the study. (Action: HOD, HECM Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar)	
11.7.2.99	**Centre:** HECM Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar		
	Human rights awareness and extent social freedom among girl students of SDAU	Accepted with following suggestions: 1 Title should be changed to: Determination of indicators for farm women empowerment. 2 Specific objectives should be reframed accordingly. (Action: HOD, HECM Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar)	
11.7.2.100	**Centre:** HDFS Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar		
	Study on Problems among Students of Sardarkrushinagar Dantiwada Agricultural University, Banaskantha District, Gujarat	Accepted with following suggestions: 1 Title should be changed to: Study the employability level of girls studying in SDAU. 2 Specific objectives should be reframed accordingly. (Action: HOD, HDFS Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar)	
11.7.2.101	**Centre:** FRM Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar		

	Risk Assessment of Musculoskeletal Disorders related to Livestock Activities among Rural Women	Accepted (Action: HOD, FRM Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar)	
11.7.2.102	**Centre:** FN Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar		
	Assessment of weaning practices prevailing amongst the tribal mothers of Sabarkantha district	Accepted (Action: HOD, FN Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar)	
11.7.2.103	**Centre:** FN Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar		
	Comparative study of nutritional status of school going tribal girls and boys of Sabarkantha district	Accepted (Action: HOD, FN Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar)	
11.7.2.104	**Centre:** TAD Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar		
	Assessment of need for Sun protective Clothing among Farm workers and its Designing	Accepted with following suggestions: 1 "Light" word should be inserted after sun in the title. 2 Villages adjacent to SDAU should constitute the study area. (Action: HOD, TAD Department, ASPEE College of Home Science and Nutrition, SDUA,SK Nagar)	
11.7.2.105	**Centre:** FN Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar		
	Farmers' View Perception on Malnutrition	Accepted with following suggestions: 1 Title should be modified as: Perception of farmers about malnutrition. 2 Fourth objective should be reframed as: To know the relation between socio economic status of farmers and their perception on malnutrition 3 Respondents should be replaced by "farm women" in the methodology (Action: HOD, FN Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar)	
11.7.2.106	**Centre:** HECM Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar		
	Attitude of SDAU Employees and Students towards Swatchh Bharat Abhiyan	Accepted with following suggestions: 1 Title should be: Construction of attitude scale towards cleanliness	

		2 Dr Pragya Dashora should be replaced by Dr S Ahlawat 3 Specific objectives and methodology should be reframed in view of suggested modifications. (Action: HOD, HECM Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar)	
11.7.2.107	**Centre:** HECM Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar		
	Knowledge and participation level of Rural People in Gram Sabha in Dantiwada Taluka	Accepted with the suggestion that departmental studies should be taken up only by the name of faculties of SDAU (Action: HOD, HECM Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar)	
11.7.2.108	**Centre:** HDFS Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar		
	Knowledge and Utilization of Kishori Shakti Yojna among adolescent girls	Accepted (Action: HOD, HDFS Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar)	
11.7.2.109	**Centre:** FN Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar		
	Retrospective study on human body profile of SDAU employees by using Body Composition Analyzer	Accepted (Action: HOD, FN Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar)	
11.7.2.110	**Centre:** ABM College, SDAU, SK Nagar		
	Assessment of production, consumption, marketed and marketable surplus of wheat in Mehsana district of North Gujarat	Accepted with following suggestions: 1 The title should be: An economic assessment of production and marketing of wheat growers in Mehsana district. 2 First objective should be deleted. 3 Sample size should be increased to 150 (Action: Principal, ABM College, SDAU, SK Nagar)	
11.7.2.111	**Centre:** Agricultural Economics Department, SDAU, SK Nagar		
	Economic analysis of Price Movement of major Pulse crops of North Gujarat	Accepted (Action: HOD, Agricultural Economics Department, SDAU, SK Nagar)	
11.7.2.112	**Centre:** Department of Agricultural Statistics, CPCA, SDAU, SK Nagar		
	Pre-harvest forecasting of wheat yield (*Triticum aestivum L.*) in Banaskantha	Accepted (Action: HOD, Department of Agricultural Statistics, CPCA, SDAU,	

	district	SK Nagar)	
11.7.2.113	**Centre:** FN Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar		
	Prediction of Guar yield using weather parameters in Banaskantha district of North Gujarat	Accepted (Action: HOD, FN Department, ASPEE College of Home Science and Nutrition, SDUA, SK Nagar)	

General Suggestion:

(1) It was suggested by the house to take up at least one research study by all the KYKs of JAU, Junagadh.

(Action: Director of Extension Education, JAU, Junagadh)

(2) Regarding the proposal made by EEI, AAU, Anand in context to the recommendation for scientific community about the Scale to measure attitude of Brinjal growers about cv. Gujarat Oblong Brinjal-1 (GOB-1) released by AAU, the house suggested that the composition of statements should be refined and reliability should be measured again and the proposal should be presented next year.

(Action: Director, EEI, AAU, Anand)

PROCEEDING 11th COMBINED JOINT AGRESCO MEETING OF ANIMAL HEALTH /ANIMAL PRODUCTION / ANIMAL PRODUCTION AND FISHERIES / ANIMAL SCIENCE AND FISHERIES SCIENCE/ ANIMAL HEALTH AND FISHERIES OF STATE AGRICULTURAL UNIVERSITIES OF GUJARAT HELD AT AAU, ANAND DURING APRIL 7-9, 2015

Chairman : Prof. M. C. Varshneya, Vice Chancellor, Kamdhenu University
Co-Chairman: Dr. R. R. Shah, Director of Research, SDAU, SK Nagar
Co-Chairman: Dr. A. Y. Desai, Director of Research, JAU, Junagadh
Rapporteurs : Dr. B. N. Suthar, Prof. & Head, Gynaecology, Vet. College, SDAU
Dr. D. N. Rank, Prof. & Head, Dept. of AGB, Vet. College, AAU

The details of Recommendations and New Technical Programmes presented, discussed and approved during the session are as under:

Universities	Recommendations				New Tech. Prog.	
	Farming Community		Scientific Community		Proposed	Approved
	Proposed	Approved	Proposed	Approved		
AAU	08	08	14	14	41	39
JAU	05	03	15	13	13	12
NAU	04	04	07	07	15	13
SDAU	03	03	06	05	12	12
Kamdhenu University	-	-	-	-	04	04
Total	20	18	42	39	85	80

11.8.1 RECOMMENDATIONS

A. RECOMMENDATIONS FOR FARMING COMMUNITY

ANAND AGRICULTURAL UNIVERSITY, ANAND	
11.8.1.1	**Effect of Feeding Milk Replacer on Holstein-Kankrej Crossbred Calves**
	There is a reduction of 39.73 and 33.91 per cent in feed cost per kilo gain in body weight of crossbred calves (HF X Kankrej) from birth to three months of age reared on self made milk replacer (1:10 dilution) consisting of 15 per cent milk, 11 per cent casein, 18 per cent maize, 18 per cent soya meal, 15 per cent soya seed, 8 per cent jaggery, 12 per cent palm oil and 3 per cent minerals, vitamins and salt over milk feeding (control) and feeding commercially available milk replacer, respectively.
	જન્મથી ત્રણ મહિનાની ઉંમરના સંકર (એચ.એફ. X કાંકરેજ) બચ્ચાંને જાતે બનાવેલાં મિલ્ક રીપ્લેસર (૧૫ ટકા દૂધ, ૧૧ ટકા કેસીન, ૧૮ ટકા મકાઇ, ૧૮ ટકા સોયા મીલ, ૧૫ ટકા સોયાબીનનાં બીજ, ૮ ટકા ગોળની રસી, ૧૨ ટકા પામોલીન તેલ અને ૩ ટકા ક્ષાર મિશ્રણ, પ્રજીવકો અને મીઠું) ને પાણી સાથે ૧:૧૦ ના પ્રમાણમાં પીવડાવવાથી, એકલા દૂધ પીવડાવવાની સરખામણીએ, ૩૯.૭૩ ટકા અને બજારમાં મળતાં મિલ્ક રીપ્લેસર કરતાં ૩૩.૯૧ ટકા જેટલો ખોરાકી ખર્ચમાં પ્રતિ કિલો શારીરીક વૃધ્ધિ દર પર ઘટાડો જોવા મળે છે.
	Action : Research Scientist & Head, LRS, AAU, Anand
11.8.1.2	**Study of nutritional status of dairy animals of Mahisagar district**
	The dairy farmers of Mahisagar district are recommended to feed daily additional 1.0 kg compound concentrate mixture (20% CP; 65% TDN) to crossbred cows yielding 12-14 kg during summer and in monsoon in order to fulfill their nutrient requirement.

