PROCEEDING OF THE TWELFTH MEETING OF COMBINED JOINT AGRICULTURAL RESEARCH COUNCIL OF SAUS AND KAMDHENU UNIVERSITY- 2015-16

ORGANIZED BY

NAVSARI AGRICULTURAL UNIVERSITY (APRIL 11-13, 2016)











DIRECTORATE OF RESEARCH NAVSARI AGRICULTURAL UNIVERSITY NAVSARI- 396 450

PROCEEDING OF THE TWELFTH COMBINED JOINT AGRESCO MEETING OF STATE AGRICULTURAL UNIVERSITIES AND KAMDHENU UNIVERSITY HELD AT NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI DURING 11-13 APRIL, 2016.

The Twelfth Combined Joint meeting of the Agricultural Research Council (AGRESCO) of State Agricultural Universities of Gujarat and Kamdhenu University was held at Navsari Agricultural University, Navsari during 11-13 April, 2016 under the Chairmanship of Dr. C.J. Dangaria, Hon. Vice Chancellor, NAU, Navsari. Shri. Mansinhbhai K. Patel, Chairman, Gujarat State Federation of Co-operative Sugar Factories ltd. Gandinagar graced the inaugural function as inaugurator and chief guest. Dr. N.C. Patel, Hon. Vice Chancellor, AAU, Anand and Dr. A.R. Pathak, Hon. Vice Chancellor, JAU, Junagadh were the guest of honour and Dr. R. A. Sherashiya, Director of Horticulture, Government of Gujarat was the special guest. Besides, Dr. A. N. Sabalpara, Director of Research and Dean PGS, NAU, Navsari and Dr. G.R. Patel, Director of Extension Education, NAU, Navsari, Directors of Research of all SAUs, Principals and Deans of various faculties of SAUs, officers from Line Department of Gujarat state, the Associate Directors of Research, the conveners of different sub-committees of SAUs, the senior scientists/professors of SAUs attended the meeting.

At the outset, Dr. A.N. Sabalpara, Director of Research, NAU, Navsari welcomed the dignitaries and all the participants. In his welcome address he briefed the summary of recommendation and new technical programmes approved in AGRESCO Sub-committees and Joint AGRESCO meeting of respective Universities, which were to be presented and discussed during the Twelfth Combined Joint Agresco Meeting. He also gave a brief account on success of Gujarat in Agricultural sector and opined that the credit goes to visionary planning of Government and sincere efforts made by Line department and State Agricultural Universities and hard work of industrious and responsive farmers of the state.

Dr. C. J. Dangaria, Hon. Vice Chancellor, NAU, Navsari welcomed Shri. Mansinhbhai K. Patel and other dignitaries by offering floral bouquets as a symbol of love and affection. All the dignitaries joined their hands for lighting the lamp and inaugurated the XIIth Combined Joint AGRESCO meeting. The august gathering also released informative publications *viz.*, Salient Research Achievements 2004-2014, Research Accomplishments and Recommendations, 2014-15, *Adhunik Khetina Vaigyanik Sawal Jawab*, from NAU, Navsari and three folders from Junagadh Agricultural University, Junagadh.

Dr. R.A. Sherashiya, Director of Horticulture, GOG, Gujarat highlighted horticulture scenario of Gujarat state as well as of India and emphasized on need of undertaking research in priority areas like high density planting and rejuvenation of old mango orchards, protected cultivation, post harvest technology, development of disease resistant varieties of vegetables and fruit crops, introduction and development of package of practices for new crops like *Kantola*, orchids and pomegranate. Further he also expressed the need of production of quality planting material of coconut and mango with salinity resistant root stocks for coastal region as well as diversification in coconut products.

Dr. A.R. Pathak, Hon. Vice Chancellor, JAU, Junagadh expressed his views on agriculture research and need for investment in agriculture research which has more returns than any other enterprise. He added that the challenges and problems faced by farmers should be at the focal point for undertaking research programmes. Considering the difficulty in unbiased biosafety testing in Genetically Modified crops, he recommended the use of Marker Assisted Selection as an option for GM crops, which is otherwise less exploited in SAUs. Further, he emphasized the need for undertaking research in frontier areas of nanotechnology, value addition in fruit crops, drip irrigation; especially in mango orchards, diversification in mango varieties and supply of organic inputs including seeds and proper demonstrations of organic farming to the farmers for the success of organic farming.

Dr. N.C. Patel, Hon. Vice Chancellor, AAU, Anand acquainted the august gathering to the research achievements of AAU, Anand. He also informed about the research activities related Agricultural engineering and dairy research being implemented at AAU, Anand. He appreciated the *Krishi Mahotsav* and said that the Soil health cards have benefited the farmers and there is reduction in use of chemical fertilizers. He urged the agricultural fraternity to hold research in light of changing climate and emphasized the need of development of stress resistant varieties in vegetable crops. Further he hoped that the resistant varieties of *mung* and *urad* bean to mosaic virus will soon be released.

Shri Mansinhbhai K. Patel, Chairman, Gujarat State Federation of Co-operative sugar Factories limited, Gandhinagar and Chairman, Mahuva Co-operative Sugar Factory, Mahuva, expressed his views on the importance of bridging scientist and farmers through *Krishi Mahotsav* programme and express his gratitude to the Hon. Prime Minister Shri Narendra Modi (the then Chief Minister of Gujarat) for initiating *Krushi Mahotsav* with holistic approach. He appreciated the efforts of scientific community for dissemination of scientific information and demonstration of new crops and varieties, package of practices and technological advancement to the farmers for increased productivity and quality production in different crops. He explained the importance of co-operative sector in agriculture and how it has benefited to the farmers of the Gujarat state. Further he expressed the need of conservation of local breeds of cattle and establishment of animal hostels.

In his chairman address, Dr. C.J. Dangaria, Hon. Vice Chancellor, NAU, Navsari congratulated the scientific fraternity of SAUs and Kamdhenu University for the valuable recommendations for the farming community and entrepreneurs. While explaining the agriculture scenario of Gujarat state, he gave credit to the harmony and whole hearted efforts of scientific community and the farmers along with synergistic impetus by policies laid down by Government lead by Smt. Anandiben Patel, Hon. Chief Minister, Government of Gujarat for increased share of agriculture in the state's GDP. He pointed out the major problems and constraints like depletion & degradation of land, soil nutrient deficiency, over use of fertilizers, climate change, new pest and diseases and water scarcity. He emphasized to plan new research programmes on the priority research areas of climate change, nutrient deficiency, farm mechanization, export standards for fruit crops, protected cultivation in horticulture, biosafety issues, high density planting and marker assisted selection in agriculture.

Dr. G.R. Patel, Director of Extension Education, NAU, Navsari proposed vote of thanks at the end of inaugural session.

12.1 CROP IMROVEMENT:

Chairman: Dr. A. R. Pathak, Hon. Vice Chancellor, JAU, Junagadh Co-Chairman: Dr. K. B. Kathiria, Director of Reseach, AAU, Anand

Dr. B. D. Jadhav, Professor, NAU, Bharuch

Rapporteurs: Dr. K. L. Dobariya, Research Scientist, JAU, Junagadh

Dr. P. B. Patel, Associate Research Scientist, NAU, Navsari

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

	Varietal Recommendations				New Technical		
Universities	Farming	Farming Community		Scientific Community		Programmes	
	Proposed	Approved	Proposed	Approved	Proposed	Approved	
AAU	03	03	00	00	03	03	
NAU	17	14 +3*	00	00	16	15	
JAU	03	03	00	00	07	07	
SDAU	03	03	00	00	00	00	
TOTAL	26	23 + 3*	00	00	26	25	

^{(*} Pre-release)

12.1.1 RECOMMENDATIONS / ENDORSEMENT FOR FARMING COMMUNITY

ANAND A	GRICULTURAL UNIVERISTY
12.1.1.1	Guinea grass : CO (GG)-3 (Endorsement)
	This proposal was presented by Dr. R. S. Fougat, Convener, AAU, Anand. The proposed variety of guinea grass was developed through clonal selection and has already been released by TNAU, Coimbatore. It has light green foliage and robust tillering. This variety produced Green forage yield of 2517 q/ha/year which was 84.0, 92.4 and 83.1% higher than national check varieties BG-1, PGG-616 and Riversdale, respectively. The variety produced dry matter yield of 553.7q/ha/year which was 54.4, 84.8 and 58.1% higher than BG-1, PGG-616 and Riversdale, respectively. Looking to the above features, the proposal of CO (GG)-3 was recommended for endorsement for whole Gujarat. The proposal was approved for endorsement with following suggestions. Suggestions:
	 Verify dry matter data for the year 2014-15. In final proposal, give data for number of tillers per plant and remove data of days to flowering. Provide cut wise green fodder yield and number of tillers. (Action: Research Scientist (FC), MFRS, AAU, Anand)
12.1.1.2	Forage Sorghum : AFS-44 [GAFS-12 (Gujarat Anand Forage Sorghum-12)]
	The proposed genotype of sorghum AFS-44 has produced GFY of 300q/ha which was 19.1, 65.2, 31.5 and 37.1 % higher with DMY of 101q/ha which was 14.4, 66.3, 57.4 and 66.0 % higher than check varieties <i>viz.</i> GAFS-11, S-1049, GFS-5 and C-10-2, respectively in middle Gujarat. It has thin stem and higher leaf stem ratio than checks. The proposed genotype AFS-44 is recommended for Middle Gujarat. The proposal was approved with following suggestions.

Suggestions:

- 1. Include grain yield data.
- 2. Provide data for station trial.
- 3. Give reasons for missing data of some years in different centres.
- 4. Recommend for rainfed ecology. Correct time of sowing in proposal.
- 5. Reanalyze HCN % data and include corrected data in final proposal to be submitted to SVRC.

(Action: Research Scientist (FC), MFRS, AAU, Anand and Assoc. Res. Sci., Viramgam)

12.1.1.3 Kodo millet: GAK-3 (Gujarat Anand Kodra-3)

The proposed variety GAK-3 of kodo millet recorded **2457 kg/ha** grain yield which was 27.5% and 37.9 % higher than the local check, GK-2 and national check, GPUK-3. This variety is recommended for Middle Gujarat. The variety was approved with following suggestions.

Suggestions:

- 1. Correct disease /pest resistance grade.
- 2. Correct recommended ecology.
- 3. Give data of milling recovery %.
- 4. Include data of PET trial.

(Action: Research Scientist, Hill Millet Research Station, AAU, Dahod)

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12.1.1.4 Cotton: G. Cot. Hy. 10 BG-II (Endorsement)

This proposal was presented by Dr. B. G. Solanki, Convener, NAU, Navsari. Cotton hybrid G.Cot.Hy-10 (BG-II) recorded 2109 kg/ha seed cotton yield which was 92.1 % and 10.7 % higher over its non Bt counterpart and zonal check RCH-2 (BG-II), respetively. The proposed hybrid possesses staple length of 28.8 mm with good uniformity (48), average fineness (4.2 mv), medium fibre strength (22.6 g/tex) and good maturity (0.84). The proposed hybrid G.Cot.Hy-10 (BG-II) recorded below ETL population for major sucking pest. The proposed hybrid was found moderately resistant to bacterial leaf blight and alternaria leaf spot diseases and free from grey mildew. Hybrid G. Cot. Hy-10 (BG-II) is recommended for irrigated and rainfed areas of Gujarat. The proposal was approved for endorsement.

(Action:- Research Scientist (Cotton), MCRS, NAU, Surat)

12.1.1.5 Cotton: G. Cot. Hy. 12 BG-II (Endorsement)

Cotton hybrid G.Cot.Hy-12 (BG-II) recorded 2115 kg/ha seed cotton yield which was 46.6 % and 11.1% higher over its non Bt counterpart and zonal check RCH-2 (BG-II), respectively. The proposed hybrid had comparatively bigger boll size (4.4 g) with good opening and stay green character. The proposed hybrid had staple length of 28.1 mm with good uniformity (47), average fineness (4.2 mv), medium fibre strength (21.7 g/tex) and good maturity (0.84). G.Cot.Hy-12 (BG-II) recorded below ETL population of major sucking pest and moderately resistant to bacterial leaf blight and alternaria leaf spot diseases and free from grey mildew. Hybrid G. Cot. Hy-12 (BG-II) is recommended for irrigated and rainfed areas of Gujarat. The proposal was approved for endorsement.

(Action:- Research Scientist (Cotton), MCRS, NAU, Surat)

12.1.1.6 Cotton: GISV 272 GN Cot. 24 (Irrigated) Cotton variety GISV 272 gave mean seed cotton yield of 1815 kg/ha which was 42.0, 28.8, 37.2 and 30.6% higher over checks G.Cot.10, G.Cot.20, GN.Cot.22 and LRA 5166, respectively. The lint yield produced by the proposed entry was 699 kg/ha which was 47.2, 42.2, 42.7 and 50.6 % higher than checks G.Cot.10, G.Cot.20, GN.Cot.22 and LRA 5166, respectively. The proposed genotype possessed medium long staple with 27.4 mm 2.5 % SL, 5.0 mv Fibre fineness and 20.5 g/tex of Fibre strength. The proposed entry GISV 272 recorded lower population of sucking pest (below ETL). The bollworms damage was found more or less similar to checks. The proposal was approved for pre release for irrigated conditions with following suggestions. **Suggestions:** 1. Generate data for pink ball worm infenstation / damage. 2. Compare proposed variety with popular *Bt* hybrid. 3. Include data of HDP, if available. (Action:- Research Scientist (Cotton), MCRS, NAU, Surat) 12.1.1.7 Cotton: GBHV 170 (GN Cot. 26) (Rainfed) Cotton variety GBHV 170 had recorded 1640 kg/ha seed cotton yield which was 22.4 and 40.2 per cent higher than checks G.Cot.16 and NH 615, respectively under rainfed condition. GBHV 170 gave mean lint yield of 538 kg/ha which was 28.4 and 38.4% higher than checks G.Cot.16 and NH 615, respectively. It possessed medium long fibres (25.9 mm) with average fineness (4.5 mv) and average fibre strength (21.4 g/tex). It has recorded lower population of sucking pest and exhibited disease free reaction for wilt and alternaria leaf spot and observed resistant for bacterial leaf blight. The proposal was approved for pre release for South and Middle Gujarat with following suggestions. Suggestions: Generate data for pink ball worm infestation / damage. 2. Compare proposed variety with popular Bt hybrid. Include data of HDP, if available. (Action:- Research Scientist (Cotton), MCRS, NAU, Surat) 12.1.1.8 Rice: NVSR-6137 (GNR-5) The proposed genotype of rice was derivatives of Jaya x GR-6. It has recorded grain yield of 5791 kg/ha which was 13.5 % and 21.4 % higher than checks Dandi and NAUR-1, respectively. The proposed genotype possessed easy threshability compared to checks. NVSR-6137 performed very well in the coastal salt affected soils of Umbharat - Danti in South Gujarat and inland saline areas of middle Gujarat. The proposed genotype was superior over check Dandi with respect to pest and disease reaction. It was also found better in quality traits including HRR % than Dandi. The proposed genotype, NVSR-6137 possess 6.83 mm kernel length (long) with the kernel width of 1.72 mm having the L/B ratio of 3.97 categorizing as long slender grain. Rice genotype NVSR-6137 recommended for salt affected rice growing areas of Gujarat. The proposal was approved by the house.

(Action:- Assoc. Res. Scientist, MRRC, NAU, Navsari)

12.1.1.9	Rice: NVSR-2031 (GNR-6)
	Rice variety NVSR-2031 developed from cross IR-28 x NAUR-1 which recorded 4046 kg/ha grain yield which was 8.5% higher than check IR 28 in overall performance. The genotype has recorded 4152 kg/ha grain yield which was 12.5% higher than check IR 28 in South Gujarat condition. The proposed genotype is moderately resistant to major pest and diseases and better than check IR-28. The proposed genotype GNR-6 has long slender grain with better HRR %. Variety GNR-6 recommended for South Gujarat very specific rainfed transplanted (RFTP) condition. The proposal was approved with following suggestions. Suggestions: 1. In ancillary observations, give mean values alongwith range. 2. Exclude data of Nawagam centre from the proposal. (Action:- I/c. Assoc. Res. Scientist, RRRS, NAU, Vyara)
12.1.1.10	Rice: NVSR-H-1003 (GNRH-1)
	NVSR-H-1003 is the first rice hybrid of Gujarat. The proposed hybrid has recorded 5077 kg/ha grain yield, which was 10.1% and 17.1 % higher over GR 7 and a popular hybrid Suruchi 5629, respectively. The proposed hybrid is moderately resistant against bacterial leaf blight, grain discolouration and sheath rot whereas tolerant reaction against insect pest. The hybrid NVSR-H-1003 also found superior in quality traits including HRR% over hybrids US 312, suruchi 5629 and NAUR-1. Rice Hybrid NVSR-H-1003 recommended for transplanted rice growing areas of Gujarat. The proposal was approved with following suggestion. Suggestion: 1. In ancillary observations, give mean values along with range.
	(Action:- Assoc. Res. Scientist, RRRS, NAU, Vyara)
12.1.1.11	Sugarcane: CoN 9072 (GNS-9)
	Proposed clone CoN 09072 (GNS 9) of sugercane is an early maturing gave yield of 129.05 t/ha which is 27.3 %, 11.7 % and 16.6 % higher than CoC 671, GS-5 and GNS-8, respectively. GNS-9 has also recorded higher sugar yield (16.2 t/ha) and it is moderately resistant to red rot and wilt and resistant to whip smut. It is also a good ratooner and having non flowering habit. It is recommended for irrigated areas of South Gujarat. (Action:- Research scientist, Main Sugarcane Research Station, NAU, Navsari)
12.1.1.12	Castor: NCH-1 (GNCH-1)
	The proposed castor hybrid NCH-1 yielded 2444 kg/ha resulting 21.2%, 46.2% and 44.5% higher seed yield than hybrid checks GCH-7, DCH-519 and DCH-177, respectively. The hybrid NCH-1 having medium plant height and long primary as well as secondary spikes. The hybrid is resistant to wilt disease and tolerant to various larval and sucking pest of castor. The hybrid GNCH-1 is recommended for late- <i>kharif</i> and <i>rabi</i> season in South and Middle Gujarat in irrigated conditions under rice based cropping system. (Action:- Asst. Res. Sci., Pulse and Castor Project, NAU, Navsari)

12.1.1.13 Pigeon pea: BP-06-33 (GNP-2) Pigeon pea vareity BP-06-33 is the first dual purpose (grain and vegetable) in the state. The proposed culture recorded green pod yield of 3394 kg/ha which was 19.5 %, 47.8 % and 16.0 % higher than checks GT-1, AVPP-1 and Vaishali, respectively. Similarly it gave grain yield of 1255 kg/ha which was 17.2%, 49.5% and 20.9% higher than checks GT-1, AVPP-1 and Vaishali, respectively. It is moderately tolerant for pod fly and pod borer and moderately resistant to wilt and SMD. The genotype is with indeterminate growth habit having dark green foliage. The pods are green in colour with 4 to 5 grains with prominent constriction compared to GT-1. BP-06-33 is recommended for Kharif pigeon pea cultivating areas of South and North Gujarat. The proposal was approved with following suggestions. Suggestions: 1. Recast proposal as per the prescribed proforma points. 2. Provide quality parameters data of green pods. 3. Specify agency responsible for breeder seed production. 4. Delete grain yield data in table 10. (Action:- Assoc. Res. Sci., Pulse and Castor Project, NAU, Navsari) 12.1.1.14 Sweet Potato: CIP-440127 (Bhukanti) Endorsement Sweet potato culture CIP-440127 gave 33.24 t/ha tuber yield which was 84.0% higher over the national check Gouri. It possesses good amount of Beta carotene content i.e., 2.36 (mg/100g) as against 1.18 (mg/100g) in the national check Gouri. The proposal was approved as pre-release for South Gujarat with following suggestions. **Suggestions:** 1. Test for one more year over locations with local check / variety. 2. Recast proposal by using data of Navsari centre for endorsement (Do not consider National level data). 3. Correct average yield in proposal. 4. Remove matter given in point 15, 17 of the proposal for screening under stress condition. 5. Give quality data and compare with locally available variety grown by farmers. (Action:- Assoc. Professor, ACHF, NAU, Navsari) 12.1.1.15 Finger Millet: WWN-25 (GNN-7) The finger millet culture WWN-25 was found superior in grain yield (2477 kg/ha) by 19.48% over local check GN-5 and 18.41% over national check variety VL-149. It has bold grain size, medium duration and synchronous in maturity (120-130 days) and non-lodging type. It is moderately resistant to leaf, neck and finger blast and foot rot disease. It is recommended for Zone- I, II and III i.e., finger millet growing region of Gujarat. The proposal was approved with

following suggestions.

Suggestions:

- 1. Compile and combine data of AICRP trials / locations.
- 2. Remove MLT data of the year 2015-16.

(Action:- Assoc. Res. Sci., HMRS, NAU, Waghai)

12.1.1.16	Little Millet: WV-125 (GNV-3)	
	The genotype, GNV-3 found superior in grain yield (2864 kg/ha) by 8.77 % and 43.92 % over the existing checks i.e. GV-2 (LC) and CO-2 (NC), respectively. It is early and synchronous in maturity (107-118 days) and multi-tillering and non-lodging type. It showed resistant reaction to diseases like blast (Leaf, neck and panicle) and moderately resistant to grain smut (%) and sheath blight. It is recommended for Zone- I, II and III i.e., littet millet growing region of Gujarat. The proposal was approved with following suggestion. Suggestion: 1. Include data of hulling recovery percentage. (Action:- Assoc. Res. Sci., HMRS, NAU, Waghai)	
12.1.1.17	Sorghum: SR-2917 (GNJ-1)	
	The sorghum genotype, SR-2917 recorded 3431 kg/ha which was 33.8%, 16.4% and 21.1% higher than checks GJ- 38, GJ-42 and CSV-20, respectively. SR-2917 found grain mold resistant, less incidence of ergot disease and stem borer. SR-2917 having desirable characteristics like well peduncle exertion resulted in disease resistance. It has long panicle and tall stature suitable for dual purpose. SR-2917 is recommended for rainfed areas of Gujarat. The proposal was approved by the house. (Action:- I/c. Res. Scientist, MSRS, NAU, Surat)	
12.1.1.18	Niger: NRS-1304 (GNN-1)	
	Niger: NRS-1304 (GNN-1) Niger variety NRS-1304 has recorded higher seed yield of 406 kg/ha which was 35.8% and 31.4% increase over the national check IGPN-2004-1 (299 kg/ha) and local check GN-2 (309 kg/ha) respectively. It recorded oil yield of 132 kg/ha which was 53.5% and 36.1% higher over the national check IGPN-2004-1 (86 kg/ha.) and local check GN-2 (97 kg/ha). NRS-1304 also found resistant to the Alternaria and Cercospora leaf spot diseases and moderately resistant to semilooper and caterpillar. It is recommended for South Gujarat. The proposal was approved with following suggestions. Suggestions: 1. Follow SAU patterns for naming the variety. 2. Specify breeding method with detailed generation advancement. 3. Reanalyze the insect / pest data. Follows standard pattern for recording incidence. 4. Specify seed production technique in proposal. (Action:- Asst. Res. Scientist, NRS, NAU, Vanarasi)	
12.1.1.19	Turmeric: NVST-64 (GNT-2)	
	A termeric culture NVST-64 yielded 28.7 t/ha with yield increment of 22.5 % and 26.5 % over checks GNT-1 and Pratibha. It contains more number of mother rhizomes (4-5) per plant, fingers per rhizome (30-34), higher curcumin content (4.10 %), dry weight recovery (20.70%), powder recovery (87.0%) and medium reddish yellow powder colour. Resistant against rhizome rot and moderately resistance against leaf blotch diseases. It is recommended for South Gujarat. The proposal was approved with following suggestions.	

	Suggestions: 1. Follow SAU norms for naming the variety. 2. Specify the year/location of source material and generation advancement. (Action:- I/c. Prof. and Head, NAU, Navsari)
12.1.1.20	Brinjal: NSRP-1 (GNRB-1)
	The brinjal culture, NSRP-1 recorded 308.6 q/ha fruit yield which was 22.6 % and 18.0 % higher over standard checks GJB-3 (251.6 q/ha) and GOB-1 (261.5 q/ha), respectively. Under South Gujarat condition, GNRB-1 registered 23.0 and 22.7% higher fruit yield over GJB-3 and GOB-1 respectively. The fruits of genotype are round, dark purple in colour and has purple green leaves. GNB-1 had low incidence of little leaf disease reaction (3.90 %) and shoot borer (3.35 %). GNRB-1 is recommended for general cultivation in brinjal growing areas of South Gujarat. The proposal was approved with following suggestion. Suggestion: 1. Specify year of collection made and procedure followed for generation advancement. (Action:- Assoc. Professor, ACHF, NAU, Navsari)

JUNAGADH AGRICULTURAL UNIVERISTY		
12.1.1.21	Wheat: Gujarat Junagadh Wheat 463 (GJW 463)	
	The proposal of Gujarat Junagdh Wheat 463 (GJW 463) was presented by Dr. M. D. Khanpara, Convener, JAU, Junagadh. The proposed wheat variety has recorded 5575 kg/ha grain yield under early sown condition which was 28.1, 30.0, 21.7 and 12.9 per cent higher over check varieties GW 496 (3338 kg/ha), LOK 1 (4287 kg/ha), GW 366 (4565 kg/ha) and GW 190 (4938 kg/ha), respectively. Whereas, the proposed variety has recorded 5091 kg/ha grain yield under timely sown condition which was 13.4, 6.9, 1.1 and 6.2 per cent higher grain yield over check varieties GW 496 (4479 kg/ha), LOK 1 (4763 kg/ha), GW 322 (5037 kg/ha) and GW 366 (4792 kg/ha), respectively. It possesses amber seed like GW 496. This variety is tolerant against rust disease. The proposal was approved for wheat growing area of the state with following suggestion. Suggestion: 1. Include Point No. 17 in the proposal. (Action: Research Scientist (Wheat), JAU, Junagadh)	
12.1.1.22	Red Onion: Gujarat Junagadh Red Onion-11 (GJRO-11)	
	This Gujarat Junagadh Red Onion-11 (GJRO-11) variety was recommended in 11 th Combine-Joint AGRESCO held at Anand on 7-9 th , April 2015 and was	

released for Gujarat except South Gujarat. The proposal was presented with South Gujarat data. Overall, this variety recorded bulb yield of 336.29 q/ha, which was 16.0, 27.3 and 21.3 per cent higher over check varieties, AGFL Red (289.9 q/ha), Pilli Patti (264.2 q/ha) and Talaja Red (277.3 q/ha), respectively. This variety was found less pungent (pyruvic acid, 1.22 μ M/g) as compared to check varieties AGFL-Red and Talaja-Red and the bulbs of this variety were medium in size with flat globe shape and red in colour. The proposed variety was found good as compared to check varieties against diseases and insect-pest reactions. The proposal was approved by the house for South Gujarat too.

[Action: Research Scientist (Onion & Garlic), JAU, Junagadh]

12.1.1.23 White Onion: Gujarat Junagadh White Onion-3 (GJWO-3)

The proposal of Gujarat Junagadh White Onion-3 (GJWO-3) was presented by incorporating suggestions of 11th Combine-Joint AGRESCO meeting. This white onion variety recorded bulb yield of 398.06 q/ha, which was 20.8, 11.3 and 7.8 per cent higher over check varieties, PWF-131 (329.54 q/ha), GWO-1 (357.75 q/ha) and qualifying variety GAWO-2 (369.26 q/ha), respectively. The proposed variety bulbs contain higher total soluble solid (13.15%) as compared to check varieties *viz.*, PWF-131 (12.80%), GWO-1 (12.88%) and GAWO-2 (12.18%). Bolting per cent and jointed bulb per cent were less as compared to check varieties and the bulbs of this variety were medium in size with flat globe shape and white in colour preferred by industry. The proposal was approved by the house for whole Gujarat.

[Action: Research Scientist (Onion & Garlic), JAU, Junagadh]

SARDARKRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

12.1.1.24 | Cowpea : GUJARAT COWPEA 6 (GC 6)

This proposal was presented by Dr. Y. Ravindrababu, Convener, SDAU, S.K. Nagar. Overall, the proposed cowpea variety recorded 1077 kg/ha seed yield which was higher than GC 3 (905 kg/ha), GC 4 (947 kg/ha) and GC 5 (923 kg/ha), respectivity. The proposed variety GC 6 recorded 18.97, 13.66 and 16.64 per cent higher grain yield than checks GC 3, GC 4 and GC 5, respectively over years and locations. The variety also showed superiority in term of yield in summer season (28.32, 12.49 and 28.33 per cent over GC 3, GC 4 and GC 5, respectively). Proposed variety has medium, attractive creamish white colour with higher test weight (10.66 gm). The proposal was approved and recommended for summer season cultivation in North Gujarat.

(Action: Research Scientist, Pulses Research Station, S. D. Agricultural University, S.K. Nagar)

12.1.1.25 | Isabgul: GI 4 (GUJARAT ISABGUL 4)

The proposed isabgul variety has recorded 928 kg/ha seed yield which was 11.8 % higher over the check GI 3 (830 kg/ha). The variety is non-shettering type with higher husk swelling trait. The proposal was approved by the house for isabgul growing areas of the state.

(Action: Research Scientist, Seed Spices Research Station, S. D. Agricultural University, Jagudan)

12.1.1.26 | FENUGREEK: ENDORSEMENT OF PUSA EARLY BUNCHING (PEB)

The proposed fenugreek variety Pusa Early Bunching recorded 20.4 t/ha green leaf foliage yield which was 41.6 % higher than the check variety GM 2 (14.4 t/ha). This variety possesses higher nutrient values *viz.*, Fe, Zn and Mn than the check GM 2. The proposal was approved for endorsement with following suggestions.

Suggestions:

- 1. Include seed yield data.
- 2. Include cut-wise green leaf yield.
- 3. Give data of number of secondary branches and number of leaves per plant.

(Action : Research Scientist, Seed Spices Research Station, S. D. Agricultural University, Jagudan)

12.1.2 NEW TECHNICAL PROGRAMMES

ANAND AGRICULTURAL UNIVERISTY			
Item No.	Title/Centre	Suggestions	
Centre:- As	ssociate Research Scientist, RC	RS, Viramgam., AAU, Anand	
12.1.2.1	Validation of male sterility specific SCAR marker in early generation of Gossypium herbaceum.	Accepted by the house. (Action: Associate Research Scientist, RCRS, Viramgam., AAU, Anand)	
12.1.2.2	Characterization of Deshi cotton (<i>G. herbaceum</i>) germplasm	Accepted with following suggestion/s 1. Include disease and pest incidence observation (Action: Associate Research Scientist, RCRS, Viramgam., AAU, Anand)	
Centre:- Pr	Centre:- Professor & Head, Department of Genetics & Plant breeding, AAU, Anand		
12.1.2.3	Evaluation of sesame genotypes in summer season along with molecular characterisation.	Accepted with following suggestion/s 1. Include No. of seeds per capsule observation 2. Include all recommended varieties as checks 3. Take disease and pest observation.	
		(Action: Professor & Head, Department of Genetics & Plant breeding, AAU, Anand)	

NAVSARI A	NAVSARI AGRICULTURAL UNIVERISTY			
Item No.	Title/Centre	Suggestions		
Centre:- Re	search Scientist (Cotton), NAU	, Surat (Cotton)		
12.1.2.4 Exploration of cotton germplasms for various characters from Gujarat		Accepted with following suggestion/s 1. Change the title as "Collection, evaluation and development of promising cotton hybrids with big ball size." (Action:- Research Scientist (Cotton), NAU, Surat)		
Centre:- A	ssociate Research Scientist ((PB), MRRC, NAU, Navsari (Rice)		
12.1.2.5	Induction of salt tolerance in rice by mutagenesis	Accepted by the house. (Action:- Associate Research Scientist (PB), MRRC, NAU, Navsari)		
12.1.2.6	Effect of different priming treatments on seed germination and early growth of rice	Accepted by the house. (Action:- Associate Research Scientist (PB), MRRC, NAU, Navsari)		

Centre:- N	Centre:- Nodal officer & Unit Head, Pulse and Castor Res. Station, NAU, Navsari				
12.1.2.7	Effect of seed coating polymer on seed quality	Differed by the house.			
	of cotton	(Action:- Nodal officer & Unit Head, Pulse and Castor Res. Station, NAU, Navsari)			
12.1.2.8	Effect of priming on seed germination and seedling vigour of	Accepted with following suggestion/s 1. Take experiment in FCRD design.			
	Pigeon pea (<i>in vitro</i> condition)	(Action:- Nodal officer & Unit Head, Pulse and Castor Res. Station, NAU, Navsari)			
12.1.2.9	To study the effect of different seed priming treatments on chickpea.	Accepted with following suggestion/s. 1. Specify dose in the treatments.			
		(Action:- Nodal officer & Unit Head, Pulse and Castor Res. Station, NAU, Navsari)			
Centre:-: F	Professor & Head, Dept. of O	Genetics and Pl. Breeding, NMCA, Navsari			
12.1.2.10	Improvement in yield and quality parameters in turmeric through	Accepted by the house.			
	mutagenesis	(Action:- Professor & Head, Dept. of Genetics and Pl. Breeding, NMCA, Navsari)			
Centre:- Pr	ofessor & Head, Dept. of G	enetics and Pl. Breeding, Co. of Agri., Bharuch			
12.1.2.11	Exploitation of genomic resources to developed biofortified pigeon pea	Accepted with following suggestion/s. 1. Change title as "Exploitation of genetic resources to develop biofortified pigeonpea". 2. Collect different lines from other research stations and ICRISAT.			
		(Action:- Professor & Head, Dept. of Genetics and Pl. Breeding, Co. of Agri., Bharuch)			
Centre:- As	sso. Research Sci. (PB), Hill I	Millet Research Station, Waghai			
12.1.2.12	Evaluation of promising genotypes of Finger millet (<i>Eleusine coracana</i> L.) developed through gamma rays induced mutation	 Accepted with following suggestion/s. 1. Include variety GPU-28 in conventional breeding programme. 2. Add LD₅₀ value. 3. Artificial inoculation in M₂ generation should be done. 			
		(Action:- Asso. Research Sci. (PB), Hill Millet Research Station, Waghai)			

Centre:- As	Centre:- Asso. Research Sci. (PB), NRS, NAU, Vanarasi			
12.1.2.13	Collection and evaluation of niger genotypes for seed oil and quality aspects.	Accepted by the house. (Action:- Asso. Res. Sci. (PB), Vanarasi)		
Centre:- As	sso. Research Sci. (PB), Hill I	Millet Research Station, Waghai		
12.1.2.14	Collection and evaluation of superior cucumber (<i>Cucumis sativus</i> L.) genotypes suitable for cultivation in Southern Gujarat region	Accepted with following suggestion/s. 1. Collect more local germplasm from surrounding areas. (Action:- Asso. Research Sci. (PB), Hill Millet Research Station, Waghai)		
12.1.2.15	Collection, Multiplication and Maintenance of Elephant Foot Yam germplasm for evaluation as well as Selection of Superior Genotypes suitable for cultivation in Southern Gujarat region	 Accepted with following suggestion/s Planting material should be used with equal size and weight. Collect more germplasm from various sources. First year trial should be conducted as PET only at one location i.e. Waghai. 		
		(Action:- Asso. Research Sci. (PB), Hill Millet Research Station, Waghai)		
Centre:- As	ssistant Research Scientist,	ARS, NAU, Tanchha, Dist: Bharuch		
12.1.2.16	Selection and development of promising chickpea genotype suitable for cultivation under conserved soil moisture condition	Accepted with following suggestion/s. 1. Add protein content in observation. (Action:- Assistant Research Scientist, ARS, NAU, Tanchha, Dist: Bharuch)		
Centre:- A	gricultural Research Station	, NAU, Tanchha		
12.1.2.17	Development of molecular markers linked to fragrance in indigenous medium grain aromatic rice genotypes	Accepted by the house. (Action:- Agricultural Research Station, NAU, Tanchha)		
Centre :- V	Centre :- Vegetable Dept., ACHF, NAU, Navsari			
12.1.2.18	Assessment of genetic diversity in sweet potato	Accepted by the house. (Action:- Vegetable dept., ACHF, NAU, Navsari)		
		(Actionity vegetable dept., Actif, NAO, Navsail)		

12.1.2.19	G x E interaction and stability for yield and quality components in greater Yam.	 Accepted with following suggestion/s Change title as "Genetic variability, G x E interaction and stability analysis for yield and quality components in greater Yam." Collect more local germplasm and include in trial.
		(Action:- Vegetable dept., ACHF, NAU, Navsari)

JUNAGAI	DH AGRCICULTURAL UN	IIVERISTY
Sr. No.	Title/Center	Suggestions
Center: W	heat Research Station, JAU,	Junagadh
12.1.2.20	Phenotyping wheat genotypes for heat tolerance.	Accepted by the house. [Action: Research Scientist (Wheat), JAU, Junagadh]
12.1.2.21	Screening of different wheat genotypes under saline vertisol soil condition.	Accepted with following suggestion/s.
		Junagadh]
Center: Re	search Scientist (Pl. Br.), Ag	ricultural Research Station, JAU, Amreli
12.1.2.22	Performance of sesame genotypes differing in	Accepted by the house.
	maturity and plant types	[Action: Research Scientist (Pl. Breeding), JAU,
	and their response to plant geometry.	Amreli]
12.1.2.23	Screening of sesame varieties/ germplasm lines for yield performance under	Accepted by the house. [Action: Research Scientist (Pl. Breeding), JAU, Amreli]
	organic farming.	
		Seed Technology Research, JAU, Jamnagar
12.1.2.24	Standardization of seed production technology in green manure crops	Accepted by the house.
	(i) Dhaincha	[Action: Research Scientist (Pearl Millet), JAU,
	(ii) Sun hemp (iii) Pillipesara.	Jamnagar]
12.1.2.25	Effect of High Yielding	Accepted by the house.
	Technology (HYT) on	
	enhancing seed yield in	[Action: Research Scientist (Pearl Millet), JAU,
	wheat.	Jamnagar]

Center: Ve	Center: Vegetable Research Station, JAU, Junagadh							
12.1.2.26	Research on storability in onion.	Accepted with following suggestion/s 1. Submit technical programme in prescribed format. 2. Include farmer's practice as treatment.						
		[Action: Research Scientist (Onion & Garlic), JAU, Junagadh						

During the presentation of varietal release proposals and new technical programmes following points were emerged and discussed at length for implementation by all the centres:

- The crop varieties should be tested in a specified / systematic evaluation system eg. Station trial/ PET, SSVT, LSVT etc. The release proposal should also contain yield data of the respective systemic evaluation trials.
- There should be open and free exchange of breeding lines by different centres of SAUs.
- 3. Cotton varieties should be tested with popular *Bt* hybrids for comparison in yield.
- 4. Crop scientists should send copy of final research report to concern subcentre and Director of Research of respective SAUs for reference purpose.
- 5. No adaptive trials of any variety should be given prior to release.
- 6. When the material is developed from local, should be specified with pass port data, accession number with breeding procedure followed.
- 7. Pedigree must be mentioned in release proposal.
- 8. Release proposal must accomplish with DUST test characters.

At the end of session, Dr. B. G. Solanki, the convener, Combined Joint AGRESCO of Crop Improvement Sub-committee extended the vote of thanks.

12.2 CROP PRODUCTION AND NATURAL RESOURCE MANAGEMENT

Chairman	Dr. K.P.Patel, Principal and Dean (Agri.), B. A. College of					
	Agriculture, AAU, Anand					
Co-chairman	1. Dr. M. K. Arvadia, Principal and Dean (Agri.), N.M. College of Agriculture, NAU, Navsari					
	2. Dr. V. R. Patel, Professor and Head, Dept. of Agril. Chem & Soil Science, SDAU, Sardarkrushinagar					
Rapporteurs	1. Dr. V.R.Bhatt, Professor and Head, Dept. of Agril. Chem & Soil Science, BACA, AAU, Anand					
	2. Dr. V. P. Usadadia, Research Scientist (Soil and Water), NAU, Navsari					

SUMMARY

Universities		Recomm	New To	echnical		
	Farming Community		Scientific Community		Programmes	
	Proposed	Approved	Proposed	Approved	Proposed	Approved
AAU	11	10*			28	26
JAU	10	10	5	5	28	28
NAU	16	15	2	3	50	49**
SDAU	8	7		2	21	20
TOTAL	45	42	7	10	127	123

^{*} Recommendation no. 4 and 5 are combined in one

 $^{{\}color{red}**} \textbf{ One technical programme approved in horticulture and agro forestry sub committee}$

12.2.1 RECOMMENDATIONS

A. FARMING COMMUNITY

ANANAD AGRICULTURAL UNIVERSITY

Dept. of Agril. Chem. & Soil Sci., BACA, AAU, Anand 12.2.1.1

Site specific nutrient management in soybean – wheat cropping system in middle Gujarat conditions

The farmers of Middle Gujarat Agro climatic Zone growing wheat after soybean are recommended to apply 120-60-120 kg NPK/ha along with 25 kg ZnSO₄/ha, 20 kg S/ha (through gypsum 150 kg/ha) and one foliar spray of 0.5 % FeSO₄ (5 g FeSO₄ + 1 g citric acid /l) at 30 DAS to wheat to get higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં સોયાબીન પછી ઘઉં ઉગાડતા ખેડૂતોને વધુ ઉત્પાદન તથા નફો મેળવવા માટે ઘઉંના પાકને પ્રતિ હેકટર ૧૨૦-૬૦-૧૨૦ કિ.ગ્રા.ના. ફો. પો. ઉપરાંત ૨૫ કિ.ગ્રા. ઝીંક સલ્ફેટ,૨૦ કિ.ગ્રા. સલ્ફર (૧૫૦ કિ.ગ્રા./હે. જીપ્સમ દ્વારા) આપવાથી તેમજ ફેરસ સલ્ફેટ ૦.૫ % દ્વાવણનો (૫ ગ્રામ ફેરસ સલ્ફેટ + ૧ ગ્રામ લીંબુના ફુલ/લિ.) વાવેતર બાદ ૩૦ દિવસે છંટકાવ કરવાથી ઘઉંનું વધુ ઉત્પાદન તથા નફો મેળવી શકાય છે.

(Action: Professor & Head, Dept. of Agril. Chem. & Soil Sci., BACA, AAU, Anand)

Regional Research Station, AAU, Anand

12.2.1.2

Effect of method of sowing and seed rate on wheat in rice-wheat cropping system

The farmers of Middle Gujarat Agro climatic Zone growing wheat after transplanted rice are recommended for line sowing (22.5 cm) of wheat in dry seedbed with seed @ 150 kg/ha followed by irrigation after sowing for higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં રોપાણ ડાંગર બાદ ઘઉંનું વાવેતર કરતા ખેડૂતોને ઘઉંનું વધારે ઉત્પાદન અને નફો મેળવવા માટે સુકી જમીનમાં ૨૨.૫ સે.મી.ના અંતરે ચાસ પાડીને હેકટરે ૧૫૦ કિ.ગ્રા. બીજ દર રાખી વાવેતર કર્યા બાદ પિયત આપવાની ભલામણ કરવામાં આવે છે.

(Action: Assoc. Res. Sci., Regional Research Station, AAU, Anand)

Main Forage Research Station, AAU, Anand

12.2.1.3

Performance of dual purpose forage crops under different cutting management system

The farmers of Middle Gujarat Agro climatic Zone interested to grow oat (JHO 822) as dual purpose are recommended to harvest first cut at 60 days after sowing for green forage and leave it for grain production to get quality forage with higher grain yield and net return.

મધ્ય ગુજરાત ખેત આબોઠવાકીય વિસ્તારમાં ધાસયારા તેમજ દાણાના ઉત્પાદનના હેતુથી ઓટ (જેએચઓ ૮૨૨) નું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ઓટના પાકની પ્રથમ કાપણી વાવણી બાદ ૬૦ દિવસે લીલાયારા માટે કર્યા પછી દાણાના ઉત્પાદન માટે છોડી દેવાથી ગુણવત્તાસભર લીલોયારો અને દાણાનું વધુ ઉત્પાદન તથા નફો મેળવી શકાય છે.

(Action: Asstt. Res. Sci. (Agron.), MFRS, AAU, Anand)

Main Maize Research Station, AAU, Godhra 12.2.1.4

Response of rabi maize (GM 3 and HQPM 1) to tassel removal on maize productivity

The farmers of Middle Gujarat Agro climatic Zone growing *rabi* maize (GM-3 and HQPM 1) are recommended to remove tassel after 15 days of anthesis in alternate rows for getting higher yield and net return.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં રવી મકાઇ (ગુજરાત મકાઇ 3 અને એયક્યુપીએમ ૧) ઉગાડતા ખેડૂતો માટે ભલામણ છે કે દરેક એકાંતર લાઇનમાંથી છોડ ઉપરથી ફલીનીકરણ થયાના ૧૫ દિવસ પછી યમરી કાઢી નાખવાથી વધુ ઉત્પાદન અને નફો મેળવી શકાય છે.

(Action: Asstt. Res. Sci. (Agron.), MMRS, AAU, Godhra)

Tribal Research cum Training Centre, AAU, Devgadhbaria 12.2.1.5

Improving use efficiency of inputs (water and nutrients) in Bt. cotton (G. Cot Hy-8 BG II)

The farmers of Middle Gujarat Agro climatic Zone growing *Bt* cotton (G Cot. Hy-8, BG II) in paired row (60 x 180 x 60 cm) are recommended to adopt drip irrigation at 0.8 PEF and fertilize the crop with 240 kg N/ha in four equal splits (60 kg N as a basal and remaining 180 kg N in three equal splits at one month interval through fertigation) to get higher yield and net return with 20 % water saving.

System details:

- 1. Lateral spacing: 2.40 m
- 2. Dripper spacing: 45 cm
- 3. Dripper discharge: 4 lph
- 4. Operating pressure: 1.2 kg/cm²
- 5. Operating frequency: Alternate day
- 6. Operating time: 84 minutes

મધ્ય ગુજરાત ખેત આબોઠવાકીય વિસ્તારના બીટી કપાસ (ગુજ. કપાસ સંકર-૮ બીજી -૨) ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે કપાસના પાકને જોડીયા હારમાં (50xx૧૮0xx50 સે.મી.) વાવેતર કરી ૦.૮ પીઇએફ થી ટપક પધ્ધતિ દ્વારા પિયત આપવુ અને હેક્ટરે ૨૪૦ કિ.ગ્રા. નાઇટ્રોજન ચાર સરખા હપ્તામાં (50 કિ.ગ્રા. નાઇટ્રોજન પાયામાં અને બાકીનો ૧૮૦ કિ.ગ્રા.

નાઇટ્રોજન ત્રણ સરખા ભાગમાં એક માસના અંતરે ટપક પિયત દ્વારા) આપવાથી વધુ ઉત્પાદન, નફ્રો અને ૨૦% પાણીનો બચાવ કરી શકાય છે.

આ ટપક પધ્ધતિમા ૪ લિટર પ્રતિ કલાકની ક્ષમતાના ડ્રીપર અને ૪૫ સે.મી .ના અંતરવાળી ડ્રીપલાઇન, બે ડ્રીપલાઇન વચ્ચે ૨.૪૦ મીટરનુ અંતર રાખી ટપક પ્રણાલીને ૧.૨ કિ.ગ્રા/.સે.મી ના દબાણે આંતરે દિવસે ૮૪ મીનીટ યલાવવાની ભલામણ છે.

(Action: Res. Sci. (Agron.), TRTC, AAU, Devgadh Baria)

Main Rice Research Station, AAU, Nawagam 12.2.1.6

Response of different levels of nitrogen, phosphorus and bio-fertilizers on rice (*Oryza sativa* L.) under middle Gujarat condition

The farmers of AES-V (Nawagam area) and AES-II (Thasra area) of middle Gujarat agro climatic zone growing paddy (GAR 13) are recommended to fertilize the crop only with 120 kg N/ha where as 100 kg N/ha for farmers of AES-III (Dabhoi area) to get higher yield and net return. Application of phosphorus is not beneficial to the crop.

મધ્ય ગુજરાત ખેત આબોઠ્વાકીય વિસ્તારની ખેત પરિસ્થિતિ-૫ (નવાગામ વિસ્તાર) અને ખેત પરિસ્થિતિ-૨ (ઠાસરા વિસ્તાર) ના ડાંગર (જી.એ.આર. ૧૩) ઉગાડતા ખેડૂતોને ફક્ત ૧૨૦ કિ.ગ્રા. નાઈટ્રોજન પ્રતિ હેક્ટરે જ્યારે ખેત પરિસ્થિતિ-૩ (ડભોઇ વિસ્તાર) ના ખેડૂતોને ૧૦૦ કિ.ગ્રા. નાઈટ્રોજન પ્રતિ હેક્ટરે આપવાની ભલામણ કરવામાં આવે છે જેથી વધુ ઉત્પાદન તથા નફો મેળવી શકાય છે. આ પાકમાં ફોસ્ફરસ આપવો ફાયદાકારક નથી.

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

Pulse Research Station, AAU, Vadodara 12.2.1.7

Production potential and economic feasibility of pigeon pea based intercropping system with different planting pattern.

The farmers of Middle Gujarat Agro climatic Zone growing pigeon pea are recommended to grow one row of black gram as intercrop in pigeon pea grown at 120 cm inter row spacing for getting higher yield and net return.

મધ્ય ગુજરાત ખેત-આબોહવાકીય વિસ્તારના તુવેરની ખેતી કરતા ખેડૂતોને વધારે ઉત્પાદન અને નફો મેળવવા માટે ૧૨૦ સે.મી.ના અંતરે વાવેલ તુવેરમાં આંતરપાક તરીકે અડદની એક હાર વાવેતર કરવાની ભલામણ કરવામાં આવે છે.

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

Agriculture Research Station, AAU, Derol

12.2.1.8

Weed Management in Drilled Paddy

The farmers of Middle Gujarat Agro climatic Zone growing drilled paddy are recommended to go for two hand weeding at 20 and 40 days after sowing for higher yield and

return. In case of paucity of labour, farmer can go for chemical weed control using oxadiargyl @ 90 g/ha as pre-emergence (3 DAS) followed by bispyribac sodium @ 25 g /ha at 20 DAS.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારના ઓરાણ ડાંગરની ખેતી કરતા ખેડૂતોને વધુ ઉત્પાદન અને નફો મેળવવા માટે વાવણી બાદ ૨૦ અને ૪૦ દિવસે હાથથી નિંદામણ કરવાની ભલામણ છે. જો મજુરોની અછત હોય તો વાવણી બાદ ત્રીજા દિવસે ઓક્ઝાડાયાગ્રીલ ૯૦ ગ્રામ તેમજ વાવણી બાદ ૨૦ દિવસે બીસપાયરીબેક સોડીયમ ૨૫ ગ્રામ પ્રતિ ફેક્ટર મુજબ છંટકાવ કરવો જોઇએ.

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

Department of Agronomy, BACA, AAU, Anand 12.2.1.9

Assessment of Natural Organic Liquid (NOL) and inorganic nutrient supply on yield of *rabi* fennel (GF 1)

The farmers of Middle Gujarat Agro climatic Zone growing *rabi* fennel are recommended to apply recommended dose of fertilizer (90-45-00 NPK kg/ha) along with application of FYM @ 10 t/ha and seed treatment with AAU PGPR (Plant Growth Promoting *Rhizobacteria*) consortium @ 5 ml/kg of seed and apply NOL @ 500 l/ha drenching near plant as well as foliar spray of NOL @ 50 l/ha at 30 and 45 days after sowing for getting higher yield and net return.

NOL preparation

Materials required	Quantity of materials required				
	NOL for soil application	NOL for foliar spray			
	(A)	(B)			
Water (1)	500	10			
Desi cow dung (kg)	50	1			
Desi cow urine (1)	25	0.5			
Jaggery / Molasses (kg)	5	0.1			
Butter milk (l)	5	0.1			
Pulse flour (kg)	5	0.1			
Soil under banyan tree (kg)	2.5	0.05			

Mix the above materials (A) in barrel or tank and keep it 2 to 7 days for soil drenching.

Mix the above materials (B) in barrel or tank and keep it 48 hrs for foliar spray and use 11 mixture in 101 of water.