	મહીસાગર જીલ્લાના પશુપાલકોને દૈનિક ૧૨-૧૪ કિ.ગ્રા. દૂધ આપતી સંકર ગાયોની પોષક તત્વોની જરૂરિયાત પૂર્ણ કરવા ઉનાળાની અને ચોમાસાની ઋતુમાં હાલ આપવામાં આવતા દાણ ઉપરાંત દૈનિક ૧.૦ કિ.ગ્રા. વધારાનું દાણ (૨૦% ક્રુડ પ્રોટીન; ૬૫% કુલ પાચ્ય પોષક તત્વો) આપવાની ભલામણ કરવામાં આવે છે.
	Action: Res. Sci. & Head Animal Nutrition Research Station, A.A.U., Anand
11.8.1.3	**Study of nutritional status of dairy animals of Mahisagar district**
	The dairy farmers of Mahisagar district are recommended to feed daily additional 1.0 kg and 1.5 kg compound concentrate mixture (20% CP; 65% TDN) to buffaloes yielding 6-10 kg and 10-12 kg milk, respectively, throughout the year in order to fulfill their nutrient requirements.
	મહીસાગર જીલ્લાના પશુપાલકોને દૈનિક ૬ થી ૧૦ અને ૧૦ થી ૧૨ કિ.ગ્રા. દૂધ આપતી ભેંસોની પોષક તત્વોની જરૂરિયાત પૂર્ણ કરવા માટે હાલ આપવામાં આવતા દાણ ઉપરાંત સમગ્ર વર્ષ દરમ્યાન દૈનિક અનુક્રમે ૧.૦. અને ૧.૫ કિ.ગ્રા. વધારાનું દાણ (૨૦% ક્રુડપ્રોટીન; ૬૫% કુલ પાચ્ય પોષક તત્વો) આપવાની ભલામણ કરવામાં આવે છે.
	Action: Res. Sci. & Head, Animal Nutrition Research Station, A.A.U., Anand
11.8.1.4	**Studies on the effect of feeding bypass fat and yeast (*Saccharomyces cerevisiae*) supplemented total mixed ration to growing Surti kids under heat stress.**
	The goat keepers of middle Gujarat are recommended to feed a combination of yeast (*Saccharomyces cerevisiae*) and bypass fat each @ 2% of total mixed ration (TMR) to weaned Surti kids during hot humid weather, to reduce the impact of heat stress, improve daily gain and feed conversion efficiency with 24% reduction in feed cost per kg gain.
	મધ્ય ગુજરાતના બકરાં પાલકોને ભલામણ કરવામાં આવે છે કે ગરમ અને ભેજવાળા વાતાવરણ દરમ્યાન ધાવણ છોડાવેલ સુરતી લવારાંને યીસ્ટ (સેકેરોમાયસીસ સેરેવિસી) અને બાયપાસ ફેટ પ્રત્યેક ૨% લેખે સંપૂર્ણ મિશ્રિત ખોરાકમાં ઉમેરવાથી ગરમીથી થતી તાણ ઘટે છે તથા દૈનિક વૃધ્ધિ દર અને ખોરાકની રૂપાંતરણ ક્ષમતામાં સુધારો થાય છે. જેથી પ્રતિ કિ.ગ્રા. વજન વૃધ્ધિ દરના ખોરાકી ખર્ચમાં ૨૪%નો ઘટાડો થાય છે.
	Action: Res. Sci. & Head, Animal Nutrition Research Station, A.A.U., Anand
11.8.1.5	**Studies on the effect of feeding bypass fat and yeast (*Saccharomyces cerevisiae*) supplemented total mixed ration to Surti goats during hot summer**
	To reduce the impact of heat stress without any increment in the feed cost, the goat keepers of middle Gujarat are recommended to feed yeast (*Saccharomyces cerevisiae*) @ 2% of total mixed ration (TMR) to adult Surti goats during hot summer when they are facing extreme severe stress.
	મધ્ય ગુજરાતના બકરાં પાલકોને ભલામણ કરવામાં આવે છે કે ઉનાળામાં અતિશય ગરમ વાતાવરણ દરમ્યાન પુખ્ત સુરતી બકરાંના સંપૂર્ણ મિશ્રિત ખોરાકમાં ૨% યીસ્ટ (સેકેરોમાયસીસ સેરેવિસી) ઉમેરવાથી ખોરાકીય ખર્ચમાં વધારો કર્યા સિવાય ગરમીથી થતી તાણની અસરમાં ઘટાડો થાય છે.
	Action: Res. Sci. & Head, Animal Nutrition Research Station, A.A.U., Anand
11.8.1.6	**Studies on morphometric characteristics of udder and teats, milking practices followed by farmers and incidences of sub-clinical mastitis in crossbred cows maintained on commercial dairy farms in Anand district**
	Pendulous and goaty udders are more susceptible to subclinical Mastitis (60% and

	80% incidences) as compared to bowl and round shaped (46 and 36% incidences) udder in plueriparous crossbred cows. Therefore, dairy farmers are advised that crossbred cows with pendulous and goaty udder should not be selected / purchased.
	ઢીલાં અને ઝુલતાં (૬0%) તથા બકરીના બાવલાં જેવું બાવલું ધરાવતી ગાયો (૮0%) ની સરખામણીએ છાલીયા આકારનાં બાવલાં (૩૬%) તથા ગોળાકાર બાવલા (૪૬%) ધરાવતી ગાયોમાં આઉનો છૂપો સોજો ઓછો માલુમ પડેલ. આથી પશુપાલકોને ભલામણ કરવામાં આવે છે કે ઢીલાં અને ઝુલતાં કે બકરીનાં બાવલાં જેવું બાવલું ધરાવતી ગાયો પસંદ કરવી/ખરીદવી હિતાવહ નથી.
	Action: Asso. Prof.& Head, Dept. of Animal Science, BACA, AAU, Anand
11.8.1.7	**Studies on morphometric characteristics of udder and teats, milking practices followed by farmers and incidences of sub-clinical mastitis in crossbred cows maintained on commercial dairy farms in Anand district**
	Udder depth greater than 28 cm and teat diameter higher than 2.75 cm are the prominent risk factors (17 and 10 % higher incidences than udder depth <28cm and teat diameter <2.75cm, respectively) for subclinical mastitis (SCM). Therefore, dairy farmers are advised to consider udder and teat biometry as a useful parameter to reduce the risk of SCM in crossbred cows.
	જે સંકર ગાયોમાં બાવલાંની ઉંડાઈ ૨૮ સે.મી. અને આંચળનો વ્યાસ ૨.૭૫ સે.મી. કરતાં વધું હોય તેવી ગાયોમાં આઉનો છૂપો સોજો વધું જણાયો છે. આથી પશુપાલકોને સલાહ આપવામાં આવે છે કે બાવલાં તથા આચંળનાં માપને ઉપયોગી માપદંડ ગણી પગલાં લેવાં જેથી ગાયોમાં આઉનો છૂપો સોજો ઘટાડી શકાય.
	Action: Asso. Prof. & Head, Dept. of Anim. Science, BACA, AAU, Anand
11.8.1.8	**Studies on morphometric characteristics of udder and teats, milking practices followed by farmers and incidences of sub-clinical mastitis in crossbred cows maintained on commercial dairy farms in Anand district.**
	Crossbred cows suffering from subclinical mastitis yielded 14 % less milk per day than the healthy cows. Therefore, the dairy farmers are advised to test their milking herd regularly for subclinical mastitis.
	આઉનાં છૂપા સોજાથી પીડાતી સંકર ગાયો તંદુરસ્ત ગાયોની સરખામણીમાં ૧૪% જેટલું ઓછું દૂધ આપતી હોઇ પશુપાલકોને ભલામણ કરવામાં આવે છે કે નિયમિત રીતે દુંઝણી ગાયોનાં ધણમાં આઉનાં છૂપા સોજાની તપાસ કરાવવી.
	Action: Asso. Prof. & Head, Dept. of Anim. Science, BACA, AAU, Anand
JUNAGADH AGRICULTURAL UNIVERSITY	
11.8.1.9	**Clinical Studies on dental problems in pet animals**
	Recommendation: Dropped
	Action: Prof. & Head, Dept. of Vet. Surgery & Radiology, College of Veterinary Science & A. H., JAU, Junagadh
11.8.1.10	**Quality assessment of raw milk at the production point**
	Recommendation: Dropped
	Action: Prof. & Head, Dept. of Vet. Public Health and Epidemiology, College of Veterinary Science & A. H., JAU, Junagadh
11.8.1.11	**Growth, mortality and stock assessment of Soldier cat fish *Osteogeneiosus militaris* of Veraval coast**
	The present level of fishing of the Soldier cat fish confirmed that the stock is over exploited in Veraval. Hence, it is recommended to fishermen of Veraval not to increase the fishing efforts.

	વેરાવળનાં માછીમારોને જાણ કરવામાં આવે છે કે સોલ્જર કેટ ફીશ (ગોજી) પ્રજાતિની વધુ પડતી માછીમારી કરવાથી ભવિષ્યમાં તેમની સંખ્યામાં ઘટાડો થશે. આથી આ માછલીની સમજણપૂર્વકની માછીમારી કરવા ભલામણ કરવામાં આવે છે.
	Action : Prof. & Head, FRM Dept., College of Fisheries, JAU, Veraval
11.8.1.12	**Study the effect of some natural cryoprotectants on quality of Japanese threadfin breams (*Nemipterus japonicus*) surimi during frozen storage**
	Surimi processors and exporters are recommended to use 1% shrimp chitosan as natural cryoprotectant in Japanese threadfin bream surimi to get better gel strength and good water holding capacity instead of commercially used cryoprotectants (sugar, sorbitol, polyphosphate) upto 240 days under frozen storage at -18^{o}C.
	સુરમી બનાવતાં મત્સ્ય પ્રક્રીયાકારો અને નિકાસકારોને ભલામણ કરવામાં આવે છે કે તે રાણી ફીશની સુરમીને -૧૮^{o}સે તાપમાને સંગ્રહ કરવા માટે રૂઢીગત વપરાતા ક્રાયોપ્રોટેકટન્ટના બદલે કુદરતી ક્રાયોપ્રોટેકટન્ટ તરીકે ૧% શ્રીમ્પ (ઝીંગા) કાયટોસનનો ઉપયોગ કરવાથી રાણી ફીશની સુરમીની ગુણવતા, પાણી સંગ્રહ ક્ષમતા અને સ્થિતિસ્થાપકતા (જેલ સ્ટ્રેન્થ) ૨૪૦ દિવસો સુધી સારી રીતે જાળવી શકાય છે.
	Action: Prof. & Head, Dept. of Harvest and Post-harvest Technology, College of Fisheries, J.A.U., Veraval.
11.8.1.13	**Effect of salinity on survival rate of *Penaeus monodon* larvae**
	It is recommended to hatchery entrepreneurs to use 15 ppt salinity water for larval (zoea and mysis) rearing and 20 ppt salinity water for post-larval (PL1 to PL20) rearing of *Penaeus monodon* for higher survival.
	હેચરી ઉદ્યોગ સાહસિકોને ભલામણ કરવામાં આવે છે કે પીનીયસ મોનોડોનના લાર્વાના (ઝૂઈઆ તથા માઈસીસ) ઉછેર માટે ૧૫ પાર્ટસ પર થાઉઝન્ડ (પીપીટી) તથા પોસ્ટ લાર્વલ (પી.એલ.-૧ થી પી.એલ.-૨૦) ઉછેર માટે ૨૦ પાર્ટસ પર થાઉઝન્ડ (પીપીટી) ખારાશવાળુ પાણી વાપરવાથી વધુ જીવંત દર મળે છે.
	Action : Research Officer, Fisheries Research Station, JAU, Okha
NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI	
11.8.1.14	**Effect of polyherbal ecbolic, minerals and vitamins supplementation as a prophylactic treatment regimen at time of calving on reproductive performance in Surti buffaloes**.
	The dairy farmers are advised to initiate the following oral prophylactic treatment regimen within 3 hrs of calving in Surti buffaloes for better economic benefits as it had significant effect to reduce post-partum oestrus and service period.

Day	Dosage of prophylactic treatment regimen
Day of calving	Commercially available 200 ml of polyherbal ecbolic preparation + 200 ml oral calcium preparation with energy boosters + 10 ml Vit. A, D, E with selenium and biotin
2nd to 5th day	Commercially available 100 ml of polyherbal ecbolic preparation + 100 ml oral calcium preparation with energy boosters + 10 ml Vit. A, D, E with selenium and biotin
6th to 10th day	Commercially available 100 ml oral calcium preparation with energy boosters + 10 ml Vit. A, D, E with selenium and biotin

	આથી પશુપાલકોને ભલામણ કરવામાં આવે છે કે સુરતી ભેંસોમાં વિયાણ બાદના ૩ કલાકની અંદર નીચે જણાવ્યા મુજબનું મિશ્રણ (પ્રોફાયલેક્ટીક ટ્રીટમેન્ટ રેજીમ) પીવડાવવાનું ચાલુ

	કરવાથી અસરકારક રીતે વિયાણ બાદ વેતરમાં આવવાના અને ગાભણ થવાના સમય ગાળામાં ઘટાડો થવાથી આર્થિક રીતે ફાયદાકારક રહે છે.