These both mixtures should be stirred daily two times.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં શિયાળુ વરીયાળીનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, શિયાળુ વરીયાળીના પાકમાં વધુ ઉત્પાદન અને નફો મેળવવા માટે ભલામણ કરેલ ખાતર (૯૦-૪૫-૦૦ નાફોપો કિ.ગ્રા/હેક્ટર) ની સાથે ૧૦ ટન છાણિયું ખાતર/હેક્ટર આપવુ તેમજ ૧ કિ.ગ્રા બિયારણ ને ૫ મિ.લિ. એએયુપીજીપીઆર કોંસોર્ટીયમથી બીજ માવજત આપવી અને વાવણીના ૩૦ અને ૪૫માં દિવસે હેકટરે ૫૦૦ લિટર કુદરતી પ્રવાહી સજીવ ખાતર

છોડના થડની નજીક હારમાં રેડવું તથા હેક્ટરે ૫૦ લિટર કુદરતી પ્રવાહી સજીવ ખાતરનો પાક પર છંટકાવ કરવો.

કુદરતી પ્રવાહી સજીવ ખાતર બનાવવાની પધ્ધતિ

	સામગ્રીના જથ્થાની જરૂરીયાત					
સામગ્રી	જમીનમાં હારમાં આપવા	પાક પર છંટકાવ કરવા				
	(અ)	(બ)				
પાણી (લિ.)	400	90				
દેશી ગાયનુ છાણ (કિ. ગ્રા.)	чо	٩				
દેશી ગાયનુ મૂત્ર (લિ.)	રપ	0.4				
ગોળ/મોલાસીસ (કિ. ગ્રા.)	ų	0.9				
છાસ(લિ.)	ų	0.9				
કઠોળનો લોટ (કિ. ગ્રા.)	ų	0.9				
વડના ઝાડ નીચેની માટી (કિ.	ર.પ	0.04				
ગ્રા.)						

સમગ્ર સામગ્રી(અ)ને દર્શાવેલ માત્રામાં પીપ અથવા ટાંકીમાં મિશ્રણ કરી જમીનમાં આપવા માટે ર થી ૭ દિવસ રાખી મૂકવુ.

સમગ્ર સામગ્રી(બ)ને દર્શાવેલ માત્રામાં પીપ અથવા ટાંકીમાં મિશ્રણ કરી પાક પર છંટકાવ કરવા માટે ૪૮ કલાક રાખી મૂકવુ. આ મિશ્રણનો ૧ લિટર જથ્થો ૧૦ લિટર પાણીમાં ઉમેરી પાક પર છંટકાવ કરવો

ઉપરોકત બંને મિશ્રણને દિવસમાં ૨ વાર હલાવવું.

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

12.2.1.10 Long term effect of organic manures on soil, yield and quality of groundnut (kharif) – wheat crop sequence

The farmers of Middle Gujarat Agro climatic Zone interested to grow groundnut (*Kharif*)-wheat crop sequence organically are recommended to apply 50 % N (12.5 kg N/ha) through FYM (2.5 t/ha) to groundnut and 50 % N (60 kg N/ha) through FYM (12.5 t/ha) to wheat. The remaining 50 % N to groundnut and wheat should be given through castor cake @ 0.3 and 1.3 t/ha respectively for getting higher yield, net return and maintaining soil health.

મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તારમાં મગફળી (યોમાસુ) –ઘઉંની સેન્દ્રિય ખેતીમાં રસ ધરાવતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, મગફળીને ૫૦ % નાઇટ્રોજન (૧૨.૫ કિ.ગ્રા. નાઇટ્રોજન/હે.) છાણિયા ખાતર દ્વારા (૨.૫ ટન/હે.) તથા ઘઉંને ૫૦ % નાઇટ્રોજન (૬૦ કિ.ગ્રા.

નાઇટ્રોજન/हે.) છાણિયા ખાતર દ્વારા (૧૨.૫ ટન/हે.) આપવો. બાકીનો ૫૦ % નાઇટ્રોજન દિવેલીના ખોળ દ્વારા મગફળી અને ઘઉં ને અનુક્રમે ૦.૩ અને ૧.૩ ટન/हે. પ્રમાણે આપવાથી વધારે ઉત્પાદન અને નફ્રો મેળવવા ઉપરાંત જમીનનું સ્વાસ્થ્ય જળવાઇ રહે છે.

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

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12.2.2.1 Effect of sowing time and spacing on summer clusterbean

The farmers of South Saurashtra Agro-climatic Zone growing summer cluster bean are recommended to sow the crop in second week of February at 45 cm x 15 cm spacing for obtaining higher yield and net realization.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ઉનાળુ ગુવારનું વાવેતર કરતા ખેડૂતોને ગુવારના દાણાનું મહત્તમ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે ફેબ્રુઆરીના બીજા અઠવાડીયામાં ૪૫ સે.મી. × ૧૫ સે.મી.ના અંતરે પાકની વાવણી કરવાની ભલામણ કરવામાં આવે છે.

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

Dept. of Agronom, & Department of Agril. Chemistry & Soil Science, JAU, Junagadh

12.2.2.2 Evaluation of potentiality of organic farming for groundnut (*kharif*)-chickpea (*rabi*) cropping sequence

The farmers of South Saurashtra Agro-climatic Zone adopting groundnut (*kharif*)-chickpea (*rabi*) cropping sequence under organic farming are recommended to apply FYM (1.25 t/ha) + castor cake (139 kg/ha) to groundnut and vermicompost (667 kg/ha) + castor cake (222 kg/ha) to chickpea in furrow before sowing for securing higher net realization and maintaining soil fertility.

દક્ષિણ સૌરાષ્ટ્ર ખેત–આબોહવાકીય વિસ્તારના મગફળી (ખરીફ)–ચણા (રવી) પાક પધ્ધતિમાં સેન્દ્રિય ખેતી અપનાવતા ખેડૂતોને ઓછા ખર્ચે વધુ ચોખ્ખો નફો મેળવવા તેમજ જમીનની ફળદ્રુપતા જાળવવા માટે મગફળીમાં છાણીયુ ખાતર (૧.૨૫૦ ટન/હે.) + દિવેલીનો ખોળ (૧૩૯ કિ.ગ્રા./હે.) અને ચણામાં અળસિયાનું ખાતર (૬૬૭ કિ.ગ્રા./હે.) + દિવેલીનો ખોળ (૨૨૨ કિ.ગ્રા./હે.) વાવણી પહેલાં ચાસમાં આપવાની ભલામણ કરવામાં આવે છે.

(Action: Professor & Head, Dept.of Agronomy, JAU, Junagadh & Professor & Head, Department of Agril. Chemistry & Soil Science, JAU, Junagadh)

Department of Agronomy, JAU, Junagadh

12.2.2.3 Integrated weed management in summer sweet corn

The farmers of South Saurashtra Agro-climatic Zone growing sweet corn in summer season are recommended to apply atrazine 500 g/ha (50% WP 20 g/10 l) as pre-emergence followed by one interculturing and hand weeding at 40 DAS for effective weed management along with higher yield and net realization.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં સ્વીટ કોર્ન (મીઠી મકાઈ)નું ઉનાળુ ૠતુમાં વાવેતર કરતા ખેડૂતોને સ્વીટ કોર્નમાં અસરકારક નીંદણ નિયંત્રણ તેમજ વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે એટ્રાઝીન ૫૦૦ ગ્રામ/હે. (૫૦% વે.પા. ૨૦ ગ્રામ/૧૦ લી.) પ્રમાણે વાવણી બાદ પરંતુ પાક અને નીંદણ ઉગ્યા પહેલાં છંટકાવ તથા વાવણી બાદ ૪૦ દિવસે એક વખત આંતરખેડ અને હાથ નિંદામણ કરવાની ભલામણ કરવામાં આવે છે.

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

12.2.2.4 Development of organic farming packages for system based high value crops (Groundnut-Onion)

The farmers of South Saurashtra Agro-climatic Zone adopting Grountnut (*kharif*)-Onion (*rabi*) cropping sequence are recommended to apply 50% RDF (6.25-25 N-P₂O₅ kg/ha) for groundnut and 37.5-60-50 N-P₂O₅-K₂O kg/ha for onion + 50% RDN as FYM to groundnut (1250 kg/ha) and onion (7500 kg/ha) for securing higher groundnut equivalent yield and net realization along with maintenance of soil fertility.

Farmers interested in adopting Grountnut (*kharif*)-Onion (*rabi*) cropping sequence under organic farming are recommended to follow nutrient management system as 50% RDN as FYM (1250 and 7500 kg FYM/ha for groundnut (*kharif*) and onion (*rabi*), respectively) + biofertilizer (*Rhizobium / Azotobacter* @ 1250 ml/ha) for N + rock phosphate to meet P requirement of crops (100 kg/ha in groundnut and 600 kg/ha in onion) + PSB (1250 ml/ha) for higher groundnut equivalent yield and net income along with maintenance of soil fertility.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના ચોમાસુ મગફળી–શિયાળુ ડુંગળી પાક પધ્ધતિ અપનાવતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા તેમજ જમીનની ફળદ્રુપતા જાળવવા માટે મગફળી અને ડુંગળી માં ભલામણ કરેલ નાઈટ્રોજન પ૦% રાસાયણીક ખાતરો (મગફળીમાં ૬.૨૫–૨૫ ના–ફો કિ.ગ્રા./હે. તથા ડુંગળીમાં ૩૭.૫–૬૦–૫૦ ના–ફો–પો કિ.ગ્રા./હે.) દ્વારા તથા ૫૦% છાણીયા ખાતર (મગફળીમાં ૧૨૫૦ કિ.ગ્રા./હે. તથા ડુંગળીમાં ૭૫૦૦ કિ.ગ્રા./હે.) દ્વારા આપવું.

સેન્દ્રિય ખેતીમાં રસ ધરાવતા ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા તેમજ જમીનની ફળદ્રુપતા જાળવવા માટે મગફળી અને ડુંગળી માં ભલામણ કરેલ નાઈટ્રોજનના પ૦% છાણીયા ખાતર (મગફળીમાં ૧૨૫૦ કિ.ગ્રા./હે. તથા ડુંગળીમાં ૭૫૦૦ કિ.ગ્રા./હે.) દ્વારા + નાઈટ્રોજન માટે જૈવિક ખાતરો (રાઈઝોબિયમ / એઝેટોબેક્ટર ૧૨૫૦ મીલી/હે.) + ફોસ્ફરસ માટે રોક ફોસ્ફેટ (મગફળીમાં ૧૦૦ કિ.ગ્રા./હે. તથા ડુંગળીમાં ૧૦૦ કિ.ગ્રા./હે.) + ફોસ્ફેટ સોલ્યુબિલાઈઝીંગ બેક્ટેરીયલ કલ્ચર (૧૨૫૦ મીલી/હે.) આપવં જોઈએ.

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

Main Oilseeds Res. Station, JAU, Junagadh

12.2.2.5 Effect of potassium fertilizer on castor hybrid

The farmers of South Saurashtra Agro-climatic Zone growing irrigated castor are recommended to apply potash @ 50 kg K_2O/ha (25 kg/ha as basal and 25 kg/ha at 45 days after sowing) along with recommended dose of nitrogen and phosphorus (120-50 N- P_2O_5 kg/ha) for obtaining higher seed yield and net return.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં પિયત દિવેલા ઉગાડતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, પોટાશ ખાતર પ૦ કિ.ગ્રા./હે. (રપ કિ.ગ્રા./હે. ના બે સરખા હપ્તામાં પ્રથમ વાવેતર વખતે અને બીજો વાવેતર બાદ ૪૫ દિવસે) ઉપરાંત ભલામણ કરવામાં આવેલ નાઈટ્રોજન અને ફોસ્ફરસ (૧૨૦–૫૦ ના–ફોકિ.ગ્રા./ હે.) આપવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.

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

12.2.2.6 Identification of suitable row ratio for sesame with pigeonpea and soybean intercropping system

The farmers of North Saurashtra Agro-climatic Zone growing sesame with intercropping system in *kharif* are recommended to sow pigeon pea as an intercrop with sesame in the row ratio of 2:1 with 60 cm distance between two rows to get higher yield and net return.

ઉત્તર સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારના ખરીફ ૠતુમાં તલ સાથે આંતરપાકનું વાવેતર કરતા ખેડૂતોન**ે ભલામણ** કરવામાં આવે છે કે તલની સાથે આંતરપાક તરીકે તુવેર, બે હાર તલ એક હાર તુવેરની અને બે હાર વચ્ચે *၄૦* સેમીના અંતરે વાવેતર કરવાથી વધારે ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.

(Action: Research Scientist, Agriculture Research Station, JAU, Amreli)

Main Dry Farming Research Station, JAU, Targhadia & Dry Farming Research Station, JAU, Jamkhambhalia

12.2.2.7 Nutrient management in Bt cotton under rainfed condition

The farmers of North Saurashtra Agro-climatic Zone (AES-10) growing Bt cotton are recommended to apply 20 kg P_2O_5 , 40 kg K_2O and 20 kg sulphur (150 kg gypsum/ha) along with recommended dose of nitrogen (80 kg N/ha) for obtaining higher yield and net return as well as maintaining soil fertility under rainfed condition.

ઉત્તર સોરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તાર (ખેત હવામાન પરિસ્થિતિ–૧૦) માં વરસાદ આધારિત કપાસ વાવતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે બીટી કપાસના પાકને ભલામણ કરેલ રાસાયણિક ખાતર ૮૦ કિ.ગ્રા. નાઈટ્રોજનની સાથે ૨૦ કિ.ગ્રા. ફોસ્ફરસ, ૪૦ કિ.ગ્રા. પોટાશ અને ૨૦ કિ.ગ્રા. ગંધક (૧૫૦ કિ.ગ્રા. જીપ્સમ) પ્રતિ હેકટરે આપવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવાની સાથે જમીનની ફળદુપતા પણ જાળવી શકાય છે.

(Action: Research Scientist (Dry Farming), Main Dry Farming Research Station, JAU, Targhadia & Assistant Res. Sci., Dry Farming Research Station, JAU, Jamkhambhalia)

Department of Agril. Chem. & Soil Sci. & Wheat Res. Station, JAU, Junagadh

12.2.2.8 Effect of potassium and sulphur on growth and yield of wheat crop

The farmers of South Saurashtra Agro-climatic Zone growing wheat are recommended to apply 60 kg potash and 40 kg sulphur (through gypsum) per hectare as basal in addition to recommended dose of N and P (120-60 N-P₂O₅ kg/ha) to wheat crop for getting higher yield and net return.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારમાં ઘઉં ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ઘઉંના પાકમાં ભલામણ કરેલ રાસાયણિક ખાતર નાઈટ્રોજન અને ફોસ્ફરસ (૧૨૦–૬૦ કિ.ગ્રા./હે.) ઉપરાંત ૬૦ કિ.ગ્રા. પોટાશ તથા ૪૦ કિ.ગ્રા.ગંધક(જીપ્સમના સ્વરૂપમાં) પ્રતિ હેકટર પાયામાં આપવાથી ઘઉંનુ વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.

(Action: Professor & Head, Department of Agril. Chem. & Soil Sci. &

Research Scientist (Wheat), Wheat Res. Station, JAU, Junagadh)

Department of Agril. Chem. & Soil Sci., JAU, Junagadh & Vegetable Research Station, JAU, Junagadh

12.2.2.9 Effect of multi-micronutrient formulations on okra

The farmers of South Saurashtra Agro-climatic Zone growing *kharif* okra in medium black calcareous soil are recommended to apply micronutrients as per soil test value as basal in addition to recommended dose of fertilizers (150-50-50 N-P₂O₅-K₂O kg/ha) to okra for getting higher yield and net return

Alternatively, foliar spraying of multi-micronutrient formulation Grade IV (Fe-Mn-Zn-Cu-B, 4.0-1.0-6.0-0.5-0.5 %) @ 1% at 45, 60 and 75 DAS in addition to recommended

dose of fertilizers (150-50-50 N-P₂O₅-K₂O kg/ha) to okra is recommended for getting higher yield and net return.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારમાં મધ્યમ કાળી ચુનાયુકત જમીનમાં ચોમાસુ ભીંડાનું વાવેતર કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ભીંડાના પાકમાં ભલામણ કરેલ રાસાયણિક ખાતર (૧૫૦–૫૦–૫૦ ના–ફો–પો કિ.ગ્રા./હે.) ઉપરાંત જમીન ચકાસણી મુજબ સૂક્ષ્મતત્વો પાયામાં આપવાથી ભીંડાનું વધુ ઉત્પાદન અને નફો મળે છે.

વિકલ્પમાં ભીંડાના પાકમાં ભલામણ કરેલ રાસાયણિક ખાતર (૧૫૦–૫૦–૫૦ ના–ફો–પો કિ.ગ્રા./હે.) ઉપરાંત મલ્ટીમાઈક્રોન્યુટ્રીઅન્ટ ગ્રેડ–૪ (લોહ–મેન્ગેનીઝ–ર્ઝીક–કોપર–બોરોન, ૪.૦–૧.૦–૬.૦–૦.૫–૦.૫ ટકા) ના ૧ ટકા દ્રાવણનો ૪૫, ૬૦ અને ૭૫ દિવસે છંટકાવ કરવાથી પણ ભીંડાનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.

(Action: Professor & Head, Department of Agril. Chem. & Soil Sci., JAU, Junagadh & Research Scientist, Vegetable Research Station, JAU, Junagadh)

Department of Agril. Chem. & Soil Sci., & Cotton Research Station, JAU, Junagadh

12.2.2.10 Efficacy of multi-micronutrient formulations in improving crop production in Rt cotton

The farmers of South Saurashtra Agro-climatic Zone growing Bt cotton in medium black calcareous soil are recommended to apply micronutrients as per soil test value as basal in addition to recommended dose of fertilizers (240-50-150 N- P_2O_5 - K_2O kg/ha) to Bt cotton for getting higher yield and net return.

Alternatively, foliar spraying of multi-micronutrient formulation Grade IV (Fe-Mn-Zn-Cu-B, 4.0-1.0-6.0-0.5-0.5 %) @ 1% at 45, 60, 75 and 90 DAS in addition to recommended dose of fertilizers (240-50-150 N-P₂O₅-K₂O kg/ha) is recommended to Bt cotton for getting higher yield and net return.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારમાં મધ્યમ કાળી ચુનાયુકત જમીનમાં બી.ટી. કપાસનું વાવેતર કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે, બીટી કપાસના પાકમાં ભલામણ કરેલ રાસાયણિક ખાતર(૨૪૦–૫૦–૧૫૦, ના–ફો–પો કિ.ગ્રા./ હે.) ઉપરાંત જમીન ચકાસણી મુજબ સૂક્ષ્મતત્વોને પાયામાં આપવાથી બી.ટી. કપાસનું વધુ ઉત્પાદન અને નફો મેળવી શકાય છે.

વિકલ્પમાં બીટી કપાસના પાકમાં ભલામણ કરેલ રાસાયણિક ખાતર (૨૪૦–૫૦–૧૫૦, ના–ફો–પો કિ.ગ્રા./ હે.) ઉપરાંત મલ્ટીમાઈક્રોન્યુટ્રીઅન્ટ ગ્રેડ–૪ (લોહ–મેન્ગેનીઝ–ર્ઝીક–કોપર–બોરોન, ૪.૦–૧.૦–૬.૦–૦.૫–૦.૫ ટકા) ના ૧ ટકા દ્રાવણનો ૪૫, ૬૦, ૭૫ અને ૯૦ દિવસે છંટકાવ કરવાથી પણ બી.ટી. કપાસનું વધુ ઉત્પાદન અને ચોખખો નફો મેળવી શકાય છે.

(Action: Professor & Head, Department of Agril. Chem. & Soil Sci., &Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh)

NAVSARI AGRICULTURAL UNIVERSITY

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12.2.3.1

Effect of irrigation and sulphur levels on yields of cluster bean under South Gujarat condition

The farmers of South Gujarat Heavy Rainfall Agro climatic Zone (AES- III) intended to grow cluster bean (GG 2) during summer season are recommended to give six irrigations (60 mm depth) *i.e.*, first irrigation just after sowing, second at 7 to 10 DAS and remaining 4 irrigations at an interval of 13 to 15 days. Farmers are also advised to fertilize their crop at 20-40-00-30 NPKS kg/ha through urea and SSP *or* 20-40-00-40 kg NPKS/ha, through DAP, urea and gypsum (300 kg/ha) for getting higher yield and net return.

દક્ષિણ ગુજરાતનાં વધુ વરસાદવાળા વિસ્તાર (ખેત આબોહવાકીય પરિસ્થિતિ–૩) માં ઉનાળાની ૠતુ દરમ્યાન ગુવાર (ગુજરાત ગુવાર ર) ની ખેતી કરવા ઈચ્છતા ખેડૂતોને ગુવારનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે કુલ-૬ પિયત (૬૦ મિ.મિ. ઉડાઈ) આપવાની ભલામણ કરવામાં આવે છે. જેમાં પ્રથમ પિયત વાવણી બાદ તુરત જ, બીજુ પિયત વાવણી બાદ ૭–૧૦ દિવસે અને બાકીનાં ચાર પિયત ૧૩–૧૫ દિવસનાં ગાળે આપવા. વધુમાં ગુવાર પાકને ૨૦–૪૦–૦૦–૩૦ ના.ફો.પો.સ. કિગ્રા/હે. યુરિયા, સિંગલ સુપર ફોસ્ફેટ ખાતરનાં રૂપમાં અથવા ૨૦–૪૦–૦૦–૪૦ ના.ફો.પો. અને સલ્ફર કિગ્રા/હે. યુરિયા, ડી.એ.પી. અને જિપ્સમ (૩૦૦ કિગ્રા/હે.) નાં રૂપમાં આપવા.

(Action:- Research Scientist, SWMRU,NAU, Navsari)

SWMRU, NAU, Navsari

12.2.3.2

Effect of irrigation and fertilizer levels on yield and quality of sugar beet grown on clay soils of South Gujarat

The farmers of South Gujarat Heavy Rainfall Agro climatic Zone (AES III and IV) interested to grow sugarbeet (PAC 60008) crop are recommended to irrigate their crop with drip method [raised bed (40 cm X 20cm (three row) x 70cm), 110 cm top bed width and 40 cm furrow width] and fertilize with 120-60-60 kg N, P₂O₅, K₂O/ha. The full dose of P and 12 kg N/ha (10% RDN) and 6 kg K₂O/ha (10% RDK) should be applied as basal and remaining 90% *i.e.*, 108 kg N and 54 kg K₂O/ha should be applied in 10 equal splits at an interval of 8 to 10 days starting from 15 DAS for getting higher yield and net return.

System details:

Lateral spacing : 1.5 m

Dripper spacing : 1m

Dripper discharge : 8 lph

Operating pressure : 1.2 kg/

Operating pressure . 1.2 kg/cm
Operating frequency : Alternate days

Operating time : Navsari Danti

Nov. and Dec. 1hr: 30 minutes 1hr: 40 minutes 1an. and Feb. 1hr: 40 minutes 1hr: 50 minutes

દક્ષિણ ગુજરાત વધુ વરસાદવાળા વિસ્તાર (ખેત આબોહવાકીય પરિસ્થિતિ–૩ અને ૪) નાં સુગરબીટ (PAC 60008) ની ખેતી ગાદીકયારા પર (૪૦ સેમી × ૨૦ સેમી (૩ હાર) × ૭૦ સેમી, ગાદીની પહોળાઈ – ૧૧૦ સેમી અને ૪૦ સેમીનાં ચાસ) કરવા માંગતા ખેડૂતોને સુગરબીટ પાકમાં ટપક પિયત પધ્ધિતની સાથે ૧૨૦–૬૦–૬૦ કિ. ના.ફો.પો./હે. આપવાની ભલામણ કરવામાં આવે છે. જેમાં ફોસ્ફરસ યુક્ત ખાતરનો સંપૂર્ણ જથ્થો અને ૧૨ કિગ્રા/હે. (૧૦%) નાઈટ્રોજન અને ૬.૦ કિ.ગ્રા/હે. (૧૦%) પોટાશ પાયાના ખાતર તરીકે અને બાકીનો ૧૦૮ કિ.ગ્રા/હે. (૯૦%) નાઈટ્રોજન અને ૫૪ કિ.ગ્રા/હે. (૯૦%) પોટાશ ખાતર વાવણી બાદ ૧૫ દિવસ પછી દશ સરખા હપ્તામાં ૮ થી ૧૦ દિવસનાં ગાળે આપવાથી વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.

પિયત પધ્ધતિ:

- બે લેટરલ વચ્ચેનું અંતર –૧.૫ મીટર
- બે ટપકણિયા વચ્ચેનં અંતર –૧.૦ મીટર
- ટપકણિયાનો પ્રવાહ ૮ લિટર / કલાક
- પધ્ધતિ ચલાવવા માટેનું દબાણ -૧.૨ કિ.ગ્રા/સેમી^૨
- પધ્ધતિ ચલાવવા માટેનો સમયગાળો એકાંતરા દિવસે

પધ્ધતિ ચલાવવાનો સમય	નવસારી	દાંતી	
નવેમ્બર થી ડિસેમ્બર	૧ કલાક અને ૩૦ મિનીટ	૧ કલાક અને ૪૦ મિનીટ	
જાન્યુઆરી થી ફેબ્રુઆરી	૧ કલાક અને ૪૦ મિનીટ	૧ કલાક અને ૫૦ મિનીટ	

(Action:- Research Scientist, SWMRU,NAU, Navsari)

SWMRU, NAU, Navsari

12.2.3.3

Comparative performance of water soluble and routinely used fertilizer in banana (cv. Grand Naine) under drip irrigation

The banana (*cv*. Grand Naine) growing farmers of South Gujarat Heavy Rainfall Agro climatic Zone (AES III) are recommended to apply 80 per cent of recommended fertilizers in the form of urea (522 g/plant) + orthophosphoric acid (85 ml/plant) + MoP (267 g/plant) through drip system (0.6 PEF) for getting higher income. Although, use of WSF gave higher yield, it has not been found economically viable at present.

The operating frequency of drip system and fertigation schedule should be as follows:

Drip system detail:

Lateral distance: 2.4 m

Dripper distance: 0.6 m

Dripper discharge: 4 lph

Operating pressure: 1.2 kg/cm²

Operating frequency: Alternate day

Operating period : 1.5 to 2.0 hrs during winter and 2.5 to 2.75 hrs during summer

Fertilizer schedule:

Frequency of fertigation: twice a week

✓ P application should be started 21 days after planting in 32 equal splits and it should be completed within 4.5 months.

✓ N and K application should be started 35 days after planting in 44 equal splits and complete it within 6.5 months.

Recommend		Splits requirement of					
ed dose	Fertilizer				Wate	er Soluble fer	tilizer
(300-90-200g	Urea	Orthophosphoric	MoP		Urea	12;61;00	13;00;45
NPK/Plant)	(g/plant)	acid (ml/plant)	(g/plant)	or	(g/plant)	(g/plant)	(g/plant)
(%)							
80% RDF	11.86	2.65	6.06		8.85	3.69	8.08

દક્ષિણ ગુજરાતના વધુ વરસાદવાળા વિસ્તાર (ખેત આબોવાહીક પરિસ્થિતિ–૩) ના કેળ (ગ્રાન્ડ નૈન)ની ખેતી કરતા ખેડૂતોને વધુ આવક મેળવવા માટે ભલામણ કરેલ ખાતરનાં ૮૦ ટકા જથ્થો, યુરીયા (પરર ગ્રામ/છોડ) + ઓંથોફોસ્ફોરીક એસીડ (૮૫ મીલી/ છોડ) +મ્યુરેટ ઓફ પોટાશ (૨૬૭ ગ્રામ/છોડ) ટપક પધ્ધતિ દ્વારા આપવાની ભલામણ કરવામાં આવે છે. બજારમાં મળતા પ્રવાહી ખાતરો ના ઉપયોગથી વધુ ઉત્પાદન મળી શકે છે પરંતુ તે હાલમાં આર્થિક રીતે ફાયદાકારક નથી.

ટપક પધ્ધતિ મારફત આપવાનો થતો પિયત અને ખાતરનો સમય–ગાળો નીચે જણાવ્યા મુજબ રહેશે.

ટપક પિયત પધ્ધતિની વિગત :-

બે લેટરલ વચ્ચેનું અંતર : ૨.૪ મીટર બે ટપકણિયા વચ્ચેનું અંતર : ૦.૬૦ મીટર ટપકણિયાનો પ્રવાહ : ૪ લિટર/કલાક પઘ્ધતિ ચલાવવા માટેનું દબાણ : ૧.૨ કિગ્રા/સેમીર પધ્ધતિ ચલાવવા માટેનો સમયગાળો : એકાંતરે દિવસે

ખાતર આપવાનો સમય– અઠવાડિયામાં બે વાર

■ ફોસ્ફરસ યુકત ખાતર–કેળની રોપણી બાદ ૨૧ દિવસ પછી કુલ ૩૨ સરખા હપ્તામાં ૪.૫ મહિના સુઘીમાં આપવો.

■ નાઈટ્રોજન અને પોટાશ યુકત ખાતરો રોપણીના ૩૫ દિવસ પછી કુલ ૪૪ સરખા હપ્તામાં ૬.૫ મહિના સુધીમાં આપવો.

			હપ્તામાં આપવાના પ	યાતરો			
ભલામણ કરેલ ખાતર (૩૦૦–૯૦–૨૦ ૦ ગ્રા./છોડ)નો જથ્થો	સામાન્ય રીતે વપરાશમાં લેવામાં આવતા ખાતરો				પ્રવાહી ખાતઃ	ો	
	યુરિયા– (ગ્રા/છોડ)	ઓથોફોસ્ફરીક એસીડ (મીલી/છોડ)	મ્યુરેટ ઓફ પોટાશ (ગ્રા/છોડ)	અથવા	યુરિયા– (ગ્રા/છોડ)	૧૨: <i>૬</i> ૧:૦૦ (ગ્રા/છોડ)	૧૩:૦૦:૪૫ (ગ્રા/છોડ)
૮૦% ખાતર	99.25	ર.કપ	5.05		૮.૮૫	3.56	٥.٥٤

(Action:- Research Scientist, SWMRU,NAU, Navsari)

SWMRU, NAU, Navsari

12.2.3.4

Study on effect of land configuration and integrated nutrient management on productivity of different varieties of sorghum (*rabi*) in coastal area of South Gujarat

Farmers of coastal areas of South Gujarat Heavy Rainfall Agro climatic Zone (AES-IV) interested to grow sorghum during *rabi* season are recommended to prefer variety GJ 38 to sow on raised bed (bed width- 60 cm and furrow width 30 cm) and apply 100% RDF (80:40:00 NPK kg/ha + 10 t FYM/ha) for getting higher yield and net return.

દક્ષિણ ગુજરાતના દરિયાકાંઠાના વધુ વરસાદવાળા વિસ્તાર (ખેત આબોવાહીક પરિસ્થિતિ–૪) ના રવી ૠતુમાં જુવારનો પાક લેવા ઈચ્છતા ખેડૂતોને જુવાર જીજે ૩૮ જાતની પસંદગી કરી ગાદી કયારા (કયારા પહોળાઈ ૬૦ સેમી, નીકની પહોળાઈ: ૩૦ સેમી) ઉપર વાવણી કરી ૧૦૦ ટકા ભલામણ કરેલ ખાતર (૮૦–૪૦–૦૦ કિ. ગ્રા. નાફોપો/હે + ૧૦ ટન છાણિયુ ખાતર આપવાની ભલામણ કરવામાં આવે છે.

(Action:- Research Scientist, SWMRU,NAU, Navsari)

SWMRU, NAU, Navsari 12.2.3.5

Effect of irrigation and date of sowing on seed yield and components of *Salicornia* (S. brachiata Roxb.)

The farmers of coastal area of South Gujarat Heavy Rainfall Agro climatic Zone (AES-IV) having waste land adjoining sea coast are recommended to sow salicornia by broad casting on raised bed (120 cm top bed width and 30 cm furrow width) during the 3rd week of June with 12 irrigation of sea water/saline ground water at an interval of 11 to 13 days after cessation of monsoon till February for getting higher seed yield and net return.

દક્ષિણ ગુજરાતનાં દરિયાકાઠાનાં ભારે વરસાદવાળા વિસ્તાર (ખેત આબોહવાકીય પરિસ્થિતિ–૪) નાં ખેડૂતોને દરિયાકિનારાની બંજર જમીનમાં સેલીકોર્નીયાનું વધુ ઉત્પાદન તેમજ ચોખ્ખો નક્ષે મેળવવા માટે ગાદી કયારા (૧૨૦ સે.મી. કયારા તથા ૩૦ સે.મી. નીક) ઉપર જુનનાં ત્રીજા અઠવાડિયામાં પુંખીને વાવેતર કરવા તેમજ પાકને ચોમાસા બાદ ૧૧ થી ૧૩ દિવસને ગાળે ફેબ્રુઆરી સુધી દરિયાનાં પાણીથી/બોરના ખારા પાણીથી કુલ ૧૨ પિયત આપવાની ભલામણ કરવામાં આવે છે.

(Action:- Research Scientist, SWMRU, NAU, Navsari)

SWMRU, NAU, Navsari 12.2.3.6

Effect of manuring in organically grown garlic in coastal area of South Gujarat

Farmers of coastal areas of South Gujarat Heavy Rainfall Agro climatic Zone (AES-IV) growing garlic (GG 1) organically during *rabi* season are recommended to apply biofertilizer (*Azotobacter* + PSB each at 1.25 1 /ha) along with 50 kg N/ha through biocompost (6.5 t/ha) as basal and 50 kg N/ha through castor cake (1.1 t/ha) at 40 DAS. Adoption of organic nutrient management systems also improves soil properties.

દક્ષિણ ગુજરાતનાં દરિયાકાઠાનાં ભારે વરસાદવાળા વિસ્તાર (ખેત આબોહવાકીય પરિસ્થિતિ–૪) નાં રિવિૠતુમાં લસણ (ગુજરાત લસણ ૧) ની સેન્દ્રિય ખેતી કરતા ખેડૂતોને જૈવિક ખાતર (એઝેટોબેકટર–૧.૨૫ લી./હે. + પી.એસ.બી.–૧.૨૫ લી./હે.)ની સાથે ભલામણ કરેલ નાઈટ્રોજન ખાતરનાં ૫૦ કિ.ગ્રા. /હે. પાયામાં બાયોકંમ્પોસ્ટ (૬.૫ટન/હે) ધ્વારા તથા બાકી રહેલ ૫૦ કિ.ગ્રા./હે. નાઈટ્રોજન ખાતર દિવેલી ખોળ (૧.૧ ટન/હે) ધ્વારા વાવણીનાં ૪૦ દિવસ પછી આપવાની ભલામણ કરવામાં આવે છે. સેન્દ્રિય ખાતરનાં ઉપયોગથી જમીનની ગુણવતામાં સુધારો થાય છે.

(Action:- Research Scientist, SWMRU,NAU, Navsari)

Department of Soil Science, NAU, Navsari

12,2,3,7

Effect of land leveling by laser leveler on yield of wheat crop

The farmers of South Gujarat Heavy Rainfall Agro climatic Zone(AES-III) growing wheat under irrigated condition are recommended to adopt precision land leveling technique with laser leveler device to prepare their land maintaining a slope of 0.15% to obtain higher yield of wheat along with additional water saving through application of six irrigations each of 50 mm depth over those under traditionally leveled fields require six irrigations each of 60 mm depth. Further, once the sloppy land is developed it will be effective for three years.

દક્ષિણ ગુજરાતના વધુ વરસાદવાળા વિસ્તાર (ખેત આબોહવાકીય પરિસ્થિતિ–૩) માં પિયત ઘઉં કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, પાક વાવતા પહેલા જમીનની તૈયારી કરવા માટે "લેસર લેવલર સાધન" દ્વારા પ્રિસીઝન લેન્ડ લેવલીંગ ટેકનીક દ્વારા જમીનમાં ૦.૧૫% નો ઢાળ રાખીને જમીન તૈયાર કરવાથી વધુ પાક ઉત્પાદન સાથે ૫૦ મીમી ઉડાઈના છ પિયત આપવાથી પાણીની બચત થાય છે અને આ રીતે તૈયાર કરેલ ઢાળ ત્રણ વર્ષ સુઘી અસરકારક રહે છે. જયારે ચીલા ચાલુ પઘ્ધતિથી જમીન લેવલ કરવાથી ૬૦ મીમી ઉડાઈના ૬ પિયત આપવાની જરૂર પડે છે.

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

Department of Soil Science, NAU, Navsari

12.2.3.8

Effect of method and levels of FYM and Bio-compost application on the yield of pigeonpen cv. Vaishali and soil aggregates under rainfed condition in South Gujarat

The farmers of South Gujarat Heavy Rainfall Agro climatic Zone(AES-II) growing pigeon-pea under rainfed condition are recommended to apply the recommended dose of fertilizer (20-40 kg NP/ha) along with FYM /bio compost @ 7.5 t/ha before monsoon through band placement for higher yield and net return.

દક્ષિણ ગુજરાત ખેત આબોહવાકીય પરિસ્થિતી–ર ના ખેડુતો કે જેઓ વરસાદ આધારીત તુવેરનો પાક લેતા હોય તેઓને ભલામણ કરવામાં આવે છે કે, તુવેરનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે ભલામણ કરેલ (૨૦–૪૦ કિગ્રા ના.ફો./ હે.) ખાતર સાથે હેકટર દીઠ ૭.૫ ટન/હે. છાર્ણીયુ ખાતર કે બાયો કમ્પોષ્ટ ચોમાસુ બેસતા પહેલા હારમા આપવું.

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

Pulse & castor Research Satiation, Navsari

12.2.3.9

Spacing and nutrient management with and without AM for greengram cv. Co-4 during rabi season

Farmers of South Gujarat Heavy Rainfall Agro climatic Zone(AES-III), growing greengram (Co 4) during *rabi* season, are recommended to sow the crop at 45 cm x 10 cm spacing and apply 20-40 kg NP/ha as basal for getting higher yield and net return.

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તારની ખેત આબોહવાકીય પરિસ્થિતી–૩ માં શિયાળુ મગ (સી.ઓ ૪) નું વાવેતર કરતાં ખેડૂતોને વધારે ઉત્પાદન અને ચોખ્ખો નફો મેળવવા બે હાર વચ્ચે ૪૫ સે.મી. અને બે છોડ વચ્ચે ૧૦ સે.મી.નું અંતર રાખી વાવેતર કરવાની તેમજ પાકને વાવણી સમયે ૨૦–૪૦ કિ.ગ્રા. ના.ફો. પ્રતિ હેકટરે ખાતર આપવાની ભલામણ કરવામાં આવે છે.

(Action:- Research Scientist, Pulse & castor Research Satiation, Navsari)

Dept. of Agronomy, NMCA, Navsari 12.2.3.10

Effect of integrated nutrient management in rice-green gram cropping sequence under South Gujarat condition

The farmers of South Gujarat Heavy Rainfall Agro climatic Zone(AES-III) are recommended to fertilize *kharif* rice with 100-30-00 kg NPK/ha + 10 t FYM and 20-40-00 kg NPK/ha to succeeding *rabi* green gram for getting higher system profitability of rice-green gram cropping sequence.

દક્ષિણ ગુજરાતના ભારે વરસાદ વાળી ખેત હવામાન પરિસ્થિતિ–3માં ખેડૂતોને ખરીફ ડાંગરના પાકમાં ૧૦૦–૩૦–૦૦ કિગ્રા ના.ફો.પો./ હેકટર + ૧૦ ટન છાણીયું ખાતર અને ત્યાર પછીના શિયાળુ મગના પાકમાં ૨૦–૪૦–૦૦ કિગ્રા ના.ફો.પો./હેકટર આપવાથી વધ ઉત્પાદન અને ડાંગર–મગ પાક પધ્ધતિમાં નફાકારકતા મેળવી શકાય છે.

(Action:- Professor & Head, Dept. of Agronomy, NMCA, Navsari)

Dept. of Agronomy, NMCA, Navsari

1.2.3.11 Effect of cutting management and nitrogen levels on seed production and nutritional value of Lucerne (*Medicago sativa* L.)

The farmers of South Gujarat Heavy Rainfall Agro climatic Zone (AES-III) growing lucerne for seed purpose are recommended to take three cuts at 60,100 and 130 days after sowing and leave the crop for seed production and fertilized the crop with basal application of 30 kg nitrogen along with $50 \text{ kg P}_2\text{O}_5$ and $50 \text{ kg K}_2\text{O}$ per hectare for getting higher yield and net return.

દક્ષિણ ગુજરાતના વધુ વરસાદ વાળી ખેત આબોહવાકીય પરિસ્થિતિ—3માં બીજ ઉત્પાદન માટે રજકો ઉગાડતા ખેડૂતોને વધારે ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે રજકાની ત્રણ કાપણી (50, 100 અને 130 દિવસ) બાદ બીજ ઉત્પાદન કરવાની તેમજ પ્રતિ હેકટર પાયામાં 30 કિલોગ્રામ નાઈટ્રોજન, પo કિલોગ્રામ ફોસ્ફરસ અને પo કિલોગ્રામ પોટાશ આપવાની ભલામણ કરવામાં આવે છે

(Action:- Professor & Head, Dept. of Agronomy, NMCA, Navsari)

Dept. of Agronomy, NMCA, Navsari 12.2.3.12

Permanent plot experiment on integrated nutrient supply system in a cereal based crop sequence

The farmers of South Gujarat Heavy Rainfall Agro climatic Zone(AES-III) are recommended to integrate 100% RDF (100-30-00 NPK kg/ha) as 50% RDF from inorganic fertilizers and 50% N from FYM (10 t/ha) or Green manure in rice and apply 100% RDF (120-60-00 NPK kg/ha) in wheat under rice-wheat crop sequence for securing similar paddy equivalent yield and maintain soil fertility status. Combined use of 75% RDF from inorganic fertilizers and 25% N from FYM (5 t/ha) or Green manure in rice saves 25% RDF in succeeding wheat.

દક્ષિણ ગુજરાતના વધુ વરસાદ વાળા વિસ્તાર (ખેત આબોહવાકિય પરિસ્થિતિ–૩) ના ડાંગર–ઘઉ પાક પધ્ધતિ અપનાવતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે વર્ષ દરમ્યાન ડાંગર ના પાક માં ભલામણ મુજબ(૧૦૦–૩૦–૦૦ ના.ફો.પો. કિ.ગ્રા./હે) રાસાયણિક ખાતરનો ઉપયોગ કરવાના બદલે ભલામણના ૫૦ ટકા રાસાયણિક ખાતર અને ૫૦ ટકા નાઈટ્રોજન ૧૦ ટન છાણિયા ખાતરથી અથવા લીલા પડવાશ દ્વારા આપવો તેમજ ત્યાર પછીના ઘઉના પાકમાં ૧૨૦–૬૦–૦૦ (ના.ફો.પો. કિ.ગ્રા./હે) રાસાયણિક ખાતર આપવામાં આવે તો ડાંગર–ઘઉ પાક પધ્ધતિમાં ભલામણના ૧૦૦ ટકા રાસાયણિક ખાતરના જેટલુ ડાંગર સમકક્ષ ઉત્પાદન મળે છે અને જમીન ની ફળદ્ભુપતા જળવાય રહે છે. આ ઉપરાંત ડાંગર ના પાક માં ભલામણના ૭૫ ટકા રાસાયણિક ખાતર અને ૨૫ ટકા નાઈટ્રોજન ૫ ટન છાણિયા ખાતરથી અથવા લીલા પડવાશ દ્વારા આપવામાં આવે તો ત્યાર પછી ના ઘઉના પાક માં ભલામણના ૨૫ ટકા રાસાયણિક ખાતરની બચત થાય છે.

(Action:- Professor & Head, Dept. of Agronomy, NMCA, Navsari)

Dept. of Agronomy, NMCA, Navsari

12,2,3,13

Management of cropping systems for resource conservation and climate change

The farmers of South Gujarat Heavy Rainfall Agro climatic Zone (AES-III) are recommended to adopt rice-sorghum-greengram crop sequence without mulch/residue incorporation with 25% higher dose of respective crops' RDF under conventional tillage for securing higher paddy equivalent yield and net return.

દક્ષિણ ગુજરાતના વધુ વરસાદ વાળા વિસ્તાર (ખેત આબોહવાકિય પરિસ્થિતિ–૩) ના ખેડૂતોને હેકટરે વધુ ડાંગર સમકક્ષ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે પરંપરાગત ખેડ કરી જે તે પાકની ખાતરની ભલામણ કરતા ૨૫ ટકા વધારે રાસાયણિક ખાતર અને પાક અવશેષને જમીન સાથે ભેળવ્યા સિવાય ડાંગર–જુવાર–મગ પાક પધ્ધતિ અપનાવવાની ભલામણ કરવામાં આવે છે.

(Action:- Professor & Head, Dept. of Agronomy, NMCA, Navsari)

Dept. of Agronomy, NMCA, Navsari

12.2.3.14

Development of organic farming package for system based high value crops

The farmers of South Gujarat Heavy Rainfall Agro climatic Zone(AES-III) interested to grow organically rice-summer groundnut cropping sequence are recommended to apply recommended dose of fertilizer on N equivalent basis to both the crops in equal proportion from FYM, vermicompost and castor cake, *i.e.*, FYM 6 t + vermicompost 4 t + castor cake 700 kg/ha in rice and FYM 1.5 t + vermicompost 1 t + castor cake 170 kg/ha in summer groundnut for getting similar paddy equivalent yield, higher net profit and improving organic carbon content of soil under organic nutrient management system.

દક્ષિણ ગુજરાતના વધુ વરસાદ વાળા વિસ્તાર (ખેત આબોહવાકિય પરિસ્થિતિ–૩) ના ડાંગર – ઉનાળુ– મગફળી પાક પધ્ધતિમાં સેન્દ્રીય ખેતી અપનાવવા માગતા ખેડૂતોને હેકટર દીઠ વધુ ડાંગર સમકક્ષ ઉત્પાદન, ચોખ્ખો નફો અને જમીનમાં સેન્દ્રીય કાર્બન વધારવા માટે ભલામણ કરવામાં આવે છે કે ડાંગરના પાકમાં ભલામણ મુજબના રાસાયણિક ખાતરના જથ્થા માટે અંદાજીત ૬ ટન છાણિયું ખાતર, ૪ ટન વર્મીકંમ્પોસ્ટ અને ૭૦૦ કિ.ગ્રા. દીવેલીખોળ (નાઈઢોજન ની ભલામણ પ્રમાણે ઉપલબ્ધ પોષક તત્વો ને ધ્યાને રાખી) અને ઉનાળુ મગફળીના પાકમાં ૧.૫ ટન છાણિયું ખાતર, ૧ ટન વર્મીકંમ્પોસ્ટ અને ૧૭૦ કિ.ગ્રા. દીવેલી ખોળ આપવાની ભલામણ કરવામાં આવે છે.

(Action:- Professor & Head, Dept. of Agronomy, NMCA, Navsari)

Main Sugarcane Research Station, Navsari

12.2.3.15

Priming of cane node for accelerating germination

Sugarcane growers of South Gujarat Heavy Rainfall Agro climatic Zone(AES-III) are recommended to plant sugarcane setts after priming with desi cow dung, cow urine and water in 1:2:5 ratio for 15 minutes to enhance and increase the germination and consequently for higher yield and net return.

દક્ષિણ ગુજરાતના ભારે વરસાદ ધરાવતા વિસ્તાર (ખેત આબોહવાકીય પરિસ્થિતિ–૩) ના શેરડી ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે શેરડીના ટુકડાને દેશી ગાયનુ છાણ, ગાૈ મુત્ર અને પાણીને ૧ઃ૨ઃ૫ ના ગુણોત્તરમાં લઈ ૧૫ મિનિટ સુધી બોળી રાખ્યા બાદ રોપણી કરવાથી ઝડપી અને વધ ઉગાવાને લીધે વધ ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.

(Action:- Research Scientist, MSRS, Navsari)

SARDARKRUSHINAGAR DATIWADA AGRICULTURAL UNIVERSITY

Centre for Integrated Farming Systems, S. D. Agricultural University, Sardarkrushinagar

12.2.4.1

Title: Permanent plot experiment on integrated nutrient supply system for a cereal based crop sequence

The farmers of North Gujarat Agro-climatic Zone(AES IV)adopting pearl millet-wheat crop sequence in long term are advised to apply 75 % recommended dose of NPK through fertilizer (RDF:80-40-00 NPK) + 25 % N through gliricidia leaves & tender twigs to *kharif* pearl millet and 75 % recommended dose of NPK to wheat (RDF:120-60-00 NPK) for getting higher pearl millet equivalent yield and net return along with system productivity and profitability. The farmers are recommended to apply fertilizers as follow:

Pearl mi	illet crop	Wheat crop
Basal	950 kg Gliricidia + 65 kg DAP	98 kg DAP
Top		158 kg Urea at 21 & 35 DAS
dressing	splits	in two equal splits

ઉત્તર ગુજરાત (એઈએસ ૪) ના બાજરા–ઘઉ પાક પધ્ધતિ લાંબા ગાળા માટે અપનાવતા ખેડૂતોને ં મહત્તમ બાજરા સમકક્ષ ઉત્પાદન, ચોખ્ખો નફો, પાક પધ્ધતિની ઉત્પાદકતા અને નફાકારકતા મેળવવા માટે બાજરા પાકમાં ૭૫ % ભલામણ કરેલ ના–ફો–પો (૮૦ –૪૦ – ૦૦) નો જથ્થો રાસાયણિક ખાતરના રૂપમાં અને ૨૫ % નાઈટ્રોજનનો જથ્થો ગ્લીરીસિડીયાની પાન અને કુમળી ડાળીઓના રૂપમાં જયારે ઘઉ પાકમાં ૭૫ % ભલામણ કરેલ ના–ફો–પો (૧૨૦ – ૬૦ –૦૦) નો જથ્થો રાસાયણિક ખાતરના રૂપમાં આપવાની ભલામણ કરવામાં આવે છે . ખેડુતોને નીચે મુજબ ખાતર આપવાની ભલામણ કરવામાં આવે છે.

	બાજરા પાક	ઘઉ પાક
પાયાનું ખાતર	૯૫૦ કિલો ગ્લીરીસિડીયા + ૬૫ કિલો ડી.એ.પી.	૯૮ કિલો ડી.એ.પી.
પૂર્તિ ખાતર	૧૦૪ કિલો યુરીયા વાવણી પછી ૧૮ અને ૩૦ દિવસે બે સરખા ભાગમાં આપવું	૧૫૮ કિલો યુરીયા વાવણી પછી ૨૧ અને ૩૫ દિવસે બે સરખા ભાગમાં આપવું

(Action: Research Scientist, Centre for Integrated Farming System, S.D. Agricultural University Sardarkrushinagar)

Centre for IFS, ,S.D.A.U., Sardarkrushinagar 12.2.4.2

Title: Development of organic farming package for system based high value crops

The farmers of North Gujarat Agro-climatic Zone(AES IV) adopting sunnhemp (GM)-potato-groundnut crop sequence are recommended to fertilize potato (RDF 220-110-220 NPK kg/ha) and groundnut (RDF 25-50-00 NPK kg/ha) as 50 % RDF + 50 % RDN from FYM + micro nutrients (Zn & Fe as per soil test) for getting higher potato equivalent yield and economic return along with maintenance in soil fertility.

Farmers who are interested to grow organically potato-groundnut crop sequence are recommended to apply RDN to both the crops in equal proportion of FYM, vermicompost and castor cake (33% each) i.e. 15, 9 and 1.6 t/ha, respectively with seed treatment of N containing biofertilizer (*Azotobactor/Rhizobium*@ 20 g/kg seed) and P carrying biofertilizer (PSB-16 @ 20 g/kg seed).

ઉત્તર ગુજરાત (એઈએસ ૪) માં શણ લીલો પડવાશ −બટાટા− મગફળી પાક પધ્ધતિ અપનાવતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે બટાટા (૨૨૦−૧૧૦−૨૨૦ ના−ફો−પો કિલો/હે.) અને મગફળી (૨પ−૫૦−૦૦ ના−ફો−પો કિલો/હે.) માં ૫૦% ભલામણ કરેલ ખાતર રાસાયણિક ખાતરના રૂપમાં અને બાકીનો પ૦% નાઈટ્રોજન છાણીયા ખાતરના રૂપમાં તથા સૂક્ષ્મ તત્વો (લોહ અને જસત) જમીનના પૃથ્થકરણ મુજબ આપવાથી મહત્તમ બટાકા સમકક્ષ ઉત્પાદન અને આર્થિક વળતર મળે છે તેમજ જમીનની ફળદ્દપતા જળવાઈ રહે છે.

બટાટા–મગફળીની સેન્દ્રીય ખેતી કરવા માગતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે બન્ને પાકના ભલામણ કરેલ નાઈટ્રોજન સરખા પ્રમાણમાં, છાણીયા ખાતરથી, વર્મી કમ્પોષ્ટથી અને દિવેલી ખોળથી (૩૩ % દરેકના) એટલે કે અનુક્રમે ૧૫, ૯ અને ૧.૪ ટન/હે. અને જૈવિક ખાતર એઝોટોબેકટર/ રાઈઝોબીયમ (૨૦ ગ્રામ/ કિ.ગ્રા. બીજ) અને પી.એસ.બી. –૧૪ (૨૦ ગ્રામ/ કિ.ગ્રા. બીજ) ની બીજ માવજત આપવી.

(Action: Research Scientist, Centre for IFS, ,S.D.A.U., Sardarkrushinagar)

Centre for Natural Resources Management, S. D. A. U., Sardarkrushinagar 12.2.4.3

Title: Effect of foliar application of plant nutrients on yield of maize

The farmers of North Gujarat Agro-climatic Zone (AES IV) growing maize on medium black Fe and Zn deficient soil under rainfed condition are recommended to apply three sprays each of FeSO4 + ZnSO4 @ 0.5 % (with 0.05 % citric acid and lime solution @ 0.25 %) at 30, 40 and 50 DAS along with recommended dose of fertilizers (80-40 kg N-P₂O₅/ha) for higher yield and net return.

ઉત્તર ગુજરાત (એઈએસ ૪) માં લોહ અને જસતની ઉણપવાળી મધ્યમ કાળી જમીનમાં વરસાદ આધારિત મકાઈની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે મકાઈના પાકમાં ફેરસ સલ્ફેટ + ઝિંક સલ્ફેટ દરેકના ૦.૫ ટકા પ્રમાણે (સાઈટ્રીક એસીડ, ૦.૦૫ %અને ચુનાના દ્રાવણ, ૦.૨૫ % સાથે) વાવણી બાદ ૩૦, ૪૦ અને ૫૦ દિવસે ત્રણ છંટકાવ કરવા ઉપરાંત ભલામણ કરેલ ખાતર (૮૦-૪૦ નાઈટ્રોજન–ફોસ્ફરસ કિ.ગ્રા./હે.) આપવાથી વધારે ઉત્પાદન અને ચોખ્ખો નફો મેળવી શકાય છે.

(Action: Research Scientist, CNRM, S. D. Agricultural University, Sardarkrushinagar)

CNRM, SDAU, Sardarkrushinagar

12.2.4.4

Title: Organic farming in Green gram and Sesame (crop rotation) under North Gujarat condition.

The farmers of North Gujarat Agro-climatic Zone(AES IV)adopting organic farming with green gram-sesame in crop rotation on light textured soil under rainfed condition are recommended to apply recommended dose of nitrogen @ 20 kg/ha to green gram and 50 kg N/ha to sesame either through vermicompost (2.5 and 6.25 t/ha respectively) or FYM (4 and 10 t//ha respectively) for higher yield, net return and maintaining soil fertility.

ઉત્તર ગુજરાત (એઈએસ ૪) ની હલકી પ્રતવાળી જમીનમાં વરસાદ આધારિત સજીવ ખેતીમાં મગ– તલ પાક ફેરબદલી અપનાવતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે મગ– તલ પાક ફેરબદલીમાં વધુ ઉત્પાદન, ચોખ્ખો નફો મેળવવા તેમજ જમીનની ફળદ્વુપતા જાળવી રાખવા માટે મગના પાકને ૨૦ કિ.ગ્રા. નાઈટ્રોજન /હે. અને તલના પાકને ૫૦ કિ.ગ્રા. નાઈટ્રોજન/હે. અળસીયાના ખાતર (અનુક્રમે ૨.૫ અને ૬.૨૫ ટન/હે.) અથવા છાણીયા ખાતર (અનુક્રમે ૪.૦ અને ૧૦.૦ ટન/હે.) માંથી આપવું.

(Action: Research Scientist, CNRM, SDAU,

Sardarkrushinagar)

Agro-Forestry Research Station, S. D. A.U., Sardarkrushinagar 12.2.4.5

Title: Ardusa (Ailanthus excelsa) based Silvi-Pastoral System for Livelihood Security in Rainfed Agro-ecosystem of Gujarat

Farmers of North Gujarat Agro-climatic Zone(AES IV) are recommended to adopt *ardusa* based silvipasture system (*Ardusa* 6 m. x 6 m. with Jodhpur Dhaman or Local Dhaman) under rainfed condition for higher green fodder and net returns every year against sole *ardusa* and sole grasses from the unit area besides maintaining soil fertility.

ઉત્તર ગુજરાત (એઈએસ ૪)નાે શુષ્ક વિસ્તારના ખેડુતોને એકલા અરડુસા અથવા ધાસચારા ની સામે એકમ વિસ્તારમા વધુ લીલોચારો અને આર્થિક વળતર મેળવવા તથા જમીનની ફળદ્ભુપતા જાળવી રાખવા માટે અરડુસા આધારીત વૃક્ષ–ધાસચારા પધ્ધતિ(અરડુસા ૬ મી. × ૬ મી. સાથે જોધપુર ધામણ અથવા લોકલ ઘામણ) અપનાવવાની ભલામણ કરવામાં આવે છે.

(Action: Research Scientist, Agro-Forestry Research Station, SDAU, Sardarkrushinagar)

Seed Spices Research Station, S. D. Agricultural University, Jagudan 12.2.4.6

Title: Effect of different weed management practices on *rabi* fennel

Farmers of North Gujarat Agro-climatic Zone (AES IV) growing *rabi* fennel are recommended to go for two hand weeding + interculturing at 20 and 40 DAS to control weeds for getting higher yield and net return.

ઉત્તર ગુજરાત વિસ્તારમાં શિયાળું વરીયાળીનું વાવેતર કરતાં ખેડૂતોએ અસરકારક નિંદણ નિયંત્રણ, વધુ ઉત્પાદન અને ચોખ્ખો નક્ષે મેળવવા માટે પાકની વાવણી પછી ૨૦ અને ૪૦ દિવસે આંતરખેડ કરી હાથ વડે નિંદણ કરવાની ભલામણ કરવામાં આવે છે.

(Action: Research Scientist, Seed Spices, SDAU, Jagudan)

Regional Research Station, S. D. Agricultural University, Bhachau 12.2.4.7

Title: Development of organic farming modules for pulses in Kachchh

The farmers of North-west Gujarat Agro-climatic Zone (AES II) are recommended to adopt following module for greengram, guar and mothbean crops (*kharif*) for obtaining higher yield, net return and maintaining soil fertility under organic farming system.

- Soil application of 20 kg N/ha through Vermicompost or FYM + *Trichoderma viride* @ 1.5 kg/ha.
- Soil application of phosphorus @ 40 kg/ha through enriched compost (Mix rock phosphate and FYM@1:10 ratio and decomposed for 40-45 days in pit with maintaining 30 to 40% moisture and add 1kg PSB/1 ton compost at the time of application)
- Seed treatment with *Rhizobium* @ 30 g/kg seed.
- Install 50 bird perches/ha.
- Application of bio pesticides as per need.

ગુજરાતના ઉત્તર–પશ્ચિમ (એઈએસ ૨)ના ખેડુતોને સુકી ખેતી વિસ્તારમાં સેન્દ્રીય ખેતી હેઠળ મગ ,ગુવાર અને મઠ ના પાકોનું હેકટર દીઠ વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા અને જમીનની ફળદ્ભુપતા જાળવવા માટે નીચે મુજબના સેન્દ્રિય ખેતી મોડયુલ અપનાવવાની ભલામણ કરવામા આવે છે.

- હેકટર દીઠ ૨૦ કિ.ગ્રા નાઈટ્રોજન વર્મીકમ્પોસ્ટ અથવા છાણીયા ખાતર માંથી અને ટ્રાયકોડર્મા વીરીડી હેકટરે ૧.૫ કિ.ગ્રા જમીનમાં વાવણી સમયે આપવું.
- હેકટર દીઠ ૪૦ કિ.ગ્રા ફોસ્ફરસ સમૃધ્ધ કંમ્પોસ્ટ મારફતે આપવુ.(રોક ફોસ્ફેટ અને છાંણીયા ખાતરનું ૧:૧૦ના પ્રમાણમાં મિશ્રણ કરી તેને ખાડામાં ૪૦ થી ૪૫ દિવસ સુધી રાખી તેમાં ૩૦ થી ૪૦% ભેજ જાળવવો. જમીનમાં આપતી વખતે ૧ કિ.ગ્રા. પીએસબી કલ્ચર/૧ ટન કંમ્પોસ્ટમા ભેળવવું.
- રાઈઝોબીયમ જૈવિક ખાતરની બીજ માવજત ૩૦ ગ્રામ પ્રતિ કિલો બીજ દીઠ આપવી.
- હેકટર દીઠ પક્ષીઓને બેસવાના ૫૦ ટેકા મકવા.
- વનસ્પતિજન્ય દવાનો છંટકાવ જરૂર જણાય ત્યારે કરવો.

(Action: Assistant Research Scientist, RRS, SDAU, Bhachau)

B. Recommendation for Scientific community

ANAND AGRICULTURAL UNIVERSITY

-Nil-

JUNAGADH AGRICULTURAL UNIVERSITY

Department of Agronomy, JAU, Junagadh

12.2.2.1 Weed management in pre-monsoon groundnut

The effective weed management along with higher yield and net return from premonsoon groundnut can be achieved by pre-plant incorporation of pendimethalin 38.7% CS @ 0.75 kg a.i./ha followed by interculturing and hand weeding at 40 DAS under South Saurashtra Agro-climatic Zone.

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

Millet Research Station, JAU, Jamnagar

12.2.2.2 Integrated weed management in kharif pearlmillet

The application of atrazine @ 0.4 kg/ha as post emergence at two leaf stage of weed followed by one hand weeding at 35 days after sowing for effective weed management in *kharif* pearlmillet was found as effective as pre-emergence application of atrazine @ 0.5 kg/ha followed by one hand weeding at 35 days after sowing under North Saurashtra Agroclimatic Zone.

(Action: Research Scientist (Millet), Millet Research Station, JAU, Jamnagar)

Pulses Res. Station, JAU, Junagadh

12.2.2.3 Bio-efficacy of different herbicides for broad spectrum weed management in chickpea

The application of pendimethalin 30% EC 1.0 kg a.i./ha as a pre-emergence followed by hand weeding at 25-30 days after sowing gave higher yield with effective weed management in chickpea. However, pendimethalin 38.7% CS 1.0 kg a.i./ha as a pre-emergence followed by hoeing at 30-35 days after sowing found economical under South Saurashtra Agro-climatic Zone.

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

Department of Agril. Chem. & Soil Sci., & Pulses Research Station, JAU, Junagadh

12.2.2.4 Soil test based fertilizer recommendation for targeted yield of pigeonpea crop

The nutrient requirements for production of one quintal pigeonpea seed was assessed as 6.09, 1.98 and 1.78 kg; N, P_2O_5 and K_2O , respectively. The fertilizer prescription equation are as : for N (FN : 5.46 T - 0.25 SN - 0.16 FYM), P (FP $_2O_5$:4.11 T - 1.34 SP - 0.15 FYM) and K (FK $_2O$: 11.93 T - 0.51 SK - 0.45 FYM) with FYM. Targeted yield concept

could be effectively adopted to bring in site specificity in fertilizer use and achieve high yields of pigeonpea in the medium black calcareous soils of Saurashtra region of Gujarat.

(Action: Professor & Head, Department of Agril. Chem. & Soil Sci., & Research Scientist (Chickpea), Pulses Research Station, JAU, Junagadh)

Department of Agril. Chem. & Soil Sci., JAU, Junagadh

12.2.2.5 Establishment of critical limit of sulphur for Bt cotton in medium black calcareous soils

The critical limit for sulphur application to Bt cotton crop grown on calcareous soils of Saurashtra, was found as 15 ppm in soil and 0.475 per cent in cotton plant at 60 DAS.

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

NAVSARI AGRICULTURAL UNIVERSITY

Main Sugarcane Research Station, Navsari

12.2.3.1

Response of sugarcane to different plant nutrients in varied agro ecological situations

Application of inorganic fertilizers based on soil test values before planting of sugarcane has been found effective for getting higher cane yield and net return under south Gujarat heavy rainfall zone (AES III).

Based on field soil analysis data N, P_2O_5 , K_2O and micronutrient fertilizes to be applied as below:

If the available soil N is 0-140,141-280,281-420,421-560,561-700 and >700kg/ha then 375, 312.50, 250, 250, 187.50 and 125 kg/ha N fertilizer respectively to be applied.

If the available soil P_2O_5 is 0-10, 11-20, 21-30, 31-40, 41-55 and >55 kg/ha then 187.50, 156.25, 125, 125, 93.75 and 62.5 kg/ha P_2O_5 fertilizer respectively to be applied.

If the available soil K_2O is 0-100, 101-150, 151-200, 201-250, 251-300 and >300 kg/ha then 187.50, 131.25, 125, 125, 93.75 and 62.5 kg/ha K_2O fertilizer respectively to be applied.

In case of soil Available micro- nutriants:

Iron: for <5 ppm apply 50 kg/ha ferrous sulphate in every three years.

Manganize: for <5 ppm apply 10 kg/ha manganize sulphate in every three years.

Zinc: for <0.5 ppm apply 50 kg/ha zinc sulphate in every three years.

Copper: for <0.2 ppm apply 5 kg/ha copper sulphate in every three years.

(Action:- Research Scientist, MSRS, Navsari)

$Dept.\ of\ Agril.\ Meteorology,\ MNCA,\ NAU,\ Navsari$

12.2.3.2

Application of Mixed Statistical Distributions in Fitting Rainfall Data of South Gujarat

Annual rainfall distribution modeling for Navsari district Lognormal distribution and for Bharuch district Weibull distribution should be used for taking decision about future precipitations over a certain period of time.

(Action:-Professor and Head, Dept. of Agril. Meteorology, NMCA, NAU, Navsari)

SWMRU,NAU, Navsari

12.2.3.3 Natural resources characterization in relation to banana growing areas of South Gujarat .

Banana production constraints

Based on the characterization of soil, water and climatic resources *vis-à-vis* optimum requirement of banana, the crop production constraints related to banana were identified. The resource wise crop production constraints are reported as below:

Production constraints related to banana cultivation

Taluka	Soil	Water	Climate
Nandod	- High BD (1.47g/cc),	Marginal quality of	Low rainfall
	- Shallow depth (83cm)	groundwater	(91 mm per
	- High pH (8.46)	(EC 0.95 dSm ⁻¹)	month)
	- Fe (5.32 ppm) deficient		
Jagadia	- High BD (1.50g/cc),	Marginal quality of	Low rainfall
	- high pH (8.0),	groundwater	(72.8 mm per
	- Fe (4.74 ppm) deficient	(EC 0.96 dSm ⁻¹)	month)
Bharuch	- Hard consistency,	Poor quality of	Low rainfall
	- High BD (1.54g/cc),	groundwater	(72.8 mm per
	- High pH (7.95),	(EC 1.23 dSm ⁻¹)	month)
	- Low O.C (0.31%)		
	- Fe (3.0 ppp) deficient		
Kamrej	- Hard consistency	Poor quality of	
_	- Texture clay	groundwater	
	- High BD (1.53g/cc)	(EC 1.16 dSm ⁻¹)	
	- Fe (5.48 ppm) deficient		
Bardoli	- Texture clay		
	- High pH (8.04)		
	- Fe (3.86 ppm) deficient		
Palsana	- Fe (4.50 ppm) deficient	Poor quality of	
		groundwater	
		(EC 1.04 dSm ⁻¹)	
Navsari	- Texture clay	Poor quality of	
	- High pH (8.89)	groundwater	
	- Low O.C (0.29%)	$(EC 1.03dSm^{-1})$	
	- Fe (3.34 ppm) deficient		
	- Zn (0.04 ppm) deficient		
Jalalpore	- Hard consistency	Poor quality of	
	- High pH (8.47)	groundwater	
	- Low O.C (0.34%)	(EC 1.19 dSm ⁻¹)	
Valsad	- Texture clay	Poor quality of ground	
	- High BD (1.43g/cc)	water (EC 1.04 dSm ⁻¹)	
	- Fe (3.34 ppm) deficient		

Constraints based remedial measures for improving banana productivity under south Gujarat condition

S	Constraints' for	Deleterious effect on	Remedial measures
N	banana	root growth	
1	High bulk density, low organic carbon, hard consistency	Restricted root growth due to difficulty in penetration of roots	 Deep ploughing once in three years Addition of organic manures like FYM, biocompost, vermicompost etc. Green manuring with dhaincha or sunn hemp Insitu incorporation of crop residues Provide drainage
2	High pH and ESP	Stunted growth of plant due to restricted soil air, moisture and nutrient movement, Apart from this, extremely high pH (>9), Nutrient availability decreased	 Soil analysis based gypsum application in conjunction with organic manures, green manuring etc. Provide drainage facility Preference to sodicity tolerant variety of banana
4	Low in organic carbon, Fe and in some samples Zn deficient Marginal or Poor quality of ground water	poor yield of plant Mortality of plant in extreme cases Deterioration in soil health due to prolonged	 Apply recommended doses of fertilizer as per soil test value Soil test based application of Fe and Zn Adopt drip irrigation along with mulching for restricted upward movement of soluble salts Follow fertilization schedule using urea and MOP as source of N and K Use SSP as a source of P
5	Low rainfall (Unmanageable constraints)		- Change date of planting in such a way that full growth stage of plant comes during monsoon season

(Action:- Research Scientist, SWMRU,NAU, Navsari)

SARDARKRUSHINAGAR DATIWADA AGRICULTURAL UNIVERSITY

Department of Agronomy, S.D. Agricultural University, Sardarkrushinagar 12.2.4.1

Title: Evaluation of different herbicides for weed control in summer pearl millet (Pennisetum glaucum (L.) R. Br. emend Stuntz)

Application of atrazine 0.50 kg/ha either as pre emergence followed by inter culturing at 25 DAS or atrazine 0.50 kg/ha as post emergence at 20-25 DAS has been found effective to manage weeds in summer pearl millet for getting higher yield and net return.

(Action: Professor & Head, Agronomy, CPCA, S.D. Agricultural University, Sardarkrushinagar)

Seed Spices Research Station, S. D. Agricultural University, Jagudan 12.2.4.2

Title: Effect of different weed management practices on rabi fennel

Application of pendimethalin @1.0 kg/ha as pre emergence + interculturing followed by hand weeding at 30 DAS. has been found effective to manage weeds in *rabi* fennel for getting higher yield and net return.

(Action: Research Scientist, Seed Spices, S. D. Agricultural University, Jagudan)

2. NEW TECHNICAL PROGRAMMES

ANAND AGRICULTURAL UNIVERSITY

Sr. No.	Title	Suggestions	Remarks	
Main Mai	Main Maize Research Station, AAU, Godhra			
12.2.1.1	Effect of nitrogen, biofertilizer and plant density on yield of baby corn variety VL - 78 in <i>kharif</i> season	1.Add observation of barren plants	Approved	
12.2.1.2	Effect of nitrogen, biofertilizer and plant density on yield of baby corn variety VL - 78 in rabi season	1. Add observation of barren plants	Approved	
D. I. W. I	D 1 C/ / AAT	(Action : Research Scientist, MMRS	S, AAU, Godhra)	
	cco Research Station, AAU		A	
12.2.1.3	Effect of nitrogen levels on quality and yield of rustica tobacco varieties	1.Use word suitable in place of optimum in objective no.1	Approved	
		(Action : Research Scientist, BTR	S, AAU, Anand)	
	search cum Training Centr			
12.2.1.4	Effect of different levels of phosphorus, potassium and sulphur on growth, yield and quality of <i>Bt</i> cotton (Var. G. Cot. Hy. 8, BG II) under middle Gujarat conditions	 Add observation of seed cotton yield/boll (g) instead of boll weight (g) Add observations on fibre quality parameters 	Approved	
	Oujurat conditions	(Action : Unit Officer, TRTC, AAU	Devgadh Baria)	
Agricultu	re College, AAU, Jabugam	(riction : Omt Officer, Title, Title	, Be v guair Barra)	
12.2.1.5	Efficacy testing of native Rhizobium isolates in summer groundnut (Arachis hypogaea)	1. Add disease and pest observations	Approved	
D 4	*	ssoc. Prof. & OSD, Agriculture College	e, AAU, Jabugam	
	nt of Microbiology, BACA,	· · · · · · · · · · · · · · · · · · ·	A 1	
12.2.1.6	Screening of native Rhizobium isolates on green gram (Vigna radiata L.)	If possible, conduct trial upto maturity	Approved	
12.2.1.7	Screening of native Rhizobium isolates on pigeon pea (Cajanus cajan)	If possible, conduct trial upto maturity	Approved	

12.2.1.8	Efficacy of methylotrophic bacterial	Approved	Approved
	consortium on rice		
	(<i>Oryzae sativa</i> L.) cv. Gurjari in field		
	Gurjan in neid		
12.2.1.9	Plant growth promoting	Approved	Approved
	rhizospheric potash		
	mobilizing bacterial		
	liquid consortium efficacy in maize (<i>Zea mays</i> L.)		
		ad, Department of Microbiology, BAC	A AAII Anand)
Micronut	rient Research Project, AAU		, 11110, 1 mana)
12.2.1.10	Evaluation of heavy	Approved	Approved
	metals tolerant native		11
	bacterial culture for		
	bioremediation of heavy		
	metals using multi-cut		
12.2.1.11	forage jowar Evaluation of efficacy of	Approved	Approved
12,2,1,11	sulphur and zinc	Прриочен	Approved
	containing complex		
	fertilizer for maximizing		
	yield and quality through		
	balanced nutrition of		
12.2.1.12	groundnut crop	A 1	Δ 1
12.2.1.12	Evaluation of efficacy of sulphur and zinc	Approved	Approved
	containing complex		
	fertilizer for maximizing		
	yield and quality through		
	balanced nutrition of		
10.01.10	mustard crop	DG 1	NT
12.2.1.13	Mobilization of Iron and	PG student trial	Not approved
	Zinc through Bioconsortium and its		
	effect on growth and yield		
	of maize (Zea mays L.)		
	(Action: Associate Research S	Scientist, Micronutrient Research Proje	ct, AAU, Anand)
	nt of Agril. Chemistry and		NT /
12.2.1.14	Effect of graded saturation of P- fixing	PG student trial	Not approved
	capacity of two different		
	soil types on yield and		
	chemical composition of		
	wheat (Triticum aestivum		
	L.)		
(Act:	on: Professor & Hand Dames	tment of Agril Chamistry and Soil Soi	DACA Anond
(Action: Professor & Head, Department of Agril. Chemistry and Soil Sci., BACA, Anand)			

Departme	nt of Agronomy, BACA, AA	AU, Anand	
12.2.1.15	Effect of spacing and topping on yield of summer sesame (Sesamum indicum L.)	Conduct as a feeler trial and will be finalized after getting results	Approved
12.2.1.16	Nutrient management through organic sources in summer green gram (Vigna radiata L.)	Add observation on pests and diseases	Approved
12.2.1.17	Varietal performance of pearl millet under varying transplanting dates in semi <i>rabi</i> season	Approved	Approved
Dulgo Dogo	earch Station, AAU, Vadod	Head, Department of Agronomy, BAC	A, AAU, Ananu)
12.2.1.18	Effect of sowing dates and spacing on semi <i>rabi</i> green gram (<i>Vigna radiata</i> L.)	Approved	Approved
	(Action: Rese	arch Scientist, Pulse Research Station,	AAU, Vadodara)
	re Research Station, AAU, A		
12.2.1.19	Nutrient management through organic sources in wheat in <i>Bhal</i> region	Conduct two experiments separately for wheat variety GW 1 and GW 496 and change the methodology accordingly	Approved
12.2.1.20	Effect of different levels of nitrogen, phosphorus and bio-fertilizers on yield of irrigated wheat (<i>Triticum aestivum</i> L.) in <i>Bhal</i> region	1. Change phosphorus treatment as: P ₁ : 30 kg/ha and P ₂ : 60 kg/ha	Approved
		(Action: Research Scientist, A	RS, AAU, Arnej)
	rigated Crops, AAU, Thas		
12.2.1.21	Nutrient management through organic sources in grain amaranthus (Amarathus hypochondriacus L.) under middle Gujarat conditions	Change treatment no. 1 as RDF instead of No manure (Control)	Approved
	(Action: Associate Re	esearch Scientist, ARS on Irrigated Crop	ps, AAU, Thasra)
	Cotton Research Station, A.	I	
12.2.1.22	To study the effect of limited irrigation on production and fibre quality of <i>desi</i> cotton	1. Change the title as " Effect of limited irrigation on production and fibre quality of <i>desi</i> cotton"	Approved
	(Action: Associate Research Scientist, RCRS, AAU, Viramgam)		

AICRP or	n weed control, AAU, Anan	d	
12.2.1.23	Management of complex weed flora in Garlic (Allium sativum L.)		Approved
	(Acti	on: Agronomist, AICRP on weed contr	ol, AAU, Anand)
Main Rice	e Research Station, AAU, N	awagam	
12.2.1.24	Management of nitrogenous fertilizer through need based application by using Leaf Colour Chart (LCC) in rice varieties with different maturity group	 Change title as "Nitrogen management through need based application by using Leaf Colour Chart (LCC) in rice varieties with different maturity group Initial soil sample should be analysed for N, S, Fe and Zn and if found deficient, should be 	Approved
	(A ation, Dagaarah	supplimented before experiment.	A A I I Novyogom)
Regional	Research Station, AAU, An	Scientist, Main Rice Research Station,	AAU, Nawagaiii)
12.2.1.25	Effect of irrigation scheduling and fertigation on wheat (<i>Triticum aestivum</i> L.) under middle Gujarat conditions	Depth of irrigation in conventional treatment should be 50 mm Use lateral line with 8 lph discharge capacity Use word PEF (alternate day) instead of ADPEF Mention fertilizer dose (120-60-0 NPK kg/ha)	Approved
12.2.1.26	Effect of fertigation under different lateral spacing in drip irrigated wheat (<i>Triticum aestivum</i> L.)	Not approved arch Scientist, Regional Research Station	Not approved
Polytechn	ic in Agril. Engineering AA	The state of the s	
12.2.1.27	Effect of tillage methods on soil properties and productivity of soybean (Glycine max) - wheat (Triticum aestivum) cropping system		Approved
		(Action: Associate Professor, PA	E, AAU, Dahod)
Departme	nt of Agril. Meteorology, B	ACA, AAU, Anand	
12.2.1.28	Calibration and validation of SUBSTOR model (DSSAT 4.6) for three cultivars of potato under different sowing time	Approved	Approved
	Action: Professor & Head, D	epartment of Agril. Meteorology, BAC	A, AAU, Anand)

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

Sr. No.	Title	Suggestions	Remarks
	nt of Agronomy, JAU, Junaga		
12.2.2.1	Evaluation of cow-based bio-	1. Remove 50 % flowering in	Approved
	enhancers and botanicals for organic cultivation of summer	observation.	
	groundnut.	(Action: Professor & Head,	
	groundiau	Department of Agronomy, JAU,	
		Junagadh)	
Departme	int of Agronomy, JAU, Junaga		
12.2.2 .2	Integrated weed management	1. Add residue analysis in	Approved
	in soybean	observation.	
		(Action: Professor& Head,	
		Department of Agronomy, JAU, ,	
		Junagadh)	
	nt of Agronomy, JAU, Junaga		
12.2.2.3	Response of Bt cotton to high	1. Mentioned units of observation.	Approved
	density planting and nitrogen levels through fertigation	(Action: Professor& Head,	
	levers unough fertigation	Department of Agronomy, JAU, ,	
		Junagadh)	
	nt of Agronomy, JAU, Junaga		
12.2.2. 4	Promotion of pulses through	1. Delete length & dry wt. of roots	Approved
	inter/relay cropping for enhancing climate resilient	and no. of branches in	
	agriculture	observation	
		2. Measure nodules/plant at 45 DAS	
		instead of 60 DAS.	
		3. Measure soil moisture upto 30 cm	
		depth	
		(Action: Professor& Head,	
		Department of Agronomy, JAU,	
		Junagadh)	
Main Oils	seeds Research Station, JAU, Ju		
12.2.2.5	Evaluation of DAPG-	Approved	Approved
	producing fluorescent		
	Pseudomonas for enhancing		
	nutrient use efficiency, bio	(Action: Research Scientist	
	control of soil born disease	(Groundnut), Main Oilseeds	
	and yield of groundnut	Research Station, JAU, Junagadh)	
	seeds Research Station, JAU, Ju		
12.2.2.6	Economizing phosphorus use	Approved	Approved
	in groundnut production by	/A	
	exploiting phosphorus build	(Action: Research Scientist	
	up in soil	(Groundnut), Main Oilseeds	
		Research Station, JAU, Junagadh)	

Main Oils	eeds Research Station, JAU, Ji	ınagadh	
12.2.2.7	Integrated weed management in castor	Approved	Approved
	iii castoi	(Action: Research Scientist	
		(Groundnut), Main Oilseeds	
		Research Station, JAU, Junagadh)	
Main Oils	eeds Research Station, JAU, Ji	<u> </u>	
12.2.2.8	Evaluation of enriched castor	Approved	Approved
12.2.2.0	meal as a source of K in	T.PPTO 100	119910100
	castor	(Action: Research Scientist	
		(Groundnut), Main Oilseeds	
		Research Station, JAU, Junagadh)	
Main Oils	eeds Research Station, JAU, Ju	ınagadh	
12.2.2.9	Economizing phosphorus use	Approved	Approved
	in <i>kharif</i> groundnut		
	production by exploiting	(Action: Research Scientist	
	phosphorus build up in soil	(Groundnut), Main Oilseeds	
		Research Station, JAU, Junagadh)	
Millet Res	earch Station, JAU, Jamnagar		
12.2.2.10	Performance of pearlmillet	Approved	Approved
	released hybrids under		
	organic condition	(Action: Research Scientist (Millet),	
		Millet Research Station, JAU,	
		Jamnagar)	
	earch Station, JAU, Junagadh	· · · · · · · · · · · · · · · · · · ·	
12.2.2.11	Evaluation of wheat varieties	Approved	Approved
	in organic condition	(4 ·	
		(Action: Research Scientist (Wheat),	
		Wheat Research Station, JAU, Junagadh)	
		Junuguan)	
Wheat Res	earch Station, JAU, Junagadh		
12.2.2.12	Performance of new wheat	Approved	Approved
	genotypes at different dates		11
	of sowing under irrigated	(Action: Research Scientist (Wheat),	
	condition	Wheat Research Station, JAU,	
		Junagadh)	
	earch Station, JAU, Junagadh		
12.2.2.13	Performance of "marker	Approved	Approved
	assisted backcross breeding	(A-diam B I G to the ATT	
	(MABB)" genotypes of wheat	(Action: Research Scientist (Wheat),	
	for late sown under irrigated condition	Wheat Research Station, JAU, Junagadh)	
	Condition	Junagaan)	
Wheat Res	earch Station, JAU, Junagadh	<u> </u>	
12.2.2.14	Management of lodging and	Approved	Approved
•	yield maximization using	**	11
	nutrient expert in wheat	(Action: Research Scientist (Wheat),	
	*	Wheat Research Station, JAU,	
		Junagadh)	

Wheat Res	earch Station, JAU, Junagadh				
12.2.2.15	Comparative performance of	Approved	Approved		
	line sowing versus dibbling in				
	wheat	(Action: Research Scientist (Wheat),			
		Wheat Research Station, JAU,			
C	Paramak Station IAII Valiana	Junagadh)			
12.2.2.16	Research Station, JAU, Kodinar Ratoon management in	1. Use word "Emergence" instead of	Approved		
12.2.2.10	sugarcane management m		Approved		
		"germination" in observation			
		(Action: Research Scientist			
		(Sugarcane), Sugarcane Research Station, JAU, Kodinar)			
Sugarcano	Research Station, JAU, Kodinar	Sianon, JAO, Koamar)			
12.2.2.17	Weed management in	1.Add residue analysis in	Approved		
12.2.2.1	sugarcane with special	-	ripproved		
	reference to Cynodon	observation.			
	dactylon	(Action: Research Scientist			
		(Sugarcane), Sugarcane Research			
C	D 1 G	Station, JAU, Kodinar)			
	Research Station, JAU, Kodinar	Amanarad	A 1		
12.2.2.18	1 3	Approved	Approved		
	in sugarcane under changing climate scenario	(Action: Pagagnah Scientist			
	Cililate scellario	(Action: Research Scientist (Sugarcane), Sugarcane Research			
		Station, JAU, Kodinar)			
Pulses Res	earch Station, JAU, Junagadh	Situation, tille, illeanitum)			
12.2.2.19	Management of chickpea	Approved	Approved		
	under organic farming		11		
		(Action: Research Scientist			
		(Chickpea), Pulses Research			
		Station, JAU, Junagadh)			
	Farming Research Station, JA				
12.2.2.20	Production potential and economics of Bt cotton based	Approved	Approved		
	intercropping system under	(Action: Research Scientist (Dry			
	rainfed condition	Farming), Main Dry Farming			
		Research Station, JAU, Targhadia)			
Main Dry	Farming Research Station, JA				
12.2.2.21	Fertilizer management in	Approved	Approved		
	groundnut + castor (3:1)				
	intercropping system under	(Action: Research Scientist (Dry			
	rainfed condition	Farming), Main Dry Farming			
		Research Station, JAU, Targhadia)			
	Agril. Res. Station, JAU, Ratia & Main Dry Farming Res. Station, JAU, Targhadia				
12.2.2.22	Effect of NP fertilization on	Approved	Approved		
	yield of sorghum under	74 .•			
	conserved soil moisture in	(Action: Asst. Res. Sci., Agril. Res.			
	Ghed area	Station, JAU, Ratia & Res. Sci. (Dry			
		Farming), Main Dry Farming Res.			
		Station, JAU, Targhadia)			

Departme	Department of Agril. Chemistry & Soil Science, JAU, Junagadh			
12.2.2.23		1. Delete CRD in text.	Approved	
	crop in medium black	(Action: Professor & Head,		
	calcareous soils	Department of Agril. Chemistry &		
		Soil Science, JAU, Junagadh)		
Dept. of A	gril. Chem.& Soil Sci., & Main	Oilseeds Res. Station, JAU, Junagad	h	
12.2.2.24	Soil test based fertilizer	Approved	Approved	
	recommendation for soybean	(Astion, Business & Hond Dont		
		(Action: Professor & Head, Dept.		
		of Agril. Chem. & Soil Sci., & Res.		
		Sci. (Groundnut), Main Oilseeds		
Dont of A	aril Cham P Sail Sai P Vaga	Res. Station, JAU, Junagadh		
		table Res. Station, JAU, Junagadh	Ammayad	
12.2.2.25	Effect of N, P and K fertilizer on growth, yield and nutrients	Approved	Approved	
	uptake by brinjal	(Action: Professor & Head, Dept.		
	uptake by brinjar	· · · · · · · · · · · · · · · · · · ·		
		of Agril. Chem. & Soil Sci., & Res. Sci. (Garlic and Onion).,		
		Vegetable Res. Station, JAU,		
		Junagadh)		
Donantma	nt of Agril Chamistry & Soil S	<u> </u>		
12.2.2.26	Department of Agril. Chemistry & Soil Science, JAU, Junagadh 12.2.2.26 Effect of saline irrigation 1. Collect bulk soil sample for the		Approved	
12.2.2.20	water on brinjal crop	experiment from salt affected	прриочен	
		area		
		(Action: Professor & Head,		
		Department of Agril. Chemistry &		
		Soil Science, JAU, Junagadh)		
Departme	nt of Agril. Chemistry & Soil So			
12.2.2.27		1. Collect bulk soil sample for the	Approved	
	water on tomato	experiment from salt affected		
		area		
		(Action: Professor & Head,		
		Department of Agril. Chemistry &		
		Soil Science, JAU, Junagadh)		
Department of Agril. Chemistry & Soil Science, JAU, Junagadh				
Departme				
12.2.2.28	Effect of saline irrigation	1. Collect bulk soil sample for the	Approved	
_	· ·	Collect bulk soil sample for the experiment from salt affected	Approved	
_	Effect of saline irrigation		Approved	
_	Effect of saline irrigation	experiment from salt affected	Approved	
_	Effect of saline irrigation	experiment from salt affected area	Approved	

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Sr.No.	Title	Suggestions	Remarks
SWMRU,	Navsari		
12.2.3.1	Study on drip system layout for different row spacing of vegetable Indian bean (Var. GNIB-21)	Approved (Action:- Res. Sci., SWMRU, Navsari)	Approved
12.2.3.2	Response of drip irrigated rabi sorghum to different levels of irrigation and fertigation	1. Correct plot size as L x W (Action:- Res. Sci., SWMRU, Navsari)	Approved
12.2.3.3	Effect of different levels of irrigation, nitrogen and foliar application of banana sap on drip irrigated sweetcorn and their residual effect on succeeding summer green gram under South Gujarat conditions	Approved (Action:- Res. Sci., SWMRU, Navsari)	Approved
12.2.3.4	Survey on impact of 'NAUROJI Novel Organic Liquid Fertilizer' indifferent crops of South Gujarat	Approved (Action:- Res. Sci., SWMRU, Navsari)	Approved
12.2.3.5	Soil test based recommendation for targeted yield of rice	1. Fix the targeted yield as 40, 50, 60 and 70 q/ha (Action:- Res. Sci., SWMRU, Navsari)	Approved
12.2.3.6	Influence of soil conditioner and integrated nutrient management on <i>kharif</i> rice and their residual effect on succeeding onion under partially reclaimed coastal salt affected soil	 Change the title as" Effect of gypsum and integrated nutrient management on <i>kharif</i> rice and their residual effect on succeeding onion under partially reclaimed coastal salt affected soil " Write "a. Gypsum " instead of "a. Soil conditioner" in main plot treatment Write "G₀: No gypsum" instead of "S₀: No soil conditioner" Write "G₁: Gypsum @ 50% GR" instead of "S₁: Gypsum @ 75% GR" Remove observation 6 i.e. Test weight (Action:- Res. Sci., SWMRU, Navsari) 	Approved

12.2.3.7	Effect of land configuration and soil conditioner, integrated nutrient management on growth and yield of radish	 Change the title as "Effect of land configuration, gypsum and integrated nutrient management on growth and yield of radish" Write "G₂: Gypsum @ 50 % GR" instead of "G₂: Gypsum @ 75 % GR" in main plot treatment (Action:- Res. Sci., SWMRU, Navsari) 	Approved
Main Suga	arcane Research Station, Navsari		
12.2.3.8	Scheduling irrigation with mulch under different sugarcane planting methods	Approved (Action:- Res. Sci., MSRS, Navsari)	Approved
12.2.3.9	Carbon sequestration assessment in sugarcane based cropping system	1. Add observation soil WSA (Water soluble aggregates) analysis (Action:- Res. Sci., MSRS, Navsari)	Approved
12.2.3.10	Agronomic performance of elite sugarcane genotypes	Approved (Action:- Res. Sci., MSRS, Navsari)	Approved
12.2.3.11	Bio efficacy of herbicides against	Approved	Approved
	weeds and its residual effect on sugarcane	(Action:- Res. Sci., MSRS, Navsari)	
Pulses and	Castor Research Station, Navsari		
12.2.3.12	Soil test based fertilizer recommendation for targeted yields of pigeon pea	Approved (Action:- Res. Sci., Pulses and Castor Research Station, Navsari)	Approved
12.2.3.13	Soil test based fertilizer recommendation for targeted yields of Indian bean	Approved (Action:- Res. Sci., Pulses and Castor Research Station, Navsari)	Approved

12.2.3.14	Nutrient management in Indian bean cv. GNIB 21 and its ratoon crop sequence	1. Change the treatments as follow 1.Main plot (plant crop) M ₀ - Control M ₁ - 20- 40 kg N-P ₂ O ₅ /ha M ₂ - 5 t FYM/ha M ₃ - 3 t Biocompost/ha 2. Sub Plot (<i>Ratoon</i> crop) S ₀ - Control S ₁ - 10-10 kg N-P ₂ O ₅ /ha S ₂ - 10-30 kg N-P ₂ O ₅ /ha S ₃ - 20-30 kg N-P ₂ O ₅ /ha S ₄ - 20-40 kg N-P ₂ O ₅ /ha (Action:- Res. Sci., Pulses and Castor Research Station, Navsari)	Approved					
12.2.3.15	Response of rabi castor to row spacings under different sowing window with or without intercrop of Indian bean var. GNIB-21	1. Add LER in observation (Action:- Res. Sci., Pulses and Castor Research Station, Navsari)	Approved					
Hill Millet	Hill Millet Research Station, Waghai							
12.2.3.16	Soil test based recommendation for targeted yield of Nagli (Finger millet)	argeted yield of Nagli (Finger 10, 15, 20 and 25 q/ha						
Regional I	Rice Research Station, Vyara							
12.2.3.17	Soil test based fertilizer recommendation for targeted yields of Ground nut	1. Fix the targeted yield as 15, 20, 25 and 30 q/ha 2. Remove observation of "days to 50% flowering" (Action:- Res. Sci.,	Approved					
		Regional Rice Research Station, Vyara)						
Agricultur	re Research Station, Paria							
12.2.3.18	Intercropping in newly established mango Orchard	1. Adopt drilling methods by row spacing in below crops: Paddy:20 cm Indian bean: 45 cm Green gram: 30 cm cow pea: 30 cm	Approved					

		2. Take sweet corn variety HSC 1 instead of Madhuri (Action:- Res. Sci., Agriculture Research Station, Paria)	
12.2.3.19	Effect of different sowing methods and nutrient management on Indian bean var. NPS-1 (GNIB-21) sown after rice	Approved (Action:- Agriculture Research Station, Paria)	Approved
12.2.3.20	Scheduling irrigation along with response of mulches in Brinjal	 Change title as " Response of Brinjal to irrigation schedules and mulches under drip irrigation system" Drip System detail is required (Action:- Agriculture Research Station, Paria) 	Approved
12.2.3.21	Effect of tillage depth on flowering and fruiting behaviour of mango under rainfed agrosystem	1. Change treatment T ₃ as " Mould board plough every year " (Action:- Agriculture Research Station, Paria)	Approved
12.2.3.22	Weed control in tomato (Lycopersicon esculentum Mill.) through mulching and herbicides under drip irrigation conditions	Approved (Action:- Agriculture Research Station, Paria)	Approved
Main Cott	on Research Station, Surat		
12.2.3.23	Soil test based recommendation for targeted yield of cotton	Approved (Action:- Res. Sci., MCRS, Surat)	Approved
Main Sorg	hum Research Station, Surat	•	
12.2.3.24	Soil test based fertilizer recommendation for targeted yields of sorghum	1. Fix the targeted yield as 20, 30, 40 and 50 q/ha (Action:- Res. Sci., MSRS, Surat)	Approved

12.2.3.25	Weed management in kharif	Approved	Approved
	sorghum	(Action:- Res. Sci., MSRS, Surat)	
Agricultui	re Research Station, Achhalia		
12.2.3.26	Studies on irrigation scheduling through drip, nitrogen management and mulch in turmeric	Approved (Action:- Assoc. Res. Sci., Agriculture Research Station, Achhalia)	Approved
Agricultui	re Research Station, Mangrol		
12.2.3.27	Response of <i>rabi</i> sorghum to anti transparent and mulching along with no. of irrigations according to critical stage approach under South Gujarat condition	 Recast the title as " Response of <i>rabi</i> sorghum to anti transparent and irrigation scheduling under mulching " Reform the treatments of antitranspirant as below Water spray Kaoline @ 6% PMA @ 300 ppm (Action:- Assistant Res. Agriculture Research Station, 	Approved
12.2.3.28	Integrated nutrient management in chickpea under South Gujarat condition	 Mention the RDF of gram Use 5 t/ha FYM instead of 8 t/ha in treatment M₁ Remove treatment R₂ Add treatment R₀: Control (Action:- Assistant Res. Sci., Agriculture Research Station, Mangrol) 	Approved

Effect of ZnO nanoparticles on growth, yield and quality of rice	1. Remove 5 and 25 ppm levels in each set of treatments	Approved
	levels in each set of treatments	Approved
	2. Results of pot trial should be presented in next combined joint agresco-2017 (Action:- Professor and Head (Agron.), NMCA,Navsari)	
Effect of levels and sources of sulphur application on growth, yield and quality of linseed under South Gujarat condition	1. Recast the treatments as given below A. Levels of nitrogen (kg/ha) N ₁ -50 N ₂ -75 N ₃ -100 B. Levels of phosphorus (kg/ha) P ₁ -25 P ₂ -50 C. Levels of sulpher (kg/ha) S ₁ -10 S ₂ -20 S ₃ -40 (Action:- Professor and Head (Agron.), NMCA,Navsari)	Approved
Integrated weed management in <i>rabi</i> maize	 Reform the treatment no. 4 as "Atrazine 1 kg/ha PE + hand weeding at 40 DAS Reform the treatment no. 5 as "Atrazine 1 kg/ha PE + Interculturing at 40 DAS" (Action:- Professor and Head (Agron.), 	Approved
	_	(kg/ha) P ₁ -25 P ₂ -50 C. Levels of sulpher (kg/ha) S ₁ -10 S ₂ -20 S ₃ -40 (Action:- Professor and Head (Agron.), NMCA,Navsari) Integrated weed management in rabi maize 1. Reform the treatment no. 4 as "Atrazine 1 kg/ha PE + hand weeding at 40 DAS 2. Reform the treatment no. 5 as "Atrazine 1 kg/ha PE + Interculturing at 40 DAS"

12.2.3.33	Integrated weed management in fodder oat	 1.Recast treatment W5 as "Metsulfuron methyl 4 g/ha" instead of "Metsulfuron methyl 0.008 kg/ha" 2. Remove treatment W4 and W6 3. Add treatment Pendimethalin 1 kg/ha PE 4. In treatment W3 dose of 2,4 D amine salt is to be changed as 0.5 kg/ha instead of 0.75 kg/ha (Action:- Professor and Head (Agron.), 	Approved
12.2.3.34	Production potential of fodder maize (Zea maize L.) with different fodder intercrop	NMCA,Navsari) 1. Change title as " Production potential of fodder maize (Zea maize L.) with different fodder intercrops " (Action:- Professor and Head (Agron.), NMCA,Navsari)	Approved
12.2.3.35	Integrated farming system model for marginal farmers of Navsari (Gujarat)	Approved (Action:- Professor and Head (Agron.), NMCA,Navsari)	Approved
Dept. of S	SAC, NMCA,Navsari		
12.2.3.36	Preparation of P enriched Farm Yard Manure and its evaluation in <i>rabi</i> sorghum-green gram cropping sequence under South Gujarat condition	1. Delete the treatment no.T ₄ , T ₆ , T ₇ , T ₉ , T ₁₁ and T ₁₃ (Action:- Professor and Head (SSAC), NMCA,Navsari)	Approved
Dept. of A	g. Met., NMCA,Navsari		
12.2.3.37	Determination of rank correlation for various weather parameter over South Gujarat	Approved (Action:- Professor and Head (Ag. Met.), NMCA, Navsari)	Approved

Dept. of N	RM, ACHF,Navsari		ı	
12.2.3.38	Calibration and validation of DSSAT model for sugarcane crop in South Gujarat region.	Approved (Action:- Professor and Head (NRM), ACHF,Navsari)	Approved	
12.2.3.39	Seasonal and Diurnal variation of surface ozone at NAU campus.	Approved (Action:- Professor and Head (NRM), ACHF,Navsari)	Approved	
Dept. of S	SAC, ACHF,Navsari			
12.2.3.40	Effect of different organic sources on yield and quality of sorghum varieties	1. In M ₁ and M ₂ treatments ,use "NADEP compost" word instead of "NADEP"	Approved	
		(Action:- Professor and Head (SSAC), ACHF,Navsari)		
12.2.3.41	Effect of liquid manures on growth, yield and quality of green gram under organic farming	 Delete treatment no. 5,6,7 Add disease/pest observation 	Approved	
		3. Delete Second point in methodology		
		4. Remove word "fertilizer" from objective and use "natural organic liquid" (Action:- Professor and Head (SSAC), ACHF, Navsari)		
Dept. of S	SAC, COA,Waghai			
12.2.3.42	Response of little millet (Vari) to organics	Approved (Action:- Professor and Head (SSAC), COA,Waghai)	Approved	
12.2.3.43	Assessment of quality of irrigation water of Dangs district	Approved (Action:- Professor and Head (SSAC), COA,Waghai)	Approved	

Dept. of A	gron., COA,Bharuch			
12.2.3.44	Response of cotton to green manuring and different fertility levels under rainfed condition. Approved (Action:- Profess Head (A COA,Bh		Approved	
12.2.3.45	Response of sugarcane to tillage and different intercropping system under South Gujarat condition.	1. Replace variety of fenugreek GF 1 with GF 2 (Action:- Professor and Head (Agron.), COA,Bharuch)	Approved	
12.2.3.46	Nutrient management in Dill Seed under south Gujarat condition	1. Recast the treatments as follow A. Nitrogen levels (N kg/ha) N1-20, N2-40, N3-60 B. Phosphorus levels (P ₂ O ₅ kg/ha) P- 0, P-20, P-30 2. Delete note after treatments (Action:- Professor and Head (Agron.), COA,Bharuch)	Approved	
12.2.3.47	Evaluation of castor based relay cropping sequences under rainfed condition of South Gujarat.	Approved (Action:- Professor and Head (Agron.), COA, Bharuch)	Approved	
12.2.3.48	N & P management in kharif sorghum with and without bio organics under South Gujarat conditions	Approved (Action:- Professor and Head (Agron.), COA,Bharuch)	Approved	
12.2.3.49	Agroclimatic Approach for Crop Planning	Approved (Action:- Professor and Head (Agron.), COA,Bharuch)	Approved	
Departmen	nt of SSAC, PIH, ACHF, Navsari			
12.2.3.50	Effect of tip pruning and foliar application of KNO ₃ on early flowering and yield of mango cv. Kesar	Present in horticulture sub committee (Action:- Assist. Professor (SSAC), PIH, ACHF, Navsari)	-	

S. D. AGRICULTURAL UNIVERSITY, SARDARKRUSHINAGAR

Sr. No.	Title/ Centre	Suggestions	Remarks
12.2. 4.1	Diversification of cropping		Approved
	system as component for small	(Action: Research Scientist, IFS)	
	holder farming systems		
	Centre for IFS		
	S. D. A.U. Sardarkrushinagar		
12.2. 4.2	Evaluation of organic,	1.Add Punchgavya Spray @ 3% and	Approved
	inorganic and integrated	Jivamrut (soil application) @ 500	
	production systems	litre/ha	
	Centre for IFS	(Action: Research Scientist, IFS)	
	S. D. A.U. Sardarkrushinagar		
12.2. 4.3	Evaluation of response of		Approved
	different varieties of major		
	crops for organic farming		
	Centre for IFS		
	S. D. A.U. Sardarkrushinagar		
12.2. 4.4	Development of Integrated	1. Add African Tall variety for	Approved
	Organic Farming System	fodder maize	
	model		
	Centre for IFS	(Action: Research Scientist, IFS)	
	S. D. A.U. Sardarkrushinagar		
12.2. 4.5	Geo-referenced		Approved
	Characterization of Organic		
	Cluster		
	Centre for IFS		
12.2. 4.6	S.D.AU. Sardarkrushinagar	1 Cl Cal UNIT	A 1
12.2. 4.0	Response of different sources	1. Change title as "Nitrogen	Approved
	of urea on growth and	Management in wheat through neem coated urea".	
	productivity of wheat	2. Add treatments -T7 & T8 of	
	Department of Agronomy	NPK consortium ,T9- FYM	
	S. D. A.U. Sardarkrushinagar	10t/ha,T10- absolute Control	
		3. Add test weight observation	
		3. Add test weight observation	
		(Action: Professor & Head,	
		Agronomy, CPCA, SDAU,	
		SKNagar)	
12.2. 4.7	Fertigation in cumin	1. Title- Response of cumin.to	Approved
14.4. Tel	Centre for Natural Resources	irrigation schedule and fertigation	1 ipproved
	Management,	2. Apply 25 % N as basal and 75 %	
	S. D. A.U. Sardarkrushinagar	in three equal splits at 30,45 and 60	
	2. 2. 11. C. Sardarin abilinagai	DAS.	
		3. Drip is to be operated up to 70	
		days	
		<i></i>	
		(Action: Assistant Research	
		Scientist, PDC, Agronomy)	
12.2. 4.8	Effect of spacing and nitrogen	1. Change "optimum" word as	Approved
	1 0	11	