દિવસ	ખાસ પ્રકારનું મિશ્રણ (પ્રોફાયલેક્ટીક ટ્રીટમેન્ટ રેજીમ) નું માપ
વિયાણનો દિવસ	બજારમાં મળતાં વ્યાવસાયિક ઉત્પાદનોમાંનું ૨૦૦ મીલી પોલીહર્બલ ઇકબોલિક મિશ્રણ, ૨૦૦ મીલી શક્તિવર્ધક કેલ્શિયમ મિશ્રણ અને ૧૦ મીલી સેલેનિયમ અને બાયોટીન સાથેનું વિટામિન એ, ડી અને ઇ મિશ્રણ
બીજાથી પાંચમાં દિવસ સૂધી	બજારમાં મળતાં વ્યાવસાયિક ઉત્પાદનોમાંનું ૧૦૦ મીલી પોલીહર્બલ ઇકબોલિક મિશ્રણ, ૧૦૦ મીલી શક્તિવર્ધક કેલ્શિયમ મિશ્રણ અને ૧૦ મીલી સેલેનિયમ અને બાયોટીન સાથેનું વિટામિન એ, ડી અને ઇ મિશ્રણ
છઠ્ઠાથી દસમાં દિવસ સૂધી	બજારમાં મળતાં વ્યાવસાયિક ઉત્પાદનોમાંનું ૧૦૦ મીલી શક્તિવર્ધક કેલ્શિયમ મિશ્રણ અને ૧૦ મીલી સેલેનિયમ અને બાયોટીન સાથેનું વિટામિન એ, ડી અને ઇ મિશ્રણ

	Action : Res. Sci. & Head, LRS, NAU, Navsari
11.8.1.15	**Study on banana shrimp (*F. merguiensis*) growth under different water salinity levels**
	The farmers of coastal area of Gujarat undertaking brackish water shrimp culture are recommended to maintain pond water salinity of 30 to 40 parts per thousand (ppt) for better growth and economic returns in banana shrimp rearing.
	ગુજરાતના દરિયા કાંઠા વિસ્તારમાં ભાંભરા પાણીના ઝીંગા પાલન કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે બનાના ઝીંગા પ્રજાતિના ઉછેરમાં તળાવના પાણીની ખારાશ ૩૦ થી ૪૦ પાર્ટસ પર થાઉઝંડ (પીપીટી) જાળવવાથી વધુ સારો વિકાસ અને વળતર મેળવી શકાય છે.
	Action : Res. Sci., Coastal Soil Salinity Research Station, Danti, NAU, Navsari
11.8.1.16	***In vitro* evaluation of sugarcane bagasse treated with different level of urea and moisture**
	During the fodder scarcity, the farmers are recommended to treat 100 kg sugarcane bagasse with 3.5 kg urea in 40 liters of water and ensile it for three weeks to improve its crude protein content and digestibility.
	પ્રતિ ૧૦૦ કી.ગ્રા. શેરડીની બગાસને, ૩.૫ કિ.ગ્રા. યુરીયાવાળા ૪૦ લિટર પાણીનો છંટકાવ કરીને, ત્રણ અઠવાડીયા સુધી ચુસ્ત રીતે બંધ રાખવાથી તેના નત્રલ પદાર્થોમાં અને પાચ્યતામાં વધારો થાય છે. આથી ઘાસચારાની અછતના સમયમાં પશુપાલકોને તેની ભલામણ કરવામાં આવે છે.
	Action: Prof. & Head, Dept. of Animal Nutrition, Vet. College, NAU, Navsari
11.8.1.17	**Evaluation of phytogenic feed additive supplementation on growth performance, nutrient utilization, anti-oxidants and health status of Surti kids**
	The Surti goat keepers are recommended to supplement garlic bulb (12 gram or 8-10 cloves/day) to the growing kids (5-6 months) for two months to achieve better growth rate and profit.
	સુરતી બકરા પાલકોને ભલામણ કરવામાં આવે છે કે પાંચથી છ મહીનાનાં લવારાઓને પુરક આહાર તરીકે લસણ (૧૨ ગ્રામ અથવા ૮ થી ૧૦ કળી/દિન) બે મહીના સુધી ખવડાવવાથી શારિરીક વૃધ્ધિ દરમાં અને આવકમાં વધારો થાય છે.
	Action: Prof. & Head, Dept. of Animal Nutrition, Vety. College, NAU, Navsari

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY	
11.8.1.18	**Impact of Water Sprinkling (Foggers) on performance of Mehsana buffaloes in Summer season**
	Buffalo rearing farmers of North Gujarat are advised to make the provision of foggers in animal shed as it reduces the heat stress, improves milk yield and fat per cent of the milk and dry matter intake in Mehsana buffaloes.
	ઉત્તર ગુજરાતમાં ભેંસો ઉછેર કરતા પશુપાલકોને સલાહ આપવમાં આવે છે કે પશુ આવાસમાં પાણીના છંટકાવ (ફોગર્સ) ની જોગવાઈ કરવાથી ભેંસોમાં ગરમીના તણાવમાં ઘટાડો થાય છે તેમજ દુધ ઉત્પાદન, દુધની ચરબીની ટકાવારી અને ખોરાકમાં સુકા તત્વો લેવાનાં પ્રમાણમાં વધારો થાય છે.
	Action : Res. Sci. & Head, LRS, SDAU, **Sardarkrushinagar**
11.8.1.19	**Establishment of Elite herds of Kankrej cattle and Mehsana buffalo**
	It is recommended to the farmers and dairy co-operative unions of North Gujarat to promote the rearing of the Kankrej cows along with Mehsana buffaloes for sustainable milk production throughout the year.
	ઉત્તર ગુજરાતમાં ખેડૂતો તથા દુધ ઉત્પાદક સંઘોને વર્ષ દરમ્યાન દુધ ઉત્પાદન ટકાવી રાખવા માટે મહેસાણી ભેંસોની સાથે કાંકરેજ ગાયો રાખવા માટે પ્રોત્સાહિત કરવા ભલામણ કરવામાં આવે છે.
	Action : Res. Sci. & Head, LRS, SDAU, **Sardarkrushinagar**
11.8.1.20	**Retrospective study of reduced service period in Kankrej cattle and Mehsana buffaloes**
	The major etiological factors responsible for prolonged service period in Kankrej cattle and Mehsani buffaloes are post-partum anoestrus and endometritis as well as repeat breeding.
	કાંકરેજ ગાયો અને મહેસાણી ભેંસોમાં વિયાણ બાદના લાંબા સમય ગાળે ગર્ભાધારણનાં કારણોમાં, વિયાણ બાદ લાંબા સમય સુધી વેતરે ન આવવું અને વારંવાર ઉથલા મારવા તથા ગર્ભાશયનો ચેપ મુખ્ય કારણો છે. તેથી કાંકરેજ ગાયો અને મહેસાણી ભેંસોમાં વિયાણ બાદનાં ગર્ભધારણનાં લાંબા સમયગાળાને ઘટાડવાં તે મુજબ યોગ્ય સારવાર કરવવાની ભલામણ કરવામાં આવે છે.
	Action : Res. Sci. & Head, LRS, SDAU, **Sardarkrushinagar**

B. RECOMMENDATIONS FOR SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY	
11.8.1.21	**Studies on the effect of feeding bypass fat and yeast (*Saccharomyces cerevisiae*) supplemented total mixed ration to growing Surti kids under heat stress**
	Weaned Surti kids during hot humid weather, when supplemented with a combination of bypass fat and yeast each @ 2% of total mixed ration (TMR) resulted in significant ($P<0.05$) reduction in rectal temperature, respiration rate and heart rate and thus reduced the impact of heat stress.
	Action : Res. Sci. & Head, Animal Nutrition Research Station, A.A.U., Anand
11.8.1.22	**Studies on the effect of feeding bypass fat and yeast (*Saccharomyces cerevisiae*) supplemented total mixed ration to growing Surti kids under heat stress**
	The combination of 2% each of bypass fat and yeast (*Saccharomyces cerevisiae*) when supplemented in total mixed ration (TMR) for weaned Surti kids during hot humid weather, the average digestibility coefficient of DM, OM, CP, EE and CF was increased ($P<0.05$). Similar was the trend for blood glucose. However, the enzyme and mineral profile studied was not affected due to supplementation.

	Action : Res. Sci. & Head, Animal Nutrition Research Station, A.A.U., Anand
11.8.1.23	**Studies on the effect of feeding bypass fat and yeast (*Saccharomyces cerevisiae*) supplemented total mixed ration to Surti goats during hot summer**
	Adult Surti goats facing extreme severe stress during hot summer, when fed TMR supplemented with 2% bypass fat or with 2% yeast alone or with combination of bypass fat and yeast, the respiration rate and heart rate were significantly reduced during afternoon as compared to control group indicating thermal comfort.
	Action : Res. Sci. & Head, Animal Nutrition Research Station, A.A.U., Anand
11.8.1.24	**Studies on the effect of feeding bypass fat and yeast (*Saccharomyces cerevisiae*) supplemented total mixed ration to Surti goats during hot summer**
	The yeast (*Saccharomyces cerevisiae*) alone (2%) or combination of 2% each of bypass fat and yeast in total mixed ration (TMR) fed to adult Surti goats resulted in better digestibility of DM, CP & CF. However, EE digestibility was better ($P<0.05$) in bypass fat supplemented (2%) group. The NFE digestibility was significantly ($P<0.05$) higher in supplemented group i.e. yeast and bypass fat alone or in combination. The treatment groups did not differ for serum total protein, albumin, globulin, cholesterol and blood glucose concentration. However, triglycerides concentration was higher in bypass fat alone and in combination groups. Conversely, blood urea nitrogen was significantly reduced in supplemented groups. The creatinine concentration was lower in control and yeast supplemented groups but bypass fat and combination groups recorded significantly ($P<0.05$) higher value. There was no difference in concentration of serum minerals, viz., calcium, phosphorous, sodium, potassium and magnesium.
	Action : Res. Sci. & Head, Animal Nutrition Research Station, A.A.U., Anand
11.8.1.25	**Development of area-specific mineral mixture formulations for Vadodara district**
	Based on the prioritization of limiting minerals in Vadodara district, the area specific mineral mixture has been formulated which would make up the deficiency when fed @ 30g/head/day to dairy animals in addition to the current feeding practices.
	Action : Res. Sci. & Head, Animal Nutrition Research Station, A.A.U., Anand
11.8.1.26	**Development of recombinant viral vectored bivalent vaccine against Marek's and Newcastle disease virus in poultry**
	A new genotype XIII of Newcastle disease (ND) virus reported from other parts of the world is also circulating in India as ascertained by molecular phylogeny based on whole genome sequencing. Therefore, it is recommended to update currently used ND vaccines
	Action: Prof. & Head, Dept. of Animal Biotech., Vety. College, AAU, Anand
11.8.1.27	**Regulation of Activin receptor type IIB (ACVR2B) expression through RNA interference in Goat Myoblast Cells**
	Artificial micro RNAs under muscle specific promoter is recommended to down-regulate Activin receptor type IIB (ACVR2B) to enhance the muscle mass in goat.
	Action: Prof. & Head, Dept. of Ani. Biotech., Vety. College, AAU, Anand
11.8.1.28	**SNP Detection and Validation in Squamous Cell Carcinoma of Horn in Kankrej Cattle (*Bos indicus*) using Next Generation Sequencing**
	Up-regulation of KRT6A, KRT6B, KRT6C, KRT14, SFN, KRT84, PI3, CA1, GJB2, COL17A1, ANLN, SERPINB5 genes and down-regulation of BoLA, SCGB1A1, CXCL17, KRT19, BPIFB1, NR4A1, ATF3, LRIG1, TFF3 genes recommended to be monitored in squamous cell carcinoma of horn (Horn Cancer) in Kankrej bullocks.
	Action: Prof. & Head, Dept. of Animal Biotech., Vet. College, AAU, Anand
11.8.1.29	**SNP Detection and Validation in Squamous Cell Carcinoma of Horn in Kankrej Cattle (*Bos indicus*) using Next Generation Sequencing**

	It is recommended to study deregulation of cell cycle pathways; NFKß and MAPKs pathways; LPS signalling pathway; EGF-R and PI3K-Akt pathways for squamous cell carcinoma of horn (Horn Cancer) in Kankrej bullocks.
	Action: Prof. & Head, Dept. of Anim. Biotech., Vety. College, AAU, Anand
11.8.1.30	**SNP Detection and Validation in Squamous Cell Carcinoma of Horn in Kankrej Cattle (*Bos indicus*) using Next Generation Sequencing**
	It is recommended to use SNP [T→C] at position 63251805 (dBSNP ID rs136870681) in BPIFA1 gene as a genetic marker in squamous cell carcinoma of horn (Horn Cancer) in Kankrej bullocks.
	Action: Prof. & Head, Dept. of Animal Biotech., Vet. College, AAU, Anand
11.8.1.31	**Study on Parasitic infestation of Goats in Anand District**
	It is advisable to have prophylactic deworming during pre-monsoon and post-winter seasons for Nematodes (*Trichostrongylus* spp.; *Trichuris* spp.) and Cestode (*Moniezia* spp.) infections in Goats of Anand District.
	Action: Prof. & Head, Dept. of Vet. Parasitology, Vet. College, AAU, Anand
11.8.1.32	Abattoir studies on **Amphistomosis** of Buffaloes
	It is advisable to have prophylactic antitrematodal treatment during pre-winter and pre-monsoon seasons for *Paramphistomum cervi, Cotylophoron cotylophorum and Gigantocotyle explanatum* infections in buffaloes of Anand and Ahmedabad districts.
	Action: Prof. & Head, Dept. of Vet. Parasitology, Vet. College, AAU, Anand
11.8.1.33	**Abattoir studies on Fasciolosis of Buffaloes**
	It is advisable to have prophylactic flukicidal treatment during pre-winter and pre-monsoon seasons for *Fasciola gigantica* infection in buffaloes of Anand and Ahmedabad districts.
	Action: Prof. & Head, Dept. of Vet. Parasitology, Vet. College, AAU, Anand
11.8.1.34	**Clinical application of standardized treatment protocols in different non-cataract surgical disorders of eye in animals**
	A 2.8 mm pointed tip 45° angled keratome is suggested for surgical removal of *Setaria* spp. worm from anterior chamber of horse eye by modified clear corneal stab incision.
	Action: Prof. & Head, Dept. of Vet. Surgery & Radiology, Vet. College, AAU, Anand
JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH	
11.8.1.35	**Survey on ethno-veterinary practices and preliminary evaluation of antibacterial activity of commonly used plants for animal health in Junagadh district**
	Methanol extract of *Prosopis juliflora* (Gando Baval) leaves at the concentration of 200 mg/ml has good *in vitro* antibacterial activity against bacterial isolates from animals, viz., *Escherichia coli*, *Streptococcus agalactiae* and *Staphylococcus aureus*.
	Action : Prof. & Head, Department of Veterinary Pharmacology & Toxicology, College of Veterinary Science & A. H., JAU, Junagadh
11.8.1.36	**Clinical Studies on Dental problems in pet animals**
	Recommendation: Dropped
	Action : Prof. & Head, Department of Veterinary Surgery & Radiology, College of Veterinary Science & A. H., JAU, Junagadh.
11.8.1.37	**Radio-anatomy of heart size in Mongrel dogs using Vertebral heart score system**
	The normal VHS for mongrel dogs is 8.0 to 11.1 V. The deviation from this range may indicate cardiac abnormalities.
	Action : Prof. & Head, Department of Veterinary Surgery & Radiology, College of Veterinary Science & A. H., JAU, Junagadh.
11.8.1.38	**Histomorphometry & Histochemical observations on the ovaries of Jaffrabadi**

buffaloes in different season of year

In Jaffrabadi buffaloes, based on biometrical and micrometrical observations, higher functional activities of ovaries are observed in winter season.

Action : Prof. & Head, Department of Veterinary Anatomy, College of Veterinary Science & A. H., JAU, Junagadh

11.8.1.39 **Molecular characterization of Interleukin-8 (IL-8) gene in Jaffrabadi Buffalo (*Bubalus bubalis*)**

It is recommended to use following primers for the study of IL-8 gene involved in mastitis resistance.

List of Primers

Sr. No.	Primer Sequence 5'-3'	Primer length (bp)
Primer 1	Forward 5'-GGGCGGAGGTTGCGTATT-3' Reverse 5'-TAAGAGGGATCCCAGTAAGGTTT-3'	18 23
Primer 2	Forward 5'-GACGAGCTTCAGGCAACTATCA-3' Reverse 5'-ATATTAAATGCCATGGAGACAAA-3'	22 23
Primer 3	Forward 5'-TGGAAGAATCCAGCAAAGTTC-3' Reverse 5'-TGACAGAAGGCACAGGCATA-3'	21 20
Primer 4	Forward 5'-CCAATCGATCTGGAAATCCT-3' Reverse 5'-TGACTAAGAGGTCTTTCTGTTTGTG-3'	20 25
Primer 5	Forward 5'-ACAAACAGAAAGACCTCTTAGTCA-3' Reverse 5'-CAAACTCCTGATGACTCTGACA-3'	25 22

Action : Prof. & Head, Department of Animal Genetics & Breeding, College of Veterinary Science & A.H., JAU, Junagadh

11.8.1.40 **Molecular characterization of Toll Like Receptor 4 (TLR-4) gene in Jaffrabadi Buffalo (*Bubalus bubalis*)**

Allele B is more frequent than allele A for *TLR-4/ALU I* gene and use of following primers is recommended in Jaffarabadi buffaloes.

Exon(s)	Sr. No.	Primer Sequence 5'- 3'	Amplicon Size (bp)
Exon 1	Primer-1	Forward 5'-CACAGAGCCACTTCTGGTCA-3' Reverse 5'- TTTTCAGAAGCAAGGCCAAG-3'	180
Exon 2	Primer-2	Forward 5'- ACCTGAGCTTTAACTACCT-3' Reverse 5'-AATATTTCTGCTGAATAGGA-3'	280
Exon 3	Primer-3	Forward 5'-CTGGGCTCTCAAGTTTACGG-3' Reverse 5'-AACCAGCCGGTTGATTTTTA-3'	410
	Primer-4	Forward 5'-GGCTGGTTTTGGGAGAATTT-3' Reverse 5'-TGTGAGAACAGCAACCCTTG-3'	420
	Primer-5	Forward 5'-CAAGGGTTGCTGTTCTCACA-3' Reverse 5'-GAGCGAGTGGAGTGGTTCAT-3'	478
	Primer-6	Forward 5'-TGCTCCCTGACATCTTCACA -3' Reverse 5'-TCTGACAAGTGGCATTCCTG-3'	440
	Primer-7	Forward 5'-TCAGGAATGCCACTTGTCAG-3' Reverse 5'-CAGGTCTGGGCAATCTCATA-3'	406
	Primer-8	Forward 5'-CCAGAGCCGATGGTGTATCT-3' Reverse 5'-CACTGAATCACCGGGCTTT-3'	410
	Primer-9	Forward 5'-GGTAAACCCACGAGTCCAGA-3' Reverse 5'-CCCCCGGGAAGTTCTATATT-3'	286

Action : Prof. & Head, Department of Animal Genetics & Breeding, College of Veterinary Science & A.H., JAU, Junagadh

11.8.1.41 **To study the retrieval rate and grading of oocytes from ovary of culled Jaffrabadi buffaloes**

Higher recovery rate and good quality oocytes can be obtained from ovaries without CL in Jaffrabadi buffalo using slicing method.