Sr. No.	Title/ Centre	Suggestions	Remarks
	on yield of castor (GCH 7)	"suitable" in objective- 1	
	under rainfed condition	2.Top dressing of N to be applied in	
	Centre for Natural Resources	two splits,	
	Management,S. D. A.U.	3.Change treatments as S3:120 x30	
	Sardarkrushinagar	cm and S4:120 x60 cm	
		(Action: Asso. Res. Sci. Agronomy	
		AICRP on DLRP)	
12.2. 4.9	Integrated nitrogen	1. Recast objectives	Approved
	management in castor-cluster	2. Add control as treatment T8	
	bean crop rotation under	(Action: Asso. Res. Sci. Agronomy	
	rainfed condition	AICRP on DLRP)	
	Centre for Natural Resources		
	Management,		
	S. D. A.U. Sardarkrushinagar		
12.2. 4.10	Evaluation of drumstick	1. Add LER in observation	Approved
	based agri-horticultural	(Action: Asso. Res. Sci. Agronomy	
	system	AICRP on DLRP)	
	Centre for Natural Resources		
	Management,		
100111	S. D. A.U.,Sardarkrushinagar	1555	
12.2.4.11	Response of different	1.RDF is to be mentioned	Approved
	genotypes of grain amaranths	(A 1: A D C : CCD	
	to varying fertility levels	(Action: Asso. Res. Sci., CCI)	
	Center for Crop Improvement		
12.2. 4.12	S. D. A.U. Sardarkrushinagar	1 A 11 1	A 1
12.2. 4.12	Integrated weed management	1.Add residue analysis in observation	Approved
	in castor Castor Mustard Research		
	Station	(Action: Asstt. Res. Sci.Agronomy, Castor)	
	S. D. A.U. Sardarkrushinagar	Castor)	
12.2. 4.13	Periodical changes in soil	Dronned	Not
12.2. 4.13	fertility status in fallow land	Dropped	approved
	Castor Mustard Research	(Action:	аррголец
	Station State Research	Asstt. Res. Sci. Soil Sci., Castor)	
	S. D. Agricultural	rissit. Res. Sei. Son Sei., Custor)	
	University,Sardarkrushinagar		
12.2. 4.14	Effect of bio fertilizers	1.Add 5t/ha FYM as common	Approved
	inoculation for increasing	application	F F-5 . 53
	nutrient use efficiency in field	2. RDF is to be mentioned	
	pea	3.Keep replication four	
	Pulses Research Station,	(Action: Assistant Research	
	S. D. A.U. Sardarkrushinagar	Scientist, Agronomy)	
12.2. 4.15	Enhancing resource use	1.Sources of zinc and boron to be	Approved
	efficiency and crop	mentioned	- -
	productivity in cowpea	(Action: Assistant Research	
	Pulses Research Station,	Scientist, Agronomy)	
	S. D. A.U. Sardarkrushinagar		
12.2. 4.16	Integrated weed management	1. Add residue analysis in	Approved
	in Fenugreek	observation	
	Seed Spices Research Station	(Action: Assistant Research	

Sr. No.	Title/ Centre	Suggestions	Remarks
	S. D. A. U., Jagudan	Scientist, Agronomy)	
12.2. 4.17	Effect of seed priming on		Approved
	wheat under different spacing		
	and nutrient management		
	Wheat Research Station, S. D.		
	A. U. ,Vijapur		
12.2. 4.18	Nutrient requirement of	1.Mention Design:RBD	Approved
	irrigated wheat in North	2. Add N level 90 kg/ha instead of	
	Gujarat	180 kg/ha	
	Wheat Research Station		
	S. D. Agricultural	(Action: Associate Research	
	University,Vijapur	Scientist, Agronomy)	
12.2. 4.19	Effect of bio-fertilizers on	1.Treatments T3,T6,T8 to be	Approved
	yield of wheat under salt	applied with irrigation at CRI stage	
	affected soils	2.50% gypsum to be applied as	
	Agricultural Research Station	common on the basis of soil	
	S. D. A. U.,Adiya	analysis	
		3. Apply 5t/ha FYM instead of 10	
		t/ha as common application	
		(Action: Asstt. Res. Scientist,	
10.0 100	7700	Agronomy)	
12.2. 4.20	Effect of spacing on yield of	1.Treatments are as-60x30cm,	Approved
	Bt. Cotton under salt affected	60x45cm, 90x30cm, 90x45cm,	
	soils	120x30 cm and 120x45cm.	
	Agricultural Research Station,	(Action: Asstt. Res. Scientist,	
10.0 1.01	S. D. A. U., Adiya	Agronomy)	
12.2. 4.21	Micronutrient Management in	1.Add treatment T10 as grade-IV	Approved
	Groundnut	multimicro nutrient mixture spray	
	Agricultural Research Station	(1%) at 30 & 45 DAS	
	S. D. A. U., Aseda	2. Keep 5t/ha FYM instead of 10	
		t/ha as common application	
		3. Keep Plot size: 6.0 x 3.6 m	
		(Action: Assistant Research	
		Scientist, Agronomy)	

12.3 PLANT PROTECTION/ CROP PROTECTION

Chairman	:	Dr. A. N. Sabalpara, Director of Research, NAU, Navsari	
Co-Chairman	:	Dr. A. M. Parakhia, Director of Extension, Education, JAU, Junagadh	
		Dr. D. M. Korat, Associate Director of Research, AAU, Anand	
Rapporteurs:	:	Dr. K G. Patel, Principal, College of Agriculture, NAU, Bharuch	
		Dr. R. N. Pandey, Professor and Head, Dept. Pl. Pathology, BACA,	
		AAU, Anand	

Summary of recommendations and new technical programmes

Sr. No.	Name of university		ndations for ommunity	Information for scientific community		New technical programmes	
		Presented	Approved	Presented	Approved	Presented	Approved
1	AAU	09	08	39	39	58	56
2	JAU	03	03	07	07	36	36
3	NAU	03	03	13	13	52	51
4	SDAU	03	03	04	03	11	11
Total		18	17	63	62	157	154

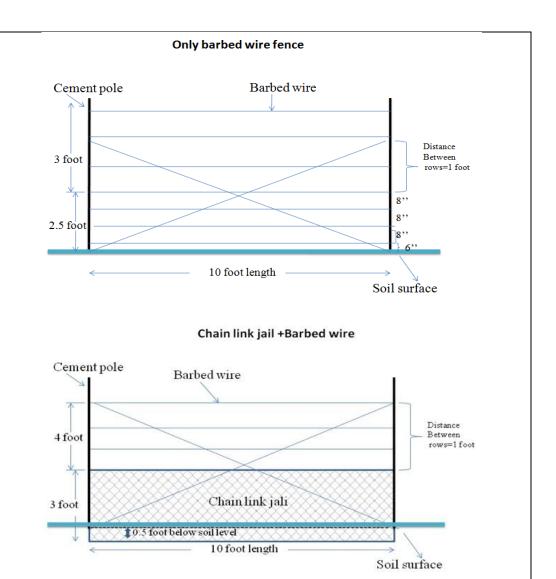
The details of recommendations and new technical programmes presented/ discussed and approved

RECOM	MENDATIONS
12.3.1	FARMING COMMUNITY
Anand Ag	gricultural University, Anand
Dr. P. K. I	Borad, Convener, PPSC, AAU, Anand

AGRICULTURAL ENTOMOLOGY

12.3.1.1 Documentation and evaluation of indigenous techniques for wild boar management

Install barbed wire fence on farm periphery with posting cement poles at 10' (3.05 m) interval and tie 7 parallel rows of barbed wire one above other and 2 rows diagonally crossing each other at centre between two adjoining poles to restrict boar (*Sus scrofa*) entering into crop field. Tie parallel rows of barbed wires, starting from 6" (15.24 cm) above ground, lower 4 rows 8" (20.32 cm) apart and upper 3 rows 12" (30.48 cm) apart. By replacing lower 3 rows of barbed wire with chain linked net pushing 6" (15.24 cm) inside ground can increase the effectiveness.



ખેતીના પાકમાં ભૂંડ (સસ સ્ક્રીફા) ને પ્રવેશતા રોકવા ખેતરની ફરતે ૧૦' (૩.૦૫ મી) ના અંતરે સિમેન્ટના થાંભલા ઉભા કરી તેના પર કાંટાળા તારની ૭ ફાર એકબીજાને સમાંતર અને ૨ ફાર બે થાંભલા વચ્ચે ચોકડી પડે તેમ બાંધવી. નીચેની સમાંતર ફાર જમીનથી ૬" (૧૫.૨૪ સેં. મી.) ઉંચેથી શરૂ કરી ૪ ફાર ૮" (૨૦.૩૨ સેં. મી.)ના ગાળાએ અને ઉપરની ૩ ફાર ૧૨" (૩૦.૪૮ સેં. મી.) ગાળાએ બાંધવી. નીચેના ૩ તારની ફારને બદલે ૩' (૦.૯૧ મી) ઉંચાઇની ચકકર જાળી, ૬"(૧૫.૨૪ સેં. મી.) જમીનમાં દબાવીને લગાવવાથી વાડની અસરકારકતા વધારી શકાય.

(Action: Res. Sci. (Ornitho.), AINPVPM: Agril. Ornithology, AAU, Anand)

12.3.1.2 Bio-efficacy of newer insecticides against brinjal shoot and fruit borer, *Leucinodes orbonalis* (Guenee)

For effective control of shoot and fruit borer (*Leucinodes orbonalis*) and getting higher fruit yield in brinjal, the farmers of middle Gujarat are

recommended to spray emamectin benzoate 5 SG 0.0025 per cent (5 g/ 10 litre of water; 12.5 g a.i./ha) or chlorantraniliprole 18.5 SC 0.006 per cent (3 ml/ 10 litre of water; 30 g a.i./ha) when the pest crosses 5 per cent shoot damage and subsequent two sprays at 15 days after first spray application.

					Dos		Waiting		
Year	Crop	Pest	Pesticides with formulation	g. a.i./ ha	Quantity of formulation/ ha	Conc. (%)	Dilution in 10 litre water	Appl. schedule	period /PHI (Days)
		• .	Emamectin benzoate 5 SG	12. 5	250 g	0.0025	5 g	First foliar spray	1
2016	Brinjal	Shoot & fruit borer	Chlorantraniliprole 18.5 SC	30	150 ml	0.006	3 ml	application at 5% damage of shoots and subsequent two at 15 days after first application	22

મધ્ય ગુજરાત વિસ્તારમાં રીંગણની ડૂંખ અને ફળ કોરી ખાનાર ઇયળના અસરકારક નિયંત્રણ માટે એમામેક્ટીન બેન્ઝોએટ પ એસજી 0.00૨૫ ટકા (૫ ગ્રામ/ ૧૦ લિટર પાણી; ૧૨.૫ ગ્રામ સિકય તત્વ/ ફેક્ટર) અથવા ક્લોરાન્ટ્રાનિલિપ્રોલ ૧૮.૫ એસસી 0.00૬ ટકા (૩ મિ.લિ. ૧૦ લિટર પાણી; ૩૦ ગ્રામ સિકય તત્વ/ ફેક્ટર) ભેળવી પ્રથમ છંટકાવ ૫ ટકા ડૂંખમાં નુકસાન જોવા મળે ત્યારે અને ત્યારબાદ બીજા બે છંટકાવ પ્રથમ છંટકાવ બાદ ૧૫ દિવસના ગાળે કરવાની ભલામણ છે.

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

12.3.1.3 Evaluation of new molecules of insecticides against leaf folder of paddy

Farmers of middle Gujarat growing transplanted rice are recommended to spray flubendiamide 480 SC 0.015 per cent (3 ml/10 litre of water; 72 g a.i./ha) or indoxacarb 15.8 EC 0.015 per cent (10 ml/10 litre of water; 79 g a.i./ha) or acephate 75 SP 0.075 per cent (10 g/10 litre of water; 375 g a.i./ha) for the control of leaf folder at initiation of pest incidence.

					Dosa	ige			Waiting
Year	Year Crop	Pest	Insecticides with formulation	g.a.i. /ha	Quantity of formulation /ha	Conc. (%)	Dilution in 10 litre water	Appli. schedule	period /PHI (Days)
		and er	Flubendiamide 480 SC	72	150 ml	0.015	3 ml	sest	st as
2015	2015 Rice Leaf folder a		Indoxacarb 15.8 EC	79	500 ml	0.015	10 ml	Initiation of pest incidence	Safe at harvest per CIB
			Acephate 75 SP	375	500 g	0.075	10 g	Initiat	Safe at pe

મધ્ય ગુજરાતના રોપાણ ડાંગર ઉગાડતા ખેડૂતોને પાન વાળનાર ઇયળના નિયંત્રણ માટે જીવાતનો ઉપદ્રવ શરૂ થયે ફ્લ્યુબેન્ડીયામાઈડ ૪૮૦ એસસી ૦.૦૧૫ ટકા (૩ મિલિ/ ૧૦ લિટર પાણી; ૭૨ ગ્રામ સિકય તત્વ/ ફેક્ટર) અથવા ઈન્ડોક્ઝાકાર્બ ૧૫.૮ ઇસી ૦.૦૧૫ ટકા (૧૦ મિલિ/ ૧૦ લિટર પાણી; ૭૯ ગ્રામ સિકય તત્વ/ ફેક્ટર) અથવા એસીફેટ ૭૫ એસપી ૦.૦૭૫ ટકા (૧૦ ગ્રામ/ ૧૦ લિટર પાણી; ૩૭૫ ગ્રામ સિકય તત્વ/ ફેક્ટર) નો છંટકાવ કરવાની ભલામણ કરવામાં આવે છે.

(Action: Asstt. Res. Sci. (Ento.), MRRS, AAU, Nawagam)

PLANT PATHOLOGY

12.3.1.4 Management of wilt and root rot of chickpea through seed biopriming and soil application of bio-agents

The farmers of middle Gujarat growing chickpea are recommended for application of $Trichoderma\ viride$ or $T.\ harzianum\ (2x10^8\ cfu/g)$ enriched FYM (10 kg bioagent/ ton FYM) in furrow @ 1 ton/ha, followed by seed biopriming at the time of sowing i.e. soaking of seeds for 10 hrs in suspension of talc based formulation 1 % WP ($2x10^8\ cfu/g$) of $T.\ viride$ or $T.\ harzianum$, respectively @ 50 g product / 250 ml of water/ kg of seed and shade dried, for the effective

management of wilt - root rot complex.

				Dosage							
Year	Crop	Pest	Pesticides with formulation	a.i./ ha	Quantity of formulation/ ha	Conc. (%)	Dilution in water	Application schedule	Waiting period/ PHI (days)	Remark	
2016	Chickpea	Wilt and root rot	T. viride or T. harzianum 1 % WP			1.0		Application of Trichoderma viride or T. harzianum (2x108 cfu/g) enriched FYM (10 kg bioagent/ton FYM) in furrow @ 1 ton/ha, followed by seed biopriming at the time of sowing i.e. soaking of seeds for 10 hrs in suspension of talc based formulation (2x108 cfu/g) of T. viride or T. harzianum, respectively @ 50 g product / 250 ml of water/kg of seed.			

મધ્ય ગુજરાતના યણા ઉગાડતા ખેડૂતોને સુકારા-મૂળખાઇ રોગના અસરકારક નિયંત્રણ માટે ટ્રાયકોડમાં વીરીડી અથવા ટ્રાયકોડમાં હરજીયાનમ (૨x૧૦૯ સીએફયુ/ગ્રામ) સંવર્ધિત છાણિયા ખાતરને (૧૦ કિલો જૈવિક નિયંત્રક/ટન છાણિયા ખાતર), ૧ ટન/ફેક્ટર પ્રમાણે વાવણી વખતે યાસમાં આપવું, ત્યાર બાદ તેજ પ્રમાણે ટાલ્ક આધારીત ટ્રાયકોડમાં વીરીડી અથવા ટ્રાયકોડમાં હરજીયાનમ ૧ % વેપા (૨x૧૦૯ સીએફયુ/ગ્રામ)ની ૫૦ ગ્રામ બનાવટને ૨૫૦ મિ.લિ. પાણીમાં પ્રતિ કિલો બીજ પ્રમાણે ભેળવી, ૧૦ કલાક બોળી, છાયડામાં સૂકવી, વાવણી માટે ઉપયોગમાં લેવાની ભલામણ કરવામાં આવે છે.

(Action: Prof. & Head, Dept. of Plant Pathology, BACA, AAU, Anand) 12.3.1.5 Evaluation of bioagents for management of soil-borne diseases in mungbean through seed treatment and soil application

The farmers of middle Gujarat growing mungbean are recommended for application of *Trichoderma harzianum* or *T. viride* $(2x10^8 \text{ cfu/g})$ enriched FYM (10 kg bioagent/ ton FYM) in furrow @ 1 ton/ha, followed by seed treatment with *T. harzianum* or *T. viride* 1 % WP $(2x10^8 \text{ cfu/g})$ @ 10 g /kg seeds, respectively at the time of sowing for the effective management of root rot disease.

			r r		Dos	age				
Year	Crop	Pest	Pesticides with formulation	a.i./ha	Quantity of formulation/ ha	Conc. (%)	Dilution in water	Application schedule	Waiting period/PHI (days)	Remark
2016	Mungbean	Root rot	T. harzianum or T. viride 1 % WP	1	1	1.0	1	Application of Trichoderma harzianum or T. viride (2x10 ⁸ cfu/g) enriched FYM (10 kg bioagent/ ton FYM) in furrow @ 1 ton/ha, followed by seed treatment with T. harzianum or T. viride (2x10 ⁸ cfu/g) @ 10 g/kg seeds, respectively.	ł	

મધ્ય ગુજરાતના મગ ઉગાડતા ખેડૂતોને મૂળખાઇ રોગના અસરકારક નિયંત્રણ માટે ટ્રાયકોડર્મા *હરજીયાનમ* અથવા *ટ્રાયકોડર્મા વીરીડી* (૨x૧૦૯ સીએફયુ/ગ્રામ) સંવર્ધિત છાણિયા ખાતરને (૧૦ કિલો જૈવિક નિયંત્રક/ ટન છાણિયા ખાતર) ૧ ટન/ફેક્ટર પ્રમાણે ચાસમાં આપવું, ત્યાર બાદ તેજ પ્રમાણે ટ્રાયકોડર્મા હરજીયાનમ અથવા ટ્રાયકોડર્મા વીરીડી ૧ %વેપા (૨x૧૦^૮ સીએફયુ/ગ્રામ)ની ૧૦ ગ્રામ પ્રતિ કિલો બીજ પ્રમાણે માવજત આપી વાવણી માટે ઉપયોગમાં લેવાની ભલામણ કરવામાં આવે છે.

(Action: Prof. & Head, Dept. of Plant Pathology, BACA, AAU, Anand) 12.3.1.6 Evaluation of bioagents for management of soil-borne diseases in soybean through seed treatment and soil application

The farmers of middle Gujarat growing soybean are recommended for application of *Trichoderma viride* or *T. harzianum* $(2x10^8 \text{ cfu/g- }1\% \text{ WP})$ enriched FYM (10 kg bioagent/ ton FYM) in furrow @ 1 ton/ha, followed by seed treatment with *T. viride* or *T. harzianum* $(2x10^8 \text{ cfu/g})$ @ 10 g/kg seeds, respectively at the time of sowing for the effective management of root rot disease.

			-		Dosa	ige			//	
Year	Crop	Pest	Pesticides with formulation	a.i./ha	Quantity of formulation/ ha	Conc.	Dilution in water	Application schedule	Waiting period/ PHI (days)	Remark
2016	Soybean	Root rot	T. viride or T. harzianum 1 % WP			1.0		Application of Trichoderma viride or T. harzianum (2x10 ⁸ cfu/g) enriched FYM (10 kg bioagent/ ton FYM) in furrow @ 1 ton/ha, followed by seed treatment with T. viride or T. harzianum (2x10 ⁸ cfu/g) @ 10 g/kg seeds, respectively.		-

મધ્ય ગુજરાતના સોયાબીન ઉગાડતા ખેડૂતોને મૂળખાઇ રોગના અસરકારક નિયંત્રણ માટે ટ્રાયકોડમાં વીરીડી અથવા ટ્રાયકોડમાં હરજીયાનમ (૨x૧૦ સીએફયુ/ગ્રામ-૧ % વેપા) સંવર્ધિત છાણિયા ખાતરને (૧૦ કિલો જૈવિક નિયંત્રક/ ટન છાણિયા ખાતર) ૧ ટન/હેક્ટર પ્રમાણે યાસમાં આપવું, ત્યાર બાદ તેજ પ્રમાણે ટ્રાયકોડમાં વીરીડી અથવા ટ્રાયકોડમાં હરજીયાનમ (૨x૧૦ સીએફયુ/ગ્રામ)ની ૧૦ ગ્રામ પ્રતિ કિલો બીજ પ્રમાણે માવજત આપી, વાવણી માટે ઉપયોગમાં લેવાની ભલામણ કરવામાં આવે છે.

(Action: Prof. & Head, Dept. of Plant Pathology, BACA, AAU, Anand)

12.3.1.7 Effects of different dates of sowing on occurrence of root-knot disease in bidi tobacco nursery

Farmers of middle Gujarat growing bidi tobacco are recommended to raise the nursery by sowing the seeds up to third week of July to minimize root- knot nematode disease and thereby getting more number of healthy seedlings.

મધ્ય ગુજરાતના બીડી તમાકુ ઉગાડતા ખેડૂતોને ધરુવાડીયાના ઉછેર માટે બીજની વાવણી જુલાઇ માસના ત્રીજા અઠવાડીયા સુધી કરવાથી ધરુમાં ગંઠવા કૃમિ રોગમાં ધટાડો થતા તંદુરસ્ત ધરુની સંખ્યા વધારે મળે છે.

(Action: Res. Sci. (Pl. Path.), Bidi Tobacco Research Station, AAU, Anand) 12.3.1.8 Evaluation of bio-fungicides for management of maydis leaf blight, turcicum leaf blight and curvularia leaf spot diseases in maize

Farmers of the middle Gujarat growing *kharif* and *rabi* maize, are recommended to treat the seeds with talc based formulation of *Trichoderma viride* 1% WP $(2x10^8 \text{ cfu/g})$ @ 7 g/kg seeds at the time of sowing; followed by four sprays of cow urine 10 per cent (1 litre / 10 litre of water) or neem leaf extract 10 per cent (1 litre / 10 litre of water) at 30, 40, 50 and 60 days after sowing for the management of maydis and turcicum leaf blight and curvularia leaf spot diseases.

મધ્ય ગુજરાતના ચોમાસુ અને શિયાળુ મકાઇ ઉગાડતા ખેડૂતોને મકાઇમાં મેઇડીસ અને ટર્સીક્રમ પાનનાં સુકારા તથા કર્વુલેરીયા પાનનાં ટપકાંના નિયંત્રણ માટે વાવણીના સમયે ટાલ્ક આધારીત *ટ્રાયકોડર્મા વીરીડી* ૧% વે.પા. (૨x૧૦^૯ સીએફયુ/ગ્રામ) ૭ ગ્રામ પ્રતિ કિલો બીજ પ્રમાણે માવજત આપવી, ત્યારબાદ ૧૦ ટકા ગૌમૃત્ર (૧ લિટર લિટર/૧૦ લિટર પાણી) અથવા લીમડાના પાનનો ૧૦ ટકા રસ (૧ લિટર લિટર/૧૦ લિટર પાણી) નો વાવણી બાદ ૩૦, ૪૦, ૫૦ અને ૬૦ દિવસે છંટકાવ કરવાની ભલામણ કરવામાં આવે છે.

(Action: Asst. Res. Sci. (Pl.Path.), MMRS, AAU, Godhra)

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH Dr. V. N. Patel, Convener, PPSC, JAU, Junagadh

AGRICULTURAL ENTOMOLOGY

Nil

PLANT PATHOLOGY

12.3.1.9 Management of alternaria leaf blight of groundnut

The farmers of south Saurashtra growing summer groundnut are advised to apply three sprays of mancozeb 75 WP 0.2% (27 g/10 litre of water) at 35, 50 and 65 days after sowing for effective and economical management of alternaria leaf blight of

groundnut.

દક્ષિણ સાૈરાષ્ટ્ર વિસ્તારના ઉનાળુ મગફળી ઉગાડતા ખેડૂતોને અલ્ટરનેરીયા ફૂગથી થતા પાનના સુકારાના રોગના અસરકારક અને અર્થક્ષમ નિયંત્રણ માટે મેન્કોઝેબ ૭૫ વે.પા. ૦.૨ ટકા (૨૭ ગ્રામ/૧૦ લીટર પાણી) ના વાવણી બાદ ૩૫, ૫૦ અને ૬૫ દિવસે ત્રણ છંટકાવ કરવાની ભલામણ કરવામાં આવે છે.

(Action: Main Oilseeds Research Station, JAU, Junagadh)

12.3.1.10 Refining integrated disease management in groundnut

The farmers of south Saurashtra growing *kharif* groundnut are advised to apply seed treatment with tebuconazole 25 WG @1.5 g/kg seed or seed treatment with *Trichoderma viride* 1% WP 10 g/kg seed, furrow application of *T. viride* at the time of sowing and broadcasting at 40 DAS @ 4 kg enriched in 50 kg FYM and two sprays of tebuconazole 25.9 SC @10 ml/ 10 l at 15 days interval from initiation of foliar disease for effective and economical management of collor rot, stem rot, tikka and rust disease.

દક્ષિણ સૌરાષ્ટ્ર વિસ્તારના ચોમાસું મગફળી ઉગાડતા ખેડૂતોને ઉગસુક, થડનો સડો, પાછોતરા પાનના ટપકા અને ગેરૂ રોગના અસરકારક નિયંત્રણ માટે બીજને ટેબુકોનાઝોલ ૨૫ ડબલ્યુજી ૧.૫ ગ્રામ પ્રતિ કિલો બીજ અથવા ટ્રાઇકોડમાં વિરીડી ૧% વે.પા, ૧૦ ગ્રામ પ્રતિ કિલો બીજ પ્રમાણે બીજ માવજત તેમજ ફેકટરે ૪ કિલો દ્રાઇકોડમાં વિરીડી પાઉડર ૫૦ કિલો છાણીયા ખાતરમાં એક અઠવાડિયા સુધી સંવર્ધિત કરી વાવેતર સમયે તથા વાવેતર બાદ ૪૦ દિવસે યાસમાં આપવું અને પાનના રોગની શરૂઆત થયે ટેબુકોનાઝોલ ૨૫.૯ એસસી (૧૦ મિલી/ ૧૦લિ પાણીમાં)ના બે છંટકાવ પંદર દિવસના અંતરે કરવાની ભલામણ કરવામાં આવે છે.

(Action: Research Scientist (Groundnut), Main Oilseeds Research Station, JAU, Junagadh)

12.3.1.11 Efficacy of seed dressing chemicals against wilt and root rot complex of cotton

The farmers of south Saurashtra are advised to treat the cotton seeds with a ready mixture of carboxin 37.5% + thiram 37.5% DS @ 3.5 g/kg seeds before sowing for economical and effective control of wilt and root rot complex and to improve seed cotton yield.

દક્ષિણ સૌરાષ્ટ્ર વિસ્તારમાં કપાસ ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, કપાસના સુકારા અને મુળખાઈ કોમ્પલેક્ષ રોગોના અર્થક્ષમ, અસરકારક નિયંત્રણ અને વધુ ઉત્પાદન મેળવવા માટે બીજને વાવતા પહેલા કાર્બોકઝીન ૩૭.૫% + થાયરમ ૩૭.૫% ડી.એસ. નાં તૈયાર મિશ્રણનો ૩.૫ ગ્રામ/ પ્રતિ કિલો મુજબ પટ આપવો.

(Action: Research Scientist (Cotton), Cotton Research Station, JAU, Junagadh)

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

Dr. Z. P. Patel, Convener, PPSC, NAU, Navsari

AGRICULTURAL ENTOMOLOGY

12.3.1.12 Waiting period of fenazaquin in/on chilli

To avoid fenazaquin residue in chilli, farmers are recommended to observe 12 days waiting period when fenazaquin 10 EC is applied twice 0.01 per cent (10 ml/10 l water) at 15 days interval starting from 50 per cent flowering stage.

		Pest/	Pesticide		PHI		
Year	Crop	Diseases	with formulation	Quantity of formulation	Conc. (%)	Dilution in water	Waiting Period (days)
2016	Chilli	Mites	Fenazaquin 10 EC	1250 ml or 125 g a.i/ha	0.01%	50 0L	12.0

ફિનાઝાક્વીનના અવશેષ મુક્ત મરચાં મેળવવા માટે ફેનાઝાક્વીન ૧૦ ઈ.સી. ૦.૦૧ ટકા (૧૦ મી.લિ./૧૦ લિ. પાણી) ફૂલ અવસ્થા બાદ ૧૫ દિવસના અંતરે બે છંટકાવ કરતા ખેડૂતોને છેલ્લા છંટકાવ અને ઉતાર વચ્ચેનો ગાળો ઓછામાં ઓછો બાર દિવસનો રાખવાની ભલામણ કરવામાં આવે છે.

વર્ષ	પાક	જીવાત	જંતુનાશકની બનાવટ	મ	માત્રા		છેલ્લા છંટકાવ અને ઉતાર
				બનાવટનું પ્રમાણ	સાંદ્રતા (%)	પાણીમાં મિશ્રણ	અન હતાર વચ્ચેનો ગાળો (દિવસ)
२०१५	લીલા મરચા	પાન કથીરી	ફેનાઝાક્વિન ૧૦.૦ ઈ.સી.	૧૨૫૦ મી.લિ. અથવા ૧૨૫ ગ્રા. સ.ત./ફે.	0.0٩ %	૫૦૦ લિ.	૧૨

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

PLANT PATHOLOGY

12.3.1.13 | Biological control of Pigeon pea wilt

Pigeon pea growers of South Gujarat are advised to apply $Trichoderma\ viride\ 1$ per cent WP @ 10 g/kg (1×10⁸ cfu/g) as seed treatment and @ 2.5 kg /500 kg FYM /ha in furrow at the time of sowing for effective management of wilt and to get higher grain yield and net profit.

દક્ષિણ ગુજરાતના તુવેર ઉગાડતા ખેડૂતોને સુકારા રોગનું અસરકારક નિયંત્રણ માટે અને વધુ ઉત્પાદન તેમજ યોખ્ખી આવક મેળવવા માટે તુવેરને ટ્રાઇકોડર્મા વીરીડી ૧% વે.પા. ૧૦ ગ્રામ/ કિ.ગ્રા ૧ ટકા વે.પા. (૧ × ૧૦ લીએફયુ પ્રતિ ગ્રામ) ની બીજ માવજત અને ૨.૫ કિ.ગ્રા/૫૦૦ કિ.ગ્રા છાણીયા ખાતર / હેક્ટર ભેળવી વાવણી સમયે યાસમાં આપવાની ભલામણ કરવામાં આવે છે.

(Action: Assoc Prof.(Pl Path), College of Agri., NAU, Bharuch)

12.3.1.14 Chemical control of rice grain discoloration

The Paddy growers are advised to apply three sprays of propiconazole 25 EC 0.025 per cent @ 125 g a.i./ ha (10 ml/10 litre) or trifloxystrobin 25 per cent + tebuconazole 50 per cent (75 WG) 0.03 % @ 150 g a.i./ ha (4 g/10 litre) for effective control of grain discoloration and to harvest higher healthy grain and straw yield. The first spray should be given at boot leaf stage and the remaining two sprays thereafter at 10 days interval.

Year	Crop	Diseases	Pesticide with		Waiting		
				Quantity of formulation	Conc. (%)	Dilution in water	Period (days)
2016	Paddy	Grain/glume discoloration	Propiconazole 25EC	125 g a.i./ ha	0.025	500 1	30
			Trifloxystrobin 25 % + tebuconazole 50% (75WG)	150 g a.i./ ha	0.03	500 1	21

ગુજરાતમાં ડાંગર ઉગાડતા ખેડૂતોને ડાંગરનાં કાળા દાણા અથવા ભૂખરા / બદામી દાણાના રોગના અસરકારક નિયંત્રણ અને વધુ તંદુરસ્ત દાણા સાથે વધુ ઉત્પાદન માટે પ્રોપીકોનાઝોલ ૨૫ ઈસી, ૦.૦૨૫ ટકા (૧૦ મી.લી. પ્રતિ ૧૦ લિટ૨) અથવા દ્રાયફલોકસીસ્ટ્રોબીન ૨૫ ટકા + ટેબુકોનાઝોલ ૫૦ % (૭૫ વેટેબલ ગ્રેન્યુલ્સ ૦.૦૩ ટકા (૪ ગ્રામ પ્રતિ ૧૦ લિટ૨) ના ત્રણ છંટકાવ કરવા. પહેલો છંટકાવ ધ્વજ પર્ણદંડ અવસ્થાએ (બુટ લીફ સ્ટેજ) અને ત્યારબાદ બાકીના બે છંટકાવ ૧૦ દિવસના સમય ગાળે કરવાની ભલામણ કરવામાં આવે છે.

વર્ષ	પાક	રોગ	કુગનાશક	માત્રા			પ્રતીક્ષા સમય
				સ.ત./ ફે	સાંદ્રતા (%)	પાણીમાં મિશ્રણ	સમય (દિવસ)
२०१५	ડાંગર	કાળા દાણા અથવા	પ્રોપીકોનાઝોલ ૨૫ ઈસી	૧૨૫ ગ્રામ	૦.૦૨૫	૫૦૦ લિ.	30
		ભૂખરા / બદામી દાણાના રોગ	ટ્રાચફલોકસીસ્ટ્રોબીન ૨૫ %+ ટેબુકોનાઝોલ ૫૦ % (૭૫ વેટેબલ ગ્રેન્યુલ્સ)	૧૫૦ ગ્રામ્	0.03	૫૦૦ લિ.	૨૧

(Action: Asstt. Res. Sci. (Pl Path), Main Rice Res. Centre, NAU, Navsari)

SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY, SARDAR KRUSHINAGAR DANTIWADA Dr. B. R. Patel, Convener, Plant Protection

Sub-Committee presented proposal for recommendations

AGRICULTURAL ENTOMOLOGY

12.3.1. Biologi

Biological control of Date palm scale insect

The date palm growers are advised to spray entomopathogenic fungus *Lecanicillium lecanii* (*Verticillium lecanii*) 1.15 WP ($1 \times 10^9 \text{ cfu/g}$) @ 40 g/10 1 at the appearance of white scale (*Parlatoria blanchardi*) in date palm for its effective control.

ખારેક ઉગાડતા ખેડૂતો માટે ભલામણ કરવામાં આવે છે કે પાકમાં સફેદ ભીંગડાવાળી જીવાતનો ઉપદ્રવ જોવા મળેથી લેકાનીસીલીયમ લેકાની (વર્ટીસીલીયમ લેકાની) ફૂગ આધારીત ૧.૧૫ ડબલ્યુપી (૧ x ૧૦° સીએફયુ/ગ્રામ) ૪૦ ગ્રામ/ ૧૦ લીટર પાણીમાં મિશ્ર કરી છંટકાવ કરવાથી તેનું અસરકારક નિયંત્રણ કરી શકાય છે.

[Action : Asso. Res. Sci. (Ento), Date palm Research Station, SDAU, Mundra
- Kachchhl

12.3.1. Management of red palm weevil through pheromones 16

Date palm growing farmers are advised to use sugarcane pieces 250 g or chickoo with vinegar 5 ml/250 g as food bait in pheromone trap of red palm weevil for higher catches of adults.

ખારેક ઉગાડતા ખેડૂતો માટે ભલામણ કરવામાં આવે છે કે લાલ ચાંચવા(સુંઢિયા)ના ફેરોમેન ટ્રેપમાં શેરડીના ટુકડા ૨૫૦ ગ્રામ અથવા ચીકુ સાથે વીનેગર પ મી.લી. ઉમેરી ૨૫૦ ગ્રામ ખાદ્ય પદાર્થ તરીકે ઉપયોગ કરવાથી તેના પુખ્ત કિટકો વધારે પ્રમાણમાં આકર્ષિત થાય છે.

[Action: Asso. Res. Sci. (Ento), Date palm Research Station, SDAU, Mundra – Kachchh]

PLANT PATHOLOGY

Management of bacterial blight of cluster bean

12.3. 1.17

For the management of bacterial blight disease in vegetable cluster bean the farmers of North Gujarat are advised to soak the seeds in streptomycin sulphate 90 per cent + tetracycline hydrochloride 10 per cent SP @ 250 ppm (2.5 g/10 litre water) for 30 minutes before sowing and apply its first spray at the appearance of the disease and second at 15 days interval.

			ation		Dose/h	a	tre	Application schedule	Weighti ng	
Year	Crop	Disease	Pesticide with formulation	a.i. (g)	Formula tion (g/ml)	water requirement litre	Formulation in 10 litre water		period /PHI (days)	Remarks
2015	Cluster bean	Bacterial leaf blight	Streptomycin sulphate 90% + tetracycline hydrochloride 10 % SP	300.25g	250mg (seed treat) + 300g (Two foliar spray) Total 300.25 g	One 1 for seed treatment 600 litre for foliar application	2.5 g	Seed soaking for 30 minutes before sowing Two foliar sprays First at appearance of the disease and second at 15 days interval	-	-

ઉત્તર ગુજરાતના શાકભાજી ગુવારનું વાવેતર કરતા ખેડુતોને જીવાણથી થતા કાળીયા રોગના અસરકારક નિયંત્રણ માટે બીજને વાવેતર કરતા પહેલાં સ્ટ્રેપ્ટોમાયસીન સલ્ફેટ ૯૦ ટકા + ટેટ્રાસાયકલીન હાઈડ્રોકલોરાઈડ ૧૦ ટકા એસ પી ના ૨૫૦ પીપીએમ (૨.૫ ગ્રામ દવા/ ૧૦ લીટર પાણી) દ્રાવણમાં ૩૦ મિનિટ બોળી રાખી વાવણી કરવાની તથા આ દવાનો પ્રથમ છંટકાવ રોગ દેખાયે અને ત્યારબાદ ૧૫ દિવસે બીજો છંટકાવ કરવાની ભલામણ કરવામાં આવે છે.

(Action: Asso. Res. Sci. (Path), Seed Spices Res. Station, SDAU, Jagudan)

12.3.2	INFORMATION FOR SCIENTIFIC COMMUNITY						
ANAND A	ANAND AGRICULTURAL UNIVERSITY, ANAND						
Dr. P. K.	Borad, Convener, PPSC, AAU, Anand						
AGRICU	LTURAL ENTOMOLOGY						
12.3.2.1	Bio-efficacy of different insecticides against anar butterfly, Virachola						
	isocrates (Fabricius) infesting pomegranate						
	Two sprays of flubendiamide 39.35 SC 0.015 per cent (3 ml/10 litre of water) or chlorantraniliprole 18.5 SC 0.006 per cent (3 ml/10 litre of water) or emamectin						
	benzoate 5 SG 0.0025 per cent (5 g/10 litre of water) first at initiation of the pest						
	and second at 30 days after first spray proved effective for the control of anar						

	butterfly, <i>Virachola isocrates</i> (Fabricius) infesting pomegranate in mrug bahar.				
12.3.2.2	(Action: Prof. & Head, Department of Entomology, BACA, AAU, Anand) Residue and persistence of ethion 50 EC in/on cabbage				
12.3.2.2					
	Two foliar sprays of ethion 50 EC in cabbage at 10-day interval @ 500 g a.i./ ha				
	starting from 50 per cent head formation resulted in its residue below the limit of quantitation of 0.05 μ g/g in cabbage heads if harvested from 7 th day after the last				
	spray. Therefore, PHI of 7 days could be suggested if ethion 50 EC is				
	recommended in cabbage with MRL of 0.05 µg/g.				
	(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)				
12.3.2.3	Residue and persistence of acephate 75 SP in/on cabbage				
	Two foliar sprays of acephate 75 SP in cabbage at 10 days interval @ 560 g				
	a.i./ha starting from 50 per cent head formation resulted in cabbage head residue				
	below the MRL 2.0 µg/g (CODEX) immediately after the last application. Therefore, PHI of 1 day could be suggested if acephate 75 SP is recommended in				
	cabbage.				
	(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)				
12.3.2.4	Residue and persistence of triazophos 40 EC in/on cabbage				
	Two foliar sprays of triazophos 40 EC in cabbage at 10 days interval @ 500 g				
	a.i./ha starting from 50 per cent head formation resulted in its residue below the				
	limit of quantitation of 0.05 µg/g in cabbage heads if harvested from 10 th day after				
	the last spray. Therefore, PHI of 10 days could be suggested if triazophos 40 EC				
	is recommended in cabbage with MRL of 0.05 $\mu g/g$.				
	(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)				
12.3.2.5	Residue and persistence of carbendazim 50 WP in/on cabbage				
	Two foliar sprays of carbendazim 50 WP in cabbage at 10 days interval @ 250 g				
	a.i./ha starting from 50 per cent head formation resulted 0.70 µg/g residues even				
	on the 15^{th} day of the last application which being higher than limit of quantitation of $0.05 \mu g/g$, label claim of carbendazim 50 WP can be considered				
	for cabbage based on the risk assessment.				
	(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)				
12.3.2.6	Residue and persistence of quinalphos 25 EC in/on cabbage				
	Two foliar sprays of quinalphos 25 EC in cabbage at 10 days interval @ 250 g				
	a.i./ha starting from 50 per cent head formation resulted in its residue below the				
	limit of quantitation of 0.05 µg/g in cabbage head if harvested from 5 th day after				
	the last spray. Therefore, PHI of 5 days could be suggested if quinalphos 25 EC is recommended on cabbage with MRL of $0.05 \mu g/g$.				
	(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)				
12.3.2.7	Residue and persistence of ethion 50 EC in/on cauliflower				

Two foliar sprays of ethion 50 EC in cauliflower at 10 days interval @ 500 g a.i./ha starting from 50 per cent curd formation resulted in its residue below the limit of quantitation of 0.05 µg/g in cauliflower curd if harvested from 15th day after the last spray. Therefore, PHI of 15 days could be suggested if ethion 50 EC is recommended on cauliflower with MRL of 0.05 µg/g. (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand) Residue and persistence of acephate 75 SP in/on cauliflower Two foliar sprays of acephate 75 SP in cauliflower at 10 days interval @ 560 g a.i./ha starting from 50 per cent curd formation resulted in 0.12 µg/g residues even on the 15th day after the last application which being higher than the limit of quantitation of 0.05 µg/g, label claim of acephate 75 SP can be considered for cauliflower based on the risk assessment. (Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

12.3.2.9 Residue and persistence of carbendazim 50 WP in/on cauliflower

12.3.2.8

Two foliar sprays of carbendazim 50 WP in cauliflower at 10 days interval @ 250 g a.i./ha starting from 50 per cent curd formation resulted in 0.16 µg/g residues even on the 15th day of the last application which being higher than limit of quantitation of 0.05 µg/g, label claim of carbendazim 50 WP can be considered for cauliflower based on the risk assessment.

(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

12.3.2.10 Residue and persistence of triazophos 40 EC in/on cauliflower

Two foliar sprays of triazophos 40 EC in cauliflower at 10 days interval @ 500 g a.i./ha starting from 50 per cent curd formation resulted in its residue below the limit of quantitation of 0.05 µg/g in cauliflower curd if harvested from 10th day after the last spray. Therefore, PHI of 10 days could be suggested if triazophos 40 EC is recommended in cauliflower with MRL of 0.05 µg/g.

(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

12.3.2.11 Residue and persistence of quinalphos 25 EC in/on cauliflower

Two foliar sprays of quinalphos 25 EC in cauliflower at 10 days interval @ 250 g a.i./ha starting from 50 per cent curd formation resulted in its residue below its MRL of 0.1 µg/g in cauliflower curd if harvested from 7th day after the last spray. Therefore, PHI of 7 days could be suggested.

(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

12.3.2.12 | Residue and persistence of quinalphos 25 EC in/on chilli

Two foliar sprays of quinalphos 25 EC in chilli at 10 days interval @ 250 g a.i./ha starting from fruiting stage resulted in its residue below its MRL of 0.2 μ g/g in green chilli fruits if harvested from 5th day after the last spray. Therefore, PHI of 5 days could be suggested.

(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

12.3.2.13 Residue and persistence of triazophos 40 EC in/on chilli

Two foliar sprays of triazophos 40 EC in chilli at 10 days interval @ 500 g a.i./ha starting from fruiting stage resulted in its residue below its limit of quantitation of 0.05 μ g/g in green chilli fruits if harvested from 15th day after the last spray. Therefore, PHI of 15 days could be suggested if triazophos 40 EC is recommended in chilli with MRL of 0.05 μ g/g.

(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

12.3.2.14 Residue and persistence of chlorpyriphos 20 EC in/on chilli

Two foliar sprays of chlorpyriphos 20 EC in chilli at 10 days interval @ 300 g a.i./ha starting from fruiting stage resulted in its residue below its limit of quantitation of $0.01 \mu g/g$ in green chilli fruits if harvested from 10^{th} day after the last spray. Therefore, PHI of 10 days could be suggested if chlorpyriphos 20 EC is recommended on chilli with MRL of $0.01 \mu g/g$.

(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

12.3.2.15 | Residue and persistence of carbendazim 50 WP in/on green chilli

Two foliar sprays of carbendazim 50 WP in chilli at 10 days interval @ 250 g a.i./ha starting from fruiting stage resulted in its residue below the MRL 2.0 μ g/g (CODEX) in green chilli fruits on the 3rd day after the last application. Therefore, PHI of 3 days could be suggested if carbendazim 50 WP is recommended in chilli.

(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

12.3.2.16 Residue and persistence of fluopyram 200 + tebuconazole 200 - 400 SC in/on chilli

Three foliar sprays of fluopyram 200 + tebuconazole 200 - 400 SC in chilli at 10 days interval @ 100 + 100 g a.i./ha starting from fruiting stage resulted its residue below its limit of quantitation of 0.05 $\mu g/g$ in green chilli fruits on the 20^{th} day after the last application. Therefore, PHI of 20 days could be suggested if the fluopyram 200 + tebuconazole 200 - 400 SC combination is recommended in chilli with MRL of 0.05 $\mu g/g$.

(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

12.3.2.17 | Residue and persistence of carbendazim 50 WP in/on capsicum grown in

open field

Two foliar sprays of carbendazim 50 WP in capsicum grown in open field at 10 days interval @ 250 g a.i./ha starting from fruiting stage resulted in its residue 0.41 μ g/g in the fruits even on the 20th day after the last application, which being higher than the limit of quantitation of 0.05 μ g/g, label claim of carbendazim 50 WP can be considered for capsicum based on risk assessment.

(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

12.3.2.18 Residue and persistence of chlorpyriphos 20 EC in/on capsicum grown in open field

Two foliar sprays of chlorpyriphos 20 EC in capsicum grown in open field at 10 days interval @ 300 g a.i./ha starting from fruiting stage resulted in its residue below its MRL 2.0 μ g/g (CODEX) in the fruits immediately after the last application. Therefore, PHI of 1 day could be suggested if chlorpyriphos 20 EC is recommended in capsicum grown in open field.

(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

12.3.2.19 Residue and persistence of quinalphos 25 EC in/on capsicum grown in polyhouse

Two foliar sprays of quinalphos 25 EC in capsicum grown in polyhouse at 10 days interval @ 250 g a.i./ha starting from fruiting stage resulted in its residue below its limit of quantitation of 0.05 μ g/g in the fruits if harvested from 10th day after the last spray. Therefore, PHI of 10 days could be suggested if quinalphos 25 EC is recommended in capsicum grown in polyhouse with MRL of 0.05 μ g/g.

(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

12.3.2.20 Residue and persistence of triazophos 40 EC in/on capsicum grown in polyhouse

Two foliar sprays of triazophos 40 EC in capsicum grown in polyhouse at 10 days interval @ 500 g a.i./ha starting from fruiting stage resulted in its residue below its limit of quantitation of 0.05 μ g/g in the fruits if harvested from 15th day after the last spray. Therefore, PHI of 15 days could be suggested if triazophos 40 EC is recommended in capsicum grown in polyhouse with MRL of 0.05 μ g/g.

(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

12.3.2.21 Residue and persistence of chlorpyriphos 20 EC in/on capsicum grown in polyhouse

Two foliar sprays of chlorpyriphos 20 EC in capsicum grown in polyhouse at 10 days interval @ 300 g a.i./ha starting from fruiting stage resulted in its residue

	below its MRL of 2.0 μ g/g (CODEX) in the fruits immediately after the last application. Therefore, PHI of 1 day could be suggested if chlorpyriphos 20 EC is
	recommended in capsicum grown in polyhouse.
	(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
12.3.2.22	Residue and persistence of acephate 75 SP in/on capsicum grown in
	polyhouse
	Two foliar sprays of acephate 75 SP in capsicum grown in polyhouse at 10 days interval @ 560 g a.i./ha starting from fruiting stage resulted in its residue 0.42 μ g/g in the fruits even on the 15 th day after the last application which being higher than limit of quantitation of 0.05 μ g/g, label claim of acephate 75 SP can be considered for capsicum based on the risk assessment.
	(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
12.3.2.23	Residue and persistence of carbendazim 50 WP in/on capsicum grown in polyhouse
	Two foliar sprays of carbendazim 50 WP in capsicum grown in polyhouse at 10
	days interval @ 250 g a.i./ha starting from fruiting stage resulted in its residue $0.25 \mu g/g$ in the fruits even on the 20^{th} day after the last application which being
	higher than limit of quantitation of 0.05 μ g/g, label claim of carbendazim 50 WP can be considered for capsicum based on the risk assessment.
	(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
12.3.2.24	Residue and persistence of quinalphos 25 EC in/on tomato
	Two foliar sprays of quinalphos 25 EC in tomato at 10 days interval @ 250 g a.i./ha starting from fruiting stage resulted in its residue below its limit of quantitation of 0.05 μ g/g in tomato fruits if harvested from 7 th day after the last spray. Therefore, PHI of 7 days could be suggested if quinalphos 25 EC is recommended in tomato with MRL of 0.05 μ g/g.
	(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
12.3.2.25	Residue and persistence of carbendazim 50 WP in/on tomato
	Two foliar sprays of carbendazim 50 WP in tomato at 10 days interval @ 250 g a.i./ha starting from fruiting stage resulted in its residue below the MRL 0.5 μ g/g (CODEX) in the tomato fruits on the 15 th day after the last application. Therefore, PHI of 15 days could be suggested if carbendazim 50 WP is recommended in tomato.
	(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
12.3.2.26	Residue and persistence of chlorpyriphos 20 EC in/on tomato

	Two foliar sprays of chlorpyriphos 20 EC in tomato at 10 days interval @ 300 g
	a.i./ha starting from fruiting stage resulted in its residue below its limit of
	quantitation of 0.01 µg/g in tomato fruits if harvested from 7 th day after the last spray. Therefore, PHI of 7 days could be suggested if chlorpyriphos 20 EC is
	recommended in tomato with MRL of 0.01 µg/g.
	(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
12.3.2.27	Residue and persistence of imidacloprid 70 WG in/on tomato
	Three foliar sprays of imidacloprid 70 WG in tomato at 7 days interval @ 35 g a.i./ha starting from fruiting stage resulted in its residue below its MRL of 1.0 µg/g in tomato fruits one hour after the last application. Therefore, PHI of 1 day could be suggested if imidacloprid 70 WG is recommended in tomato.
	(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
12.3.2.28	Residue and persistence of fluopyram 400 SC in/on tomato
	Soil drench of fluopyram 400 SC @ 250 g a.i./ha in tomato, twice at 15 days interval starting from fruiting stage revealed its residue below determination level in tomato fruits even up to 15 days after the last application. Therefore PHI of 1 day could be suggested if fluopyram 400 SC is recommended in tomato.
	(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
12.3.2.29	Residue and persistence of imidacloprid 17.8 SL in/on okra
	Two foliar sprays of imidacloprid 17.8 SL in okra at 10 days interval @ 20 g a.i./ha starting from fruiting stage resulted in its residue below its MRL of 2.0 µg/g in okra fruits one hour after the last application. Therefore, PHI of 1 day could be suggested.
	(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
12.3.2.30	Residue and persistence of imidacloprid 17.8 SL in/on brinjal
	Two foliar sprays of imidacloprid 17.8 SL in brinjal at 10 days interval @ 20 g a.i./ha starting from fruiting stage resulted in its residue below its MRL 0.01 μ g/g 1-day after the last application. Therefore, PHI of 1 day could be suggested if imidacloprid 17.8 SL is recommended in brinjal.
	(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
12.3.2.31	Residue and persistence of spiromesifen 22.9 SC in/on brinjal
	Two foliar sprays of spiromesifen 22.9 SC in brinjal at 10 days interval @ 96 g a.i./ha starting from fruiting stage resulted in its residue below limit of quantitation of 0.05 μ g/g in brinjal fruits one day after the last application. Therefore, PHI of 1 day could be suggested.
	(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)
12.3.2.32	Residue and persistence of fluopyram 200 + tebuconazole 200 - 400 SC in/on onion

Three foliar sprays of fluopyram 200 + tebuconazole 200 - 400 SC in onion at 10-day interval @ 75 +75 g a.i./ha starting from bulb formation stage resulted in the residue below their limit of quantitation of 0.05 µg/g in onion bulbs on the 50^{th} day (at harvest) after the last application. Therefore, the PHI of 50 days could be suggested for bulb onion if the fluopyram 200 + tebuconazole 200 - 400 SC combination is recommended in onion with 0.05 µg/g MRL. However, in spring onion as the residue levels being higher than the limit of quantitation even on the 20^{th} day, risk assessment can be carried out to fix the MRLs.

(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

12.3.2.33 Residue and persistence of flubendiamide 240 + thiacloprid 240 - 480 SC in/on redgram

Three foliar sprays of flubendiamide 240 + thiacloprid 240 - 480 SC in red gram at 10 days interval @ 48 + 48 g a.i./ha starting from pod formation stage resulted in the residues below their limit of quantitation of 0.05 µg/g in matured pods on the 41^{st} day (harvest) after the last application. Therefore, PHI of 41 days could be suggested for matured pods/seeds if flubendiamide 240 + thiacloprid 240 - 480 SC combination is recommended in red gram with 0.05 µg/g MRL. However, in green pods as the residue levels being higher than the limit of quantitation even on the 20^{th} day, risk assessment can be carried out to fix the MRLs in green pods.

(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

12.3.2.34 Residue and persistence of trifloxystrobin 25 + tebuconazole 50 - 75 WG in / on cowpea

Two foliar sprays of trifloxystrobin 25 + tebuconazole 50 – 75 WG in cowpea at 10 days interval @ 87.5+175 g a.i./ha at pod formation stage resulted in the residues below their limit of quantitation of 0.05 μ g/g in matured pod /seed on the 42nd day (harvest) after the last application. Therefore, PHI of 42 days could be suggested for matured pods if the trifloxystrobin 25 + tebuconazole 50 – 75 WG combination is recommended in cowpea with 0.05 μ g/g MRL. However, in green cowpea pods as the residue levels reached below determination limit of 0.05 μ g/g on the 20th day, PHI of 20-day could be suggested for green pods.

(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

12.3.2.35 | Residue and persistence of deltamethrin 2.5 EC in/on chickpea

Three foliar sprays of deltamethrin 2.5 EC in chickpea at 7 days interval @ 12.5 g a.i./ha starting from pod setting stage resulted in its residue below its limit of quantitation of $0.05~\mu g/g$ in matured pods/seeds on the 37^{th} day (harvest) after the last application. Therefore, PHI of 37 days could be suggested if deltamethrin 2.5 EC is recommended in chickpea with $0.05~\mu g/g$ MRL in seed. However, for green pods, PHI of 7 days could be suggested.

(Action: Residue Analyst, AINP on Pesticide Residues, AAU, Anand)

12.3.2.36 Bio-efficacy of newer insecticides against tomato leaf miner, *Liriomyza trifolii* (Burgess)

For effective and economical management of leaf miner in tomato, spray spinosad

45 SC, 0.0135 per cent (3 ml/ 10 litre water; 67.5 g a.i./ha) or abamectin 1.9 EC, 0.0006 per cent (3 ml/ 10 litre water; 2.85 g a.i./ha) alongwith 400 g jaggery, first at appearance of the pest and subsequent two sprays at 15 days interval.

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

12.3.2.37 | Evaluation of different miticides against paddy mites

One spray of spiromesifen 240 SC, 0.024 per cent (10 ml/10 litre of water, 120 g. a.i./ha) or propargite 57 EC, 0.057 per cent (10 ml/10 litre of water, 285 g. a.i./ha) or fenpyroximate 5 SC, 0.005 per cent (10 ml/10 litre of water, 25 g. a.i./ha) at the time of initiation of yellow leaf mite of paddy was found effective

(Action: Asstt. Res. Sci. (Ento.), MRRS, AAU, Nawagam)

12.3.2.38 Evaluation of synthetic insecticides for the control of *Spodoptera litura* Fabricious infesting bidi tobacco under nursery conditions

Application of emamectin benzoate 5 SG, 0.0025 per cent (5 g / 10 liter water; 7.5 g a.i./ha) in tobacco nursery found effective against leaf eating caterpillar (*Spodoptera litura* Fabricious) infesting bidi tobacco seedlings at the initiation of infestation.

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

PLANT PATHOLOGY

12.3.2.39 Bio-efficacy of newer fungicides against maydis leaf blight, turcicum leaf blight and curvularia leaf spot diseases in maize

For the management of leaf blight (maydis and turcicum) and curvularia leaf spot diseases of maize during *kharif* and *rabi* seasons, the seed treatment with captan 75 WS @ 3 g/ kg seeds followed by two sprays of azoxystrobin 18.2% + difenconazole 11.4% (29.6 SC), 0.03% (9.2 ml/ 10 litre of water) at 30 and 45 days after germination was found effective.

(Action: Asst. Res. Sci. (Pl. Path.), MMRS, AAU, Godhra)

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH

Dr. V. N. Patel, Convener, PPSC, JAU, Junagadh

AGRICULTURAL ENTOMOLOGY

12.3.2.40 | Field efficacy of newer insecticides against sucking pests of cumin

Spray of imidacloprid 17.8 SL 0.004% (2.24 ml/10 l water) or spinosad 45% SC 0.009% (2.0 ml/10 l water) or acetamiprid 20% SP 0.004% (2.0 g/10 l water) at the appearance of pests was found effective and economical for control of aphids and thrips in cumin.

Residue was not detected in cumin at harvest of imidacloprid 17.8 SL 0.004% or spinosad 45% SC 0.009% or acetamiprid 20% SP 0.004%.

(Action:- Prof. & Head, Dept. of Entomology, JAU, Junagadh

12.3.2.41	Management of sucking pests through seed treatments in cluster bean
	6 1 1 1 1 1 1 1 1 1 1
	Seed treatment with imidacloprid 600 FS @ 10 ml/kg seed or thiamethoxam 30 FS @ 10 ml/kg seed found effective and economical for control of whitefly of cluster bean var. Pusa Navbahar.
	(Action:- Prof. & Head, Dept. of Entomology, JAU, Junagadh
12.3.2.42	Field efficacy of newer insecticides against inflorescence pests of mango
	For effective management of inflorescence pests of mango <i>viz.</i> , hopper, thrips and flower bug, two sprays of spinosad 45 % SC 0.018% (4 ml/10 l water) or carbosulfan 25 % EC 0.05% (20 ml/10 l water) or acetamiprid 20 % SP 0.01% (5 g/10 l water) at 15 days interval starting from pests infestation were found effective.
	(Action:- Prof. & Head, Dept. of Entomology, JAU, Junagadh
12.3.2.43	Survey of various pests in mango orchard
	The incidence of leaf gall midge, mango hopper, shoot borer and thrips were found enormously during the month of September to October, January to March, July to September and August to December, respectively.
	Maximum population of leaf gall midge and mango hopper was noticed in Chalala and Mendarda area, while shoot borer and thrips were found maximum in Talala area of Saurashtra region.
	(Action:- Prof. & Head, Dept. of Entomology, JAU, Junagadh
PLANT P	ATHOLOGY
12.3.2.44	Management of alternaria leaf blight of groundnut
	Three sprays of difenconazole 25EC 0.025% (10 ml/10 l. of water) at 35, 50 and 65 days after sowing was found effective and economical for management of alternaria leaf blight of groundnut grown in summer season.
	(Action:- Research Scientist (Groundnut), JAU, Junagadh
12.3.2.45	Integrated management for wilt disease of chickpea
12.3.2.43	integrated management for witt disease of emekpea
	Seed treatment of <i>Trichoderma harzianum</i> 1% WP @ 4 g/ kg of seed or carboxin 37.5 + thiram 37.5 DS (Ready mix Vitavex powder) @ 2 g/kg seed alongwith soil application of <i>T. harzianum</i> 1% WP @ 4.0 kg/ha at the time of sowing in furrow was found effective against chickpea wilt under irrigated condition.
	(Action:- Research Scientist (Pulse), Pulse Research Station, JAU, Junagadh)
12.3.2.46	Management of foliar and fruit spot diseases in bottle gourd
	Four sprays of difenconazole 25 EC 0.025 % (10 ml/10 l. of water) or

hexaconazole 5 EC 0.005 % (10 ml/10 l. of water) at 10 days interval after appearance of the disease was found effective and economical for management of foliar and fruit spot diseases of bottle gourd grown in *kharif* season.

(Action:- Research Scientist(Garlic-Onion), Vegetable Research Station, JAU, Junagadh

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ļ	Dr. Z. P. Patel, Convener, PPSC, NAU, Navsari
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12.3.2.47 | Chemical control of chiku moth

For effective management of chiku moth in sapota, apply three sprays of either flubendiamide 39.35 SC @ 0.0096% (2.4 ml/10 litre) or emamectin benzoate 5 SG @ 0.0022% (4.4 gm/10 litre) at one month interval during fruiting stage for higher yield and better return. The residues of these insecticides remain below determination level in sapota fruits.

(Action:- Asstt. Prof. Agri Polytech. NAU, Bharuch)

12.3.2.48 | Population dynamics of major insect pests of sapota

Chiku moth, bud borer, leaf miner, mid rib folder and fruit fly remain active round the year under Agro climatic zone- II, AES- V indicating their peak in 1st fortnight of September, 2nd fortnight of September, 1st fortnight of December, 1st fortnight of November and 2nd fortnight of July, respectively.

(Action: Asstt. Prof., Agri polytech, NAU, Bharuch)

12.3.2.49 | Monitoring of fruit fly in mango orchard

The fruit flies remain active round the year under Agro climatic zone - II, AES- V in mango orchard with peak population during the 2nd week of July (28th SMW).

(Action: Asstt. Prof., Agri polytech, NAU, Bharuch)

12.3.2.50 Screening of promising genotypes for multiple resistance against stem borer, leaf folder and brown plant hopper of rice.

Rice genotypes *viz.*, NVSR-6137, IRBB-2, IR 77498-47-2-6 2-3 and IR 11A334 are found to have multiple resistant reaction against stem borer, leaf folder and brown plant hopper under natural field conditions.

(Action: Assoc.Res.Sci., Main Rice Research Centre, NAU, Navsari)

12.3.2.51 Effect of non-ionizing (UV) radiation on the development of egg parasitoid, *Trichogramma chilonis* Ishii (Hymenoptera: Trichogrammatidae)

	UV lam	Exposure period of 45 minutes (at 42 cm height from the target site with 30 W UV lamp) is found suitable to irradiate the eggs of factitious host, <i>Corcyra cephalonica</i> (Stainton) by enhancing effectiveness of <i>Trichogramma</i> without any detrimental effect of UV radiation (non-ionizing) under laboratory condition.						
12 2 2 52	(Action: Prof. & Head, Dept. of Ento., NMCA., Navsari)							
12.3.2.52	Monitor	Monitoring of mite associated with vegetable crop nurseries						
	remain Polypha nursery. Activitie	Two spotted spider mite, <i>Tetranychus urticae</i> Koch (Tetranychidae: Acari) remain active during nursery stage of brinjal and tomato, while yellow mite, <i>Polyphagotarsonemus latus</i> (Banks) (Tarsonemidae: Acari) remain active in chilli nursery. Activities of mites remain higher in summer followed by <i>kharif</i> and <i>rabi</i> nurseries of brinjal, tomato and chilli.						
			(Action: Prof. & Head,	Dent. Of Ento NM(CA. Navsari)			
12.3.2.53	Docume	entation of	f mite problems in major p					
	(1) Two spotted spider mite, <i>Tetranychus urticae</i> Koch (Tetranychidae: Acari) remain active round the year under greenhouse conditions on gerbera (cv Stenza) with peak population during April (15 th SMW) and Mid September (38 th SMW). (2) Two spotted spider mite, <i>Tetranychus urticae</i> Koch (Tetranychidae: Acari) remain active round the year under polyhouse conditions on rose (cv Top Secret) with peak population during April (15 th SMW) and Mid-October (42 nd SMW). (3) Tenupulpid mite, <i>Tenupalpus sp.</i> remain active round the year on dendrobium orchid cv Sonia-17 under polyhouse conditions with peak population during last week of September (41 st SMW).							
			(Action: Prof. & Head,		CA., Navsari)			
12.3.2.54	Screenin	Screening of mango germplasm against pests of mango						
	_		, <i>viz.</i> , Bombai and Himsaga ereas, Mahmud Vikarabad is		_			
			(Action: Asstt.F	Res.Sci. (Ento) AES,	NAU, Paria)			
12.3.2.55		_	pation pattern of fenazaqu	in in/on chilli under	South			
	Gujarat	condition	as					
	starting in dried	Fenazaquin 10 EC applied twice @ 0.01% (10 ml /10 l water) at 15 days interval starting from 50% flowering stage in green chilli resulted in built up of residue in dried chilli powder by 5.22 to 5.79 times. Therefore, it is recommended to consider a processing factor of 5.64 (i.e. 6.0) for fenazaquin for dried chilli powder.						
	DAA	Control (Water spray)	Mean Residues (μgg ⁻¹) applied at the rate of 125 g a.i./ha	Residues(µgg ⁻¹) in green chillies*	Processing Factor			
	0 (2 hrs)	-	13.19	2.53	5.22			

$(u\alpha/\alpha)$	Powder	0.06		
(μg/g) LOQ	Fruit	0.04		
	Powder		0.02	
LOD	Fruit		0.01	
			Mean	5.64
30 day	-	0.35	0.06	5.79
10 day	-	2.94	0.53	5.61
5 day	-	8.27	1.40	5.92

 $Processing factor = \frac{Residues in chilli powder}{Residues in green chilli}$

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

12.3.2.56 | Status of pesticide residues in major seasonal fruits

Residue analysis of fruit samples collected from different market places of south Gujarat revealed that 31.67 % out of 120 samples are positive for pesticide presence wherein 9.17 % are found above MRL. Maximum positive samples are detected from Surat market. Carbendazim was the most frequently detected pesticide followed by chlorpyrifos and tebuconazole. Most positive samples are detected in apple and least in sapota. However, banana had most positive samples above MRL. Total 52 pesticides detected in different fruits out of which 29 (55%) pesticides violated label claim fixed by the CIBRC.

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

12.3.2.57

Screening of genotypes against insect pests of brinjal

Among various brinjal genotypes screened, lowest shoot and fruit borer damage (3.35%) and lowest jassid (3.19/ leaf) population are recorded in genotype NSRP-1 whereas lowest whitefly population (2.27 / leaf) was recorded in GBL-1.

(Action: Assoc. Prof. (Ento), ACHF, Navsari)

12.3.2.58 Screening of promising genotypes for multiple resistance against bacterial blight, sheath rot and grain discolouration diseases of Rice.

Rice genotypes *viz.*, IR-BB2, IR-BB11, IR-BB50, IR-BB62, IR 11A334 and NVSR-6137 are found to have multiple resistant reaction against bacterial blight and sheath rot diseases under artificial inoculation and high disease pressure conditions in field and grain discoloration under natural field condition.

(Action: Asstt. Res. Sci. (Pl Path), Main Rice Res. Centre, NAU, Navsari)

12.3.2.59 | Screening of genotypes against little leaf of brinjal

Among various brinjal genotypes screened, minimum little leaf infection (3.58%) was recorded in GJB-2.

SDAU, SARDAR KRUSHINAGAR DANTIWADA		
Dr. B. R. Patel, Convener, PPSC, SDAU, Dantiwada		
	LTURAL ENTOMOLOGY- NIL	
PLANT P	ATHOLOGY	
12.3.2.60	Epidemiological study on black point of wheat	
	Bold seeded <i>aestivum</i> wheat varieties GW 366, Lok 1 and GW 496 are more vulnerable whereas, durum wheat variety GW 1139 was free from black point incidence.	
	 Morning relative humidity(68.9 to 73.7 %) and afternoon relative humidity (27.1 to 46.9%)was significantly positively and negatively correlated with black point incidence. 	
	(Action: Associate Research Scientist (Pl.Path.), Wheat Research Station,	
12.3.2.61	Management of <i>Ramularia</i> blight in fennel	
12.5.2.01	Management of Ramata ta Signt in Termer	
	Three foliar sprays of chlorothalonil 75WP @ 0.15% (20 g/ 10 litre water) at an interval of 10 days commencing from disease appearance found effective against Paraularia blight disease in famel	
	Ramularia blight disease in fennel.	
12.2.2.62	[Action : Asstt. Res. Sci. (Path), Seed Spices Res. Station, SDAU, Jagudan]	
12.3.2.62	Morpho-pathological and molecular characterization of organisms causing cumin blight	
	Not approved as isolates were not identified	
10.00.60	(Action: Asstt. Professor (Micro.), C. P. College of Agri., Sardarkrushinagar	
12.3.2.63	Bio-prospecting as well as functional and genetic diversity of promising	
	PGPR strains of fluorescent <i>Pseudomonas</i> for the control of pathogen of cumin blight <i>in-vitro</i> condition	
	Cumin bight m-varo condition	
	The isolate P-10 showed maximum phosphate solubilization followed by the isolate P-15. Phosphate solubilization increased successively with incubation period i.e. after 2, 4, 6, 8, and 10 days of incubation.	
	 Strains P-10 and P-15 proved as an effective bioagent against A. burnsii. Amplified rDNA (Ribosomal DNA) Restriction Analysis (ARDRA) of 16S-rDNA gene of P-10 produced a fragment of 175, 140, and 90 bp whereas P-15 produced a fragment of 175, 150, and 90 bp; and these fragments were not found in the other 18 isolates of fluorescent Pseudomonas. 	
	 Dendrogram obtained from the 16S-rDNA restriction pattern of the isolates of fluorescent <i>Pseudomonas</i> using NTSys-pc software placed the P-10 and P-15 together in a cluster, and hence these isolates are closely related to each other. 	
	(Action: Asstt. Professor (Micro.), C. P. College of Agri., Sardarkrushinagar	

12.3 NEW TECHNICAL PROGRAMME –PLANT PROTECTION

12.3.1 ANAND AGRICULTURAL UNIVERSITY

Agricult	Agricultural Entomology			
Action : De	Action : Dept. of Agril. Entomology, BACA, AAU, Anand			
Sr. No.	Title/Centre	Approved/Accepted with suggestions	Remarks	
12.3.1.1	Standardization of pheromone traps required for mass trapping of pink bollworm in <i>Bt</i> cotton	 Pheromone traps should be installed one week prior to flowering Trap should be installed one feet above the crop canopy (Action: Professor & Head, Dept. of Agril. Entomology, BACA, AAU, Anand) 		
12.3.1.2	Bio-rational management of cumin pests	 Write replication instead of repetition. Recommended chemical check should be kept for comparison. Include ginger rhizome and garlic bulb extract in treatment (Action: Professor & Head, Dept. of Agril. Entomology, BACA, AAU, Anand) 		
Action : Al	CRP on Biological Control, AA	U, Anand		
12.3.1.3	Survey and surveillance of pinworm, <i>Tuta absoluta</i> (Meyrick) on tomato	 In objective it should be for middle Gujarat instead of Gujarat Record the observations on other pests 		
		(Action: Principal Res. Sci., AICRP on Biological Control, AAU, Anand)		
12.3.1.4	Biological suppression of American pinworm, <i>Tuta</i> absoluta (Meyrick) on tomato	 Replace name of 'Verticillium' replace with new name 'Lecanicillium'. Mention the number of sprays required 		

		(Action: Principal Res. Sci.,	
		AICRP on Biological Control, AAU, Anand)	
Action : AI	 NPVPM : Agril. Ornithology, A	· · · · · · · · · · · · · · · · · · ·	
12.3.1.5	Evaluation of impact of	1. Pond/ wet land spacification	
	climate change on water bird	required	
	community assemblage	2. Site in western India must be fixed for observations	
		(Action: Res. Sci. (Ornitho.),	
		AINP on VPM: Agril.	
		Ornithology, AAU, Anand)	
12.3.1.6	Evaluation of bird predation	Approved	
	on honey bees/pollinators	(Action: Res. Sci. (Ornitho.),	
		AINP on VPM: Agril.	
		Ornithology, AAU, Anand)	
12.3.1.7	Effect of roosting sites of	Approved	
	Rose-ringed parakeet on	(Action: Res. Sci. (Ornitho.),	
	agricultural crops	AINP on VPM: Agril.	
		Ornithology, AAU, Anand)	
	sidue Analyst, AINP on Pesticid		
12.3.1.8	Residue and dissipation of	Approved	
	flubendiamide 240	(Action: Residue Analyst, AINP	
	+ thiacloprid 240 - 480 SC	on Pesticide Residues, AAU,	
	on brinjal	Anand)	
12.3.1.9	Residue and dissipation of	Approved	
	imidacloprid 17.1 SL on	(Action: Residue Analyst, AINP	
	tomato	on Pesticide Residues, AAU,	
		Anand)	
12.3.1.10	Residues and persistence of	Approved	
	tetraniliprole 200 SC	(Action: Residue Analyst, AINP	
	on tomato	on Pesticide Residues, AAU,	
10.0111		Anand)	
12.3.1.11	Residue and dissipation of	Approved	
	imidacloprid 17.1 SL on chilli	(Action: Residue Analyst, AINP	
		on Pesticide Residues, AAU,	
10.01.15	D 11	Anand)	
12.3.1.12	Residue and dissipation of	Approved	
	fluopyram 400 SC on	(Action: Residue Analyst, AINP	
	cucumber	on Pesticide Residues, AAU,	
		Anand)	

12.3.1.13	Residue and persistence of	Approved	
	fluopyram SC 400 on banana	(Action: Residue Analyst, AINP	
		on Pesticide Residues, AAU,	
		Anand)	
12.3.1.14	Monitoring of pesticide	Approved	
12.3.1.14	residues at national level		
	residues at national level	(Action: Residue Analyst, AINP	
		on Pesticide Residues, AAU,	
		Anand)	
12.3.1.15	Studies on pesticide residues	1. Sample will be used as	
	from surface and ground	provided by sardar sarovar	
	water under SSP phase - I	Narmada Nigam Ltd.	
	area.	(Action: Residue Analyst,	
		AINP on Pesticide	
		Residues, AAU, Anand)	
12.3.1.16	Studies on pesticide residues	Approved	
	from surface and groundwater	(Action: Residue Analyst, AINP	
	under SSP phase - II area	on Pesticide Residues, AAU,	
	Kheda, Ahmedabad and	Anand)	
	Gandhinagar region.	,	
Action : Ma	ain Vegetable Research Station	, AAU, Anand	
12.3.1.17	Survey and status of south	1. Fix the field / village for	Not
	American tomato moth, Tuta	observations	approved
	absoluta (Meyrick)	2. Do work in collaboration with	as separate
		AICRP and there should not be	trial
		two different experiments on	
		same aspect. So treat this trial	
		as not approved.	
		(Action: Asst. Res. Sci.	
		(Ento.), MVRS, AAU, Anand)	
Action : Co	llege of Horticulture (Wing), B	ACA, AAU, Anand	
12.3.1.18	Bio-efficacy of different	1. Record the number of fruits per	
	insecticides against leaf	tree and calculate yield	
	webber infesting mango	accordingly.	
		2. Record the larvae after 15 days	
		of last spray.	
		(Action: Asstt. Prof. (Ento.),	
		Horticulture College (Wing),	
Action - D-	lgo Dog Station AAII Vol-1	AAU, Anand)	vol.
		ra and Agril. Res. Station, AAU, Der	· 01
12.3.1.19	Screening of pigeonpea genotypes against insect pests	1. Add "under natural conditions"	
	genotypes against insect pests	in title	

	and diseases	2. Sow susceptible check around	
		the experiment and after two test	
		entries, also.	
		(Action: Res. Sci. (Ento.), PRS,	
		AAU, Vadodara and Asst. Res.	
		Sci. (Ento.), ARS, AAU, Derol)	
12.3.1.20	Screening of mungbean	1. Add "under natural conditions"	
	genotypes against insect pests	in title	
	and diseases	2. Sow susceptible check around	
		the experiment and after two test	
		entries, also.	
		(Action: Res. Sci. (Ento.), PRS,	
		AAU, Vadodara and Asst. Res.	
		Sci. (Ento.), ARS, AAU, Derol)	
12.3.1.21	Screening of urdbean	1. Add "under natural conditions"	
	genotypes against insect pests and diseases	in title	
		2. Sow susceptible check around	
		the experiment and after two test	
		entries, also.	
		(Action: Res. Sci. (Ento.), PRS,	
		AAU, Vadodara and Asst. Res.	
A 4. A	. 14 1D 1 G/ / A	Sci. (Ento.), ARS, AAU, Derol)	
	ricultural Research Station, A	, , , , , , , , , , , , , , , , , , ,	
12.3.1.22	Fixation of economic threshold		
	level for gram pod borer	"Determination of economic	
	chickpea	threshold level for gram pod borer in chickpea"	
		(Action: Asst. Res. Sci.	
		(Ento.), ARS, AAU, Derol)	
Action : Ag	 ricultural Research Station, A	, , , , , , , , , , , , , , , , , , , ,	
12.3.1.23	Evaluation of insecticides for	Count initial and final population of	
12.3.1.23	the control of stem borer and	wireworm in the soil adjoining to	
	wire worm infesting	plants	
	unirrigated wheat	(Action: Asso. Res. Sci. (Ento.),	
		ARS, AAU, Arnej)	
12.3.1.24	Evaluation of insecticides for t	Approved	
	control of stem borer and	(Action: Asso. Res. Sci. (Ento.),	
	wire worm infesting unirrigated	ARS, AAU, Arnej)	
	fodder sorghum		
	Agricultural Research Station	n, AAU, Sansoli	
	<u>l</u>		

12.3.1.25	Effect of sowing periods on	Remove "and their relation with	
12.3.1.23	the incidence of castor	weather parameters" from title.	
	capsule borer, Dichrocrosis	Weather parameters from time.	
	punctiperalis Guenee and		
	their relation with weather	(Action: Asst. Res. Sci. (Ento.),	
	parameters	ARS, AAU, Sansoli)	
12.3.1.26	Population dynamics of	Approved	
	major insect pests of castor	(Action: Asst. Res. Sci. (Ento.),	
		ARS, AAU, Sansoli)	
12.3.1.27	Evaluation of	Record phytotonic effect of the	
	different insecticidal application	insecticides and fodder yield	
	strategies against stem borer,		
	Chilo partellus Swinhoe		
	infesting maize	(Action: Asst. Res. Sci. (Ento.),	
		ARS, AAU, Sansoli)	
Action : Co	ollege of Agriculture (Wing), AA	AU, Jabugam	
12.3.1.28	Bio-efficacy of	1. Pesticide residue analysis of	
	different insecticides	effective treatments should be	
	against serpentine leaf	carried out.	
	miner, Liriomyza	2. No. of live and dead maggots	
	trifolii (Burgess) on water	should be recorded in each	
	melon	treatment.	
	meion	(Action: Asst. Res. Sci. (Ento.),	
		College of Agri. (Wing), AAU, Jabugam)	
DI ANT DA	 ATHOLOGY AND NEMATOL		
	epartment of Nematology, BAC		
12.3.1.29	Effect of planting periods	Record Plant height/10 plants in	
	on root–knot nematodes	each treatment	
	in tomato	(Action: Prof. & Head, Dept. of	
		Nematology, BACA, AAU, Anand)	
12.3.1.30	Screening of mungbean	Mention the name of susceptible	
12.5.1.50	lines/germplasms against	check	
	root-knot nematodes	(Action: Prof. & Head, Dept. of	
		Nematology, BACA, AAU,	
		Anand)	
10 0 1 01	Screening of urdbean	Mention the name of susceptible	
12.3.1.31		reference the name of susception	
12.3.1.31	lines/germplasms against	check	
12.3.1.31		1	
12.3.1.31	lines/germplasms against	check	
12.3.1.31	lines/germplasms against	check (Action: Prof. & Head, Dept. of	

	lines/germplasms against	check	
	root-knot nematodes	(Action: Prof. & Head, Dept. of	
	2.00	Nematology, BACA, AAU,	
		Anand)	
12.3.1.33	Screening of vegetables	Mention the name of susceptible	
12.3.1.33	lines/germplasms against	check	
	root-knot nematodes	(Action: Prof. & Head, Dept. of	
		· ·	
		Nematology, BACA, AAU,	
12.3.1.34	Diversity of	Anand)	
12.3.1.34	Diversity of Entomopathogenic	Approved (Action Prof. & Hood Dont. of	
	Nematodes (EPNS) gene pool	(Action: Prof. & Head, Dept. of	
	of the country	Nematology, BACA, AAU,	
12 2 1 25	Consoning confirmation and	Anand)	
12.3.1.35	Screening, confirmation and evaluation of rice genotypes	Approved	
	for resistance against rice	(Action: Prof. & Head, Dept. of	
	root-knot nematode (M.	Nematology, BACA, AAU,	
	graminicola)	Anand)	
12.3.1.36	Determination of host races of	Approved	
	Meloidogyne graminicola	(Action: Prof. & Head, Dept. of	
		Nematology, BACA, AAU,	
		Anand)	
12.3.1.37	Management of root-knot	Confirm the dose of bioagent and	
	nematode, M. incognita	carbofuran in soil	
	infesting cowpea using	(Action: Prof. & Head, Dept. of	
	bioagents	Nematology, BACA, AAU,	
		Anand)	
12.3.1.38	Efficacy of bio-agents in the	Mention the bioagent strain	
	management of Meloidogyne	(Action: Prof. & Head, Dept. of	
	species in bitter gourd	Nematology, BACA, AAU,	
		Anand)	
12.3.1.39	Management of Meloidogyne	Bioagent strain should be	
	spp. in okra through bioagents	mentioned.	
		(Action: Prof. & Head, Dept. of	
		Nematology, BACA, AAU,	
		Anand)	
12.3.1.40	Management of plant parasitic	Approved	
	nematode on okra by bio-	(Action: Prof. & Head, Dept. of	
	fumigation	Nematology, BACA, AAU,	
		Anand)	
12.3.1.41	Organic management of root-	1. Dose of bioagnet is too high.	
	knot nematode, Meloidogyne	Confirm the dose.	
		2. The AICRP experiment will not	
	Dioinoculants	be considered for the	
		recommendation from this	
	knot nematode, <i>Meloidogyne spp</i> . in potato using bioinoculants	2. The AICRP experiment will not be considered for the	

		house.	
		(Action: Prof. & Head, Dept. of	
		Nematology, BACA, AAU,	
12.3.1.42	Internated management of	Anand)	
12.3.1.42	Integrated management of root-knot nematodes using	Confirm the dose of bioagent of T .	
	organic amendments and bio-	viride and other bioagents	
	products on potato in field	(Action: Prof. & Head, Dept. of	
	For march one promote and one of	Nematology, BACA, AAU,	
		Anand)	
12.3.1.43	Management of root-knot	Clarify the consortium (A, B, C, D)	
	nematodes through beneficial	microorganism.	
	microbes in tomato nursery	(Action: Prof. & Head, Dept. of	
		Nematology, BACA, AAU,	
		Anand)	
12.3.1.44	Management of root-knot	Approved	
	nematodes (Meloidogyne	(Action: Prof. & Head, Dept. of	
	sp./race) in pulses by crop	Nematology, BACA, AAU,	
	rotation	Anand)	
12.3.1.45	Bio-management of root-	Confirm the dose of bioagent of <i>T</i> .	
	knot nematode and fungal	viride and other bioagents	
	wilt complex in	(Action: Prof. & Head, Dept. of	
	pomegranate	Nematology, BACA, AAU,	
		Anand)	
12.3.1.46	Management of root-knot	Clarify the consortium (A, B, C, D)	
	nematodes (Meloidogyne	microorganism.	
	spp.) in polyhouse by using	(Action: Prof. & Head, Dept. of	
	organic amendments in	Nematology, BACA, AAU,	
	capsicum	Anand)	
12.3.1.47	Screening crop genotype	Approved	
	against root-knot nematodes	(Action: Prof. & Head, Dept. of	
	for polyhouse conditions	Nematology, BACA, AAU,	
		Anand)	
12.3.1.48	Management of root-knot	Confirm the dose of bioagent of <i>T</i> .	
12.3.1.70	nematodes (Meloidogyne	viride and other bioagents	
	spp.) on cucumber in	(Action: Prof. & Head, Dept. of	
	polyhouse by using bioagents	Nematology, BACA, AAU,	
		Anand)	
12.3.1.49	Management of root-knot	Clarify the consortium (A, B, C, D)	
12.3.1.7	nematodes (Meloidogyne	microorganism.	
	spp.) in polyhouse through	(Action: Prof. & Head, Dept. of	
	crop rotation	Nematology, BACA, AAU,	
		Anand)	
12 2 1 50	Interaction between	,	
12.3.1.50		Approved	
	Meloidogyne sp. and	(Action: Prof. & Head, Dept. of	

	Ralstonia solanacearum on polyhouse crop - tomato (pot trial - autoclaved soil)	Nematology, BACA, AAU, Anand)	
12.3.1.51	 (a) Isolation and identification of potential indigenous bio-control agents (b) Evaluation of available bacteria in the microbial collections against test nematode species 	Approved (Action: Prof. & Head, Dept. of Nematology, BACA, AAU, Anand)	
Action: Bio	li Tobacco Research Station, A	AU, Anand	
12.3.1.52	Effect of bulky manures in management of nematodes in bidi tobacco nursery	Mention the dose per hectare (Action: Res. Sci. (Pl. Patho.), BTRS, AAU, Anand)	
Action : Co	llege of Horticulture (Wing), B	ACA, AAU, Anand	
12.3.1.53	Management of citrus gummosis (Phytophthora citrophthora)	 Mention the dose of <i>T. viride</i> in enriched FYM Record the total number of lesions in each tree 	
		(Action: Asst. Res. Sci. (Patho.), College of Horticulture (Wing), AAU, Anand)	
Action : Re	gional Research Station, AAU,		
12.3.1.54		1. Mention the susceptible check 2. Mention the screening scale (Action: Asst. Res. Sci. (Pl. Patho.), RRS, AAU, Anand)	
Action : Ma	nin Maize Research Station, AA	AU, Godhra & College of Agri. (Wing	g), Jabugam
12.3.1.55	Efficacy of <i>Trichoderma</i> viride in management of banded leaf and sheath blight under field conditions	 Modify the title as "Efficacy of <i>Trichoderma viride</i> in management of banded leaf and sheath blight of maize under field conditions". PDI is to be calculated Trial should be conducted as multi location at Godhra and Jabugam. (Action: Asst. Res. Sci. (Pl. Patho.), MMRS, AAU, Godhra and Asst. Prof. (Pl. Path.), COA, 	

		AAU, Jabugam)	
12.3.1.56	Effect of salicylic acid against	1. Delete treatment T_2 and add P .	
	all foliar diseases of maize	fluorescence.0.025%	
		2. PDI is to be calculated	
		(Action: Asst. Res. Sci. (Pl.	
		Patho.), MMRS, AAU,	
		Godhra)	
Action : Co	llege of Agriculture (Wing), Ja	bugam & Main Maize Res. Station, (Godhra
12.3.1.57	Management of banded leaf and sheath blight of maize (<i>Rhizoctonia solani</i> f. sp. <i>Sasakii</i>) with biocontrol agents	This trial should be conducted as multi location <i>i.e.</i> in addition to Jabugam it should also be conducted as Main Maize Res. Station, Godhra with same title (Action: Asst. Res. Sci. (Pl. Patho.), MMRS, AAU, Godhra and Asst. Prof. (Pl. Path.), COA, AAU, Jabugam)	Not approved as separate trial
Action : Ag	ricultural Research Station, A	AU, Derol	
12.3.1.58	Screening of black gram genotypes against Yellow Mosaic Virus (YMV)	Susceptible genotype should be made as scientific information. (Action: Asst. Res. Sci. (Ent.),	

12.3.2 <u>JUNAGADH AGRICULTURAL UNIVERSITY</u>

AGRICUI	AGRICULTURAL ENTOMOLOGY		
	Action :Department of Entomo	ology, College of Agriculture, JAU, Junagadh	
12.3.2.1	Effectiveness of different biopesticides against mealy bug in custard apple Effectiveness of different bio-pesticides and chemicals insecticides and its combination against onion thrips	 Keep the spray interval of 20 days. Record observation of pest before and after 10 days of each spray. Record healthy and infested fruits Sticker should be added. Title should be modify as "Effectiveness of Beaveria bassiana in combination of different insecticides" Modify objective according to title. Generate residue data of effective treatment 	
12.3.2.3	Effect of different schedule	1. Generate residue data of	

	based insecticidal sprays against garlic thrips	effective treatment	
12.3.2.4	Synergism of different plant oils with different insecticides against pod borer, <i>Helicoverpa armigera</i> infesting chickpea	 Modify the concentration of plant oil as neem oil 0.5%, sesamum 1%. Delete treatment – quinalphos, chlorpyriphos and lemon grass oil 1%. Keep RBD with combinations of remaining treatments. Detergent powder should be added as sticker. 	
12.3.2.5	Compatibility of beauveria bassiana with different insecticides Compatibility of beauveria	 Recast title as "Effect of insecticides on growth of <i>Beauveria bassiana</i>" Take observation on sporulation Concentration should be in ppm. Recast title as "Effect of 	
12.3.2.0	bassiana with different fungicides	fungicides on growth of Beauveria bassiana''	
12.3.2.7	Management of lepidopteran insect pests of groundnut	 Generate residue data of effective treatment 	
12.3.2.8	Bio-efficacy of different bio- pesticides and its combinations against sucking pests of Bt cotton (Bollgaurd II)	 Modify title as "Bio-efficacy of Beauveria bassiana in combination with different insecticides against sucking pests of Bt cotton. Replace 'spinosad' with flonicamid' Generate residue data of effective treatment 	
12.3.2.9	Effect of bio-pesticides and insecticides on aphid population and bee visits and yield of mustard	 Recast title as "Impact of biopesticides and insecticides on foraging bee in mustard" Delete treatment No. T9. Replace T5 with imidacloprid. 	
12.3.2.10	Study on foraging activities of honey bees on seed spices	 Record Bee species Record peak period of foraging and accordingly record the observation of honey bees during that peak period 	
12.3.2.11	Bio-efficacy of different bio- pesticides and their	Generate residue data of effective treatment	

	combination against pink boll worm in cotton	
Action :M	ain Oilseed Research Station, JA	AU, Junagadh
12.3.2.12	Bio-efficacy of insecticides against sucking pests of summer groundnut	 Dose of insecticide must be clarify, if possible use the insecticide as CIBRC concentration. Delete treatment Number T₇ and T₉. Record No. of thrips per three terminal leaves Mention Aphid index
12.3.2.13	Bio-efficacy of bio-pesticides and biorationals against sucking pests infesting groundnut	 Remove the word 'biorational' from title. Record No. of thrips per three terminal leaves Mention Aphid index
12.3.2.14	Management of lepidopteran pests in groundnut by using botanicals	
12.3.2.15	newer insecticides against thrips in castor	 Remove the word 'Newer' from title. Mention formulation of <i>B. bassiana</i> in T8
	Millet Research Station, JAU, Jan	
12.3.2.16	Testing the efficacy of different insecticides against shoot fly and stem borer in pearl millet	Approved
12.3.2.17	Management of major insect pest infesting pearl millet under organic cultivation	Clarify the no. of treatments and design in experiment.
12.3.2.18	Evaluation of pre-harvest spraying of insecticides for management of pulse beetle, <i>Callosobruchus spp</i> (Crop: Green gram)	Clarify the no. of treatments and design in experiment.
	ry Farming Res. Station, JAU, T	
12.3.2.19	Integrated management of insect pests and diseases of green gram crop under rain fed condition	 Modify title as "Integrated pest and disease management of green gram under rainfed condition" Do compatibility of insecticide and fungicide (T6 and T7) study under laboratory condition.

Action: Oi	lseed Research Station, JAU, Am	nreli
12.3.2.20	Management of white fly and	1. Neem leaf extract should be 5%
	aphid in summer sesame	instead of 2%.
Action: P		d Engineering, CAET, JAU, Junagadh
12.3.2.21	Effect of different packing	Approved
	materials against groundnut	
	bruchid (Caryedon serrtus,	
	Olivier.) during storage	
Action : G	rass Land Res. Station, JAU, - D) hari
12.3.2.22	Management of shoot fly and	1. Mention as 'seed treatment
	stem borer in sorghum crop	followed by spraying' in T8
12.3.2.23	Management of Helicoverpa	1. Mention concentration in '%'
	armigera in chickpea	instead of 'a.i.'.
Action: Pu	llse Research Station, JAU, June	agadh
12.3.2.24	Phenology based application of	1. Keep technical name of
	selective insecticides/bio-	insecticide in treatments.
	pesticides combinations	
	against Helicoverpa armigea in	
	chickpea	
Action: Ho	orticulture Wing, JAU, Junagad	h
12.3.2.25	, ,	Write PSB instead PSM.
	insecticide against whitefly in papaya	2. Remove need base application.

PLANT PA	PLANT PATHOLOGY		
Action : Do	Action: Dept. of Plant Pathology, College of Agriculture, JAU, Junagadh		
12.3.2.26	Impact of Phosphate solubilizing microorganism on groundnut under field conditions	1. Write PSB instead PSM in methodology.	
12.3.2.27	Biological control of root rot of coriander	1. Delete Treatment No. 7 and add one treatment of <i>pseudomonas fluorescens</i> .	
12.3.2.28	Biological control of root rot (Macrophomina phaseolina) of ground nut	1. Add seed treatment of <i>P. fluorescens</i> should be included instead of T7.	
12.3.2.29	Efficacy of fluorescens producing <i>Pseudomonas</i> against collar rot (<i>Aspergillus niger</i>) of groundnut	 Give treatment of <i>P. fluorescens</i> as seed treatment. Delete blanket treatment of Tebuconazole. 	
12.3.2.30	Efficacy of fluorescens	Approved.	

			$\overline{}$
	producing Pseudomonas		
	against foliar diseases (Leaf		
	spots and rust) of groundnut		
12.3.2.31	Effect of biofertilizers on the	1. It should be taken as filler trial.	
	yield of oyster mushroom		
	(Pleurotus sajor caju)		
12.3.2.32	Effect of different substrates on	1. Mention straw of crops.	
	nutritional and biochemical		
	properties of oyster mushroom		
	(Pleurotus sajor caju)		
Action: N	Iain Oilseeds Research Station, J	AU, Junagadh	
12.3.2.33	Management of groundnut	1. Treatment T4 should be enriched with	
	diseases through organic	T. viride.	
	amendments, bio products and	2. Record germination (%)	
	biocontrol agents		
12.3.2.34	1	Approved	
	harzianum on growth and stem		
	rot disease management in		
	groundnut		
Action : M	illet Research Station, JAU, Jam		
12.3.2.35	Management of downy mildew	1. Mentioned technical name instead of	
	disease of pearl millet	trade name of Apron 35 SD	
Action: V	egetable Research Station, JAU,	Junagadh, RS (O&G)	
12.3.2.36	IDM package for cucurbit	Approved.	
	diseases (Bottle gourd)		

12.3.3 NAVSARI AGRICULTURAL UNIVERSITY

ENTOMOLOGY

Sr. No.	Title/Centre	Suggestions	
Action: I	Dept. of Ento., NMCA, NAU, Navsari	'	
12.3.3.1	Management of the two spotted spider mite, <i>Tetranychus urticae</i> Koch on gerbera with the use of biopesticides and the predatory mite, <i>Amblyseius longispinosus</i> (Evens)	Approved	
12.3.3.2	Survey of soil oribatid mites fauna	Approved	
12.3.3.3	Seasonal incidence and pest activity of two spotted spider mite, <i>Tetranychus urticae</i> Koch. on adenium (<i>Adenium obesum</i> (Forssk.) Roem & Schutt)	 Record the seasonal weather data. Conduct this trial in polyhouse also. 	

12.3.3.4	Effect of various leaf defoliation levels on castor yield for rearing of eri silkworm, <i>Samia cynthia ricini</i> Hutt	Mention Plucking of top leaves
12.3.3.5	Survey for native Entomopathogenic Nematode (EPN)	Approved
12.3.3.6	Survey of South American leaf miner, <i>Tuta absoluta</i> in Tomato.	Approved
12.3.3.7	Standardize the height of pheromone traps in pigeon pea ecosystem for the mass trapping of <i>Helicoverpa armigera</i> (Hubner)	Approved
12.3.3.8	Pollinator's fauna in Lucerne flora	Approved
	tion: Dept. of Ento., ACHF NAU, Na	
12.3.3.9	Effect of organic pesticides on shoot borer in organic mango	1. Replace the word 'organic pesticide' with 'biopesticide'.
	FQTL, Navsari	
12.3.3.10	Dissipation and persistence of combi-product of chlorantraniliprole 9.26 % + lambda-cyhalothrin 4.63 % in/on pigeon pea	Approved
12.3.3.11	Disssipation and persistence of Spiromesifin (22.9 % SC) in brinjal under south Gujarat conditions	Approved
12.3.3.12	Effect of ozonized water washing on pesticide residues and shelf-life of green chilli and okra	Approved
Action:	MRRC, Navsari	
12.3.3.13	Bio-efficacy of biopesticides against insect-pests of rice crop	Approved
Action	Main Cotton Research Station, NAU	J, Surat
12.3.3.14	Study of expression of <i>Bt</i> proteins with different categories of parents	Approved
12.3.3.15	Isolation and characterization of endophytic bacteria from wild cotton plants and exploring insecticidal activity against pink bollworm, <i>Pectinophora gossypiella</i>	Approved

12.3.3.16	Bio-chemical traits in relation to	Approved
	insect tolerance of wild species and	
	cross derivatives involving wild	
	species of cotton	
Action : M	/Iin Sorghum Researsh Station, NAU	Surat
12.3.3.17	Evaluation of different modules for	1. Take fourth Module as absolute
	pest management in sorghum	control.
Action: K	VK, NAU, Navsari	,
12.3.3.18	Development of organic nutrient and	1. Clarify B. subtilis in the
	bio pest management modules for	experiment.
	chilli	2. Keep absolute control also
12.3.3.19	Survey of major insect pests,	Correct index as PDI.
	diseases and their Natural enemies	
	in brinjal, okra and chilli in Tribal belt of Surat district	
Action: S	SWMU, NAU, Navsari	<u> </u>
12.3.3.20	Incidence of pests in high density	Approved
	mango plantation under drip	
	irrigation	
12.3.3.21	Varietal preference of pests in	Approved
	ultrahigh density mango plantation	
	under drip irrigation	
	AES, NAU, Paria	
12.3.3.22	Integrated Pest Management of	Modify title as "Integrated Management of mango
	hopper in mango	Management of mango hopper".
		2. In module, fix the quadrate
		with large plot technique.
12.3.3.23	Documentation and monitoring	1. Replace design 'RBD' with
	population of pollinators on mango	'CRD'.
		2. Take single tree as one
		repetition.
12.3.3.24	Management of mango hoppers and	1. Record observation at 7 and 12
	thrips using entomophathogens	days.
12.3.3.25	Efficacy of biopesticides against	Mention Design as CRD.
	Tea Mosquito Bug (TMB), Helopeltis antonii Signoret in	
	cashew	
Action: 1	Hort. Polytech, NAU, Paria	

12.3.3.26	Assessment of yield losses due to	1. Mention Design as CRD and 't'	
	major insect pest in cashew	test.	
	-		
Action:	College of Agri, NAU, Waghai		
12.3.3.27	Evaluation of insecticides against	1. Mention Design as CRD.	
	insect pest of mango		
	-		
Action:	Hort. Polytech, NAU, Navsari		
12.3.3.28	Screening of mango varieties against	Approved	
	shoot borer, Chlumetia transversa		
Action:	Action : Dept. of Ento., NMCA., Navsari		
12.3.3.29	Pest survey in cucurbits under	Approved.	
	protected cultivation		

PL. PATHOLOGY

Action: Dept. of Pl. Path., NMCA., NAU, Navsari			
Sr.No.	Title of experiment	Suggestions	
12.3.3.30	Effect of phosphate solubilizing microbes in wheat (<i>Triticum aestivum</i>) under saline conditions.	Approved.	
12.3.3.31	Isolation and characterization of plant growth promoting Actinomycetes from rhizosperic soil	Approved	
12.3.3.32	Status of diseases of cucurbits under protected and unprotected cultivation	Approved	
12.3.3.33	Investigation of phylloplane microflora of tomato and banana diseases	1. Remove word 'Disease' from title.	
12.3.3.34	Evaluation of different substrates for cultivation of Oyster mushroom	Biochemical analysis should be done	
12.3.3.35	Diagnostic kit for the identification of yellow mosaic virus infecting pulses	Title should be "Development of diagnostic kit for the identification of yellow mosaic virus infecting pulses"	
12.3.3.36	Relative susceptibility of medicinal plants to Garmar (<i>Coleus forskohlii</i> Briq.) Root knot Nematode (<i>Meloidogyne</i> sp.)	Recast title as "Susceptibility of medicinal plants against root knot Nematode (<i>Meloidogyne</i> sp.) of Garmar (<i>Coleus forskohlii</i> Briq.)". In objective, mention the medicinal plants	
Action :	Action: Dept. of Pl. Path., ACHF., NAU, Navsari		

12.3.3.37	Management of leaf blight of	1. Check the formulation and	
	gerbera under polyhouse condition	concentration of fungicides in	
		Module-I.	
Action: C	ollege of Agri., NAU, Bharuch		
12.3.3.38	Study of free living nitrogen fixing	Approved	
	bacterial diversity with respect to		
	seasonal variation		
Action: F	QTL, NAU, Navsari		
12.3.3.39	Standardization of liquid	NOT APPROVED	
	chromatography based aflatoxin	1. <u>Drop the experiment</u>	
	detection method and their status in		
	raw and processed groundnut		
	ES, NAU, Paria		
12.3.3.40	Determination of different decline	Approved	
	disorders in Mango orchards		
12.3.3.41	Survey and incidence of diseases in	Approved	
	cashew		
	RS, Gandevi		
12.3.3.42	Integrated management of papaya	1. Confirm dose of neem oil 2%	
	diseases	and record toxicity, if any.	
		2. Keep Control as one module.	
	ulse and Castor Res. Station, Navsar		
12.3.3.43	Screening of mungbean entries	1. Delete 'Virus' word from title.	
	against Mungbean Yellow Mosaic	2. Include GM 5 as resistant	
	Virus (LSET-I & SSET)	variety instead of Meha.	
12.3.3.44	Screening of urdbean entries	1. Delete 'Virus' word from	
	against Mungbean Yellow Mosaic	title.	
10 0 0 15	Virus (SSET)		
12.3.3.45	Screening of cowpea entries against	1. Delete 'Virus' word from title	
10 2 2 46	Yellow Mosaic Virus (SSET & PET)	A 1	
12.3.3.46	Screening of pigeonpea entries	Approved	
	against sterility mosaic disease		
12.3.3.47	(SSET) Screening of Indian bean entries	Annwayad	
12.3.3.47	against yellow mosaic and powdery	Approved	
	mildew (SSET)		
Action: DI	RRS, NAU, Vyara		
12.3.3.48	Root knot nematode (<i>Meloidogyne</i>	1. Recast title as "Survey of root	
14.3.3.40	graminicola) disease in rice	knot nematode (<i>Meloidogyne</i>	
	nurseries of South Gujarat	graminicola) in rice nurseries of	
	narberies of South Sujarat	South Gujarat'	
Action: Ac	ri. Polytech, Waghai	Souri Sujurut	
12.3.3.49	Screening of Little millet (<i>Panicum</i>	Approved	
12,0,0,7	miliare L.) varieties and	11pp1010u	

	germplasm against Blast	
Action: Al	ES, NAU, Paria	·
12.3.3.50	Standardisation of hot water treatment technique (HWTT) to manage post-harvest anthracnose as well as fruit flies of mango	 Replace '@' with 'at'. Keep the temperature 45 ± 2°C, 50 ± 2°C and 55 ± 2°C with five repetitions.
Action: Do	ept. of Pl. Path., NMCA., Navsari	
12.3.3.51	Occurrence of diseases in high density mango plantation under drip irrigation	Approved
12.3.3.52	Prevalence of diseases in ultra-high density mango plantation under drip irrigation	Approved

12.3.4 S. D. AGRICULTURAL UNIVERSITY

Sr. No.	Title /Centre	Suggestions	Remarks
Action: Pulse Research Station, SDAU,SKN			
12.3.4.1	Integrated pest management for cluster bean (AICRP Trial)	Approved	
12.3.4.2	Evaluation of sequential application of insecticides against insect pests of pigeonpea	Observation should be taken from 50 pods per treatment.	
Action: Seed Spices Res. Station, SDAU, Jagudan			
12.3.4.3	Bio-efficacy of different synthetic and botanical insecticides against isabgol aphid, <i>Aphis gossypii</i> Clover	1. Recast title as "Bio-efficacy of synthetic insecticides against isabgol aphid, Aphis gossypii Clover	
12.3.4.4	Eco-friendly management of sucking pests infesting cumin	Approved	
Action: Da	te Palm Res. Station, SDAU, Mundr	a	
12.3.4.5	Chemical control of Red mite (<i>Raoiella indica</i>) and date palm mite complex	 Modify title as "Chemical control of date palm mite complex" Record mite observation at 3, 7, and 15 days interval. Design should be RBD 	

12.3.4.6	Chemical control of date palm scale, <i>Parlatoria blanchardii</i>	Approved	
Action:KV	K, SDAU,Deesa		
12.3.4.7	Study of damage status of fruit sucking moth, <i>Othreis materna/O.fullonia</i> in pomegranate in Banaskantha district	Approved	
Action: Ar	rid Fruit Res. Stn, Horti. College, SD	AU, SKN	
12.3.4.8	Eco-friendly management of mustard aphid	 Remove treatment T3 and T8. Clarify the ppm of Azadiractin. 	
Action: Se	ed Spices Res. Station, SDAU, Jagud	an	
12.3.4.9	Management of coriander powdery mildew using new generation fungicides	Recast title as "Management of coriander powdery mildew through fungicides"	
	te Palm Res. Station, SDAU, Mundra		
12.3.4.10	Management of Graphiola leaf spot disease of date palm through fungicides in field and nurseries	 Replace 'neem oil' with 'Azadiractin'. Residue analysis of effective treatment should be made. 	
Action: De	ept. of Plant Path., CPCA, SDAU, SK	Nagar	
12.3.4.11	Spatial distribution of Papaya ringspot disease in north Gujarat	 Recast title as "Survey virus diseases of Papaya in Banaskantha". Observation on viral disease of papaya should be recorded. Delete observation No.2. (Host range) 	

General suggestions:

- 1. As per the Insecticide Act 1968, recommendations of pesticides to the farmers is issued by the Central Insecticide Board and Registration Committee (CIBRC) and SAUs can not recommend insecticides/ fungicides/ plant growth regulators/ herbicides/ biopesticides to the farmers. However, there are following short-comings with CIBRC recommendations which are required to be resolved at state/ central level.
 - a). Crops like Sapota, and Anola have not recommendations at all or important crops like cumin/castor have only limited recommendations.