Action : Prof. & Head, Department of Veterinary Gynaecology & Obstetrics, College

	of Veterinary Science & A. H., JAU, Junagadh
11.8.1.42	**Comparative study on Efficacy of different medicaments for induction of estrus in true anestrous Jaffrabadi heifers (*Bubalus bubalis*)**
	The true anoestrus Jaffrabadi buffalo heifers of 3 to 3.5 body condition score responded well to CIDR or ovosynch-protocol in terms of estrus induction and conception rate.
	Action : Prof. & Head., Department of Veterinary Gynaecology & Obstetrics, College of Veterinary Science & A. H., JAU, Junagadh
11.8.1.43	**Association of milk components with Intra-mammary infection in Jaffrabadi Buffaloes**
	The milk lactose and milk urea nitrogen are found to be decreased in Jaffrabadi buffaloes with mastitis.
	Action : Prof. & Head., Department of Livestock Production management, College of Veterinary Science & A. H., JAU, Junagadh
11.8.1.44	**Record of marine finfishes commonly landed at Veraval fishing harbor**
	Seventy finfish species of different genera were recorded during the period of October 2010 to May 2014 at Veraval fish landing centre. The major groups of finfish available are sharks and rays, pomfrets, crockers, groupers, threadfins, ribbonfish, clupeids, lizard fish, sea catfishes, leather jackets, bull's eye. Fishes like *Rachycentron canadum, Mene maculate, Pomadasys maculates, Lethrinus ramark, Upenus sp., Cypselury obligolepis, Remora remora, Therapon jarbua, Therapon theraps, Harpodon nehereus, Plotosus conius, Coryphaena hippurus* are available in very less proportion at Veraval fish landing center.
	Action: Professor & Head, Dept. of Fisheries Resource Management, College of Fisheries Science, JAU, Veraval
11.8.1.45	**Antibacterial activity of some available seaweeds from Veraval coast**
	Seaweeds extract of *Gracilaria edulis, Sargassum weightii* and *Hypniamus ciformis* collected from Veraval coast contains antibacterial activity against *Aeromonas hydrophila, Pseudomonas aeruginosa* and *Vibrio alginolyticus,* respectively.
	Action: Professor & Head, Dept. of Aquaculture, College of Fisheries Science, JAU, Veraval
11.8.1.46	**Growth, mortality and stock assessment of Soldier catfish *Osteogeneiosus militaris* (Linnaeus, 1758) off Veraval coast**
	The present level of fishing on the Soldier catfish, *Osteogeneiosus militaris,* confirmed that the stock is being overexploited. Estimated growth parameters for *O. militaris* were 523 mm and 0.62 for L_∞ & K respectively. Estimated mortality parameters for *O. militaris* were 1.09, 3.67 and 2.58 for natural mortality, total mortality and fishing mortality respectively.
	Action: Professor and Head, Department of Fisheries Resource Management, College of Fisheries Science, JAU, Veraval
11.8.1.47	**Length–weight relationship and stomach content analysis of Japanese threadfin bream (Pink Perch)*, Nemipterus japonicus***
	The size and weight of Threadfin bream, *Nemipterus japonicus* available at Gujarat coast ranged from 6.5-24.1 cm and 20.5-277 g respectively with the length-weight relationship equation Log W = -2.2520 + 2.4669 Log L. The major food composition of *N. japonicus* constituted of crustaceans (54.35%), finfishes (30.24%), molluscs (7.80%), and unidentified and semi–digested materials (5.80%).
	Action: Professor and Head, Department of Fisheries Resource Management, College of Fisheries Science, JAU, Veraval
11.8.1.48	**Study on biodiversity of shellfishes in rocky intertidal zone of Veraval coast**
	The most abundant and year round species found at Veraval are *Patella radiate*

	followed by *Turbo intercostalis, Chiton granoradiatus, Rinoclavis sinensis* and Cerithium spp. of molluscs and *Balanus amphtrite* among the crutaceans.
	Action: Professor and Head, Department of Fisheries Resource Management, College of Fisheries Science, JAU, Veraval
NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI	
11.8.1.49	**Eco-friendly plastination technology for preservation of biological specimens**
	Plastinated specimens are odourless, dry and everlasting teaching aids and overcomes the existing formalin embalmed preservation method having various health hazards.
	Action: Prof. & Head. Dept. of Vet. Anatomy, Vanbandhu Veterinary College, NAU, Navsari
11.8.1.50	**1) Studies on pharmacokinetics and pharmacodynamic relationship of Cefquinome in cow calves; 2) Studies on pharmacokinetics and pharmacodynamic relationship of Cefquinome in goats**
	Based on pharmacokinetics and pharmacodynamics relationships of cefquinome in cattle and goat, it is recommended that a dose of 20 mg/kg repeated at 8 h interval after intravenous and 12 h after intramuscular administration is sufficient to maintain %T>MIC above 60% of dosage interval for bacteria with MIC values <0.4µg/ml.
	Action: Prof. & Head. Dept. of Vet. Pharmacology & Toxicology, Vanbandhu Veterinary College, NAU, Navsari
11.8.1.51	**Evaluation of gene specific primer sets in the molecular detection of *Anaplasma* organism in bovine**
	The *msp5* gene primers (forward: 5'-GTG TTC CTG GGG TAC TCC TAT GTG-3' and reverse: 5'-AAG CAT GTG ACC GCT GAC AAA C-3') are useful for specific detection of *Anaplasma marginale* in bovines with 576 bp amplicon using PCR.
	Action: Prof. & Head. Dept. of Vety. Para., Vanbandhu Veterinary College, NAU, Navsari
11.8.1.52	**Ultrasonography, diagnosis and surgical management of abdominal disorders in bovines**
	Distended intestinal loops through right flank and collapsed intestinal loops through ventro-lateral abdominal view using 3.5 to 5 MHz convex probe is suggestive of intestinal obstruction, whereas bull's eye appearance using 6-8 MHz trans-rectal probe is confirmatory for diagnosis of intussusceptions in bovines.
	Action: Prof. & Head. Dept. of Vet. Surgery & Radiology, Vanbandhu Veterinary College, NAU, Navsari
11.8.1.53	**Ultrasonography, diagnosis and surgical management of abdominal disorders in bovines**
	Presence of reticular motility at 5^{th} right inter-costal space (ICS) in advanced pregnant animal is normal but is suspected for diaphragmatic hernia in recently calved animals. Presence of reticular motility at 4^{th} right inter-costal space in advanced pregnant and recently calved animals is confirmatory diagnosis of diaphragmatic hernia on ultrasonography in bovines.
	Action: Prof. & Head. Dept. of Vety. Surgery & Radiology, Vanbandhu Veterinary College, NAU, Navsari
11.8.1.54	***In vitro* evaluation of sugarcane bagasse treated with different level of urea and moisture**
	Treatment of sugarcane bagasse at level of 3.5% urea and 40% moisture ensiled for three weeks improves nutritive values, *in vitro* digestibility of dry matter (27.7%) and organic matter (29.9%) and VFA production by 4 units as compared to untreated.
	Action : Prof. & Head, Dept. of Animal Nutrition, Vanbandhu Veterinary College, NAU, Navsari

11.8.1.55	**Evaluation of phytogenic feed additive supplementation on growth performance, nutrient utilization, anti-oxidants and health status of Surti kids**
	Supplementation of garlic bulb (2% DMI) to the growing Surti goat kids (5-6 months) for two months improves utilization of protein and fibre with higher retention of nitrogen (0.94 g/d) accompanied by improved feed conversion efficiency (18.29%) and oxidative status.
	Action : Prof. & Head, Dept. of Animal Nutrition, Vanbandhu Veterinary College, NAU, Navsari
SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SKNAGAR	
11.8.1.56	**Pharmacokinetics and safety profile of marbofloxacin and its combination with ornidazole in sheep**
	Marbofloxacin at loading dose of 2.4 mg/kg followed by maintenance dose of 2.2 mg/kg at eight hour interval intravenously in sheep maintains therapeutic concentration of marbofloxacin above 0.20 µg/ml.
	Action : Prof. & Head, Dept. of Veterinary Phar. & Toxicology, College of Veterinary Science & A.H., S.D. Agricultural University
11.8.1.57	**Pharmacokinetics and safety profile of marbofloxacin and its combination with ornidazole in sheep**
	Ornidazole at the dose of 23 mg/kg intravenously in sheep at six hours interval maintains therapeutic concentration of ornidazole above 0.20 µg/ml.
	Action : Prof. & Head, Dept. of Veterinary Phar. & Toxicology, College of Veterinary Science & A.H., S.D. Agricultural University
11.8.1.58	**Evaluation of Toll like receptor agonists for their immuno-modulating potential in poultry**
	Pre-sensitizing birds with Toll Like Receptor agonist like *Salmonella gallinarum* LPS before immunization with inactivated Newcastle Disease vaccine has potential in modulating the humoral immune response.
	Action: Prof. & Head. Dept. of Vety. Micro., College of Veterinary Science & A.H., S.D. Agricultural University
11.8.1.59	**Study on usefulness of ultrasonography for diagnosis of D.H. in bovines**
	Ultrasonography using 3.5-5 MHz transducer at right 4th or 5th inter-costal space is recommended for the diagnosis of diphragmatic hernia in Mehsana buffaloes with more than 90 percent of diagnostic accuracy.
	Action : Prof. & Head., Dept. of Veterinary Surgery & Radiology, Dr. V. M. Jhala Clinical Complex, College of Veterinary Sci. & A. H., S.D. Agricultural University
11.8.1.60	**Retrospective study of reduced service period in Kankrej cattle and Mehsana buffaloes**
	Recommendation: Dropped
	Action : Res. Sci. & Head, LRS, SDAU, Sardarkrushinagar
11.8.1.61	**Retrospective study of reduced service period in Kankrej cattle and Mehsana buffaloes**
	Intrauterine infusion of Gentamicin (40mg/ml, 40 ml for three days) is advised for the treatment of endometritis in Kankrej cattle and Mehsana buffaloes.
	Action : Res. Sci. & Head, LRS, SDAU, Sardarkrushinagar

11.8.2 NEW TECHNICAL PROGRAMME

ANAND AGRICULTURAL UNIVERSITY, ANAND

Sr. No.	Centre / Title	Approval / Suggestions	Remarks
11.8.2.1	Livestock Research Station		
	Effect of climatic factors on daily milk production of dairy cows	Approved (**Action**: Research Scientist and Head, LRS, AAU, Anand)	-
11.8.2.2	Livestock Research Station		
	Causes of culling on an organized dairy farm	Approved with following suggestions: 1. Change the title as "Study on herd life and causes of culling on an organized dairy farm". (**Action**: Research Scientist and Head, LRS, AAU, Anand)	-
11.8.2.3	Pashupalan Sansodhan Kendra, Ramna Muvada; Kapila Go Sansodhan Kendra, Minavada		
	Growth, optimal age and weight at puberty in Surti goats under farm feeding	Approved (**Action**: Research Scientist and Head, PSK, Ramana Muvada; KGK, Minavada)	-
11.8.2.4	Reproductive Biology Research Unit		
	Study on hormonal profile and follicular dynamics in pubertal buffalo heifers to hasten puberty after feeding sprouted moth beans (*Phaseolus aconitifolius*) and sprouted moong beans (*Phaseolus moongo*)	Approved (**Action**: Research Scientist and Head, RBRU, AAU, Anand)	-
11.8.2.5	Reproductive Biology Research Unit		
	Studies on restricted mating in adult Surti goats in comparison to mating throughout the year	Approved (**Action**: Research Scientist and Head, RBRU, AAU, Anand)	-
11.8.2.6	Animal Nutrition Research Station		
	Study of nutritional status of dairy animals of Botad district	Approved (**Action**: Research Scientist and Head, ANRS, AAU, Anand)	-
11.8.2.7	Animal Nutrition Research Station		
	Effect of supplementation of turmeric and ginger powders on growth performance and nutrient utilization in broilers	Approved with following suggestions: 1. To merge all five objectives in to one. (**Action**: Research Scientist and Head, ANRS, AAU, Anand)	-
11.8.2.8	Animal Nutrition Research Station		
	Methane mitigation in cattle using legume straw based Total Mixed Ration with SSF Biomass	Approved (**Action**: Research Scientist and Head, ANRS, AAU, Anand)	-
11.8.2.9	Animal Nutrition Research Station		