- b). In CIBRC recommendations, number of spray, stage of application and resistance management points are grossly ignored.
- c). Over the years, SAUs have evaluated number of pesticides on different crops for which CIBRC has no recommendations. Such recommendations can be submitted to the CIBRC for approval.

The above matter was thoroughly discussed during the XII Combined Joint AGRESCO and house proposed to take up the issue in the plenary session to represent the matter at approximate level.

- 2. Year wise data of insect pest, diseases and nematode etc. of the recommendations need to be presented for more clarity of the treatments
- 3. Common format of the recommendation is to be formed
- 4. Now the experiments on ecofriendly management of insect pests and diseases should be of more attention
- 5. As per the technical programme of AICRP are finalized in respective workshops and that too before our AGRESCO, there are no chance of any change in such technical programmes. Therefore, it was also discussed in the meeting that the recommendations emerged out from AICRP trial should not be passed in AGRESCO.

12.4 HORTICULTURE AND AGRO-FORESTRY

Technical Session-I: Recommendations for Farmers and Scientific Community

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Chairman	Dr. A. V. Barad, Principal and Dean, College of Agriculture, JAU,
	Junagadh
Co-Chairman	1. Dr. B. N. Patel, Principal and Dean, ASPEE College of Horticulture and
	Forestry, NAU, Navsari
	2. Dr. R. R. Sankhela, Research Scientist (Agroforestry), SDAU,
	Dantiwada
Rapporteurs	1. Dr. R. S. Chovatia, Professor and Head, Dept. of Fruit Science, College
	of Agriculture, JAU, Junagadh
	2. Dr. T. R. Ahlawat, Associate Professor, Dept. of Fruit Science, ACHF,
	NAU, Navsari

Technical Session-II: New Technical Programs

Chairman	Dr. A. V. Barad, Principal and Dean, College of Agriculture, JAU,
	Junagadh
Co-Chairman	1. Dr. B. N. Patel, Principal and Dean, ASPEE College of Horticulture and
	Forestry, NAU, Navsari
	2. Dr. R. R. Sankhela, Research Scientist (Agroforestry), SDAU,
	Sardarkrushinagar
Rapporteurs	1. Dr. S. L. Chawla, Associate Professor, Dept. of Floriculture and
	Landscape Architecture, ACHF, NAU, Navsari
	2. Dr. Minal Tandel, Assistant Professor, Dept. of Agroforestry, ACHF,
	NAU, Navsari

Universit	RECOMMENDATION					
y	Proposed		Accepted		Not approved	
	For	For	For	For	For	For
	Farmers	Scientific	Farmers	Scientific	Farmers	Scientific
	communit	communit	communit	communit	communit	communit
	y	y	y	y	y	y
AAU	-	-	-	-	-	-
JAU	2	-	2	-	-	-
NAU	25	2	18	2	4 +3*	-
SDAU	8	1	7	1	1	-
TOTAL	35	03	28	03	5 +3*	-

Note: One recommendation made by NAU is for bifurcated as both farming as well as scientific community. **3* Extended for one more year suggested by Agril. Engg. Sub committee.**

NEW TECHNICAL PROGRAMMES

University	Proposed	Accepted	Not accepted	Remarks
AAU	06	06	-	-
JAU	04	04	-	-
NAU	78	48	08	22 *
SDAU	08	07	01	-
TOTAL	96	65	09	22*

^{*} Transfer to respective subcommittee

Junagadh Agricultural University, Junagadh

Sr. No.	Centre/Station/Department	
22.210	Centre: Department of Horticulture, JAU, Junagadh	
12.4.2.1	Effects of chemical fertilizers and vermicompost on yield and quality of banana	
	(Musa paradisiaca L.) cv. Grand Naine. Recommendation for farmers:	
	Farmers of South Saurashtra Agro - climate Zone cultivating banana cv. Grand	
	Naine are advised to apply total 300g nitrogen and 4kg vermicompost per plant in four equal split at 2 nd , 3 rd , 4 th and 5 th month after planting; along with recommended dose of phosphorus 90g and 200g potash per plant at 3 rd month after transplanting, while 5 kg	
	FYM as basal dose at transplanting for getting good quality, higher yield and higher return.	
	ખેડૂત ઉપયોગી ભલામણ :	
	દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારના કેળની ગ્રાન્ડ નેઇન જાત ઉગાડતા ખેડૂતોને	
	ભલામણ કરવામાં આવે છે કે પ્રતિ છોડ દીઠ કુલ ૩૦૦ ગ્રામ નાઈટ્રોજન અને ૪ કિગ્રા અળસિયાનુ ખાતર	
	એક સરખા ચાર હપ્તામાં ફેર રોપણીના બીજા, ત્રીજા, ચોથા તથા પાંચમા મહિને આપવુ, તેમજ ભલામણ	
	મુજબ ૯૦ ગ્રામ ફ્રોસ્ફરસ અને ૨૦૦ ગ્રામ પોટાશ ફેર રોપણીના ત્રીજા મહીને જ્યારે પાયામા ૫ કિલો ગ્રામ	
	ગળતિયુ ખાતર ફેર રોપણી વખતે આપવાથી સારી ગુણવત્તા, વધુ ઉત્પાદન અને ચોખ્ખો નફો મળે છે.	
	(Action: Professor and Head, Dept. of Horticulture, JAU, Junagadh)	
	Centre: Fruit Research Station, JAU, Mangrol	
12.4.2.2	Feasibility of organic farming in coconut (<i>Cocos nucifera</i>) under saline water irrigation condition.	
	Recommendation for farmers:	
	The farmers of South Saurashtra Agro-climatic Zone interested organic cultivation of coconut cv. West Coast Tall (WCT) are advised to apply FYM @ 60 kg per tree under saline irrigation (EC 10-14 dSm ⁻¹) condition for obtaining higher return and improving soil fertility.	
	ખેડૂત ઉપયોગી ભલામણ :	
	દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય હવામાનમાં જે ખેડૂતો નાળીયેરીની પશ્ચિમ કિનારાની ઉંચી	
	જાત (દેશી)ની સજીવ ખેતીમાં રસ ધરાવતા હોય અને ખારા પાણીની પિયત (ઇસી ૧૦-૧૪ ડીએસએમ ^{્૧})	
	પરીસ્થિતિ હોય તેને સલાહ આપવામાં આવેછે કે ઝાડ દીઠ ૬૦ કિ.ગ્રા. છાણિયું ખાતર આપવાથી વધારે વળતરની સાથે જમીનની ફળદ્રુપતા પણ જાળવી શકાય છે.	
	(Action: Asstt. Res. Sci., FRS, JAU, Mangrol)	

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Sr. No.	Centre/Station/Department
	Centre: Department of Fruit Science, ACHF, NAU, Navsari
12.4.3.1	Effect of heading back and training on growth, flowering, yield and quality in old orchard of mango cv. Rajapuri
	Recommendation for farmers:- The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone are advised to head back their above 30 years old mango trees cv. Rajapuri at 4 to 5 m height from ground level and maintain 6 newly emerged tertiary limbs to get higher yield with quality production. Note: Rejuvenation should be done after completion of monsoon in month of October. For rejuvenation slant cut should be made and cut portion should be treated with copper fungicide paste (100 g lit ⁻¹) and frequently visit to rejuvenated orchard for controlling stem borer.
	ખેડૂતો ઉપયોગી ભલામણ:- દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તારમાં ૩૦ વર્ષ કરતા જુના રાજાપુરી 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 ડાળીઓમાંથી ૬ ડાળીઓની કેળવણી કરવી.
	નોંધ:- ૧. નવીનીકરણ ચોમાસુ પૂર્ણ થયા પછી ઓકટોબર માસમાં કરવું ૨. નવીનીકરણ માટે ત્રાંસો કાપ મુકી કપાચેલા ભાગ ઉપર તાંબાયુકત ફુગનાશક દવાની પેસ્ટ લગાવવી ૧૦૦ ગ્રામ / લી.) અને આબાંવાડીમાં આંબાના મેઢનાં નિયંત્રણ માટે નિયમિત મુલાકાત લેતા રહેવું . (Action:-Assoc. Res. Sci. RHRS, NAU, Navsari)
12.4.3.2	Standardization of organic nutrient schedule in banana cv. Grand Naine
	Recommendation for farmers: The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone-I (AES-III) growing banana cv. Grand Naine under organic farming are recommended to apply 10 kg FYM and 1.25 kg Neem cake at planting, Bio fertilizers 50 ml each Azospirillum and PSB, 50 g Trichoderma harzianum and 25 g AM at one month after planting, 5 kg Vermicompost after three months of planting and 1.75 kg Wood ash after five months of planting per plant. This gives higher yield with higher return. พิฐณิขขาใ ผสเพช :-
	દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તાર ઝોન–૧ અને ખેત આબોહવાકીય પરિસ્થિતિ–૩ માં કેળની ગ્રાન્ડ નૈન જાતની સેન્દ્રિય ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે રોપણી વખતે છોડ દીઠ ૧૦ કિ. ગ્રા. છાણિયું ખાતર અને ૧.૨૫ કિ. ગ્રા. લિંબોળી ખોળ આપવો. એક માસ બાદ જૈવિક ખાતર છોડ દીઠ ૫૦ મીલી દરેક એઝોસ્પીરીલમ અને પીએસબી, ૫૦ ગ્રામ ટ્રાયકોડર્મા હારઝીનીયમ અને ૨૫ ગ્રામ આપવું. ત્યારબાદ ત્રીજા માસે છોડ દીઠ ૫ કિ. ગ્રા. વર્મીકમ્પોસ્ટ અને પાંચમા માસે છોડ દીઠ ૧.૭૫ કિ. ગ્રા. લાકડાની રાખ આપવી. આ માવજતથી વધુ ઉત્પાદન સહિત વધુ નફો મળે છે. (Action:- Associate Res. Sci., FRS, Gandevi)

12.4.3.3 Macro propagation technique for Banana **Recommendation for farmers:** Banana growing farmers and nurserymen are advised to produce lower cost quality planting material through macro propagation technique. This technique saves cost of planting material. A sucker treated with each AM and Trichoderma viride @ 30 g/sucker produces maximum 20 plants per sucker within 5-6 months. Methodology Selection of good quality suckers weighing 500-1000g. > Suckers are detopped just above the juncture of the aerial shoot (Decortications). Removal of apical meristem to a 4 cm depth and 2 cm width (Decapitation). ➤ 6-8 cross wise cuts given to sucker. Sucker placed in net house at 1 X 1 feet distance and covered with sawdust. > Application of 30g each AM and *Trichoderma viride* around each sucker. Removal of juvenile meristem of primary and secondary buds to produce tertiary buds. > Plants produced from tertiary buds having 4-5 leaves separated and planted in plastic bag in media containing Red soil: Sand: FYM in ratio of 1:1:1. > Plants kept in net house for hardening. Regular watering by water can during entire procedure. ખેડતોપયોગી ભલામણ : કેળની ખેતી કરતા ખેડતો અને નર્સરીધારોકોને કેળની રોપણી માટે ઓછા ખર્ચે ગણવત્તા સભર રોપા તૈયાર કરવા માટે મેક્રોપ્રોપોગેશન પધ્ધતિ અપનાવવાની ભલામણ કરવામાં આવે છે. આ પધ્ધતિથી રોપણી સામગ્રી પાછળ થતો ખર્ચ ઘટાડી શકાય છે. આ પધ્ધતિમાં પ્રતિ ગાંઠ વામ અને ટ્રાયકોડર્મા વિરીડી બંને ૩૦ ગ્રામ મજબ આપવાથી પાંચથી છ માસમાં એક ગાંઠમાંથી વઘમાં વઘ ૨૦(વીસ) જેટલા રોપવા લાયક છોડ મળી શકે છે. રોપ તૈયાર કરવાની પધ્ધતિ 🗲 સારી ગણવત્તાવાળી ૫૦૦ થી ૧૦૦૦ ગ્રામ વજનની ગાંઠો પસંદ કરવી. 🗲 ગાંઠનો ઉપરનો ભાગ થડની શરૂઆત થાય ત્યાંથી કાપી નાંખવો. 🗲 ગાંઠની વચ્ચેથી ૪ સે. મી. ઉડાઈ અને ૨ સે. મી. પહોળાઈ જેટલો ભાગ ખોતરીને મુખ્ય આંખ દુર કરવી. 🗲 ગાંઠના ઉપરના ભાગે છ કે આઠ ભાગ થાય તે પ્રમાણે આડા કાપા મકવા. આ રીતે તૈયાર થયેલ ગાંઠોને નેટ હાઉસમાં ૧×૧ ફુટના અંતરે ગોઠવી લાકડાના વ્હેરથી ઢાંકી દેવી. 🗲 ગાંઠ દીઠ વામ અને ટાયકોડર્મા વિરીડી બંને ૩૦ ગ્રામ મજબ ગાંઠની ફરતે આપવં. 🗲 ગાંઠમાંથી નીકળતી પ્રાથમિક અને દ્ધિતિય કળીઓને ખોતરીને દર કરવી. 🤛 ત્યારબાદ નીકળતી તતીય કળીઓનો વિકાસ થવા દેવો અને જયારે ચાર થી પાંચ પાન ધારણ કરે ત્યારે છોડને છટા પાડી માટી. રેતી અને છાણિયા ખાતરના સમ પ્રમાણમાં તૈયાર કરેલ ઉછેર માધ્યમને પ્લાસ્ટીક બેગમાં ભરી તેમાં રોપવા. 🗲 તૈયાર થયેલ રોપાને સખ્તાઈ માટે નેટહાઉસમાં રાખવા. 🗲 સમગ્ર પધ્ધતિ દરમ્યાન જરૂરિયાત મુજબ ઝારાથી નિયમિત પિયત આપવું. (Action: - Associate Res. Sci. FRS, Gandevi) Centre: Department of Vegetable Crops, ACHF, NAU, Navsari 12.4.3.4 Standardization of fertigation and methods of training in cucumber under naturally ventilated polyhouse **Recommendation for farmers:** Farmers cultivating parthenocarpic cucumber in naturally ventilated polyhouse (1000 m² area) are advised to train plants to single stem system and fertigate the crop with 9.0:7.5:7.5 kg NPK (As per the Table given below) along with application of 0.5 kg Trichoderma viride, 0.5 litre Pseudomonas fluorescens, 2.0 t FYM or 0.4 t vermicompost and 5.0 kg micro-nutrients

(Grade-5) at the time of sowing for higher net returns.

	Crop Duration	Distribution pattern fertilizers		Remarks		
		N (kg)	P (kg)	K (kg)		
	First Growth Period	4.50 kg	3.21 kg	1.07 kg	• Fertigation should be start	ted at
	(Up to 30 days)				appearance of 2 nd true leaf stage	
	Second Growth Period	2.25 kg	2.15 kg	3.22 kg	 Fertigation should be carried out 	
-	(30-60 days)				3.13	
-	Third Growth Period	2.25 kg	2.14 kg	3.21 kg		
ł	(60-90 days)					

Note:

1. Training of cucumber plants to single stem system can be achieved by removing all the laterals arising from the axils of leaves, commonly known as suckers at the attainment of 10-12 cm length and only main stem should be allowed to grow vertically along the supporting string.

ખેડૂતોપયોગી ભલામણ :

નેચરલી વેન્ટીલેટેડ પોલી હાઉસમાં પાર્થેનોકાર્પિક કાકડીની રક્ષિત ખેતી સાથે સંકળાયેલ ખેડૂતોને ૧૦૦૦ ચો.મી.ના વિસ્તારમાં વધુ આવક મેળવવા માટે કાકડીના વેલાને એક થડ ઉપર કેળવણી કરવાની અને પાકને ફર્ટીગેશન અંતર્ગત ૯.૦:૭.૫:૭.૫ કિ.ગ્રા.નાફોપો (નીચેના કોઠામાં દર્શાવ્યા પ્રમાણે) ની સાથે ૦.૫ કિ.ગ્રા. ટ્રાયકોડર્મા વીરીડી, ૦.૫ લિટર સ્યુડોમોનાસ ફલુરોએન્સ, ૨.૦ ટન સંપૂર્ણ સડેલું છાણિયું ખાતર અથવા ૦.૪ ટન વર્મીકંમ્પોસ્ટ અને ૫. ૦ કિ.ગ્રા. ગ્રેડ-૫ સૂક્ષ્મ તત્વ પ્રમાણે બીજની વાવણી સમયે આપવાની ભલામણ કરવામાં આવે છે.

સમયગાળો	રાર	ટિપ્પણી		
	નાઈટ્રોજન (કિ.ગ્રા.)	ફોસ્કરસ (કિ.ગ્રા.)	પોટેશીયમ (કિ.ગ્રા.)	
પ્રથમ વિકાસ તબકકો (પ્રથમ ૩૦ દિવસ)	૪.૫૦	૩.૨૧	1.09	• ફર્ટીગેશનની શરૂઅ મુખ્ય પાનની
દ્વિતીય વિકાસ તબકકો (૩૦ થી ૬૦ દિવસ)	ર.૨૫	ર.૧૫	૩. ૨૨	કરવી. ● અઠવાડીયામાં લ
તૃતીય વિકાસ તબકકો (૬૦ થી ૯૦ દિવસ)	ર.૨૫	ર.૧૪	૩. ૨૧	ફર્ટીગેશન આપવું.

નોંધઃ– છોડને એક થડ ઉપર કેળવણી માટે પર્ણકક્ષ માંથી નીકળતા પીલા જયારે ૧૦ થી ૧૨ સે.મી. લંબાઈના થાય ત્યારે તેને દૂર કરી ફકત મુખ્ય થડને જ ઉપરની દિશામાં વધવા દઈ દોરીથી ટેકો આપવો.

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

12.4.3.5 | Site specific nutrient management study of Elephant foot Yam

Recommendation for farmers:

The peasantry of south Gujarat Heavy Rainfall Agro-climatic Zone-I (AES III), growing elephant foot yam cv. Gajendra in the soil having deficient N and sufficient P and K are advised to apply 100: 45: 75 NPK kg/ha in two splits. Apply first dose of 50: 45: 37.5 NPK kg/ha at 45 days after planting and second dose of 50: 00: 37.5 NPK kg/ha one month after application of first dose for obtaining higher income. At the time of planting application of 25 tonne FYM per hectare is advisable.

ખેડતોપયોગી ભલામણ :-

દક્ષિણ ગુજરાત ભારે વરસાદીય ખેત આબોહ્વાકિય વિસ્તાર ઝોન–૧ (એઈએસ–૩) માં નાઈટ્રોજનની ઉણપ અને ફોસ્ફરસ અને પોટાશ પૂરતા પ્રમાણમાં ધરાવતી જમીનમાં સુરણની ગજેન્દ્ર જાત વાવતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે સુરણના પાકમાં ૧૦૦ : ૪૫ : ૭૫ ના.ફો.પો. કિલો / હે. ના પ્રમાણમાં બે હપ્તામાં આપવું. પ્રથમ હપ્તામાં ૫૦ : ૪૫ : ૩૭.૫ ના.ફો.પો. કિલો / હે. વાવણીના ૪૫ દિવસે તથા બાકીનો ૫૦ : ૦૦ : ૩૭.૫ ના.ફો.પો. કિલો / હે. પ્રથમ હપ્તાના એક મહના પછી આપવાથી મહત્તમ આર્થિક ફાયદો મેળવી શકાય છે. વાવતી વખતે ૨૫ ટન છાણિયુ ખાતર આપવું સલાહ ભર્ય છે.

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

Centre: Department of Natural Resource Management, ACHF, NAU, Navsari

12.4.3.6 Feasibility of Papaya banana sugarcane relay cropping under organic farming

Recommendation for farmers (papaya-banana-sugarcane relay cropping):

The farmers of south Gujarat Heavy Rainfall Agro - climatic Zone- I (AES III) growing papaya (variety Red Lady 786)-banana (variety Grand Naine)-sugarcane (variety CoN 07072) under relay system are advised to apply 25 per cent N through biocompost, 40 per cent N through vermicompost and 15 per cent N_2 through castor cake to supply recommended nitrogen on N equivalent basis and also advice to apply banana pseudostem sap @ 2 l/plant to papaya-banana and 4000 l/ha for sugarcane or 50 per cent N through biocompost and 40 per cent N_2 through vermicompost to supply recommended nitrogen on N equivalent basis and also advice to apply banana pseudostem sap @ 1 l/plant for papaya-banana and 4000 l/ha for achieving higher yield as well as net income.

Detail management for papaya

- i. Planting: Prepared the pits at 1.5 m x 2.4 m distance. Sow plant by applying 1.7 kg biocompost, 3.1 kg vermicompost and 0.341 kg castor cake per plant along with PSB and Azatobactor @ 5kg/ha.
- ii. 3 & 6 MAP: Apply 0.8 kg biocompost, 1.6 kg vermicompost and 0.17 kg castor cake per plant.
- iii. After one months of planting, apply banana pseudostem sap @ 200ml/plant in 5 equal splits at one month interval.
- iv. In summer green manuring should be followed in wider space.
- v. Drench 500 ml 0.5% each of Trichoderma and Pseudomonas at the time of planting.
- vi. Spray 0.5 % neem based solution.

Detail management for banana

- i. Planting: Prepared the pits at 1.2 m x 1.5 m x 3.3 m distance (paired row). Sow plant by applying 2.5 kg biocompost, 4.6 kg vermicompost and 0.5 kg castor cake per plant alongwith *PSB* and *Azatobactor* @ 5kg/ha.
- ii. 3 & 6 MAP: Apply 1.25 kg biocompost, 2.3 kg vermicompost and 0.25 kg castor cake per plant.
- iii. After one months of planting, apply banana pseudostem sap @ 200ml/plant in 5 equal splits at one month interval.
- iv. In summer green manuring should be followed in wider space.
- v. Drench 500 ml 0.5% each of *Trichoderma* and *Pseudomonas* at the time of planting.

Detail management for sugarcane

- i. At planting, treat two eye budded setts with biofertilizer *i.e.* Acetobacter and PSB and biopesticide *i.e.* Trichoderma and Pseudomonas @ 100ml each/ 50 litre of water for 20 minutes.
- ii. Planting: Apply 4.15t biocompost and 3.85t vermicompost per hectare as basal.
- iii. 3 & 6 MAP: Apply 2.1t biocompost and 1.9t vermicompost per hector.
- iv. After one months of planting, apply banana pseudostem sap @ 800 l/ha in 5 equal splits at one month interval.
- v. In summer green manuring should be followed in wider space.
- vi. Drench 0.5% each of *Acetobactor*, *Trichoderma* and *Pseudomonas* at the time of earthing up.

ખેડૂત ઉપયોગી ભલામણ

ભલામણ : (પપૈયા-કેળા -શેરડી રીલે પધ્ધતિ માટે)

પપૈયા (જાત રેડ લેડી ૭૮૬)-કેળા (જાત ગ્રાન્ડ નેન)- શેરડી (જાત સીઓએન ૦૭૦૭૨) રીલે પધ્ધતિ માટે દક્ષિણ ગુજરાતનાં ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તાર-૧ (પરિસ્થિતિ-૩) માં સેન્દ્રિય ખેતીથી પપૈયા (જાત રેડ લેડી ૭૮૬)-કેળા (જાત ગ્રાન્ડ નેન)- શેરડી (જાત સીઓએન ૦૭૦૭૨) રીલે પધ્ધતિથી ઉગાડતા ખેડ્રતોને વધુ ઉત્પાદન અને આવક મેળવવા ભલામણ કરેલ નાઈટ્રોજન પૂરો પાડવા ૨૫ ટકા નાઈટ્રોજન બાચોકંપોષ્ટ દ્વારા, ૪૦ ટકા નાઈટ્રોજન અળસિયાનાં ખાતર દ્વારા અને ૧૫ ટકા નાઈટ્રોજન દિવેલી ખોળ દ્વારા નાઈટ્રોજન તત્વનાં આધારે આપવો તેમજ પપૈયા અને કેળને કેળના થડનો રસ ર લી./છોડ અને શેરડીને ૪૦૦૦ લી./હે આપવો અથવા ૫૦ ટકા નાઈટ્રોજન બાચોકંપોષ્ટ દ્વારા અને ૪૦ ટકા નાઈટ્રોજન અળસિયાનાં ખાતરમાંથી નાઈટ્રોજન તત્વનાં આધારે આપવો તેમજ પપૈયા અને કેળને કેળના થડનો રસ ર લી./છોડ અને શેરડીને ૪૦૦૦ લી./હે આપવો

પપૈયા માટે વિગતે માવજતો:

- રોપણી સમચે: ૧.૫ મી × ૨.૪ મી ના અંતરે ખાડા કરવા. છોડ દીઠ ૧.૭ કીગ્રા બાયોકંમ્પોષ્ટ, ૩.૧ કીગ્રા અળસિયાનું ખાતર અને ૦.૩૪૧ કિગ્રા દિવેલી ખોળની સાથે પીએસબી અને એઝાટોબેકટર ૫ કિગ્રા/ફે પ્રમાણે નાંખી રોપણી કરવી.
- રોપણી બાદ ત્રણ અને છ મહિને: છોડ દીઠ o.૮ કીગ્રા બાયોકંપોષ્ટ, ૧.૬ કીગ્રા અળસિયાનું ખાતર અને o.૧૭ કિગ્રા દિવેલીનો ખોળ આપવો.
- રોપણીનાં એક મહિના બાદ કેળના થડનો રસ ૨૦૦ મીલી./છોડ લેખે પાંચ સરખા હપ્તામાં ૧ મહિનાનાં આંતરે આપવો.
- ઉનાળામાં પહોળા પદ્મમાં લીલો પડવાશ કરવો.
- રોપણી સમયે ૫૦૦ મિલી ૦.૫% ટ્રાયકોડમાં અને સ્યુડોમોનાસનું દ્રાવણ રેડવું.
- ૦.૫% લીમડા યુક્ત દરવાનો છંટકાવ કરવો.

કેળ માટે વિગતે માવજતો:

- રોપણી સમયે: ૧.૨ મી \times ૧.૫ મી \times ૩.૩ મીના અંતરે ખાડા કરવાં. છોડ દીઠ ૨.૫ કીગ્રા બાયોકંમ્પોષ્ટ, ૪.૬ કીગ્રા અળસિયાનું ખાતર અને ૦.૫ કિગ્રા દિવેલી ખોળ નાંખી રોપણી કરવી.
- રોપણી બાદ ત્રણ અને છ મહિને: છોડ દીઠ ૧.૨૫ કીગ્રા બાચોકંપોષ્ટ, ૨.૩ કીગ્રા અળસિયાનું ખાતર અને ૦.૨૫ કિગ્રા દિવેલી ખોળ સાથે પીએસબી અને એઝાટોબેકટર @ ૫ કિગ્રા/ફે નાંખી રોપણી કરવી.
- રોપણીનાં એક મહિના બાદ કેળના થડનો રસ ૨૦૦ મીલી./છોડ લેખે પાંચ સરખા હપ્તામાં ૧ મહિનાનાં આંતરે આપવો.
- ઉનાળામાં પહોળા પદ્યમાં લીલો પડવાશ કરવો.
- રોપણી સમયે ૫૦૦ મિલી ૦.૫% ટ્રાયકોડર્માં અને સ્થુડોમોનાસનું દ્રાવણ રેડવું.

શેરડી માટે વિગતે માવજતો:

- રોપણી સમયે બે આંખનાં ટુકડાને એસિટોબેક્ટર અને પીએસબી જેવા બાયો ફર્ટીલાઈઝર તેમજ ટ્રાયકોડર્માં અને સ્યુડોમોનાસ જેવી બાયોપેસ્ટીસાઇડ દરેકનાં ૧૦૦ મિલી/૫૦ લીટર પાણીમાં બનાવેલ દ્રાવણમાં ૨૦ મિનિટ સુધી બોળવા.
- રોપણી સમયે: પાયામાં ૪.૧૫ ટન બાયોકંપોષ્ટ અને ૩.૮૫ ટન અળસિયાનું ખાતર પ્રતિ હેક્ટર આપવું.
- રોપણી બાદ ત્રણ અને છ મહિને: ૪.૧૫ ટન બાયોકંપોષ્ટ અને ૩.૮૫ ટન અળસિયાનું ખાતર પ્રતિ હેક્ટર આપવું.
- રોપણીનાં એક મહિના બાદ કેળના થડનો રસ ૮૦૦ લી./હે લેખે પાંચ સરખા હપ્તામાં ૧ મહિનાનાં આંતરે આપવો.
- ઉનાળામાં પહોળા પદ્યમાં લીલો પડવાશ કરવો.
- ૦.૫% એસિટોબેક્ટર, ટ્રાયક્રોડર્માં અને સ્યુડોમોનાસનું દ્રાવણ પાળા યઢાવતી વખતે રેડવું.

 $(\boldsymbol{Action} \hbox{:-} Assoc.\ Professor\ (NRM),\ ACHF,\ NAU,\ Navsari)$

(Give the soil condition after experiment)

12.4.3.7

Evaluation of *in situ* farm residue management on quality and productivity of banana cultivated under organic farming

Recommendation for farmers:

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone- I (AES III) growing banana, variety Grand Naine, organically are advised to apply 10 tonnes farm residue along with 400 litres, 2% banana pseudostem sap per hectare for achieving higher net income.

Detail management

- Prepared the pits at 1.5 m x 1.2 m x 2.4 m distance and apply the 2.0 kg NADEP compost in each pit along with *Azatobactor* and PSB each @ 5.0 kg/ha.
- Add the farm residue @10t/ ha. in equal two splits at the time of two and four monts after planting.
- Apply 400l/ha 2% banana pseudostem sap on residue and covered the residue by thin layer of soil.
- \bullet Drench 500 ml (0.5%) per plant each of Trichoderma and Pseudomonas at the time of planting

ખેડત ઉપયોગી ભલામણ:

દક્ષિણ ગુજરાત ભારે વરસાદવાળા ખેત આબોહવાકિય વિસ્તાર-૧ (પરિસ્થિતિ-૩)ના સેન્દ્રિય ખેતિથી કેળની જાત ગ્રાન્ડ નેન ઉગાડતા ખેડૂતોને વધુ આવક મેળવવા પ્રતિ હેકટર ૧૦ ટન ખેત અવશેષ સાથે ૪૦૦ લીટર, ૨ ટકા કેળના થડનો રસ આપવાની સલાહ આપવામાં આવે છે.

વિગતે માવજતો:-

- રોપણી સમચે: ૧.૫ મી $x \times$ ૧.૨ મી $x \times$ ૨.૪ મીના અંતરે ખાડા કરવા અને દરેક ખાડામાં ૨ કિગ્રા નાડેપ કમ્પોસ્ટ અને એઝોટોબેકટર અને પીએસબી ૫ કિગ્રા/હે આપવું.
- ૧૦ ટન/હે ખેતરનો કચરો બે સરખા ભાગમાં રોપણીનાં ૨ અને ૪ મહિના પછી ઉમેરવો.
- ખેતરના કચરા ઉપર ૨ ટકા કેળનાં થડનો રસ ૪૦૦ લી/ફે પ્રમાણે ઉમેરવો અને અવશેષને માટીનાં આછા થરથી ઢાંકવો.
- રોપણી સમયે પ્રતિ છોડ ૫૦૦ મિલી (૦.૫%) ટ્રાયકોડર્માં અને સ્યુડોમોનાસનું દ્રાવણ રેડવું.

(Action:- Assoc. Professor (NRM), ACHF, NAU, Navsari)

(Give the soil condition after experiment)

Centre: Department of Floriculture and Landscape Architecture, ACHF, NAU, Navsari

12.4.3.8

Effect of Land configuration and integrated nutrient management on growth, quality and yield of tuberose (*Polinathes tuberosa* var. Prajwal)

Recommendation for farmers:

The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone - I AES-III cultivating tuberose var. Prajwal are advised to grow bulbs on raised bed of 90 cm width and 15 cm height in 3 rows along with 15 ton FYM/ha per year + RDF 300-200-100 kg N, P_2O_5 , K_2O / ha. (application of nitrogen in four equal splits 3 months interval per year) for qualitative as well as quantitative spike production up to three years after planting.

ખેડૂત ઉપયોગી ભલામણ

દક્ષિણ ગુજરાતના ભારે વરસાદીય ઝોન–૧ ખેત આબોહવાકીય પરિસ્થિતિ–૩ માં ગુલછડીની પ્રજજવલ જાતની ખેતી કરતા ખેડુતોને ભલામણ કરવામાં આવે છે કે ગાંઠની ૯૦ સે.મી પહોળા અને ૧૫ સે.મી ઉચાઈ વાળા ગાદીકયારા માં ત્રણ હારમાં રોપણી કરી ૧૫ ટન છાણિયું ખાતર અને ભલામણ કરેલ રસાયાણિક ખાતર ૩૦૦: ૨૦૦: ૧૦૦ કિ ગ્રા ના.ફો.પો. પ્રતિ હે. પ્રતિ વર્ષ (નાઇટ્રોજન ને પ્રતિ વર્ષ ચાર સરખા ભાગમા ત્રણ મહિનાનાં અંતરે) આપવાથી રોપણી કર્યા બાદ ૩ (ત્રણ) વર્ષ સુધી સારી ગણવત્તાવાળા વધ ફ્લોનું ઉત્પાદન આપે છે.

(Action:-Assoc. Res. Sci. (Flori.), ACHF, NAU, Navsari)

12.4.3.9 Effect of bio-fertilizers and chemical fertilizers on growth and yield of gladiolus cv. Psittacinus Hybrid.

Recommendation for farmers:

The farmers of the South Gujarat Heavy Rainfall Agro-climatic Zone I, AES-III, growing gladiolus cv. Psittacinus Hybrid are advised to dip gladiolus corms in microbial consortium solution (10 ml /l water) for one hour and dry under shade then use for planting. Apply 75% of RDF (150-150-150 kg NPK / ha.), P and K as basal and N in two equal splits, 15 days and 45 days after planting which reduced 25% fertilizers cost and gives higher realization.

ખેડૂતો ઉપયોગી ભલામણ:

દક્ષિણ ગુજરાતનાં ભારે વરસાદવાળા વિસ્તાર ૧ એઈએસ- ૩ માં ઝ્લેડીઓલસની સીટેસીનસ હાઈબ્રીડ જાત ઉગાડનાર ખેડૂતોને ભલામણ કરવામાં આવે છે કે વાવણી પહેલા ઝ્લેડીઓલસ કંદને ૧૦ મીલી જૈવિક ખાતર/લીટર પાણીમાં ૧ કલાક બોળી, છાયડામાં સુકવી રોપણી કરવી. રોપણી બાદ ભલામણ કરેલા ૭૫% જથ્થા(૧૫૦-૧૫૦-૧૫૦ ના. ફો. પો. કીલો / હે.) પૈકી ફોસ્ફરસ અને પોટાશનો પુરો જથ્થો પાયામા આપવો અને નાઇટ્રોજન રોપણી બાદ ૧૫ દીવસે અને ૪૫ દીવસે બે સરખા હપ્તામાં આપવાથી ૨૫ % રાસાયણિક ખાતરના ખર્ચમાં ઘટાડો કરી વધુ આવક મેળવી શકાય છે.

(Action:- Principal, Horti. Polytechnic., Navsari)

Centre: Dept. of Post Harvest Technology, ACHF, NAU, Navsari

12.4.3.10 Development of technology for utilization of banana peel for preparation of sev

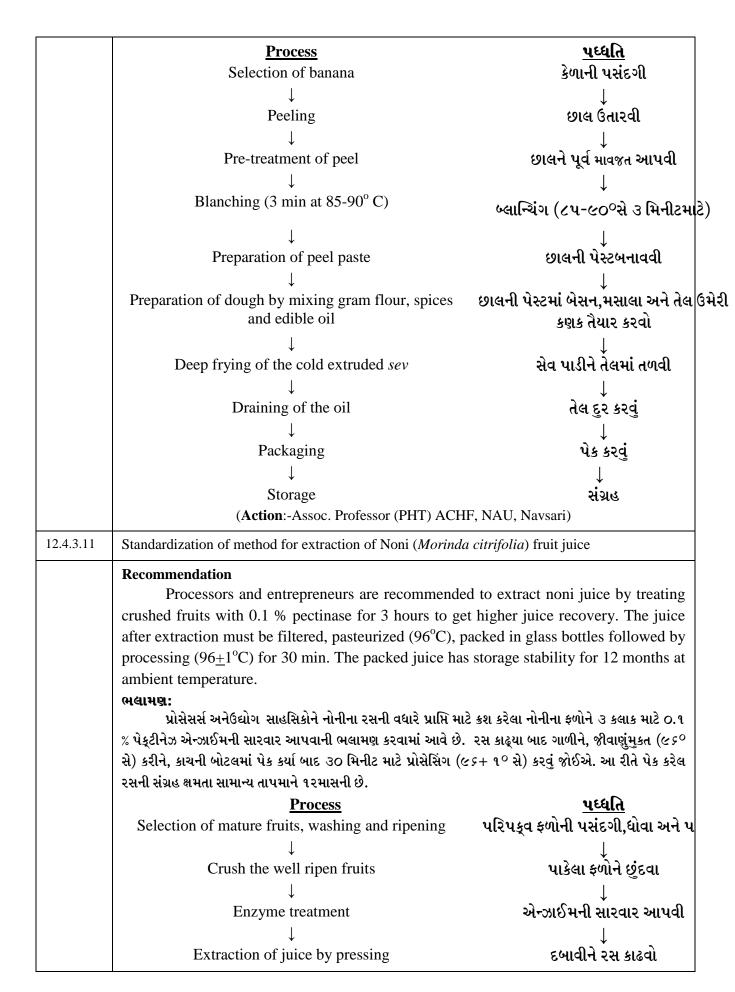
Recommendation:

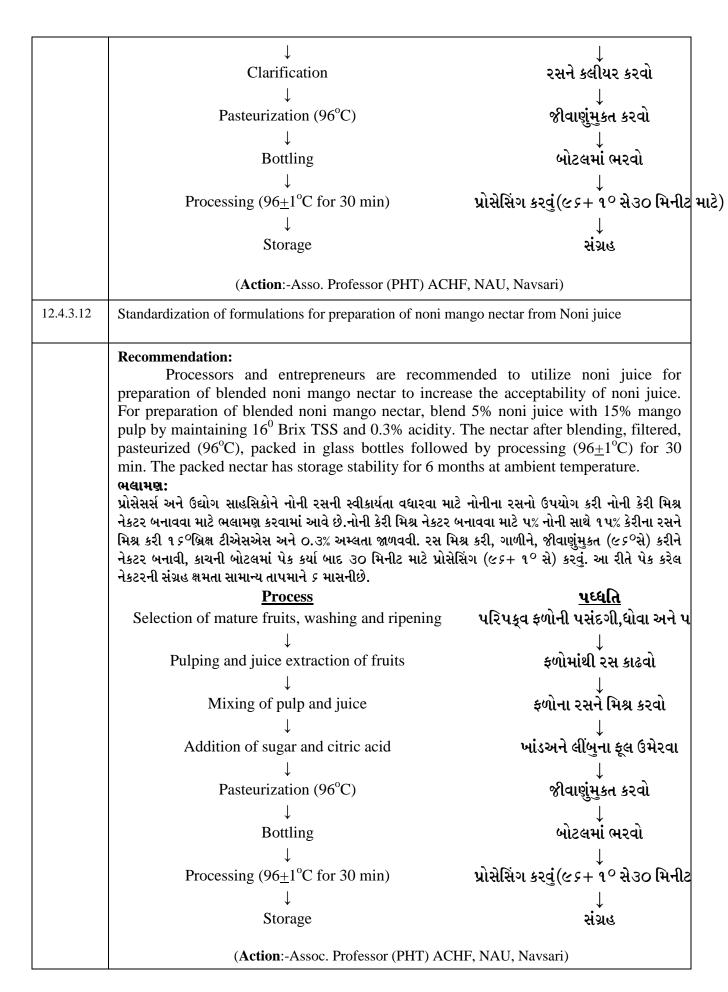
Home-makers, processors and entrepreneurs are recommended to utilize ripe banana peel for preparation of *sev*. Ripe banana peel must be pre-treated immediately to prevent enzymatic browning by dipping in 2% salt (NaCl) solution along with 100 ppm ascorbic acid for 30 min.. After pre-treatment, banana peel must be blanched, grind to make paste and mixed(30% ripe banana peel paste) with gram flour (70%) for preparation of fibre rich *sev*. The recipe for the preparation of ripe banana peel based *sev* comprised of 30 g ripe banana peel paste, 70 g gram flour, 2.5 g common salt, 1.5 g chilli powder, 0.75 g white pepper powder, 1.0 g turmeric powder, 2.5 g coriander powder and 5 ml edible oil.

ભલામણ:

આથી ગૃહિણીઓ, પ્રોસેસરો અને ઉદ્યોગ સાહિસકોને ભલામણ કરવામાં આવે છે કે પાકા કેળાની છાલનો સેવ બનાવવા માટે ઉપયોગ કરી શકાય છે. પાકા કેળાની છાલનું એન્ઝાયમેટીક બ્રાઉનીંગ અટકાવવા માટે તરત જ ર% મીઠું અને ૧૦૦પીપીએમ એસ્કોર્બીક એસીડ ના દ્રાવણમાં ૩૦ મિનિટ સુધી પૂર્વ માવજત આપવી જ જોઈએ. પૂર્વ સારવાર બાદ બ્લાન્ચિંગ કરી, પેસ્ટ બનાવીને (૩૦% પાકા કેળાની છાલની પેસ્ટ) અને બેસન (૭૦%) મિશ્ર કરી રેસાયુકત સેવ બનાવી શકાય છે.પાકા કેળાની છાલ આધારિત સેવ બનાવવા માટેની રેસીપી નીચે મુજબ છેઃ

૩૦ ગ્રામ પાકા કેળાની છાલની પેસ્ટ, ૭૦ ગ્રામ બેસન, ૨.પગ્રામ મીઠું, ૧.પગ્રામ મરચુ પાવડર, ૦.૭પગ્રામ સફેદ મરી પાવડર, ૧.૦ ગ્રામ હળદર પાવડર, ૨.પગ્રામ ધાણા પાવડર અને પમિલીખાદ્ય તેલ.

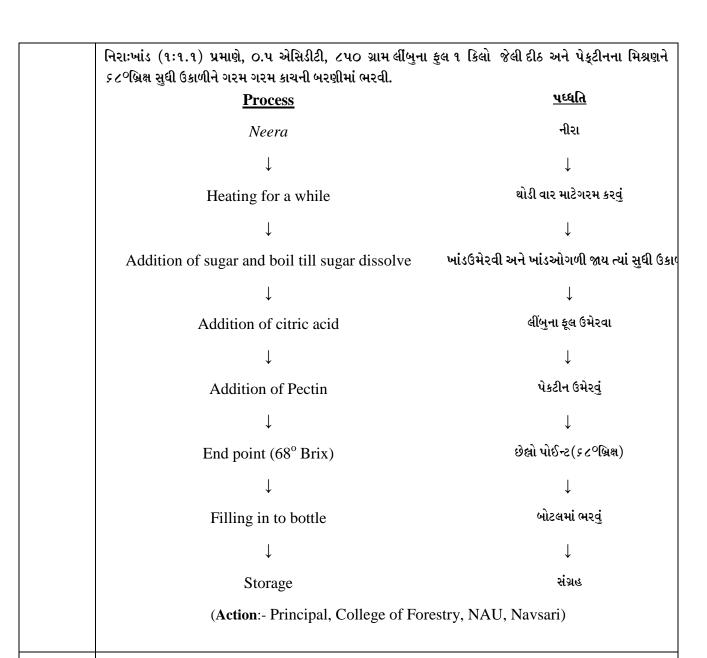




12.4.3.13	Evaluation and modification of banana comb cutter				
	Recommendation:				
	The farmers growing banana are recommended to use banana comb cutter developed by ICAR – CIPHET with the NAU developed safety cover (340 mm x 220 mm) to separate comb from banana bunch.				
	કેળની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે કેળાની લુમમાંથી કેળાનું ઝુમખુ અલગ કરવા આઈસીએઆર-સીફેટ દ્વારા વિકસાવેલ ઓજાર અને ન.કૃ.યુ. દ્વારા વિકસાવેલ રક્ષણાવરણ (૩૪૦ એમ.એમ.				
	૨૨૦ એમ.એમ.) સાથે ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે.				
	Suggestions:				
	1. This would be presented in the Agricultural Engineering Subcommittee group meeting.				
	(Action:-Assoc. Professor (PHT) ACHF, NAU, Navsari)				
	Centre: Department of Agroforestry, ACHF, NAU, Navsari				
12.4.3.14	Investigation on tree ring analysis (Dendrochronology) to monitor radial growth responses of teak to climate in South Gujarat				
	Recommendation for Scientific Community: It is informed to the scientific community and state forest department that the mean ring-width-index chronologies of teak developed for Navsari from AD 1991-2015, Valsad from AD 1867-2012 and Dang from 1912-2012 of South Gujarat are useful in reconstruction of past climate mainly the rainfall patterns during drought years. Furthermore, it also indicates the major El Niño and drought years of India. These ring-width-index chronologies developed for the particular time periods at the three sites are also helpful in determining the unknown year in which the teak tree was felled.				
	Recommendation for Farmers: To enhance the radial growth in teak (<i>Tectona grandis</i> L.), the farmers of South Gujarat Heavy Rainfall Agro-climatic Zone-1 (AES-I & III) growing teak in their plantations may give light irrigation during March and normal irrigation during peak growth period from June to July, especially, when there is a moisture stress due to deficient rainfall. ખેડૂતો માટે ભલામણ: દક્ષિણ ગુજરાત ભારે વરસાદીય ઝોન -૧, ખેત આબોહવાકીય પરિસ્થિતિ-૧ અને ૩ માં સાગ (ટેકટોના ગ્રાન્ડીસ એલ.) ની				
	ખેતી કરનારા ખેડૂતોને ભલામણ કરવામાં આવે છે કે સાગનો સારો ધેરાવો અને સારો વિકાસ મેળવવો હોય તો માર્ચ માસ દરમ્યાન હલકુ પિયત આપી શકાય. જયારે જુન–જુલાઈ માસમાં તેનો વિકાસ સારો થવાનો હોઈ, જો અપુરતો વરસાદ થાય તો, સામાન્ય પિયત આપવાથી ભેજ ના અભાવથી થતા તણાવની અસર ધટાડી શકાય.				
	(Action:- Principal, College of Forestry, NAU, Navsari)				
12.4.3.15	Performance of turmeric (<i>Curcuma longa</i>) grown as an intercrop under different tree species in South Gujarat conditions				
	Recommendation for farmers: The farmers of South Gujarat heavy rainfall zone – I (AES- III) growing <i>Mitragyna parvifolia</i> (Kalam), <i>Adina cordifolia</i> (Haldu) and <i>Gmelina arborea</i> (Sevan) at 10 X 2.5 m spacing are advised to grow Turmeric Variety – Sugandham planted at 30 x 15 cm spacing having 19 rows as an intercrop in plantation of <i>Gmelina arborea</i> (Sevan) for additional income.				

	ખેડૂતો માટે ભલામણ: દક્ષિણ ગુજરાતના ભારે વરસાદીય ઝોન – ૧, ખેત આબોહવાકીય પરિસ્થિતી ૨.૫ મીટરે ઉછેરતા ખેડુતોને ભલામણ કરવામાં આવે છે કે હળદરની જાત સુ રોપીને સેવનના વૃક્ષની સાથે આંતર પાક તરીકે લેવાથી વધારાની આવક મેળવી (Action:- Principal, College of Fore	ગંધમને ૩૦ × ૧૫ સેમી. ના અંતરે ૧૯ જેટલી હાર શકાય છે.			
12.4.3.16	Standardization of the recipe for the preparation of a palm	candy from the fruits of Palmyra			
	Recommendation for farmers: Home Makers, processors and entrepreneurs are recommended that, candy from the fruits of Palmyra palm can be prepared by steeping the slices (5cm x 5mm) in sugar syrup having 65% TSS for 8 hours followed by drying of slices for 7 hours at 65°C and packed in PE pouches can be stored successfully up to six month at ambient storage.				
	ભલામણ:				
	આથી ગૃહિણીઓ, પ્રોસેસરો અન ેઉદ્યોગ સાહસિકોને ભલામ ણ કરવામાં આવે છે કે, કે તાડફળી				
	(ગલેલી)માંથી કેન્ડી ૬૫% ટીએસએસ વાળી ખાંડની ચાસણીમાં ગલેલી બોળીને ૭ કલાક માટે ૬૫ ^૦ સે પર સૂકવણી કરી તૈયાર કરી શકાય છ સફળતાપૂર્વક સંગ્રહ કરી શકાય છે .				
	Process	પઘ્ધતિ			
		404III			
	Selection of Fruits	યુવ્યાહ ફળોની પસંદગી			
	Selection of Fruits ↓	—— ફળોની પસંદગી ↓			
					
	Selection of Fruits Peeling	ફળોની પસંદગી ↓ છાલ ઉતારવી ↓			
	Selection of Fruits ↓	——- ફળોની પસંદગી ↓			
	Selection of Fruits Peeling Slicing (5cm x 5mm)	ફળોની પસંદગી ↓ છાલ ઉતારવી ↓			
	Selection of Fruits Peeling	કળોની પસંદગી ↓ છાલ ઉતારવી ↓ સ્લાઈસ બનાવવી (પ સેમિx પ મિમિ)			
	Selection of Fruits Peeling Slicing (5cm x 5mm)	—— ફળોની પસંદગી ↓ છાલ ઉતારવી ↓ સ્લાઈસ બનાવવી (પ સેમિx પ મિમિ)			
	Selection of Fruits Peeling Slicing (5cm x 5mm) Preparation of sugar syrup (75° Brix) Steeping of slices (24 hrs)	——- ફળોની પસંદગી ↓ છાલ ઉતારવી ↓ સ્લાઈસ બનાવવી (પ સેમિx પ મિમિ) ખાંડની ચાસણી બનાવવી (૬પ ^૦ બ્રિક્ષ) ↓ સ્લાઈસને ચાસણીમાં ડૂબાડવી (૮કલાક) ↓			
	Selection of Fruits Peeling Slicing (5cm x 5mm) Preparation of sugar syrup (75° Brix)	—— ફળોની પસંદગી ઇગલ ઉતારવી ↓ સ્લાઈસ બનાવવી (પ સેમિx પ મિમિ) ખાંડની ચાસણી બનાવવી (૬પ ^૦ બ્રિક્ષ) ↓			
	Selection of Fruits Peeling Slicing (5cm x 5mm) Preparation of sugar syrup (75° Brix) Steeping of slices (24 hrs) Draining of syrup	કળોની પસંદગી ઇલ ઉતારવી ↓ સ્લાઈસ બનાવવી (પ સેમિx પ મિમિ) ખાંડની ચાસણી બનાવવી (૬પ ^૦ બ્રિક્ષ) ↓ સ્લાઈસને ચાસણીમાં ડૂબાડવી (૮કલાક) ↓ ચાસણી દુર કરવી			
	Selection of Fruits Peeling Slicing (5cm x 5mm) Preparation of sugar syrup (75° Brix) Steeping of slices (24 hrs)	કળોની પસંદગી ↓ છાલ ઉતારવી ↓ સ્લાઈસ બનાવવી (પ સેમિx પ મિમિ) ખાંડની ચાસણી બનાવવી (૬પ ^૦ બ્રિક્ષ) ↓ સ્લાઈસને ચાસણીમાં ડૂબાડવી (૮કલાક) ↓			
	Selection of Fruits Peeling Slicing (5cm x 5mm) Preparation of sugar syrup (75° Brix) Steeping of slices (24 hrs) Draining of syrup	કળોની પસંદગી ઇલ ઉતારવી ↓ સ્લાઈસ બનાવવી (પ સેમિx પ મિમિ) ખાંડની ચાસણી બનાવવી (૬પ ^૦ બ્રિક્ષ) ↓ સ્લાઈસને ચાસણીમાં ડૂબાડવી (૮કલાક) ↓ ચાસણી દુર કરવી			
	Selection of Fruits Peeling Slicing (5cm x 5mm) Preparation of sugar syrup (75° Brix) Steeping of slices (24 hrs) Draining of syrup Drying (65° C for 7hrs)	ફળોની પસંદગી ↓ છાલ ઉતારવી ↓ સ્લાઈસ બનાવવી (પ સેમિx પ મિમિ) ખાંડની ચાસણી બનાવવી (દ્રપ ^૦ બ્રિક્ષ) ↓ સ્લાઈસને ચાસણીમાં ડૂબાડવી (૮કલાક) ↓ ચાસણી દુર કરવી ↓ સુકવણી (દ્રપ° સે ૭ કલાક માટે) ↓			
	Selection of Fruits Peeling Slicing (5cm x 5mm) Preparation of sugar syrup (75° Brix) Steeping of slices (24 hrs) Draining of syrup Drying (65° C for 7hrs)	ફળોની પસંદગી ↓ છાલ ઉતારવી ↓ સ્લાઈસ બનાવવી (પ સેમિx પ મિમિ) ખાંડની ચાસણી બનાવવી (દ્રપ ^૦ બ્રિક્ષ) ↓ સ્લાઈસને ચાસણીમાં ડૂબાડવી (૮કલાક) ↓ ચાસણી દુર કરવી ↓ સુકવણી (દ્રપ° સે ૭ કલાક માટે) ↓			

12.4.3.17	Standardization of the recipe for the preparation of jam from the fruits of Palmyra palm				
	Recommendation for farmers:- Home Makers, processors and entrepreneurs ar fruits of palmyra palm can be prepared by using pulp: 16g/kg of pulp and it also can be stored for six months	sugar ratio (1:1.2) and addition of pecti			
	ભલામણ:- આથી ગૃહિણીઓ, પ્રોસેસરો અને ઉદ્યોગસાહસિકોને ભલાગ માવોઃખાંડનું પ્રમાણ (૧:૧.૨) અને ૧૬ ગ્રામ પેકટીન પ્રતિ કિલો માવ ઉકાળીને જામ બનાવી શકાય છે તેમજ તેને કાચની બરણીમાં પેક કરીને છે.	ાા દિઠ ઉમેરીને મિશ્રણને <i>૬</i> ૫ ^૦ બ્રિક્ષ ટીએસએસ સુ			
	Process	<u>પઘ્ધતિ</u>			
	Selection of Fruits	ડુંગળીની પસંદગી			
	↓ Peeling	↓ છાલ ઉતારવી			
	↓ Slicing (5cm x 5mm)	↓ સ્લાઈસ બનાવવી (પ સેમિx પ મિમિ)			
	Preparation of sugar syrup (75° Brix)	ખાંડની ચાસણી બનાવવી (<i>૬</i> ૫ ^૦ બ્રિક્ષ)			
	Steeping of slices (24 hrs)	↓ સ્લાઈસને ચાસણીમાં ડૂબાડવી (૮કલાક)			
	↓ Draining of syrup	↓ ચાસણી દુર કરવી			
	Drying (65° C for 7hrs)	↓ સુકવણી (૬૫ ^૦ સે ૭ કલાક માટે)			
	↓ Packing	↓ પેકિંગ			
	↓ Storage	↓ સંગ્રહ			
	(Action:- Principal, College of For	restry, NAU, Navsari)			
2.4.3.18	Standardization of the recipe for the preparation of jelly from the Neera of Palmyra palm				
	Recommendation:- Home Makers, processors and entrepreneurs are recommended that jelly from the <i>Neera</i> can be prepared by using pectin 13 g/kg of <i>Neera</i> and can be safely stored for six months Recipe should be <i>Neera</i> :sugar (1:1.1), 0.5% acidity (50 g citric acid per kg of jelly) and pectin Boil the mixture till 68°Brix followed by hot filling in to glass bottle.				
	ભલામણ:- આથી ગૃહિણીઓ, પ્રોસેસરો અને ઉદ્યોગસાહસિકોને ભળ કિલો વાપરીને નીરામાંથી જેલી બનાવી શકાય છે તેમજ <i>૬</i> (છ) મા	•			



Effect of different tree species leaf leachate on germination and seedling growth of some vegetable crops

Recommendation for scientific community:

The leaf leachates of various tree species reduced germination and growth parameters of different vegetable crops in laboratory as well as in nursery condition. The percentage of inhibition was maximum in Eucalyptus as compared to other tree species leaf leachates in laboratory as well as in nursery condition. Moreover the percentage of inhibition was minimum in Teak. The different vegetable crops have different mode of inhibition during the study. In both the growing conditions Brinjal (*Solanum melongena*), Okra (*Abelmoschus esculentus*) and Tomato (*Lycopersicon esculentum*) performed better for all parameters under study for the respective years of investigation while, V₅: Chilli (*Capsicum anum*) performed poor for all the parameters under study. In case of leachates concentration, all the parameters under study were decreased as the concentration of leaf leachates increased in both the growing conditions. This response showed concentration dependent phenomenon as highest inhibitory effects were observed with 20 % leaf leachate concentration of all the tree species.

(Action:- Principal, College of Forestry, NAU, Navsari)

Sardarkrushinagar Dantiwada Agricultural University, S.K. Nagar

	Centre/ Station/ Department
	Centre: Department of Horticulture; C. P. College of Agriculture; SDAU; Sardarkrushinagar
12.4.4.1	Effect of different levels of Nitrogen and methods of application on growth, yield and quality of Garlic (<i>Allium sativum L.</i>)
	Recommendation for farmers: Farmers of North Gujarat growing garlic under sprinkler irrigation system are advised to fertilize their crop with 125: 50: 50 kg NPK per hectare. Out of that 25 kg Nitrogen, 50 kg Phosphorus and 50 kg Potash should be applied as basal dose while remaining 100 kg Nitrogen in four equal splits of 25 kg each should be given at 30, 50, 70 and 90 DAS in order to obtain maximum yield and net income.
	ખેડૂત ઉપયોગી ભલામણઃ ઉત્તર ગુજરાત વિસ્તારના ફુવારા પધ્ધતિથી લસણ ઉગાડતા ખેડૂતોને પાકમાં ૧૨૫–૫૦–૫૦ કિલો ના.ફો.પો. આપવાની ભલામણ કરવામાં આવે છે. જે પૈકી ૨૫ કિલો નાઈટ્રોજન ૫૦ કિલો ફોસ્ફરસ અને ૫૦ કિલો પોટાશ પાયાના ખાતર તરીકે અને નાઈટ્રોજનનો બાકીનો જથ્થો ૧૦૦ કીલોગ્રામના ચાર સરખા હપ્તામાં વાવેતરના ૩૦, ૫૦, ૭૦ અને ૯૦ દિવસ પછી આપવો.
	(Action: Professor, Dept. of Horticulture, CPCA, SDAU, Sardarkrushinagar)
12.4.4.2	Multilocation trial to study the performance of different varieties and hybrids of mango
	Recommendation for farmers: Farmers of North Gujarat are recommended to grow Amrapali or Langra or Kesar variety of mango to get higher net return
	ખેડૂત ઉપયોગી ભલામણ : ઉત્તર ગુજરાત ના ખેડૂતોને વધુ ચોખ્ખો નફો મેળવવા માટે આંબાની આમ્રપાલી અથવા લંગડા અથવા કેસર જાત વાવવાની ભલામણ કરવામાં આવે છે.
	(Action: Professor, Dept. of Horticulture, CPCA, SDAU, Sardarkrushinagar)
12.4.4.3	Performance of different varieties and time of planting in Marigold (<i>Tagetes erecta</i> Linn.) for growth, yield and quality parameters.
	Recommendation for farmers: Marigold growing farmers of North Gujarat are recommended to grow the Pusa Narangi Gainda or Pusa Basanti Gainda varieties in September to obtain the maximum yield and higher net return.
	ખેડૂત ઉપયોગી ભલામણ : ઉતર ગુજરાતમા ગલગોટા ની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે સપ્ટેમ્બર માસમાં પુસા નારંગી ગેંદા અથવા પુસા બસંતી ગેંદા જાતનુ વાવેતર કરવું.
	(Action: Professor, Dept. of Horticulture, CPCA, SDAU, Sardarkrushinagar)

12.4.4.4 Effect of foliar application of plant growth substances on multiplication of pomegranate through cutting in plug tray under control condition.

Recommendation for farmers:

The growers and nurserymen growing pomegranate cv. Bhagwa are advised to use sub-apical cutting after three days of spray of ethrel 1000 ppm (1 ml/l water) on mother plant, cutting should be treated with 2000 ppm IBA as quick dip method and planted in plug tray to get higher survival per cent under control condition.

ખેડૂત ઉપયોગી ભલામણ :

દાડમની ભગવા જાત ઉગાડતા ખેડૂતો અને નર્સરી ધારકોને ભલામણ કરવામાં આવે છે કે માતૃછોડ ઉપર ૧૦૦૦ પીપીએમ (૧ એમ. એલ./લી. પાણી) ઈથરલનો છંટકાવ કરી ત્યારબાદ ત્રણ દિવસ પછી ડાળીના કટકા લઈ તેને ૨૦૦૦ પીપીએમ આઈબીએમના દ્રાવણમાં બોળી ગ્રીનહાઉસમાં પ્લગ ટ્રેની અંદર લગાવવાથી વધુ સફળતા મળે છે.

(Action: Principal, College of Horticulture, SDAU, Sardarkrushinagar)

12.4.4.5 Effect of different shoot portion and media on multiplication of pomegranate in plug tray under control condition.

Recommendation for farmers:

The growers and nurserymen growing pomegranate cv. Bhagwa are advised to use Vermiculite:Poultry Manure (1:1) + *Pseudomonas fluorescens* @ 50ml/10 kg media in plug tray for cuttings taken from the 30 cm below part of top to obtain maximum survival under control condition. Cutting should be treated with 2000 ppm IBA as quick dip method.

ખેડૂત ઉપયોગી ભલામણ :

દાડમની ભગવા જાત ઉગાડતા ખેડૂતો અને નર્સરીધારકોને ભલામણ કરવામાં આવે છે કે પ્લગટ્રેમા વર્મીકયુલાઈટ : મરઘીનું ખાતર (૧:૧) સાથે સુડોમોનાસ ફ્લુરોસન્સ (૫૦ એમએલ/૧૦ કિલો માધ્યમ)નો માધ્યમ તરીકે ઉપયોગ કરી તેમાં ડાળીઓની ટોચથી ૩૦ સેમી નીચેના ભાગમાંથી લીઘેલ કટકાને ૨૦૦૦ પીપીએમ આઈબીએમના દ્રાવણની માવજત આપી ગ્રીનહાઉસમાં લગાવવાથી વધુ સફળતા મળે છે.

(Action: Principal, College of Horticulture, SDAU, Sardarkrushinagar)

12.4.4.6 Effect of levels of IBA and different media on multiplication of ixora (*Ixora spp.*) through apical cutting in plug tray under control condition.

Recommendation for farmers:

The nurserymen are advised to use vermiculite:poultry manure (1:1) as a media + *Trichoderma viride* @ 50 g/10 kg media in plug tray and dip the apical cutting with IBA of 5000 ppm (5 g/l water) to get maximum survival of ixora (*Ixora spp.*) under controlled conditions.

ખેડૂત ઉપયોગી ભલામણ :

નર્સરી ધારકોને સલાહ આપવામા આવે છે કે ગ્રીનહાઉસમાં ઈકઝોરા ના કટકા કલમથી છોડ ઉછેર માટે વર્મીકયુલાઈટ : મરઘીનું ખાતર (૧:૧) માધ્યમ તરીકે ઉપયોગ કરી તેમાં ટ્રાયકોડર્મા વીરીડી (૫૦ ગ્રામ/૧૦ કિલો માધ્યમ) ભેળવી પ્લગટ્રેમા ભરીને ડાળીના ટોચના ૧૦ સેમીના ટુકડાને ૫૦૦૦ પીપીએમ (૫ ગ્રામ/લી. પાણી) આઈબીએ ના દ્રાવણમાં ડૂબાડીને લગાવવાથી વધારે સફળતા મળે છે.

(Action: Principal, College of Horticulture, SDAU, Sardarkrushinagar)

12.4.4.7	Effect of GA ₃ and time of seed soaking on germination of sandalwood (<i>Santalum album</i> L.)	
	in plug tray under control condition.	
	Recommendation: Sandalwood growers and nurserymen are advised to soak the seeds with 500 ppm (0.5 g/l water) gibberellic acid (GA ₃) for 24 hours to get better germination under control condition.	
	ખેડૂત ઉપયોગી ભલામણઃ ચંદન ઉગાડતા ખેડૂતો અને નર્સરીધારકોને ભલામણ કરવામાં આવે છે કે ચંદનના બીજને ૫૦૦ પીપીએમ (૦.૫ ગ્રામ/લી. પાણી) જીબ્રેલીક એસીડ (જીએ૩) ના દ્રાવણમાં ૨૪ કલાક સુધી ડુબાડી રાખીને ગ્રીનહાઉસમાં પ્લગ ટ્રેની અંદર વાવવાથી બીજનો ઉગાવો સારો થાય છે.	
	(Action: Principal, College of Horticulture, SDAU, Sardarkrushinagar)	
	Centre: Agroforestry Research Station; SDAU; Sardarkrushinagar	
	Effect of various levels of IBA on rooting in semi-hard wood cutting of Olive (<i>Olea europaea</i>) under net house conditions.	
	Recommendation for the scientific community: It has been observed that semi hard wood cutting of olive treated with 2500 to 3000 ppm solution of IBA and planting in cocopeat gives maximum survival percentage under net house condition.	
	(Action: Research Scientist, Agroforestry Res. Station, SDAU, Sardarkrushinagar)	

B. Recommendation for Scientific community

New Technical Programmes

AAU

Sr.	Title/ centre	Suggestions	Remarks
No	Centre: - Department of Horticulture, BA	ACA, AAU	
1	Effect of different organics manures on	Accepted with following suggestion/s	
	growth, yield and quality of sapota	1. Mention Canopy volume in	
	(Manilkara achras L.)	observations to be recorded	
		2. Recast the title "Effect of different	
		organic manures and PGPR consortium on	
		growth, yield and quality of sapota (Manilkara	
		achras L.) ev. Kalipatti"	
		3. Recast objectives	
		(Action : - Professor & Head	
		(Horticulture), BACA, AAU, Anand	
2	High density plantation and canopy	Accepted with following suggestion/s	
	management in mango cv. Kesar	1. Experiment should be laid out in <i>In situ</i>	
		planting	
		(Action : - Professor & Head	
		(Horticulture), BACA, AAU, Anand	

3	High density plantation and prunning in	Accepted with following suggestion/s	
	guava cv. Allahabad Safeda	1. Remove T ₃ treatment from treatments	
		(May, February)	
		(Action : - Professor & Head	
		(Horticulture), BACA, AAU, Anand	
4	Effect of different plant spacing on growth	Accepted with following suggestion/s	
	& yield of capsicum under open ventilated	1. Remove cvs. from title and name of	
	poly house cv. Arka Gaurav/IIHR variety	variety in Experimental details (IIHR variety/	
		Indra)	
		(Action : - Professor & Head	
		(Horticulture), BACA, AAU, Anand	
Ce	entre: College of Horticulture (Wing), BACA,	AAU, Anand	
	Nutrient management through organics in	Accepted with following suggestion/s	
	onion as intercrop in sapota orchard	1. Total sugar in observations to be	
5		recorded instead of Total soluble sugar (%)	
		(Action : - Professor and OSD	
		Horticulture college, AAU, Anand)	
Ce	ntre : TRTC, AAU, Devgadh Baria		
	Nutrient management through fertigation	Accepted as such	
6	on green fruit yield of chilli (Capsicum		
	annuum L.) under middle Gujarat conditions	(Action : - Research scientist, TRTC,	
		AAU, Devgadh Baria	

JAU

Sr. No.	Title/Centre	Suggestions	Remar ks
	Centre: Department of Horticulture, JA	U, Junagadh	
1	Effect of various concentrations of multi micronutrients (Grade-IV) on growth, yield and quality in pomegranate (<i>Punica granatum</i> L.) cv. Bhagava.	Accept with following suggestions 1. Remove number of aril per fruit and fresh and dry weight from observations 2. Add physiological disorder (Fruit cracking) in observations 3. Correct name of cultivar as Bhagava (Action: Professor and Head, Dept. of Horticulture, JAU, Junagadh)	
2	Evaluation of different varieties of guava and its genotypes under meadow plantation.	Accept with following suggestions 1.Recast title (HDP instead of meadow) 2. Remove locules / pulp weight observation from observations (Action: Professor and Head Dept. of Horticulture, JAU, Junagadh)	
3	Effect of polyamines on storage life of mango (Mangifera indica L.) cv. Kesar	Accept with following suggestions 1. Recast the title – Effect of polyamines on quality and shelf life of mango (<i>Mangifera indica</i> L.) cv. Kesar 2. Use shelf life instead of storage life in observations. (Action: Professor and Head, Dept. of Horticulture, JAU, Junagadh)	

	Centre: Agricultural Research Station,	JAU, Mahuva	
4.	Feasibility of organic farming in	Accept with following suggestions	
	pomegranate (Punica granatum L.) under	1. Remove inorganic word from	ı
	saline water irrigation condition.	objectives	ı
		2. Correct name of cultivar as Bhagava	i
		(Action: Research Scientist, ARS, JAU, Mahuva)	

NAU

Sr.	Title/Centre	Suggestions	Remarks
No.	Centre:- ASPEE College of Horticulture and Forestry, Navsari Fruit Science :		
1.	Pheno-physiological studies on regular and biennial bearing of mango	Accepted with following suggestion/s 1. Add Alphanso in biennial bearer 2. Remove No. of panicles / tree and flowering intensity from observations.	
		(Action:-Professor & Head (Fruit Science), ACHF, NAU, Navsari)	
2.	Effect of growth regulators on flowering and yield of sapota cv. Kalipatti	Accepted with following suggestion/s 1. Add GA_3 @ 100 mg/l as per previous recommendation (Control) 2. Remove S_4 and S_8 treatments from treatments	
		(Action:-Professor & Head(Fruit Science), ACHF, NAU, Navsari)	
3.	Response of media, fertilizer and chemicals application on growth of mango rootstock	Accepted with following suggestion/s 1. Remove C : N Ratio	
		(Action:-Professor & Head(Fruit Science), ACHF, NAU, Navsari)	
4.	Effect of foliar application of fertilizers on yield and quality of sapota cv. Kalipatti.	Accepted with following suggestion/s 1. Add high density rejuvenate word in title 2. Take treatment T ₄ , T ₅ and T ₆ and its combinations. (Action:-Professor & Head(Fruit Science), ACHF, NAU, Navsari)	
5.	Feasibility of planting and pruning intensity of meadow orchard in guava cv. Lalit	Accepted with following suggestion/s 1. Add incidence of pest and diseases in observations. (Action:-Professor & Head(Fruit Science), ACHF, NAU, Navsari)	
6.	Impact of pre-soaking treatments on germination and growth of mango (Mangifera indica L.) stones	Accepted with following suggestion/s 1. Take S ₈ treatment as a common treatment 2. Design CRD 3. take stone of Kesar cultivar (Action:-Professor & Head(Fruit Science), ACHF, NAU, Navsari)	

7.	Evaluation of different biofertilizers with graded chemical fertilizers for nutrient management in papaya var. Red Lady Taiwan.	Approved as Such (Action:-Professor & Head(Fruit Science), ACHF, NAU, Navsari)	
8.	Intercropping studies under coconut orchard	Accepted with following suggestion/s 1. Remove Ber from treatments 2. Add Phalsa in treatments at a spacing of (1.25 x 1.25 m)	
		(Action:-Professor & Head(Fruit Science), ACHF, NAU, Navsari)	
9.	Effect of foliar application of plant growth regulators and novel organic liquid on growth, yield & quality of garlic (Allium sativum L.) var. GG-3	Not Approved (Action:-Professor & Head(Fruit Science), ACHF, NAU, Navsari)	
10.	Effect of tip pruning and foliar application of KNO ₃ on early flowering and yield of mango cv. Kesar	Accepted with following suggestion/s 1. Total treatment numbers (12+1 =13) (Action:-Principal Horticulture Polytechnic, ACHF, NAU, Navsari)	
11.	Standardization of stage wise requirement of nutrients in sapota cv. Kalipatti	Approved as such (Action:- Associate Research Scientist, FRS, NAU, Gandevi)	
12.	Evaluation of different rootstocks of mango for problematic soils	Accepted with following suggestion/s 1. Increase number of stones (3) per pit as <i>in situ</i> .	
		(Action:- Research Scientist, AES, NAU, Paria)	
13.	Varietal evaluation of different pineapple varieties under South Gujarat conditions	Accepted with following suggestion/s 1. Remove 4 th objective 2. Add Incidence of pest and diseases in observations (Action:- Research Scientist, AES, NAU, Paria)	
14.	Effect of different organic sources on yield and quality of banana under certified organic farm.	Accepted with following suggestion/s 1. Two successive green manuring (Action:-Associate professor (Agril. Chemistry), Organic farming Unit, ACHF, NAU, Navsari	
15.	Effect of organics and mineral sources on yield and quality of sapota [Manilkara achras (Mill.) Fosberg] cv. Kalipatti.	Accepted with following suggestion/s 1. Recast the title "Effect of organic and rock phosphate on yield and quality of sapota [Manilkara achras (Mill.) Fosberg] cv. Kalipatti." 2. In factor A - FYM @ 150 kg/tree instead of 200 kg/tree (Action:- Associate Professor (Horticulture), College of Agriculture, NAU, Bharuch)	

16. 17. 18.	Assessment of Genetic diversity in sweet potato [Ipomoea batatas (L.) Lam.] Genotypic × environment interaction and stability analysis for yield and quality components in Greater Yam (Dioscorea alata L.) Okra (YVMV) IET		
19.	Tomato (Determinate) AVT-I	House suggested to present in Crop	
20.	Tomato (Determinate) AVT-II	Improvement Sub-committee (Action:-Professor and Head (Vegetable Science) ACHF, NAU, Navsari)	
21.	Tomato (Indeterminate) IET		
22.	Chilli AVT – II		
23.	Pumpkin AVT-I		
24.	Bitter Gourd Hybrid- IET		
25.	Bitter Gourd Hybrid- AVT-I		
26.	Feasibility of tomato cultivation through grafting during rainy season Part 1: Evaluation of grafting techniques in tomato under NVPH Part 2: Comparative performance of grafts and non-grafts of tomato for growth, yield and related traits during rainy season	Accepted with following suggestion/s 1. Remove weight of grafted transplant from observations (Part 1) (Action:-Professor and Head (Vegetable Science), ACHF, NAU, Navsari)	
27.	Response of musk melon (Cucumis melo L.) to different levels of N and K fertigation for yield and other horticultural traits under NVPH	Accepted with following suggestion/s 1. Year of commencement is 2016-17 2. Take popular variety among the farmers (Action:-Professor and Head (Vegetable Science), ACHF, NAU, Navsari	

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28.	Preliminary Evaluation Trial (PET) on Tomato		
29.	Preliminary Hybrid Trial (PHT) on Tomato-I		
30.	Preliminary Hybrid Trial (PHT) on Tomato-II		
31.	Multi-location Trial (MLT) on Tomato		
32.	Preliminary Evaluation Trial (PET) on Brinjal		
33.	Preliminary Hybrid Trial (PHT) on Brinjal		
34.	Preliminary Hybrid Trial (PHT) on Okra	House suggested to present in Crop Improvement Sub-committee (Action: Professor and Head (Vegetable)	
35.	Collection and evaluation of cucumber (<i>Cucumis sativus</i> L.) genotypes suitable for cultivation in Southern Gujarat region	(Action:-Professor and Head (Vegetable Science) ACHF, NAU, Navsari)	
36.	Collection and Maintenance of Elephant Foot Yam (Amorphophallus paeoniifolius) germplasms for Evaluation as well as Selection of Superior Genotypes suitable for cultivation in Southern Gujarat region		
37.	Assessment of bush type Frenchbean (<i>Phaseolus</i> vulgaris) varieties suitable for the Dangs district.		
38.	Organic farming in Capsicum (<i>Capsicum annum</i> L.) under protected condition.	Accepted with following suggestion/s 1. Correct the commencement year 2016-17 (Action:- Associate Professor (Ag. Chem.), Organic Farm, NAU, Navsari	
39.	Organic Farming in Pointed Gourd (<i>Trichosanthes dioica</i> Roxb.).	Accepted with following suggestion/s 1. Add observation of wilt incidence 2. Days to first picking instead of days to 50 % flowering (Action:- Associate Professor (Ag. Chem.), Organic Farm, NAU, Navsari	
40.	Standardization of soil less media for brinjal plug tray nursery	Accepted with following suggestion/s 1. Add Survival % in observations (Action:- Principal Horticulture Polytechnic, AES, Paria)	

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41.	Induction of variability in spider lily (<i>Hymenocallis littorallis</i>) through chemical mutagens	Accepted with following suggestion/s 1. Mention cytological study in detail
		(Action:- Associate Professor (Floriculture), ACHF, NAU, Navsari)
42.	Induction of variability in spider lily (<i>Hymenocallis littorallis</i>) through colchicine	Accepted with following suggestion/s 1. Mention cytological study in detail
	treatment treatment	(Action:- Associate Professor (Flori.), ACHF, NAU, Navsari)
43.	Integrated nutrient management in rose (<i>Rosa chinensis</i> L.)	Approved as such
	III Tose (Rosa Chinensis L.)	(Action:- Associate Professor (Flori.), ACHF, NAU, Navsari)
44.	Collection and evaluation of local turfgrass germplasm of Gujarat	Accepted with following suggestion/s 1. Include seasonal effect in observation 2. Take Quality attributes of trfgrass in relation to season
		(Action:- Associate Professor (Flori.), ACHF, NAU, Navsari)
45.	Testing of new genotypes of China aster.	Approved as such (Action:- Associate Professor (Flori.), ACHF, NAU, Navsari)
46.	Standardization of packing techniques for flower strings of marigold.	Accepted with following suggestion/s 1. Correct Commencement of year 2016-17 (Action:- Associate Professor (Flori.), ACHF, NAU, Navsari)
47.	Standardization of postharvest treatment using boric acid and	Approved as such
	sodium benzoate for improving postharvest life of loose flowers of tuberose.	(Action:- Associate Professor (Flori.), ACHF, NAU, Navsari)
48.	Studies on use of food dyes for tinting in tuberose stems.	Accepted with following suggestion/s 1. Remove Control No-Dipping from factor -2 2. Correct Commencement of year 2016-17 (Action:- Associate Professor (Floriculture), ACHF, NAU, Navsari)
49.	Standardization of soilless based growing media for different varieties of potted <i>Euphorbia milli</i>	Approved as such (Action:- Associate Professor (Flori.), ACHF, NAU, Navsari)
50.	Influence of different seasons on plant growth, flower production and flower quality in rose variety "Top Secret" in	Accepted with following suggestion/s 1.Mention "First week of every month" in case of treatments (Action: Accepted With Following Suggestion/s (Action: Accepted with following suggestion/s
	soilless culture under protected condition.	(Action:- Associate Professor (Flori.), ACHF, NAU, Navsari)

51.	Standardization of Grafting	Accepted with following suggestion/s
	Technique in Adenium	Add Incremental height of scion in observations
		(Action:- Associate Professor (Flo.), ACHF, NAU, Navsari)
52.	Response of PGRs and cutting methods on vegetative growth of different varieties of bougainvillea (<i>Bougainvillea</i> spp.).	Not Approved (Action:- Professor (Horticulture), NMCA, NAU, Navsari)
53.	Response of different varieties and growing media on growth and yield of gladiolus (<i>Gladiolus grandiflorus</i> L.) in pot culture.	Not Approved (Action:- Associate Professor (Horticulture), College of Agriculture, Bharuch)
54.	Management of leaf blight of gerbera under poly house condition	Approved as such and present in Plant Protection Sub Committee (Action:- Associate Professor (Plant Pathology), ACHF, NAU, Navsari)
55.	Effect of chemicals on vase life of Gerbera cut flower Var. Tera Juba.	Accepted with following suggestion/s 1. Number of bend flowers instead of stem curvature in observations 2. Flower appearance as per RHS colour chart (Action:- Principal, Horticulture Polytechnic, AES, Paria)
56.	Standardization of technology for preparation of Aloe vera based vermicelli	Accepted with following suggestion/s 1. Increase size of sample 250 g instead of 100 g (Action:- Associate Professor & Head, PHT, NAU, Navsari)
57.	Standardization of technology for minimal processing of fresh cut cauliflower (<i>Brassica oleracea</i> var. botrytis L.). Experiment – 1: To study the effect of blanching and Calcium chloride (CaCl ₂) on texture of minimally processed cauliflower Experiment – 2: To study the effect of citric acid and KMS on quality of minimally processed cauliflower.	Approved as Such (Action:- Associate Professor & Head, PHT, NAU, Navsari)
58.	Standardization of technology for minimal processing of fresh cut potatoes (<i>Solanum tuberosum</i> L.)	Approved as Such (Action:- Associate Professor & Head, PHT, NAU, Navsari)

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59.	Standardization of technology for preparation of candy from ripe papaya (<i>Carica papaya</i> Linn.) fruits.	Approved as Such (Action:- Associate Professor & Head, PHT, NAU, Navsari)
60.	Standardization of technology for preparation of Tomato (Solanum lycopersicum L.) powder for home scale adoption	Not approved (Action:- Associate Professor & Head, PHT, NAU, Navsari)
61.	Development of technology for preservation of tender coconut water	Not approved (Action:- Associate Professor & Head, PHT, NAU, Navsari)
62.	Development of technology for health based digestive tablets from noni pomace powder.	Accepted with following suggestion/s 1. Remove health based word from the title (Action:- Associate Professor & Head, PHT, NAU, Navsari)
63.	Characterization of the Sapota seed oil for extraction and value addition	Not Approved (Suggested to take filler trial) (Action:- Associate Professor & Head, PHT, NAU, Navsari)
64.	Home scale ripening of Banana cv. Grand Naine	Approved as Such (Action:- Research Scientist, SWMRU, NAU, Navsari)
65.	Effect of pre-cooling on quality and shelf-life of Banana Cv. Grand Naine	Not approved (Action:- Associate Professor & Head, PHT, NAU, Navsari)
66.	Isolation, Characterization and filed efficacy of PGPRs from different banana cultivars	Approved in Basic Science Committee (Action:-Associate Professor, Department of Plant Molecular Biology and Biotechnology, ACHF, NAU, Navsari)
67.	Determination of Nutritional Composition of Minor Fruits	Accepted with following suggestion/s 1. Remove Chironji from crop and variety (Action:- I/C Professor & Head (FQTL), NAU, Navsari)
68.	Determination of critical limit of water salinity for <i>Ailanthus excelsa</i> Roxb. Seedlings	Accepted with following suggestion/s 1. Add local name of <i>Ailanthus excelsa</i> also in title 2. Add ESP in observation (Action:-Principal, College of Forestry, ACHF, NAU, Navsari)

69.	Development of volumetric equation for Teak (<i>Tectona grandis</i> L.) in South Gujarat	Accepted with following suggestion/s 1. Write derivation instead of development in title. (Action:-Principal, College of Forestry, ACHF, NAU, Navsari)
70.	Seed source variation for seed traits, germination and seedling vigour in <i>Cinnamomum verum</i> J. Presl	Accepted with following suggestion/s 1. Also collect possible accessions from FRS, Gandevi (Action:-Principal, College of Forestry, ACHF, NAU, Navsari)
71.	Metagenomic analysis of flooded rice ecosystem under climate change resilience	Not approved* 1. Present in Basic Science sub committee (Action:-Principal, College of Forestry, ACHF, NAU, Navsari)
72.	Evaluation of various <i>Poplar</i> clones for early Growth and Establishment under South Gujarat condition	Approved as such (Action:-Principal, College of Forestry, ACHF, NAU, Navsari)
73.	Evaluation of different Salix clones for early Growth and Establishment under South Gujarat condition	Approved as such (Action:-Principal, College of Forestry, ACHF, NAU, Navsari)
74.	Emission of N ₂ O and CH ₄ from forests soils.	Accepted with following suggestion/s 1. Add Co ₂ in observation (Action:-Principal, College of Forestry, ACHF, NAU, Navsari)
75.	Effect of different seed treatment and media on growth of Indian Cheese Maker - Withania coagulans (Stocks) Dunal	Approved as such (Action:-Principal, College of Forestry, ACHF, NAU, Navsari)
76.	Documentation of basic density and calorific value of different tree species of South Gujarat.	Approved as such (Action:-Principal, College of Forestry, ACHF, NAU, Navsari)
77.	Growth assessment of various kinds of fishes in fresh water.	Not Approved* Present this programme in Animal Science and Fisheries sub committee (Action:-Principal, College of Forestry, ACHF, NAU, Navsari)
78.	Establishment of plantations of minor fruit species for PG research	Not Approved (Action:-Principal, College of Forestry, ACHF, NAU, Navsari)

SDAU

S.N.	Title/ Centre	Suggestions	Remarks		
1	Title:	1 Not Approved			
	Evaluation of different propagules				
	of pomegranate for its biotic stress.				
		(Action: Principal, College of Horticulture,			
	Centre:	SDAU, Sardarkrushinagar)			
	Arid Horticulture Research				
	Station, SDAU, Sardarkrushinagar				
2	Title:	Accepted with following suggestion/s			
	Evaluation of different filling	1.Take Variety Barhee instead of Elite – 63 II			
	medias for offshoot of Date palm	2. Remove treatment No. 3 and 9			
		(1.41 A B G : DDDG 14 1.)			
3	Title:	(Action: Assoc. Res. Sci. DPRS, Mundra)			
3	Evaluation of different pollen	Approved as such			
•	mixtures (with inert materials) on	Approved as such			
	fruit set and yield of date palm cv.				
	Barhee/ Halawy				
	Barries Halawy	(Action: Assoc. Res. Sci. DPRS, Mundra)			
4	Title:	Accepted with following suggestion/s			
1.	Growth and biomass productivity	1. Write spacing as per treatment			
	of <i>Melia azadirach</i> in different	2. Correct plot size			
	densities in agroforestry system	•			
		(Action: Research Scientist, Agroforestry Res.			
		Station, SDAU, Sardarkrushinagar)			
5	Title:	Accepted with following suggestion/s			
	Eveluation of Melia varieties	1. Write species word in title instead of varieties			
	under agroforestry system for				
	biomass production under North	(Action: Research Scientist, Agroforestry Res.			
	Gujarat conditions	Station, SDAU, Sardarkrushinagar)			
6	Title:	Accepted with following suggestion/s			
	Fertilizer management in five	1. Remove five year old word from title			
	year old olive (Oleae europaea L.)	2. Mentioned age of plant in treatment details			
		(Action: Research Scientist, Agroforestry Res.			
7	Title.	Station, SDAU, Sardarkrushinagar)			
7	Title:	Accepted with following suggestion/s 1.Mention about pruning methodology			
'	High density planting in organic	2.Mention about pruning methodology			
	guava	2.1vicition about banar in methodology			
		(Action: Assistant Research Scientist, FRS,			
		SDAU, Dehgam)			
8	Title:	Accepted with following suggestion/s			
	High density planting in organic	1. Mention about pruning in methodology			
	Mango	2. Design FRBD			
		(Action: Assistant Research Scientist, FRS,			
		SDAU, Dehgam)			

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

Chairman	Dr. N C Patel, Hon. VC, AAU		
Rapporteurs	Dr. P K Shrivastava, NAU		
	Dr. R V Prasad, AAU		

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

Departments/	No. of Recommendations				No. of New Technical	
Discipline	Farmer / Industry		For Scientific Community		Programmes	
Universities	Propose d	Approved	Proposed	Approved	Proposed	Approved
AAU	24	24	14	14	41	39
JAU	5	4	3*	4*	8	8
NAU	14	9	1	1	27	23
SDAU	0	0	0	0	10	10
Kamdhenu	0	0	0	0	1	1
Grand Total	43	37	18*	19*	87	81

^{*}One recommendation proposed for farmer community is approved for scientific community

12.5.1 RECOMMADATIONS

A - FARMING / INDUSTRY COMMUNITY

ANAND AGRICULTURAL UNIVERSITY

12.5.1.1

Development and evaluation of a multipurpose tool bar for mini tractor suitable for the cropping pattern of middle Gujarat region

A mini tractor (15-20 HP) drawn multipurpose tillage tool developed by Anand Agricultural University is suitable for seed bed preparation at wapsa conditions under sandy loam soil of Middle Gujarat Agro-climatic zone in a single operation. The implement consisting of iron ploughs for tillage and clod crusher for breaking clods is useful for preparation of seed bed in a single pass with a saving of upto 50% in the cost of operation as compared to the cultivator. Therefore it is recommended for farmers of the region to prepare the seedbed by using the developed implement.

આણંદ કૃષિ યુનિવર્સિટી દ્વારા મીની ટ્રેક્ટરથી (૧૫-૨૦ હો.પા.) યાલતું ખેડ કરવા માટેનું બહુલક્ષીય સાધન વિકસાવવામાં આવ્યુ છે જેના વડે મધ્ય ગુજરાત એગ્રો ક્લાઇમેટીક ઝોનમાં આવેલ ગોરડું જમીનમાં વરાપની અવસ્થાએ એકીસાથે વાવણી લાયક જમીન તૈયાર કરી શકાય છે અને કલ્ટીવેટર કરતાં ખર્ચમાં આશરે ૫૦ ટકા જેટલી બયત થાય છે. આ સાધનમાં ખેડ માટે લોખંડના હળ તેમજ ઢેફા ભાંગવા માટે ક્લોડ ક્શર લગાડવામાં આવ્યા છે જેથી એકજ ઓપરેશનમાં વાવણી લાયક

જમીન તૈયાર થતી હોવાથી ખેડૂતોને આ સાધનનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે.

(Action: PI/HOD/Principal, CAET, Godhra)

12.5.1.2

Modification of three point linkage system of medium tractor drawn sowing machine to operate by mini tractor

By modifing the three point hitching system of the sowing machines designed for medium size tractor (35-40 HP) it can be easily operated by the mini tractor (15-20 HP) and saving upto 20 % in sowing operation can be achieved as compared to the medium sized tractor. A 100 kg front ballasting in the mini tractor will be required. The manufacturers of the seed drill are advised to follow the hitching specifications given below for fabrication of the new seed drill so that the machine can be operated by the mini tractor also: (1) Maximum distance between lower hitching points have to be set in the range of 60-70 cm and (2) Vertical distance between top hitching point and lower hitching point have to be set in the range of 50-60 cm.

મધ્યમ સાઈઝના ટ્રેક્ટરથી (૩૫-૪૦ હો.પા.) યાલતા વાવણી યંત્રોંના થ્રી પોઈન્ટ હિચિંગ સિસ્ટમમાં ફેરફાર કરવાથી આ જ વાવણી યંત્રોને મીની ટ્રેક્ટરમાં (૧૫-૨૦ હો.પા.) આગળ ના ભાગે ૧૦૦ કિલો વજન મૂકી (ફ્રન્ટ બાલાસ્ટિંગ કરી) સહેલાઇથી ચલાવી શકાય છે. આમ વાવણી ના ખર્ચમાં પણ મધ્યમ ટ્રેક્ટર થી યાલતા વાવણી ના યંત્રો કરતાં આશરે ૨૦ ટકા જેટલી બયત કરી શકાય. ટ્રેક્ટરથી યાલતા વાવણી માટે ના યંત્રોં ના ઉત્પાદકોને સલાહ આપવવામાં આવે છે કે વાવણી ના યંત્રોનું હિચિંગ નીચે આપેલ માપ મુજબ રાખવામાં આવે તો મધ્યમ ટ્રેક્ટર દ્વારા સંયાલિત વાવણી યંત્રોંને મીની ટ્રેક્ટરથી પણ યલાવી શકાય: (૧) લોઅર હિચિંગ પોઈન્ટ વચ્ચે મહત્તમ ૬૦ - ૭૦ સેમી. નું અંતર અને (૨) ટોપ હિચિંગ પોઈન્ટ અને લોઅર હિચિંગ પોઈન્ટ વચ્ચે વર્ટિકલ અંતર ૫૦ - ૬૦ સેમી. રાખવાની ભલામણ કરવામાં આવે છે.

(Action: PI/HOD/Principal, CAET, Godhra)

12.5.1.3

Development and evaluation of mini tractor drawn semi automatic potato planter

A mini tractor (15-20 hp) drawn two row semi-automatic potato planter developed by AAU is recommended for the farmers for planting the potato crop. The planter places the potato tubers and fertilizer at appropriate depths in a single operation. In the planter the distance between two rows (45-70 cm) can be adjusted as per requirement. The use of this planter with mini tractor will save about 40% cost of the potato planting as compared to the medium size tractor (35-40 hp) operated planter. The cost of the planter is estimated as Rs. 26000/-

આણંદ કૃષિ યુનિવર્સિટી દ્વારા મીની ટ્રેક્ટરથી (૧૫-૨૦ હો.પા.) યાલતું બે યાસવાળું સેમી ઓટોમેટિક બટાટા ની વાવણી કરવાનું મશીન વિકસાવવામાં આવેલ છે. જેનો બટાટાના પાક ઉગાડ્તા ખેડ્ડતોને ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. આ પ્લાન્ટરથી બટાટાની વાવણી અને ખાતરની ઓરણી યોગ્ય ઉંડાઈએ એકી સાથી થાય છે. આ પ્લાંટર થી બે યાસ વચ્ચેનું અંતર જરૂરિયાત મુજબ (૪૦-૭૦ સેમી) ગોઠવી શકાય છે. આ પ્લાંટરનો ઉપયોગ કરવાથી મધ્યમ સાઇઝના ટ્રેક્ટર (૩૫-૪૦ હો.પા.) થી યાલતા પ્લાંટર કરતાં વાવણીના ખર્ચમાં આશરે ૪૦ ટકા જેટલી બયત થાય છે. આ પ્લાંટરની અંદાજીત કિંમત રૂ. ૨૬૦૦૦ જેટલી થાય છે.

(Action: PI/HOD/Principal, CAET, Godhra)

12.5.1.4

Design and Development of a Throat Type Up Draft Biomass Gasifier For Thermal Application

The throat type updraft biomass gasifier developed by AAU is recommended for thermal applications at community kitchen, restaurants, dhabas and similar establishments owners who are interested in shifting to biomass gasifier system. The developed gasifier can be successfully operated using maize cobs, sized wood and saw dust briquettes. Maize cob is found more suitable for throat type updraft gasifier as compared to other two fuels. The newly developed gasifier remains about 50% cheaper in operation as compared to that by LPG system.

સામૃહિક રસોડા, હોટલ તથા ઢાબા જેવી સંસ્થાઓના સંચાલકોને આણંદ કૃષિ યુનિવર્સીટી દ્વારા વિકસાવાયેલ મકાઈના લાટિયા, લાકડાના ટુકડા અને લાકડાના વેરની બ્રિકેટસ ઉપર ચાલતા થ્રોટ ટાઇપ અપડ્રાફ્ટ બાયોમાસ ગેસીફાયરનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. આ ગેસીફાયરના ઉપયોગથી એલ.પી.જી. ગેસની સરખામણીએ ૫૦ ટકા સુધીનો બળતણ ખર્ચ બયાવી શકાય છે તથા મકાઈના લાટિયા બીજા બળતણ કરતા વધારે અનુકળ છે.

(Action: HOD, Dept. of REE, CAET, AAU, Godhra)

12.5.1.5

Development of Mobile based application for farmers

Anand Agricultural University has started "i-khedut" mobile application. This application provides packages of practices and animal husbandry related information in Gujarati language and hence recommended to use by Farmers of Gujarat.

આણંદ કૃષિ યુનિવર્સીટી દ્વારા i-Khedut મોબાઈલ અપ્લિકેશન શરૂ કરવામાં આવેલ છે. આ એપ્લિકેશન દ્વારા વૈજ્ઞાનિક પાક પદ્ધતિ (વૈજ્ઞાનિક ખેતી પદ્ધતિ) તથા પશુપાલનને લગતી માહિતી ગુજરાતી ભાષામાં ઉપલબ્ધ કરાવતી હોઈ ગુજરાત રાજ્યના ખેડૂતોને તેના ઉપયોગ કરવા ભલામણ કરવામાં આવે છે.

(Action: PI / Director IT, Anand)

12.5.1.6

Edible coating material for extending the shelf life of tomato fruit

Farmers, Entrepreneurs and Agro-processing units involved in post-harvest handling of tomato fruits are advised to use the technology of edible coating developed by AAU, for extension of shelf life. For storage of pre-breaker stage tomatoes at ambient conditions (27±3°C) the coating formulation of Bee wax 20%, oleic acid 2%, sodium hydroxide 4%, glycerol monostearate 1%, remaining 73% hot distilled water is recommended which will extend shelf life by 24 days. For low temperature storage (15±2°C), the coating formulation comprising of Bee wax 20%, mineral oil 15%, oleic acid 2%, sodium hydroxide 4%, glycerol monostearate 1 %, remaining 58% hot distilled water is recommended which will extend the shelf life of tomatoes by 15 days compared to non-coated tomatoes stored at same temperature.

ટામેટાની ખેતી અને તેના વ્યવસાય સાથે સંકળાયેલા ખેડૂતો તેમજ ઉદ્યોગકારોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ ટામેટાને કોટિંગ કરી લાંબા સમય સુધી જાળવી રાખવા માટેની તકનીકના ઉપાયોગની ભલામણ કરવામાં આવે છે. સામાન્ય તાપમાને (૨૭±૩°સે) અર્ધ પરિપકવ ટામેટા સંગ્રહ કરવા, ૨૦% બી-વેક્સ ,૨% ઓલિક એસિડ ,૪% સોડીયમ હાઈડ્રોકસાઈડ અને ૧ %ગ્લીસરોલ મોનોસ્ટીયરેટનું સંયોજન બનાવી તેમાં બાકીનું ૭૩ % ગરમ પાણી ઉમેરીને ટામેટા ઉપર કોટિંગ કરવાથી

૨૪ દિવસ વધારે સાચવી શકાય છે. ઓછા તાપમાને (૧૫±૨° સે) ટામેટા સંગ્રહ કરવા ૨૦ %બી-વેક્સ, ૧૫% મિનરલ ઓઈલ, ૨% ઓલિક એસિડ, ૪% સોડીયમ હ્રાઈડ્રોકસાઈડ અને ૧ %ગ્લીસરોલ મોનોસ્ટીયરેટનું સંયોજન બનાવી તેમાં બાકીનું ૫૮% ગરમ પાણી ઉમેરીને કોટિંગ કરવાથી ૧૫ દિવસ વધારે સાચવી શકાય છે. (Action:- HOD, Department of PHE,

FPT & BE, AAU, Anand)

12.5.1.7

Biodiesel conversion technology

Entrepreneurs interested in producing biodiesel from sunflower oil and cottonseed oil are advised to use the biodiesel conversion technology developed by AAU, Anand. The process involves transesterification with methanol in presence of specific catalyst (Sodium hydroxide) under controlled reaction followed by separation of glycerol and other downstream processes.

સૂર્યમુખીના તેલ અને કપાસીયાના તેલમાંથી બાયોડીઝલ બનાવવામાં રસ ધરાવતા ઉદ્યોગ સાહસિકોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ તકનીકનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. આ તકનીકમાં ખાસ ઉદ્વીપકની (સોડીયમ હાઇડ્રોકસાઈડ) હાજરીમાં, મીથેનોલ સાથે ટ્રાન્સએસ્ટરીફીકેશન કરી ગ્લીસરોલ છુટા પાડવાની અને તેના પછીની પ્રકિયાઓનો સમાવેશ થાય છે.

(Action:- HOD, Department of PHE, FPT & BE, AAU, Anand)

12.5.1.8

Design and development of a multi-chamber equipment for online measurement of rate of respiration of fruits and vegetables

Entrepreneurs and instrument manufactures interested in online measurement of rate of respiration of fruits and vegetables or equipment for above purpose are advised to use the design of multi-chamber equipment for online continuous measurement of respiration rate developed by AAU, Anand. The system is quick, accurate, versatile and user friendly for continuous determination of the rate of respiration under varying storage environments for different fruits and vegetables.

ફળ અને શાકભાજીનાં શ્વસન દરને ઓનલાઇન માપવામાં રસ ધરાવતા ઉદ્યોગકારો અને/અથવા તેને માપવા માટેના યંત્રો બનાવનારને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિક્સાવેલ મલ્ટી ચેમ્બર યંત્રની ડીઝાઇનનો ઉપયોગ કરવા ભલામણ કરવામાં આવે છે. આ યંત્ર દ્વારા ફળ અને શાકભાજીને જુદા- જુદા વાતાવરણમાં તેના શ્વસન દરને સરળ રીતે, ઝડપથી અને ચોક્કસાઇ પૂર્વક ઓનલાઈન માપી શકાય છે.