	In vitro evaluation of Fenugreek (*Trigonella foenum graecum*) for its influence on substrate degradation and methanogenesis	Approved (**Action**: Research Scientist and Head, ANRS, AAU, Anand)	-
11.8.2.10	Animal Nutrition Research Station		
	Effect of supplementing Jivanti (*Leptadenia reticulate*) and bypass fat in total mixed rations on nutrient utilization and milk production of Surti goats	Approved (**Action**: Research Scientist and Head, ANRS, AAU, Anand)	-
11.8.2.11	Animal Nutrition Research Station		
	To evolve area specific mineral mixture for dairy animals in Anand district	Approved (**Action**: Research Scientist and Head, ANRS, AAU, Anand)	-
11.8.2.12	Animal Nutrition Research Station		
	Effect of incorporation of dried and green date palm (*Phoenix dactylifera* L. [Arecaceae]) leaves in total mixed ration for adult goats.	Approved (**Action**: Research Scientist and Head, ANRS, AAU, Anand)	-
11.8.2.13	Animal Nutrition Research Station		
	Effect of incorporation of dried and green date palm (*Phoenix dactylifera* L. [Arecaceae]) leaves in total mixed ration for adult sheep	Approved (**Action**: Research Scientist and Head, ANRS, AAU, Anand)	-
11.8.2.14	Animal Nutrition Research Station		
	Studies on the effect of feeding bypass fat and yeast (*Saccharomyces cerevisiae*) supplemented total mixed ration to adult sheep during hot summer	Approved (**Action**: Research Scientist and Head, ANRS, AAU, Anand)	-
11.8.2.15	Animal Nutrition Research Station		
	Determination of optimum level of incorporation of recombinant cellulase of bacterial origin in total mixed ration for small ruminants	Approved (**Action**: Research Scientist and Head, ANRS, AAU, Anand)	-
11.8.2.16	Poultry Complex		
	To study the effects of feeding different quality maize on production performance and egg quality parameters of White Leghorn birds	Differed as it is an ongoing Programme. (**Action**: Research Scientist and Head, CPRS, AAU, Anand)	-
11.8.2.17	Dept. of Animal Biotechnology		
	Mining lignocellulolytic enzymes from rumen metagenome	Approved (**Action**: Prof. and Head, Dept. of Animal Biotechnology, Veterinary College, AAU, Anand).	-
11.8.2.18	Dept. of Animal Biotechnology		
	Individual genome reconstruction	Approved	-

	of Ruminant Anaerobic Microbes from Metagenomic Studies	(**Action**: Prof. and Head, Dept. of Animal Biotechnology, Veterinary College, AAU, Anand)	
11.8.2.19	Dept. of Animal Biotechnology		
	Detection of somatic mutations in Squamous Cell Carcinoma of Horn in Kankrej Cattle (*Bos indicus*) using Next Generation Sequencing	Approved (**Action**: Prof. and Head, Dept. of Animal Biotechnology, Veterinary College, AAU, Anand)	-
11.8.2.20	Dept. of Animal Genetics & Breeding		
	Screening of Dumba sheep breed for presence of fecundity gene polymorphism by PCR-RFLP	Approved with following modifications: 1. To change the title as "Screening of Dumba sheep breed for presence of fecundity gene polymorphism by PCR-RFLP and sequencing" (**Action**: Prof. and Head, Dept. of AGB, Veterinary College, AAU, Anand)	-
11.8.2.21	Dept. of Physiology & Biochemistry		
	Physiological, Biochemical and Hormonal Profiles of Surti Goats during summer and winter seasons under Intensive Production System.	Approved (**Action**: Prof. and Head, Dept. of Physiology & Biochemistry, Veterinary College, AAU, Anand)	-
11.8.2.22	Dept. of Physiology & Biochemistry		
	Physiological, Biochemical and Hormonal Profiles of Indigenous sheep during summer and winter seasons under Intensive Production System	Approved (**Action**: Prof. and Head, Dept. of Physiology & Biochemistry, Veterinary College, AAU, Anand)	-
11.8.2.23	Krishi Vigyan Kendra, Devataj		
	To evaluate optimum stocking density for nursery raising of *Labeorohita* Spawn under hapa culture system (Multi-location trial) in village ponds of middle Gujarat	Approved (**Action**: Research Scientist, KVK, Devataj, AAU, Anand)	-
11.8.2.24	Dept. of Vet. Pharmacology & Toxicology		
	To study the effects of aqueous extract of *Phyllanthus emblica* (Amla) @ 200 and 400 mg/kg body weight orally for 28 days on 15aematological and serum biochemical parameters in potassium oxonate induced gout rat model.	Approved with following modifications: 1. Change the title as "To study the effects of aqueous extract of *Phyllanthus emblica* (Amla) on haematological and serum biochemical parameters in potassium oxonate induced gout rat model". 2. To include replication of 6 animals/treatment in the	-

		methodology. (**Action**: Prof. and Head, Dept. of Vet. Pharmacology & Toxicology, Veterinary College, AAU, Anand)	
11.8.2.25	Dept. of Vet. Parasitology		
	Studies on Clinico-biochemical aspects of Ancylostomosis in dogs	Approved with following modifications: 1. Change the title as "Studies on Hemato-biochemical aspects of Ancylostomosis in dogs". (**Action**: Prof. and Head, Dept. of Vet. Parasitology, Veterinary College, AAU, Anand)	-
11.8.2.26	Dept. of Vet. Pathology		
	Toxico-pathological studies of meloxicam, ibuprofen and diclofenac sodium in broiler chicks	Approved. (**Action:** Prof. and Head, Dept. of Vet. Pathology, Veterinary College, AAU, Anand)	-
11.8.2.27	Dept. of Vet. Pathology		
	Toxicopathological studies of acetyl salicylic acid, nimesulide and diclofenac sodium in broiler chicks	Approved (**Action**: Prof. and Head, Dept. of Vet. Pathology, Veterinary College, AAU, Anand)	-
11.8.2.28	Dept. of Vet. Microbiology		
	Status of anti-rabies antibodies in dogs	Approved with following modifications: 1. To exclude treatment C from the experiment. (**Action**: Prof. and Head, Dept. of Vet. Microbiology, Veterinary College, AAU, Anand)	-
11.8.2.29	Dept. of Vet. Microbiology		
	Multi-locus sequence typing of *Pasteurella multocida* isolates of buffalo origin from Gujarat state	Approved (**Action**: Prof. and Head, Dept. of Vet. Microbiology, Veterinary College, AAU, Anand)	-
11.8.2.30	Dept. of Vet. Microbiology		
	Outer membrane protein profile of *Pasteurella multocida* isolates of buffalo origin from Gujarat state	Approved (**Action**: Prof. and Head, Dept. of Vet. Microbiology, Veterinary College, AAU, Anand)	-
11.8.2.31	Dept. of Gynaecology and Obstetrics		
	Effect of inclusion of antioxidants – cysteine and taurine – in semen extenders on refrigeration (5°C) and cryopreservation (-196°C) of buffalo semen	Approved (**Action**: Prof. and Head, Dept. of Gynaecology and Obstetrics, Veterinary College, AAU, Anand)	-
11.8.2.32	Dept. of Gynaecology and Obstetrics		
	Validation of different estrus induction and synchronization	Approved (**Action**: Prof. and Head, Dept. of	-

	protocols in anoestrus cows and buffaloes	Gynaecology and Obstetrics, Veterinary College, AAU, Anand)	
11.8.2.33	Dept. of Gynaecology and Obstetrics		
	Effect of peripartum nutritional (multi-minerals and bypass fat) supplementation on uterine involution and postpartum fertility in crossbred cows	Approved (**Action**: Prof. and Head, Dept. of Gynaecology and Obstetrics, Veterinary College, AAU, Anand)	-
11.8.2.34	Dept. of Gynaecology and Obstetrics		
	Clinical efficacies of different hormonal approaches in repeat breeding dairy animals	Approved (**Action:** Prof. and Head, Dept. of Gynaecology and Obstetrics, Veterinary College, AAU, Anand)	-
11.8.2.35	Dept. of Gynaecology and Obstetrics		
	Molecular approaches to identify specific gene markers for infertility/ reproductive disorders in dairy animals	Approved (**Action**: Prof. and Head, Dept. of Gynaecology and Obstetrics, Veterinary College, AAU, Anand)	-
11.8.2.36	Dept. of Gynaecology and Obstetrics		
	Evaluation of role of hypothalamo-hypophyseal-ovarian axis **i**n the onset of puberty in Surti/Banni buffalo and crossbred cattle	Approved (**Action**: Prof. and Head, Dept. of Gynaecology and Obstetrics, Veterinary College, AAU, Anand)	-
11.8.2.37	Dept. of Gynaecology and Obstetrics		
	Seasonal influence on efficacy of estrus induction & synchronization protocols in anoestrus cows and buffaloes	Differed as it is an ongoing Programme (**Action**: Prof. and Head, Dept. of Gynaecology and Obstetrics, Veterinary College, AAU, Anand)	-
11.8.2.38	Dept. of Vet. Public Health & Epidemiology		
	Isolation and characterization of Campylobacter spp. From buffalo meat	Approved (**Action**: Prof. and Head, Dept. of VPH, Veterinary College, AAU, Anand)	-
11.8.2.39	Dept. of Vet. Public Health & Epidemiology		
	Isolation and characterization of Campylobacter spp. from pork and slaughter house environment	Approved (**Action**: Prof. and Head, Dept. of VPH, Veterinary College, AAU, Anand)	-
11.8.2.40	Dept. of Vet. Public Health & Epidemiology		
	Isolation and characterization of Campylobacter spp. from faecal samples of cattle	Approved (**Action**: Prof. and Head, Dept. of VPH, Veterinary College, AAU, Anand	-
11.8.2.41	Dept. of Vet. Public Health & Epidemiology		
	Detection and characterization of methicillin resistance *Staphylococcus aureus* from animal, man and environment	Approved (**Action**: Prof. and Head, Dept. of VPH, Veterinary College, AAU, Anand)	-

JUNAGADH AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Centre	Suggestions	Remarks
11.8.2.42	Department of Veterinary Parasitology, College of Veterinary Science & A. H. JAU, Junagadh		
	Diagnosis of *Babesia bigemina* and *Trypanosoma evansi* in bovines in and around Junagadh: Traditional vs molecular detection and assessment of risk factors	Approved (**Action**: Prof. and Head, Deprtment of Veterinary Parasitology, College of Veterinary Science & A. H. JAU, Junagadh)	-
11.8.2.43	Department of Livestock Products Technology, College of Veterinary Science & A. H., JAU, Junagadh		
	Development and standardization of value added milk product by using buffalo milk and *Cucurbita Pepo* pulp	Differed and suggested to conduct as a filler trial. (**Action**: Prof. and Head, Department of Livestock Products Technology, College of Veterinary Science & A. H., JAU, Junagadh)	Suggested to present the project in Dairy Science & FPT group for expert insight
11.8.2.44	Department of Veterinary Anatomy, College of Veterinary Science & A. H., JAU, Junagadh		
	Study on Postnatal Development of Adrenal Gland in Gohilwari Goat (*Capra hircus*)	Approved with following modifications: 1. Change spelling of "Gohilwari" to "Gohilwadi" in the title. (**Action**: Prof. and Head, Department of Veterinary Anatomy, College of Veterinary Science & A. H., JAU, Junagadh)	-
11.8.2.45	Department of Veterinary Surgery and Radiology, College of Veterinary Science & A. H., JAU, Junagadh		
	Clinical studies on foot affections in unsound working horses	Approved with following modifications: 1. To carryout analysis using appropriate statistical tools. 2. To exclude observations related to "Correlation of foot affection with age and sex". (**Action**: Prof. and Head, Department of Veterinary Surgery and Radiology, College of Veterinary Science & A. H., JAU, Junagadh)	-
11.8.2.46	Department of Veterinary Pharmacology & Toxicology, College of Veterinary Science & A. H., JAU, Junagadh		
	Preliminary evaluation of antibacterial activity of extracts of	Approved. (**Action**: Prof. and Head, Dept. of	-

	Cassia auriculata, *Prosopis juliflora* and *Annona squamosa*	Veterinary Pharmacology & Toxicology, College of Veterinary Science & A. H., JAU, Junagadh)	
11.8.2.47	Department of Veterinary Pharmacology & Toxicology, College of Veterinary Science & A. H., JAU, Junagadh		
	Survey on use of indigenous plants for medicinal use by local people during ailments of animals in Junagadh region	Approved with following modifications: 1. Change the title as "Survey on indigenous plants use for medicinal purpose in animals in Junagadh region". (**Action**: Prof. and Head, Dept. of Veterinary Pharmacology & Toxicology, College of Veterinary Science & A. H., JAU, Junagadh)	-
11.8.2.48	College of Fisheries Science, JAU, Veraval		
	Identification and documentation of marine fish biodiversity using mitochondrial DNA bar coding	Approved. (**Action**: Professor & Head, Dept. of Aquaculture, College of Fisheries Science, JAU, Veraval)	-
11.8.2.49	College of Fisheries Science, JAU, Veraval		
	Surveillance of shrimp diseases in shrimp farms of Gujarat	Approved with following modifications: 1. Observations to be recorded should include conventional methods like clinical and microbiological parameters. (**Action**: Professor & Head, Dept. of Aquaculture, College of Fisheries Science, JAU, Veraval)	-
11.8.2.50	College of Fisheries Science, JAU, Veraval		
	MSY Estimation of Fisheries Resources of Gujarat Coast with Surplus Production Model	Approved with following modifications: 1. In observations to be recorded: "type of fish species" to be replaced with "Group of fishes". (**Action**: Prof.& Head, Dept. of Fisheries Resources Mgmt., Coll. of Fisheries Sci., JAU, Veraval)	-
11.8.2.51	Department of Harvest and Post-Harvest Technology, College of Fisheries, JAU, Veraval		
	Effects of hurdle technology on biochemical, microbiological, and sensory quality of frozen cut crabs, *Portunus pelagicus*	Approved with following modifications: 1. In observations to be recorded to add Salmonella in the microbiological analysis. (**Action:** Prof. and Head, Dept. of Harvest and Post-Harvest Tech., College of Fisheries, JAU, Veraval)	-
11.8.2.52	Fisheries Research Station, Okha		

	Effect of stocking density on growth and survival of juvenile Pacific white shrimp, *Litopenaeus vannamei* (Boone, 1931)	Approved with following modifications: 1. The change stocking density of *L. vannamei* in the treatment as 20, 25, 35 and 45 pcs/m^2 instead of 5, 10, 15 and 20 pcs/m^2. (**Action**: Res. Officer, Fisheries Research Station, JAU, Okha)	-
11.8.2.53	Fisheries Research Station, Okha		
	Effect of Aloevera treatment on quality parameters of Indian mackerel (*Rastrelliger kanagurta*, Cuvier-1816) during chill storage	Approved with following modifications: 1. To consult microbiologist for observations on microbiological analysis. (**Action**: Res. Officer, Fisheries Research Station, JAU, Okha)	-
11.8.2.54	Fisheries Research Station, Sikka		
	Effect of thermal jerk to stimulate *Saccostrea cucullata* for breeding.	Approved with following modifications: 1. To exclude objective no. 2 and 3. (**Action**: Res. Officer, Fisheries Research Station, JAU, Sikka)	-

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Sr. No.	Title/ Centre	Suggestions	Remarks
11.8.2.55	Livestock Research Station, NAU, Navsari		
	Effects of bypass fat supplementation on production performance and economics of lactating Surti buffaloes	Approved (**Action**: Research scientist and Head, LRS, NAU, Navsari)	-
11.8.2.56	SMS, KVK, NAU, Vyara		
	Effect of weather on physiological profile of heifers	Approved with following modifications: 1. To include meteorological data on animal sheds in the experimental details. (**Action**: Research scientist, SMS, KVK, NAU, Vyara)	-
11.8.2.57	Department of Instructional Livestock Farm Complex		
	Cytogenic study of HF cross bred cattle	Approved with following modifications: 1. Change the title as "Cytogenetic studies of HF crossbred cattle". 2. Treatment: Blood collection should be carried out at the earliest stage instead of periodical collections. (**Action:** Prof. and Head, Dept. of Instructional Livestock Farm Complex, NAU, Navsari)	-

11.8.2.58	Department of Veterinary Physiology and Biochemistry		
	Study of GHG emissions from dairy animals	Differed and suggested to conduct as a filler trial. (**Action**: Prof. and Head, Dept. of Veterinary Physiology and Biochemistry, NAU, Navsari)	-
11.8.2.59	Department of Livestock Products Technology		
	Studies on development of burfi utilizing watermelon (*Citrullus lanatus*) rind	Approved (**Action**: Prof. and Head, Department of Livestock Products Technology, NAU, Navsari)	suggested to present it in Dairy Science & FPT group for better insight
11.8.2.60	Department of Animal Nutrition		
	Effect of fenugreek (*Trigonella foenum-graecum* L.) supplementation on milk yield and quality in lactating Surti buffaloes	Approved (**Action**: Prof. and Head, Department of Animal Nutrition, NAU, Navsari)	-
11.8.2.61	Department of Animal Nutrition		
	Economics of growth performance due to dietary inclusion of tanniferous leaves in kids infested with gastrointestinal helminths	Approved with following suggestions: 1. To specify the name of tree in the title. 2. Observations should include fecal egg count. (**Action**: Prof. and Head, Dept. of Animal Nutrition, NAU, Navsari)	-
11.8.2.62	Department of Animal Science, N M C A, NAU, Navsari		
	Evaluation of yeast (*Saccharomyces cerevisiae*) supplementation on selected level of roughage to concentrate ratio in Surti goat kids	Approved with following suggestions: 1. Change the title as "To study the effect of yeast (*Saccharomyces cerevisiae*) on growth, feed conversion efficiency and cost of feeding in Surti kids". 2. Treatment: To workout ratio of concentrate to roughage keeping in view of national standards. 3. Treatment should include minimum of '8' animals instead of '6'. (**Action**: Prof. and Head, Dept. of Animal Science, N M C A, NAU, Navsari)	-
11.8.2.63	Department of Pharmacology and Toxicology, College of Veterinary Sci. & A.H., NAU, Navsari		
	Evaluation of *in vitro*	Differed as it is an ongoing	-

	antimicrobial (EP021 to EP030) and anti-inflammatory (EP011 to EP020) activity of medicinal plants	Programme. (**Action**: Prof. and Head, Department of Pharmacology and Toxicology, College of Veterinary Sci. & A.H., NAU, Navsari)	
11.8.2.64	Department of Pharmacology and Toxicology, College of Veterinary Sci. & A.H., NAU, Navsari		
	Evaluation of in *vitro* antimicrobial properties of endophytes isolated from medicinal plants	Approved with following suggestions: 1. Experiment should include two plant species namely *Terminalia bellirica* and *Bixaorellana*. (**Action**: Prof. and Head, Dept. of Pharmacology and Toxicology, College of Veterinary Sci. & A.H., NAU, Navsari)	-
11.8.2.65	Department of Veterinary Surgery & Radiology, College of Veterinary Sci. & A.H., NAU, Navsari		
	Cataract management by extra capsular cataract extraction technique in dogs	Approved with following suggestions: 1. To exclude objective no.2. (**Action**: Prof. and Head, Dept. of Vet. Surgery & Radiology, College of Vet. Sci. & A.H., NAU, Navsari)	-
11.8.2.66	Department of Veterinary Medicine, College of Veterinary Sci. & A.H., NAU, Navsari		
	Diagnosis and management of ascites in canines	Approved with following suggestions: 1. Objective No. 2 to be replaced with "To generate clinical data on diagnosis and treatment of ascites in canines". (**Action**: Prof. and Head, Department of Veterinary Medicine, College of Veterinary Sci. & A.H., NAU, Navsari)	-
11.8.2.67	Department of Veterinary Gynaecology and Obstetrics, College of Veterinary Sci. & A.H., NAU, Navsari		
	Evaluation of frozen semen of buffalo, crossbred and indigenous cow bull by Hypo Osmotic Swelling Test and supra-vital staining technique	Approved (**Action**: Prof. and Head, Dept. of Veterinary Gynaecology and Obstetrics, College of Veterinary Sci. & A.H., NAU, Navsari)	-
11.8.2.68	Department of Veterinary Public Health and Epidemiology,College of Veterinary Sci. & A.H., NAU, Navsari		
	Detection of Classical Enterotoxigenic coagulase positive *Staphylococcus aureus* in Raw milk, Dairy food products and Handlers' hand swabs	Approved (**Action**: Prof. and Head, Dept. of Vet. Public Health and Epidemiology, College of Vet. Sci. & A.H., NAU, Navsari)	-
11.8.2.69	Department of Veterinary Public Health and Epidemiology,College of Veterinary		

	Sci. & A.H., NAU, Navsari		
	Sero-molecular epidemiological study of Brucellosis in Navsari and Jalalpore Taluka of Navsari district	Approved with following suggestions: 1. Change the title as "Sero-molecular epidemiological study of Brucellosis in animals in Navsari and Jalalpore Taluka of Navsari district". (**Action**: Prof. and Head, Dept. of Veterinary Public Health and Epidemiology,College of Veterinary Sci. & A.H., NAU, Navsari)	-

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

Sr. No.	Title/ Centre	Suggestions	Remarks
11.8.2.70	Livestock Research Station		
	Effect of feeding guar meal and Isabgul lali during transition period on service period in Kankrej cattle.	Approved with following suggestions: 1. Treatment-3 should include Banas Dan + Isabgul lali 2.5 % + Guar meal 2.5%. 2. Observations to be recorded should include: Weight of dam at fortnight intervals up to 3 months post-partum. (**Action:** Res. Sci. and Head, LRS, College of Veterinary Science & A.H., SDAU, **Sardarkrushinagar**)	-
11.8.2.71	Livestock Research Station		
	Effect of feeding Guar meal and Isabgul lali during transition period on service period in Mehsana buffalo	Approved with following suggestions: 1. Treatment-3 should include Banas Dan + Isabgul lali 2.5 % + Guar meal 2.5%. 2. Observations to be recorded should include: Weight of dam at fortnight intervals up to 3 months post-partum. (**Action**: Res. Sci. and Head, LRS, College of Veterinary Science & A.H., SDAU, Sardarkrushinagar)	-
11.8.2.72	Livestock Research Station		
	Effect of feeding dried Moringa (SARAGAVO) leaves on body weight gain in Mehsana goat kid (3-6 months)	Approved with following suggestions: 1. Change the title as "Effect of feeding dried *Moringa olifera* (SARAGAVO) leaves on bodyweight gain in Mehsana goat kids". (**Action**: Res. Sci. & Head, LRS, Vet. College, SDAU, SKNagar)	-

11.8.2.73	Livestock Research Station		
	Effect of feeding dried Moringa (SARAGAVO) leaves on body weight gain in Patanwadi sheep lamb (3-6 months)	Approved with following suggestions: 1. Change the title as "Effect of feeding dried *Moringa olifera* (SARAGAVO) leaves on body weight gain in Patanwadi weaner lambs". (**Action**: Research Scientist and Head, LRS, College of Veterinary Science & A.H., SDAU, Sardarkrushinagar)	-
11.8.2.74	Livestock Research Station		
	Body weight dynamics in relation to milk production during lactation in Mehsana buffaloes	Approved. (**Action**: Res. Sci. and Head, LRS, College of Veterinary Science & A.H., SDAU, Sardarkrushinagar)	-
11.8.2.75	Department of Vet. Physiology & Biochemistry		
	Micro-mineral profile in Banni buffaloes (*Bubalus bubalis*) at different physiological stages	Approved. (**Action**: Prof. and Head, Dept. of Vet. Physiology & Biochemistry, College of Veterinary Science & A.H., SDAU, Sardarkrushinagar)	-
11.8.2.76	Department of Veterinary Pharmacology & Toxicology, College of Veterinary Science & A.H., SDAU, Sardarkrushinagar		
	Effect of tolfenamic acid on pharmacokinetics of ceftizoxime in sheep	Approved. (**Action**: Prof. and Head, Dept. of Vet. Pharmacology & Toxicology, College of Vet. Sci. & A.H., SDAU, Sardarkrushinagar)	-
11.8.2.77	Department of Veterinary Pharmacology & Toxicology, College of Veterinary Science & A.H., SDAU, Sardarkrushinagar		
	Pharmacokinetics of ceftizoxime in goats following single dose intravenous and intramuscular administration	Approved. (**Action**: Prof. and Head, Dept. of Veterinary Pharmacology & Toxicology, College of Veterinary Science & A.H., SDAU, SKNagar)	-
11.8.2.78	Department of Veterinary Pharmacology & Toxicology, College of Veterinary Science & A.H., SDAU, Sardarkrushinagar		
	Monitoring of toxic metals in milk of dairy animals in Northern Gujarat	Approved (**Action**: Prof. and Head, Dept. of Vet. Pharmacology & Toxicology, College of Veterinary Sci. & A.H., SDAU, Sardarkrushinagar)	-
11.8.2.79	Department of VPH & Epidemiology, College of Veterinary Science & A.H., SDAU, Sardarkrushinagar		
	Checking of sanitary quality of community drinking water in S. D. A. U. Campus, Sardarkrushinagar	Approved with suggestion to modify the title as "Quality assessment of drinking water in SDAU, Campus, Sardarkrushinagar".	-

		(**Action**: Prof. and Head, Dept. of VPH & Epidemiology, College of Vet. Sci. & A.H., SDAU, SKagar)	
11.8.2.80	Department of Veterinary Parasitology, College of Veterinary Science & A.H, SDAU, Sardarkrushinagar		
	Study on status of acaricide resistance and development of alternate strategy to control ticks in northern Gujarat	Approved. (**Action**: Prof. and Head, Dept. of Vet. Parasitology, College of Vet. Sci .& A.H, S.D.A.U., SKNagar)	-
11.8.2.81	Dr. V. M. Jhala Clinical Complex (TVCC),College of Veterinary Science & A.H., SDAU, Deesa		
	Clinical and blood profile studies on Mehsana buffaloes affected with dystocia.	Approved (**Action**: Professor, TVCC, College of Veterinary Science & A.H., SDAU, Deesa)	-

KAMDHENU UNIVERSITY, GANDHINAGAR

Sr. No.	Title/ Centre	Suggestions	Remarks
11.8.2.82	Kamdhenu University, Gandhinagar		
	Assessment of optimum thermal humidity index for dairy cattle	Approved with following suggestions: 1. Observations should include wind velocity and rectal temperature. (**Action**: Assoc. Dir. of Research, Kamdhenu University)	-
11.8.2.83	Polytechnic in Animal Husbandry, Himmatnagar		
	Epidemiological surveillance of important disease of cattle and buffaloes in milk shed areas of Sabarkantha district	Approved with following suggestions: 1. Title to be modified as "Disease surveillance of cattle and buffaloes in milk shed of Sabarkantha district". 2. Observation on "losses due to such diseases" to be excluded. (**Action**: Principal, Polytechnic College, Himmatnagar, Kamdhenu University)	-
11.8.2.84	Polytechnic in Animal Husbandry, Himmatnagar		
	Study of animal husbandry practices of dairy animals in relation to women empowerment in Sabarkantha district	Approved with following suggestions: 1. Title to be modified as "Study of animal husbandry practices adopted by women dairy farmers in Sabarkantha district". 2. Objective-2 to be modified as "To disseminate scientific knowledge on animal husbandry practices (feeding, housing, breeding and vaccination) to the women concerned.	-

		3. Objective-3 to be deleted. (**Action**: Principal, Polytechnic College, Himmatnagar, Kamdhenu University)	
11.8.2.85	Faculty of Fisheries, Kamdhenu University, Gandhinagar		
	Effect of earthworms as feed component on survival and growth rate of *P. monodon*	Approved with following suggestions: 1. Title to be modified as "Effect of earthworms as feed component on survival and growth rate of Tiger shrimp *P. monodon*". 2. Methodology: Feed should be prepared as per Pearson's formulation. 3. Replication should be '5' instead of '4'. 4. Earthworm species to be specified. (**Action**: Res. Sci., Faculty of Fisheries, Kamdhenu University, Gandhinagar)	-

11.9 PLENARY SESSION:

Plenary session of 11th Combined Joint AGRESCO meeting of SAUs was Chaired by Dr. N. C. Patel, Hon'ble Vice Chancellor of AAU, Anand and Co-Chaired by Dr. A. R. Pathak, Hon'ble Vice Chancellor, JAU, Junagadh and Officers Dr. K. B. Kathiria, Director of Research, AAU, Anand, Dr. R. R. Shah, Director of Research, SDAU, S. K. Nagar, Dr. A. N. Sabalpara, Director of Research, NAU, Navsari and Dr. P. P. Patel, Director of Extension Education, AAU, Anand remained present. After the formal welcome by Dr. K. B. Kathiria, Director of Research, AAU, the session began with the presentation of proceedings of all the sub-committee by the respective conveners, where in recommendations and new technical programmes of different sub-committee were approved as in Table. Dr. M. K. Jhala, ADR, AAU, Anand; Dr. S. Acharya, ADR, SDAU, S. K. Nagar; Dr. P. Mohnot, ADR, JAU, Junagadh and Dr. B. N. Patel, ADR, NAU, Navsari were the rapporteurs for this session.

During discussion on Horticulture and Agro-forestry Sub-committee presentation, Dr. N. C. Patel, Hon'ble Vice Chancellor, AAU, Anand suggested that technical programmes related to product processing should also be discussed in FPT&BE Sub-committee.

During discussion on Basic Science & Plant Physiology, Bio-Chemistry And Biotechnology Sub-committee presentation, Dr. Subhash, Professor & Head, Tissue Culture Laboratory, AAU, Anand suggested to discuss any projects related to Plant Biotechnology in the Basic Science group for better out-put.

Dr. P. H. Tank, Dean, College of Veterinary Science & A.H., JAU, Junagadh expressed the need to have two separate Sub-committees *viz*. Animal Production & Fisheries and Animal Health at JAU at par with other 3 SAUs. Dr. N. C. Patel, Hon'ble Vice Chancellor, AAU, Anand replied that the concerned Dean should represent this matter to the concerned Director of Research, provided there is enough staff/scientists available in each sub-committees suggested.

CONCLUDING REMARKS :

Dr. A. R. Pathak, Hon'ble Vice Chancellor, JAU, Junagadh emphatically opined that our own farms/research stations should follow the recommendations approved by this house. This is not only important to further verify our own research, but also to gain confidence while suggesting to the farmers. He also stressed on working in collaboration and not in isolation, as the present era of agricultural science demands such an approach for better output. According to his view, research on farming systems should be given more weightage. He also appealed to all those concerned for providing their inputs in finalizing the proceedings of this meeting, so that

the booklet with final recommendations and new technical programmes can be published without delay.

Dr. N. C. Patel, Hon'ble Vice Chancellor, AAU, Anand and Chairman of the session, congratulated the scientists for bringing out large number of useful recommendations and also for planning new technical programmes. He emphasized that the research work should be target oriented and each University should target one major crop each by focusing all the related aspects for that crop. He was also of the opinion that while presenting new technical programmes, review of literature should also be included by the concerned scientist. The house was of the opinion to keep full 3 days for subsequent Combined Joint AGRESCO Meetings, which was endorsed by the Chair and accordingly the same will be followed from next meeting.

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