(Action:- HOD, Department of PHE, FPT & BE, AAU, Anand)

12.5.1.9

Development of osmotically dehydrated whole aonla fruits

The entrepreneurs and fruit processors interested in production of osmotically dehydrated whole Aonla are advised to use processing technology developed for the purpose by AAU, Anand. The technology involves ultrasonication, osmotic dehydration in sugar syrup (58⁰ Brix) followed by hot air drying and results in good quality whole sweetened dehydrated Aonla. Final product packed in HDPE (200 gauge) bags can be stored at ambient storage condition (27±2°C, 65% RH) for six months.

આખા આમળાની કેંડીનું ઉત્પાદન કરવામાં રસ ધરાવતા સાહ્સિકો અને ઉદ્યોગકારોને આણંદ કૃષિ યુનિવર્સિટી ધ્વારા વિકસાવવામાં આવેલ ટેકનોલોજીનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. આ પધ્ધતિમાં સારી ગુણવત્તાના આખા આમળાની કેંડી બનાવવા અલ્ટ્રાસોનીકેશન, ખાંડની ચાસણી (૫૮º બ્રિકસ) ધ્વારા ઓસ્મોટીક ડીહાઇડ્રેશન અને મીકેનીકલ ડ્રાયર ધ્વારા સુકવણી કરવામાં આવે છે. આ પધ્ધતીથી બનાવેલ આખા આમળાની કેંડીને એચડીપીઈ (૨૦૦ ગેજ) પેકેજીંગમાં ૬ મહિના માટે સંગ્રહ (૨૭±૨°સે, ૬૫% આરએચ) કરી શકાય છે.

(Action:- HOD, Department of FPT, FPT & BE, AAU, Anand)

12.5.1.10

Production technology for superior quality malt flour from moth bean

The entrepreneurs and food processors interested in manufacture of malt based products are advised to adopt the production technology of mothbean malt developed at AAU, Anand. The technology involves soaking and germination of mothbean for 12 and 36 h, respectively, followed by drying at 60°C and milling. This process reduces the anti-nutrients thereby improving the assimilable nutrients (proteins, carbohydrates and minerals) in malted mothbean.

માલ્ટ આધારિત ઉત્પાદનો બનાવવામાં રસ ધરાવતા ઉદ્યોગ સાહ્સિકો અને ઉત્પાદકો ને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ મઠમાંથી માલ્ટ બનાવવાની પધ્ધતિ અપનાવવાની ભલામણ કરવામાં આવે છે. આ પદ્ધતિમાં મઠને ૧૨ કલાક પલાળી અને ૩૬ કલાક ફણગાવ્યા બાદ તેને ૬૦°સેં સુકવીને દળવામાં આવે છે. આ રીતે બનાવેલ મઠનો માલ્ટ પૌષ્ટિક તત્વો (પ્રોટીન, કાર્બોહાઈડ્રેટ અને મીનરલ્સ) નું પ્રમાણ સુધારે છે તથા પ્રતિ-પોષક તત્વો નું પ્રમાણ ઘટાડે છે.

(Action:- HOD, Department of FPT, FPT & BE, AAU, Anand)

12.5.1.11

Supercritical fluid extraction of carotenoid from vacuum dried pumpkin powder

The entrepreneurs and food processors interested in production of carotenoids from pumpkin powder are advised to use supercritical extraction technology developed by AAU, Anand. This technology involves extraction of carotenoid from vacuum dried pumpkin powder using blanching, sulphitation, drying, sieving and super critical fluid extraction using CO_2 at controlled pressure and temperature. The process enables to achieve the maximum yield of solvent-free carotenoid (0.6 g/100 g) having higher β -carotene content (151.47 mg/100 g). This extract is stable up to 45 days at -18°C temperature.

કોળા પાવડરમાંથી કેરોટીનોઈડનું ઉત્પાદન કરવામાં રસ ધરાવતા, ફૂડપ્રોસેસિંગ સાથે સંકળાચેલા ઉદ્યોગ સાહસિકોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ સુપરક્રિટિકલ એક્ટ્રેક્સન દ્વારા નિષ્કર્ષણની ટેકનોલોજીનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. આ ટેકનોલોજીમાં કોળાને બ્લાન્યિંગ, સલ્ફાઈટેશન અને શૂન્યાવકાશમાં સુકવીને યાળ્યા બાદ મળેલ પાવડરને નિયંત્રિત દબાણે અને તાપમાને સુપરિક્રિટિકલ એક્ટ્રેક્સન કાર્બન ડાયોક્સાઈડ દ્વારા નિષ્કર્ષણ કરી કેરોટીનોઈડનું ઉત્પાદન કરવામાં આવે છે, જે પરંપરાગત નિષ્કર્ષણ પદ્ધતિ કરતા શ્રેષ્ઠ છે. આ પદ્ધતિથી કેરોટીનોઇડ (0.5 ગ્રામ / ૧૦૦ ગ્રામ) અને β-કેરોટિન (૧૫૧.૪૭ એમજી/૧૦૦ ગ્રામ) નુ મહત્તમ ઉત્પાદન પ્રાપ્ત કરી શકાય છે. આ રીતે મેળવેલ અર્કને -૧૮° સે. તાપમાને ૪૫ દિવસ સુધી સાચવી શકાયછે.

(Action:- HOD, Department of FPT, FPT & BE, AAU, Anand)

12.5.1.12

Development of High Protein Pumpkin Bar

The food processors interested in development of nutritious protein fortified pumpkin bar are advised to follow the protocol developed for this purpose by AAU, Anand. The technology involves addition of whey protein concentrate (5%), maltodextrin (0.1%), pectin (0.2%) and citric acid (0.86%) to pumpkin pulp, cooking, drying and packaging of final product in metallized cast polypropylene (MPP).

જે ફૂડ પ્રોસેસરોને પૌષ્ટિક પ્રોટીન ફોર્ટિફાઇડ કોળાની બાર બનાવવામાં રસ હોય તેઓને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ પદ્ધતિનો ઉપયોગ કરવાની ભલામણ છે. આ ટેક્નોલોજીમાં વ્હે-પ્રોટીન કોન્સંટ્રેટ(૫%), માલ્ટોડેક્ષટ્રીન(૦.૧%), પેક્ટિન(૦.૨%) અને સાઈટ્રિક ઍસિડ(૦.૮૬%) કોળાના પલ્પમાં નાખી, તેને પકવી, મેટલાઈજડ કાસ્ટ પોલિપ્રોપીલીનમાં(એમપીપી) પેકિંગ કરવામાં આવે છે.

(Action:- HOD, Department of FQA, FPT & BE, AAU, Anand)

12.5.1.13

Super critical fluid extraction of oleoresins from red chilli

The entrepreneurs and food processors interested in production of oleoresins, capsaicin and pigment compounds from red chillies are advised to use supercritical extraction technology developed for this purpose by AAU, Anand. This technology involves better recovery of oleoresins (6.5%), capsaicin (2.2%) and pigment compounds having 16024 Nesslerimeter Colour Value (NCV) using drying, sieving and CO₂ supercritical fluid extraction at controlled pressure and temperature. The process results in superior quality oleoresins, capsaicin and pigment compounds as compared to conventional extraction methods.

લાલ મરચામાંથી ઓલિયોરેસિન, કેપ્સીસીન અને પીગમેંટ પદાર્થો બનાવવામાં રસ ધરાવતા ઉધોગ-સાહ્સિકો અને ફૂડ પ્રોસેસરોને આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ સુપરક્રિટિકલ ફ્લ્ઈડ એક્ટ્રેક્સન ટેક્નોલોજીનો ઉપયોગ કરવાની ભલામણ છે. આ ટેક્નોલોજી પ્રમાણે મરચાંની સુકવણી કરી તેનો પાઉડર બનાવી તેને યાળી, નિર્ધારિત તાપમાને અને દબાણે સુપરક્રિટિકલ ફ્લ્ઈડ એક્ટ્રેક્સન કાર્બન ડાયોક્સાઈડ વડે કરવાથી ઓલિયોરેસિન (૬.૫%), કેપ્સીસીન(૨.૨%) અને પીગમેંટ પદાર્થો (નેસલેરીમિટર કલર વેલ્યુ - ૧૬૦૨૪) મેળવી શકાય છે. આ પદ્ધતિના ઉપયોગથી મળતા ઓલિયોરેસિન, કેપ્સેસીન અને પીગમેંટ પદાર્થો હાલ વપરાતી અન્ય પદ્ધતિઓ કરતાં વધુ સારી ગુણવત્તાના હોય છે.

(Action:- HOD, Department of FQA, FPT & BE, AAU, Anand)

12.5.1.14

Use of Basil (Tulsi leaves) as flavouring ingredient in the manufacture of ice cream

A technology for making acceptable basil flavoured ice cream is developed by Anand Agricultural University, Anand using basil juice (6% TSS) @ 6.0% or freeze dried basil

powder (5% moisture) @ 1.0% in ice cream mix. Basil powder is preferred over basil juice.

આણંદ કૃષિ યુનિવર્સિટી દ્વારા સારી ગુણવત્તા યુક્ત તુલસી ફ્લેવર્ડ આઇસક્રીમ બનાવવાની પધ્ધતિ વિકસાવેલ છે. જેમા ૬% તુલસીનો રસ અથવા ૧% ફ્રીજ ડ્રાઈડ તુલસી પાવડરનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. વ્યાવસાયિક ઉપયોગ માટે ફ્રીજ ડ્રાઈડ તુલસી પાઉડર તુલસીનાં રસ કરતા સારૂ પરિણામ આપે છે

(Action:- HOD, Department of DT, DSC, AAU, Anand)

12.5.1.15

Evaluating the effect of partial homogenization of milk on the quality of Mozzarella cheese

The technology developed by Anand Agricultural University for Mozzarella cheese making from partially homogenized milk enables obtaining product with higher yield, superior appearance and baking qualities, and greater cost returns compared to the one prepared from unhomogenized milk.

આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસિત આંશિક હોમોજીનાઈઝડ મોઝ્ઝરેલ્લા ચીઝ, હોમોજીનાઈઝ કર્યા વગરના મોઝ્ઝરેલ્લા ચીઝની સરખામણીમાં વધુ ઉત્પાદન , સારો દેખાવ, સારી બેકિંગ ગુણવત્તા અને વળતરની દ્રષ્ટિએ ચઢિયાતી છે.

(Action:- HOD, Department of DT, DSC, AAU, Anand)

12.5.1.16

Formulation of ready mix carrot halwa from dried carrot shreds

A technology to prepare Carrot Halwa ready-mix is developed by Anand Agricultural University using carrot shreds mixed with Khoa and Ghee, followed by drying under vacuum. The prepared Ready-mix for $Carrot\ Halwa$ had a shelf-life of 45 and 30 days at $7\pm2^{\circ}C$ and $30\pm2^{\circ}C$ respectively when packed in Met-Polyester/Polyfilm pouches (85 µm) and packed under CO_2 environment. The ready-mix and water (85°C) in the proportion of 1:2 (w/v), along with sugar (28 - 36% by weight) can be mixed to get good quality carrot Halwa.

ગાજરના છીણ, માવો અને ધી નો ઉપયોગ કરી બનાવેલ મીશ્રણને શૂન્યાવકાશમાં પુર્ણ સૂકવણી કરી "રેડી મીક્ષ" ગાજર હલવો બનાવવાની રીત આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવવામાં આવેલ છે. "રેડી મીક્ષ" ગાજર હલવા ને કાર્બન ડાયોક્સાઈડ ગેસ હેઠળ પ્લાસ્ટીકની મેટ - પોલીસ્ટર પોલીફીલ્મની થેલી (૮૫ μm) માં પેક કરી ફીજના તાપમાને (૭ \pm ૨ °સે) ૪૫ દિવસ અને સાધારણ તાપમાને (૩૦ \pm ૨°સે) ૩૦ દિવસ સુધી સાચવણી કરી શકાય છે. રેડી મીક્ષ અને પાણી (૮૫°સે) 1:2 ના પ્રમાણમાં તથા ખાંડ ૨૮ થી ૩૬ % સુધી (૪૨રીયાત મુજબ) ઉમેરી સારી ગુણવત્તા વાળો ગાજર હલવો બનાવી શકાય છે.

(Action:- HOD, Department of DPO, DSC, AAU, Anand)

12.5.1.17

Screening of qualitative tests for detection of adulterants in milk

Large numbers of qualitative tests for detection of adulterants in milk are reported in literature with wide procedural variations. Among all the tests compared and evaluated at AAU, Anand following tests were found to give the best results and hence are suggested for practical application.

PART I Qualitative tests suggested for detection of adulterants in milk

Sr. No.	Adulterant	Test	Reported by
1	Detergent	Methylene blue	Paradkar et al. (2000), FSSAI (2015)
2	Urea	DMAB	Bector <i>et al.</i> (1998), Dixit (2012), Sharma <i>et al.</i> (2012), FSSAI (2015)
3	Ammonium salts	Phenol	Mittal & Roy (1976), Srivastava (2010), FSSAI (2015)
4	Glucose	Barfoed	Roy & Mittal (1977), Sharma <i>et al.</i> (2012), Dixit (2012), FSSAI (2015)
5	Sucrose	Seliwanoff (solid)	Sharma <i>et al.</i> (2012)
6	Maltodextrin	Iodine	Dairy Development Department of Maharashtra (2013)
7	Starch	Iodine	BIS (1960), Anon. (2006), Dixit (2012), Sharma <i>et al.</i> (2012)
8	Nitrate	Diphenylamine	FAO (1986)
9	Sulphate	Barium chloride	Sharma et al. (2012), FSSAI (2015)
10	Gelatine	Picric acid	Jacobs & Jaffe (1932), DGHS (2005), FSSAI (2015)
11	Formaldehyde	Leach	Williams & Sherman (1905), BIS (1961)
12	Hydrogen peroxide	<i>p</i> -Phenylenediamine	Draaiyer et al. (2009)
13	Neutralizers	Rosolic acid	DGHS (2005)
14	Borax & Boric acid	Turmeric paper	Anon. (2006), Dairyforall (2006), Singh <i>et al.</i> (2012), Dixit (2012)
15	Salicylic acid	Ferric chloride	Dixit (2012)
16	Benzoic acid	Ferric chloride	Singh et al. (2012), Dixit (2012)

Note: For sodium chloride, potassium chromate test needs modification to increase the test accuracy for detection (Anon. 2006, Dairyforall 2006, Anon. 2009, Srivastava 2010, Singh *et al.* 2012, Dixit 2012, Sharma *et al.* 2012, Kamthania *et al.* 2014, FSSAI 2015).

PART II If qualitative test for detection of adulterant is performed in milk itself; it is suggested to perform at optimum temperature as given below.

Sr. No.	Adulterant	Test	Optimum temperature
1	Detergent	Methylene blue (FSSAI 2015)	20 to 30°C
2	Lluca	Urease (Paradkar et al. 2000)	40°C
2	Urea	Phenol (Paradkar et al. 2000)	20°C
3	Starch	Iodine(BIS 1960, Anon. 2006, Dixit 2012, Sharma <i>et al.</i> 2012)	20°C
4	Maltodextrin	Iodine (Sharma et al. 2012)	30°C
5	Hydrogen menevide	p-phenylenediamine (Draaiyer et al. 2009)	20°C
3	Hydrogen peroxide	Iodometry (Sharma et al. 2012, FSSAI 2015)	10°C
6	Borax & Boric acid	Turmeric paper (Dairyforall 2006, Dixit 2012, Singh <i>et al.</i> 2012)	20 to 30°C

Note: No influence of temperature of milk (10-40°C) was found on performance of DMAB test for urea (Anon. 2009, Dixit 2012, Sharma *et al.* 2012, FSSAI 2015), Rosolic acid test for

neutralizer (DGHS 2005), Ferric chloride test for benzoic acid (Dixit 2012, Singh *et al.* 2012) and Ferric chloride test for salicylic acid (Dixit 2012) detection.

PART III If heating is involved in procedure of conducting qualitative test for detection of adulterant in milk, it is suggested to use optimum heating period as given below.

Sr. No.	Adulterant	Test	Optimum heating period
1	Ammonium salts	Phenol (Mittal & Roy 1976, DGHS 2005, Srivastava 2010, FSSAI 2015)	20 sec
2	Glucose	Barfoed (in milk) (Roy & Mittal 1977, Vishweshwar & Krishnaiah 2005, Anon. 2006, Singh <i>et al.</i> 2012, Sharma <i>et al.</i> 2012, Dixit 2012, Kamthania <i>et al.</i> 2014, FSSAI 2015)	3 min
3	Sucrose	Seliwanoff (resorcinol solid) (Sharma et al. 2012)	4 min
		Seliwanoff (resorcinol solution) (Srivastava 2010)	5 min
4	Formaldehyde	Leach (heating by direct flame) (Williams & Sherman 1905, BIS 1961, Vishweshwar & Krishnaiah 2005)	1 min
		Leach (heating in boiling water bath) (Sharma <i>et al.</i> 2012)	4 min

વિભાગ ૧

દૂધમાં ભેળસેળ કરવામાં આવતા પદાર્થીની યકાસણી કરવા માટે સંખ્યાબંધ ગુણાત્મક કસોટીઓ સાહિત્યમાં પ્રકાશિત કરવામાં આવેલ છે, જેમાં ભિન્નતા જોવા મળે છે. આથી યકાસેલ, સરખામણી કરેલ અને મૂલ્યાંકિત કરેલ કસોટીઓ પૈકી નીચે દર્શાવેલ કસોટીઓ કે જે સૌથી સારું પરિણામ આપે છે તે પદ્ધતિઓ વાપરવાની સલાહ આપવામાં આવે છે.

	દૂધમાં ભેળસેળની ચકાસણી માટે કસોટીની સલાહ					
ક્રમ	ભેળસેળ કરેલ પદાર્થ	કસોટી	સંદર્ભ			
1	ડીટરજન્ટ	મીથીલીન બ્લ્યુ કસોટી	Paradkar et al. (2000), FSSAI (2015)			
2	યુરિયા	ડી. એમ. એ. બી. કસોટી	Bector <i>et al.</i> (1998), Dixit (2012), Sharma <i>et al.</i> (2012), FSSAI (2015)			
3	અમોનિયમ ક્ષારો	ફીનોલ કસોટી	Mittal & Roy (1976), Srivastava (2010), FSSAI (2015)			
4	ગ્લુકોઝ	બારફ્રોડ કસોટી	Roy & Mittal (1977), Sharma <i>et al.</i> (2012), Dixit (2012), FSSAI (2015)			
5	ખાંડ	સેલીવાનોફ કસોટી (ધન)	Sharma <i>et al.</i> (2012)			
6	માલ્ટોડેક્સ્ટ્રિન	આચોડીન કસોટી	Dairy Development Department of Maharashtra (2013)			
7	સ્ટાર્ચ (કાંજી)	આચોડીન કસોટી	BIS (1960), Anon. (2006), Dixit (2012), Sharma <i>et al.</i> (2012)			
8	નાઈટ્રેટ	ડાઈફીનાઈલ એમાઈન કસોટી	FAO (1986)			

9	સલ્ફેટ	બેરીયમ ક્લોરાઈડ	Sharma <i>et al.</i> (2012), FSSAI (2015)
10	જીલેટીન	પીક્રીક એસીડ કસોટી	Jacobs & Jaffe (1932), DGHS (2005), FSSAI (2015)
11	ફોર્માલડીહાઈડ	લીય કસોટી	Williams & Sherman (1905), BIS (1961)
12	હાઈડ્રોજન પેરોક્ષાઈડ	ρ-ફ્રીનીલીન ડાઈએમાંઈન	Draaiyer et al. (2009)
		કસોટી	
13	ન્યુટ્રલાઈઝર	રોઝોલીક એસીડ કસોટી	DGHS (2005)
14	બોરેક્સ અને બોરિક	ટરમરીક પેપર કસોટી	Anon. (2006), Dairyforall (2006), Singh et al.
	એસીડ		(2012), Dixit (2012)
15	સેલીસીલીક એસીડ	ફેરિક ક્લોરાઈડ કસોટી	Dixit (2012)
16	બેન્ઝોઈક એસીડ	ફેરિક ક્લોરાઈડ કસોટી	Singh et al. (2012), Dixit (2012)

નોંધ: સોડીયમ ક્લોરાઈડ (મીઠું) ની ભેળસેળ પારખવા માટેની કસોટીઓ પૈકી Anon. 2006, Dairyforall 2006, Singh et al. 2012, Dixit 2012, Sharma et al. 2012, FSSAI 2015, Anon. 2009, Srivastava 2010, Kamthania et al. 2014 કોઈ પણ કસોટી સુધીની સોડીયમ ક્લોરાઈડ (મીઠું)ની ભેળસેળ પારખી શકતી નથી. આથી આ કસોટીની પદ્ધતિમાં સુધારો કરવાની જરૂર છે.

વિભાગ ર

દૂધમાં ભેળસેળ કરવામાં આવતા તત્વોની યકાસણી માટેની ગુણાત્મક કસોટીમાં જો દૂધનો જ માધ્યમ તરીકે ઉપયોગ થતો હોય તો, તેવી કસોટીમાં નીચે દર્શાવ્યા પ્રમાણેના સૌથી સાનુકળ તાપમાનનો અમલ કરવાની સલાહ આપવામાં આવે છે.

	ભેળસેળ માટેની ગુણાત્મક કસોટીની પદ્ધતિમાં દૂધના તાપમાનની અસર				
ક્રમ	ભેળસેળ કરેલ પદાર્થ	કસોટી	સાનુકુળ		
			તાપમાન		
1	ડીટરજન્ટ	મીથીલીન બ્લ્યુ કસોટી (FSSAI 2015)	ર૦ થી ૩૦°સે		
2	યુરિયા	યુરીએજ કસોટી (Paradkar <i>et al</i> . 2000)	૪૦∘સે		
		ફીનોલ કસોટી (Paradkar <i>et al.</i> 2000)	ર૦∘સે		
3	સ્ટાર્ચ (કાંજી)	આયોડીન કસોટી (BIS 1960, Anon. 2006, Dixit 2012,	ર૦∘સે		
		Sharma <i>et al.</i> 2012)			
4	માલ્ટોડેક્ટ્રિન	આયોડીન કસોટી (Sharma <i>et al</i> . 2012)	30°સે		
5	હાઈડ્રોજન પેરોક્ષાઈડ	ρ-ફ્રીનીલીન ડાઈએમાઈન કસોટી (Draaiyer <i>et al.</i> 2009)	૨૦°સે		
		આયોડોમેટ્રી (Sharma <i>et al.</i> 2012, FSSAI, 2015)	૧૦∘સે		
6	બોરેક્સ અને બોરિક	ટરમરીક પેપર કસોટી (Dairyforall 2006, Dixit 2012,	૨૦ થી ૩૦°સે		
	એસીડ	Singh et al. 2012)			

નોંધ: યુરિયા માટેની ડી. એમ. એ. બી. કસોટી (Anon. 2009, Dixit 2012, Sharma *et al.* 2012, FSSAI 2015), ન્યુટ્રલાઈઝર માટેની રોઝોલીક એસીડ કસોટી (DGHS, 2005), બેન્ઝોઈક એસીડ માટેની ફેરિક ક્લોરાઈડ કસોટી (Dixit 2012, Singh *et al.* 2012) અને સેલીસીલીક એસીડ માટેની

ફેરિક ક્લોરાઈડ કસોટી (Dixit 2012) માં તાપમાનની (૧૦ થી ૪૦°સે) અસર જણાઈ નથી.

વિભાગ ૩

દૂધમાં ભેળસેળ કરવામાં આવતા તત્વોની યકાસણી માટેની ગુણાત્મક કસોટીની પદ્ધતિમાં જો કસોટી માટેના મિશ્રણને ગરમ કરવામાં આવતું હોય તો નીચે દર્શાવેલા સૌથી સાનુકુળ સમયગાળાના ઉપયોગની સલાહ આપવામાં આવે છે.

ભેળસેળ માટેની ગુણાત્મક કસોટીની પદ્ધતિમાં મિશ્રણ ગરમ કરવાના સમયગાળા ની અસર				
ક્રમ	ભેળસેળ કરેલ	કસોટી	સૌથી સાનુકુળ	
	પદાર્થ		સમયગાળો	
1	અમોનિયમ	ફીનોલ	૨૦ સેકન્ડ	
	ક્ષારો	(Mittal & Roy 1976, DGHS 2005, Srivastava 2010, FSSAI 2015)		
2	ગ્લુકોઝ	બારફ્રોડ (દૂધમાં કરેલ કસોટી)	૩ મિનીટ	
		(Roy & Mittal 1977, Vishweshwar & Krishnaiah 2005, Anon. 2006, Singh <i>et al.</i> 2012, Sharma <i>et al.</i> 2012, Dixit 2012, Kamthania <i>et al.</i> , 2014, FSSAI 2015)		
3	ખાંડ	સેલીવાનોફ કસોટી (ધન રીસોર્સીનોલ)	૪ મિનીટ	
		(Sharma et al. 2012)		
		સેલીવાનોફ કસોટી (રીસોર્સીનોલ દ્રાવણ) (Srivastava 2010)	૫ મિનીટ	
4	ફોર્માલ્ડીહાઈડ	લીય કસોટી (ડાયરેક્ટ ફ્લેમ)	૧ મિનીટ	
		(Williams & Sherman 1905, BIS 1961, Vishweshwar & Krishnaiah 2005)		
		લીય કસોટી (બોઈલીંગ વોટર બાથ)	૪ મિનીટ	
		(Sharma et al. 2012)		

(Action:- HOD, Department of DC, DSC, AAU, Anand)

12.5.1.18

Studies on physico-chemical and sensory characteristics of iron rich biscuits

Anand Agricultural University has developed a technology for preparation of Iron-rich biscuits with improved protein content which can be prepared using a mixture comprising of rajkeera (*rajgaro*) flour, bengal gram flour, refined wheat flour and wheat flour along with whey powder, coconut powder, amaranth leaves powder, cocoa powder, sesame seeds, spices and condiments.

આણંદ કૃષિ યુનિવર્સિટી, આણંદ દ્વારા રાજગરા, યણા ના લોટ, ઘઉં ના લોટ અને મેંદા ના લોટના મિશ્રણ તથા વ્હે પાઉડર, નાળીચેરનું છીણ, તાંદળજાની ભાજીનો પાઉડર, કોકો પાઉડર, તલ તથા મરી મસાલાનો ઉપયોગ કરી લોહતત્વ અને પ્રોટીનસભર બિસ્કિટ બનાવવાની ટેક્નોલોજી વિકસાવેલ છે.

(Action:- HOD, Department of DC, DSC, AAU, Anand)

12.5.1.19

Optimization of biomass production for probiotic *Lactobacillus helveticus* MTCC 5463 Cheddar cheese whey supplemented with 0.95% each of yeast extract and proteose peptone at pH 6.25 and inoculated with 6% (v/v) active culture of *Lactobacillus helveticus* MTCC 5463 and fermented at 40°C for 24 h can yield 3.25 g/l dry cell biomass and 14.82 log cfu/g total viable count.

ચેડાર ચીઝ વ્હે માં 0.૯૫ % થીસ્ટ એકસ્ટ્રેકટ અને પ્રોટીઓઝ પેપ્ટોન ઉમેરી, પી.એચ. ૬.૨૫ રાખી તેમાં એક્ટીવ લેક્ટોબેસીલસ હેલ્વેટીકસ MTCC 5463નું કલ્ચર ૬% (વી/વી) પ્રમાણ માં ઉમેરી તેને ૪૦°સે તાપમાન પર ૨૪ કલાક સુધી આથવણ (ફરમેન્ટ) કરવાથી ૩.૨૫ ગ્રામ/લિટર ડ્રાય સેલબાયોમાસ (જૈવિક જ્થ્થો) મળે છે. જેમાં કુલ જીવંત બેક્ટેરીયાનું પ્રમાણ ૧૪.૮૨ લોગ સી.એફ.યુ પ્રતિ ગ્રામ જોવા મળે છે.

(Action:- HOD, Department of DM, DSC, AAU, Anand)

12.5.1.20

ACE Inhibitory activity of *Lactobacillus helveticus* MTCC 5463 in fermented milk added with honey

A technology developed by Anand Agricultural University is recommended for the preparation of fermented milk rich in ACE inhibitory activity (antihypertensive property), which can be prepared using toned milk and fermented by L. helveticus MTCC5463 at the rate of 2% for 24 h at 42° C.

આથવણ કરેલ ટોન્ડ દૂધ કે જેમાં વધારે માત્રામાં એન્જીઓટેન્સીન કન્વર્ટીંગ એન્ઝાઈમને અવરોધતી સક્રીયતા રહેલી છે. તેનું ઉત્પાદન કરવા આણંદ કૃષિ યુનીવર્સિટી ખાતે વિકસાવેલ તકનીકી ભલામણ કરવામાં આવે છે. આ પ્રક્રિયા માં ટોન્ડ દૂધમાં ૨% ના દરથી *Lactobacillus helveticus* MTCC 5463 નામના પ્રોબાયોટીક કલ્યરને ઉમેરી આ મિશ્રણને ૨૪ કલાક અને ૪૨° સે. તાપમાને રાખવાથી મળે છે.

(Action:- HOD, Department of DM, DSC, AAU, Anand)

12.5.1.21

Utilization of Whey Protein Concentrate (WPC) in the selected cultured dairy product i.e. fermented milk drink

A technology for making acceptable 'Mango based fermented milk drink' is recommended by Anand Agricultural University using Double Toned Milk, 1.23% Whey Protein Concentrate (WPC-70), 0.1% Pectin and 18.24% Mango pulp. The shelf life of fermented milk drink at 7 ± 2 °C was 9 days.

આણંદ કૃષિ યુનીવર્સિટી દ્વારા સારી ગુણવત્તા યુક્ત મેંગો બેઝ્ડ કર્મેન્ટેડ મિલ્ક ડ્રીંક બનાવવાની પધ્ધતિ વિકસાવેલ છે. જેમા ડબલ ટોન્ડ મિલ્ક (ડી.ટી.એમ.) સાથે ૧.૨૩% ડબ્લ્યુ. પી. સી. – ૭૦ (વ્હે પ્રોટીન કોન્સન્ટ્રેટ – ૭૦), ૦.૧% પેક્ટીન, ૧૮.૨૪% કેરીનો ૨સ તથા ૧૫% ખાંડના ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. ઉપરોક્ત પધ્ધતિથી વિકસાવેલ મેંગો બેઝ્ડ ફર્મેન્ટેડ મિલ્ક ડ્રીંક ની સંગ્રહ ક્ષમતા ૭ ± ૨ ° સે. તાપમાને ૯ દિવસની છે.

(Action:- HOD, Department of DM, DSC, AAU, Anand)

12.5.1.22

Development of commercial process for manufacture of 'carrot halwa'

Commercial process for the manufacture of carrot *halwa* using scraped surface heat exchanger developed by Anand Agricultural University is recommended. The process saves about 66% of processing time with 67% saving in the thermal energy and in-canned sterilized carrot *halwa* has better sensory and nutritive attributes with extended shelf-life up to 6 months as compared to carrot *halwa* prepared by traditional method.

આણંદ કૃષિ યુનિવર્સિટી દ્વારા વિકસાવેલ સ્ક્રેપ સરફેસ હિટ એક્સચેંજરનો ઉપયોગ કરીને ગાજર હલવાના ઉત્પાદન માટેની કોમર્શિયલ પ્રક્રિયા ભલામણ કરવામાં આવે છે. આ પ્રક્રિયા લગભગ ૬૭% ઉષ્મા ઊર્જાની સાથે ૬૬ % સમય બચાવે છે અને કેનમાં ભરીને સ્ટરીલાઈષ્ડ કરેલ ગાજર હલવો પરંપરાગત પદ્ધતિ દ્વારા તૈયાર કરેલા ગાજર હલવાની સરખામણીમાં વધુ સારો સ્વાદ અને પોષણ ગુણો ધરાવે છે અને ૬ મહિના સુધી જાળવી શકાય છે.

(Action:- HOD, Department of DE, DSC, AAU, Anand)

12.5.1.23

Development of commercial process for manufacture of 'bottle gourd halwa'

Commercial process for the manufacture of bottle gourd *halwa* using scraped surface heat exchanger developed by Anand Agricultural University is recommended. The process saves about 63% of processing time with 66% saving in the thermal energy and in-canned sterilized bottlegourd *halwa* has better sensory and nutritive attributes with extended shelf-life up to 6 months as compared to bottlegourd *halwa* prepared by traditional method.

આણંદ કૃષિ યુનિવર્સિટી દ્વારા સ્ક્રેપ સરફેસ હિટ એક્સચેંજરનો ઉપયોગ કરીને દૂધી હલવાના ઉત્પાદન માટે વિકસાવેલ કોમર્શિયલ પ્રક્રિયાની ભલામણ કરવામાં છે. આ પ્રક્રિયા લગભગ ૬૬% ઉષ્મા ઊર્જાની સાથે ૬૩ % સમય બચાવે છે અને કેનમાં ભરીને સ્ટરીલાઈજ્ડ કરેલ દૂધી હલવો પરંપરાગત પદ્ધતિ દ્વારા તૈયાર કરેલા દૂધી હલવાની સરખામણીમાં વધુ સારો સ્વાદ અને પોષણ ગુણો ધરાવે છે અને ૬ મહિના સુધી જાળવી શકાય છે.

(Action:- HOD, Department of DE, DSC, AAU, Anand)

12.5.1.24

Evaluation of energy conservation potential of soft starter in dairy industry

Application of soft staters in operating machinery up to 5 kW is recommended which results in saving of average instantaneous energy and average overall energy in the range of 4.00 to 17.16% and 0.10 to 4.57%, respectively, depending on the loading conditions.

પાંચ કિલોવોટ સુધીના મશીનોને ચલાવવા માટે સોફ્ટ સ્ટાર્ટરને વાપરવાની ભલામણ કરવામાં આવે છે. આમ કરવાથી પ્રારંભિક ઉર્જામાં અને એકંદર ઉર્જામાં અનુક્રમે ૪.૦૦ થી ૧૭.૧૬ ટકા અને ૦.૧૦ થી ૪.૫૭ ટકાની લોડની વધ-ઘટ પ્રમાણે બચત થઇ શકે છે.

(Action:- HOD, Department of DE, DSC, AAU, Anand)

JUNAGADH AGRICULTURAL UNIVERSITY

12.5.2.1

Evaluation of different mulches for Sapota crop under drip irrigation

Farmers of South Saurashtra Agro-climatic Zone growing Sapota (Kalippati) are advised to adopt drip irrigation (2 drippers per plant upto 2 years and after that 4 dripper per plant, dripper discharge of 4 lph) covered with black plastic mulch of 100 micron and irrigate every alternate day at 0.6IW/ET_c (or apply water 14, 34, 48, 34, 8, 11 and 9 liters per day per plant during January-February, March-April, May, June, July-August, September-October and November-December respectively) for acquiring higher yield and net return of Sapota over no mulch.

દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવા વિસ્તારના ખેડૂતોને ભલામણ કરવામાં આવે છે કે, ચીકુ (કાલીપત્તી) માં ટપક પિયત પધ્ધતિ (બે વર્ષ સુધી છોડ દીઠ ર ડ્રીપર ત્યાર બાદ છોડ દીઠ ૪ ડ્રીપર, ડ્રીપર ડીસ્યાર્જ: ૪લીટર/કલાક) ઉપર ૧૦૦ માઈક્રોનનું કાળું પ્લાસ્ટિક પાથરી તેને એકાંતરે દિવસે ૦.૬ ઈટીસી લેવલે (અથવા છોડ દીઠ ૧૪, ૩૪, ૪૮, ૩૪, ૮, ૧૧ અને ૯ લીટર પ્રતિ દિવસ પ્રતિ છોડ પાણી અનુક્રમે જાન્યુઆરી-ફેબ્રુઆરી, માર્ચ- એપ્રિલ, મે, જૂન, જૂલાઈ-ઓગષ્ટ, સપ્ટેમ્બર- ઓક્ટોબર અને નવેમ્બર-ડીસેમ્બર) આપવાથી મલ્યીંગ વગરના ચીકુની સરખામણીમાં વધુ ઉત્પાદન તેમજ વધારે આવક મેળવી શકાય છે.

(Action:- Research Scientist (Agril.Engg.), RTTC, JAU, Junagadh)

12.5.2.2

Preparation of extruded products from flour of amaranth grain, sago and defatted groundnut.

Food processors are advised to prepare quality cold extruded pasta by blending defatted groundnut flour, amaranth flour and sago flour (as a binder) in the ratio of 20, 70 and 10 % respectively followed by sun drying for 14 hours in summer months or in solar cabinet dryer for 1hour at 55 0 C. The product can be stored in transparent polyethylene (LDPE) bags of 75 micron to retain the good quality at least up to two months of storage period.

ફૂડ પ્રોસેસર્સને સલાહ આપવામાં આવે છે કે તેલ કાઢેલ મગફળીનો લોટ, રાજ્ગરાના લોટ તેમજ સાબુદાણાનો લોટ (બાઈંડર તરીકે) ના અનુક્રમે ૨૦, ૭૦ અને ૧૦% ના ગુણોત્તરવાળા મીશ્રણનો ઉપયોંગ કરી ગુણવતાયુકત બનાવેલા ઠંડા પાસ્તાને ઉનાળાના મહિનાઓમાં ૧૪ કલાક સૂર્યપ્રકાશમાં અથવા તો ૫૫ ડિગ્રી સેલ્સિયસ તાપમાને એક કલાક માટે સોલાર કેબિનેટ ડ્રાયરમાં સુકવીને તૈયાર કરેલ પાસ્તા (સેવ) ને ૭૫ માઇક્રોન ટ્રાન્સપેરન્ટ પોલિઇથિલિન (LDPE) પેકેજિંગ બેગમા ઓછામાં ઓછા બે મહિના માટે યોગ્ય ગુણવત્તા સાથે સારી રીતે સંગ્રહ કરી શકાય છે.

(Action:- HOD, Department of Processing & Food Engg., CAET, JAU, Junagadh)

12.5.2.3

Development of power operated sapota cleaner.

The farmers are recommended to use power operated sapota cleaner developed by Junagadh Agricultural University for cleaning and shining sapota surface after harvesting. This machines saves 90 per cent cost of cleaning as compared to manual cleaning. Machine capacity is 575 kg/h.

ખેડ્ડતોને ચીકુને ઝાડ પરથી ઉતાર્યા બાદ ચીકુની સપાટીને સાફ અને યળકતી કરવા માટે જુનાગઢ કૃષિ યુનીવર્સીટી દ્વારા વિકસાવાયેલ પાવરથી યાલતા ક્લીનરનો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે. આ મશીન દ્વારા સફાઈ કરવામાં આવે તો માણસો દ્વારા કરવામાં આવતી સફાઈના ખર્ચ કરતા ૯૦ ટકા બચત થાય છે. આ મશીનની ક્ષમતા ૫૭૫ કિગા/કલાક છે.

(Action:- HOD, Department of Processing & Food Engg., CAET, JAU, Junagadh)

12.5.2.4

Effect of different structures on protection of cumin crop against adverse climate.

The farmers of South Saurashtra agroclimatic zone are recommended to adopt plastic (LDPE-50 micron) low tunnel (sing tunel size : 4x2x1m) covered with 30% shade net at both the ends for cultivation of cumin. This type of structure protects the crop from adverse climate, insects/pests, diseases and results in better quality and higher yield of cumin. It can be used for seed production also.

આથી દક્ષિણ સાૈરાષ્ટ્ર કૃષિ આબોહવાકીય વિસ્તારનાં જીરૂ ઉગાડતા ખેડુતોને ૩૦ ટકા શેડ નેટથી બન્ને છેડે ઢાંકેલ પ્લાસ્ટીક (એલડીપીઈ – ૫૦ માઈક્રોન) લો ટનલ (એક ટનલ સાઇઝ ૪×૨×૧ મી.) વાપરવાની ભલામણ કરવામાં આવે છે. આ પ્રકારનાં ટનલ વાપરવાથી પાકનું પ્રતિકૂળ વાતાવરણ તેમજ રોગ–જીવાતથી રક્ષણ કરી શકાય છે તેમજ સારી ગુણવત્તા અને વધુ ઉત્પાદકતા મેળવી શકાય છે.

(Action:- Department of Renewable Energy & Rural Engg., CAET, JAU, Junagadh)

NAVSARI AGRICULTURAL UNIVEERSITY

12.5.3.1

Preparation of Ready to Serve (RTS) beverage from banana pseudostem sap.

Farmers and processors are recommended to utilize blend of banana psuedostem sap and aonla fruit juice having 3.5% and 8% TSS respectively with the ratio of 90:10 for the prepration of ready to serve drink. The drink packed in glass bottle after pasteurization at 87° C for 15 min followed by sterilization in bottles at $96 \pm 1^{\circ}$ C for 25 min has storage stability for six month at ambient condition.

ખેડુતો અને પ્રોસેસરોને કેળાના થડના રસ અને આમળાના રસ કે જેના ટી. એસ. એસ. અનુક્રમે 3.8% અને 2% હોય તેને ૯૦:૧૦ પ્રમાણમાં મીશ્રણ બનાવી પીરસવા માટે તૈયાર પીણું બનાવવાની ભલામણ કરવામાં આવે છે. આ પીણાને 29° સે. તાપમાને ૧૫ મીનીટ પાસ્ચરાઈઝ કરી ગ્લાસની બોટલમાં ભરી ૯ $5 \pm 1^{\circ}$ સે તાપમાને ૨૫ મીનીટ સ્ટરીલાઈઝ કરવાથી સામાન્ય તાપમાને $5 + 10^{\circ}$ મહિના સુધી સંગ્રહ કરી શકાય છે.

(**Action:** I/c, CE on PHT, Navsari)

12.5.3.2

Study of effect of drainage on banana production in South Gujarat

Farmers of South Gujarat Heavy Rainfall Zone (AES-III), growing banana are advised to follow 45cm deep open drainage system (bottom width 15cm and top width105cm) spaced 12 m apart with 1:1 side slope and a bed slope of 0.05%, to achieve higher yield and maximum net return.

દક્ષિણ ગુજરાતના વધુ વરસાદ વાળા ખેત આબોહવાકીય વિસ્તાર–૩ મા કેળની ખેતી કરતા ખેડૂતોને વધુ ઉત્પાદન અને આર્થિક વળતર મેળવવા ૧૨ મીટર અંતરે ૪૫ સેમી ઉડી તથા બાજુએ ૧ઃ૧ નો તથા ૦.૦૫ % સમાંતર ઢાળવાળી ખુલ્લી નીતાર નીક(પાયાની પહોળાઈ ૧૫ સે.મી. અને ઉપરની પહોળાઈ ૧૦૫ સે.મી.) બનાવવા ભલામણ કરવામાં આવે છે.

(Action: I/c Prof. and Head, Dept. of Agril. Engg., NMCA, Navsari)

12.5.3.3

Effect of laser leveling on crop water requirement and growth of castor crop

Farmers of South Gujarat Heavy Rainfall Zone (AES-III), growing irrigated castor (GCH-7) during rabi season are advised to adopt laser land leveling technique to provide 0.45 per cent longitudinal slope to castor field for getting higher castor yield, net return and water saving.

દક્ષિણ ગુજરાતના ભારે વરસાદ વાળા વિભાગ (કૃષિ આબોહવાકીય પરિસ્થિતી −૩) માં રવિ ૠતું દરમ્યાન પિયત દિવેલા (જી.સી.એચ.−૭) ઉગાડતા ખેડૂતોને દિવેલાનું વધું ઉત્પાદન અને આર્થિક વળતર મેળવવા તેમજ પાણીની બચત માટે લેસર લેવલરનો ઉપયોગ કરી ૦.૪૫ ટકા સમાંતર ઢાળ આપી દિવેલાનો પાક લેવા ભલામણ કરવામાં આવે છે.

(Action: I/c Prof. and Head, Dept. of Agril. Engg., NMCA, Navsari)

12.5.3.4

Development and evaluation of low cost of solar still

A low cost roof top cement brick type solar still covered with 4mm thick toughened glass developed by NAU is recommended to get 2 l/m² - day distilled water for Dediapada area.

નવસારી કૃષિ યુનિવર્સિટી દ્રારા વિકસાવવામાં આવેલ સિમેન્ટ– ઈટ બાંધંકામ અને ૪ એમ. એમ. ટફન કાર્ય કવર પ્રકારના ઓછી કિંમતના સોલર સ્ટીલ ર લી/ મીર પ્રતિ દિવસ શુધ્ધ પાણી (દેડીયાપાડા ક્ષેત્ર માટે) મેળવવા ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે.

(Action: Dean, CAET, Dediapada)

12.5.3.5

Development of technology for dehydration of onions rings for adoption at commercial scale

The house deferred the recommendation with following suggestions;

- Data without pre treatment are to be given
- Industry norms should be followed in process methodology be given
- Microbial analysis be included
- Usage of silica gel to be reviewed

(Action: Assoc. Pro. & Head, Dept. PHT, ACHF, Navsari)

12.5.3.6

Development of technology for dehydration of okra slices for adoption at commercial scale

The house deferred the recommendation with following suggestions;

- Data without pre treatment are to be given
- Industry norms should be followed in process methodology be given
- Microbial analysis be included
- Usage of silica gel to be reviewed

(Action: Assoc. Pro. & Head, Dept. PHT, ACHF, Navsari)

12.5.3.7

Development of technology for dehydration of cauliflower for adoption at commercial scale

The house deferred the recommendation with following suggestions;

- Data without pre treatment are to be given
- Industry norms should be followed in process methodology be given
- Microbial analysis be included
- Usage of silica gel to be reviewed

(Action: Assoc. Pro. & Head, Dept. PHT, ACHF, Navsari)

12.5.3.8

Standardization of Method for Preparing of Candy from Bitter Gourd

The house deferred the recommendation due to following reason:

Practical utility of the product is not meeting the desired objectives (product found very bitter in spite of adding sugar)

(Action: Assoc. Pro. & Head, Dept. PHT, ACHF, Navsari)

12.5.3.9

Effect of different types of processing on the nutritional quality of green gram, french bean and chick pea

House deferred the recommendation

B. SCIENTIFIC COMMUNITY

ANAND AGRICULTURAL UNIVERSITY

12.5.1.43

Screening of novel thermotolerant yeast with improved process economics for bioethanol production

Ethanogenic and thermotolerant AAU cultures ETGS1 and ETDLT1 are identified as strains of *Saccharomyces cerevisiae* and *Kluyveromyces marxianus* respectively. These strains have shown potential for bioconversion of starch and lactose containing substrates into ethanol. Scientists interested in the process development for bioconversion of starch or lactose into ethanol can use these strains.

(Action:- HOD, Department of FQA, FPT & BE, AAU, Anand)

12.5.1.44

Screening, Identification and Characterization of Lactic Acid Bacteria with probiotic potential and phytic activity

Lactic acid bacterial strains *Pediococcus acidilactici* ID-01 and *Pediococcus lolii* ID-02 were isolated and identified having probiotic potential and phytate degrading ability. Scientists interested in phytate processing are advised to use these AAU strains

(Action:- HOD, Department of FQA, FPT & BE, AAU, Anand)

12.5.1.45

Comparative appraisal of physical, chemical, instrumental and sensory evaluation methods for monitoring oxidative deterioration of ghee

- 1. Among BIS, AOAC, AOCS, FOX and IDF methods for determination of peroxide value of ghee, the use of FOX method is recommended since it is best correlated with the flavour score of ghee.
- 2. Among Weight gain, Conjugated dienes content, Iodine value, FFA content, Kreis number and Peroxide value (by FOX) method for monitoring primary stage of oxidation in ghee, determination of peroxide value of ghee by FOX method is recommended since it is best correlated with the flavour score of ghee.
- 3. Among Thiobarbituric acid, ρ-Anisidine value, Totox value and Carbonyl value for monitoring secondary stage of oxidation in ghee, the method of Carbonyl value is recommended since it is best correlated with the flavour score of ghee.

(Action:- HOD, Department of DC, DSC, AAU, Anand)

12.5.1.46

Preparation of ghee from camel milk and evaluation of its shelf life

The ghee prepared from camel milk has Reichert Meissl (RM) value of 9.91 and Butyrorefractometer Reading (BR) at 40°C of 44.52. These parameters do not fulfill the present requirements specified by FSSAI and AGMARK for ghee. Therefore, while formulating FSSAI

and/or AGMARK specifications for ghee prepared from camel milk, the RM value and BR reading at 40°C reported in the present study will be useful.

(Action:- HOD, Department of DC, DSC, AAU, Anand)

12.5.1.47

Evaluation of selected spices/herbs for their suitability to enhance the shelf life of paneer

Among the common culinary spices/herbs (ajwain, asafoetida, black pepper, cardamom, cinnamon, clove, coriander, cumin, fenugreek, garlic, ginger, mint, onion and turmeric), cardamom was found to be most effective to improve the shelf life of *paneer*. The addition of crushed cardamom seeds in milk @ 0.6% of the expected yield of *paneer* improves the shelf life of *paneer* up to 21 days at $7 \pm 1^{\circ}$ C.

(Action:- HOD, Department of DC, DSC, AAU, Anand)

As suggested by house at NAU this recommendation should also be included under category Industry/ Entrepreneurs

12.5.1.48

Characterization of *Khoa* prepared from camel milk and evaluation of its suitability for preparation of selected sweets

The flavor of gulabjamun prepared from camel milk *khoa* blended with refined wheat flour (10%), *suji* (12%), baking powder (0.25%) and water can be improved using cardamom, when added both in dough (20 ml extract of 7.5% crushed cardamom seed in water) and in sugar syrup (63°Brix) (3 g crushed cardamom seeds in 1 lit of sugar syrup).

(Action:- HOD, Department of DC, DSC, AAU, Anand)

12.5.1.49

Study on distribution pattern of nitrogenous components in milk

In pooled cow milk samples collected from Anand district, the average values of total nitrogen (TN), casein nitrogen (CN), whey protein nitrogen (WPN) and non-protein nitrogen (NPN) were 0.5102, 0.3903, 0.0793 and 0.0411%; in buffalo milk 0.6230, 0.4922, 0.0879 and 0.0429% while in mixed milk 0.5588, 0.4360, 0.0810 and 0.0418% respectively. Distribution of total nitrogen amongst CN, WPN and NPN was 76.50%, 15.53% and 8.06% in cow milk; 79.00%, 14.11% and 6.89% in buffalo milk; while it was 78.02%, 14.50% and 7.48% in mixed milk respectively.

(Action:- HOD, Department of DC, DSC, AAU, Anand)

12.5.1.50

Metagenomic and Clinical investigation of synbiotic fermented dairy product containing probiotic *Lactobacillus helveticus* MTCC 5463 in geriatric volunteers

A honey supplemented probiotic fermented milk containing *Lactobacillus helveticus* MTCC 5463 is recommended for consumption by geriatrics as it is found to have immune boosting functional property in geriatrics and positively modulates the gut microflora.

The metagenomic study revealed that the faecal samples were dominated by Firmicutes (50%), Actinobacteria (20%) and Proteobacteria (10%) and feeding honey supplemented probiotic fermented milk resulted in 7% increase in Firmicutes, 1.5 % rise in Actinobacteria and 1.9% increase in Proteobacteria.

(Action:- HOD, Department of DM, DSC, AAU, Anand)

12.5.1.51

e-Student Corner with Attendance and Result module for UG courses

e-student corner web system developed by Anand Agricultural University is recommended for attendance, results and fees collection. The system is useful to Course Teachers, Academic in-charges, Principals, Registrar and Administrative Officers to carry out various academic activities of AAU and recommended for use in Anand Agricultural

University.

(Action: PI / Director IT, Anand)

12.5.1.52

Web User Interface Assisted Document Management System

Web user interface assisted document management system developed by Anand Agricultural University automates the workflow process. It is applied for digitization of documents and recommended for use by Anand Agricultural University.

(Action: PI / Director IT, Anand)

12.5.1.53

Development of web based Procurement Management System

Web based procurement management system developed by Anand Agricultural University is useful to purchase goods. System generates comparative statement, kharid patrak etc. and recommended to use for Anand Agricultural University.

(Action: PI / Director IT, Anand)

12.5.1.54

Development of web based Online Tour Program

Web based online tour program developed by Anand Agricultural University is useful to place online tour proposals for university staff members with provision for approval from authorities. It also generates print out of tour diary, TA-DA reports, and previous tour reports and recommended for use at Anand Agricultural University.

(Action: PI / Director IT, Anand)

12.5.1.55

Development of web based Online Bill Processing System

Web based online bill processing system developed by Anand Agricultural University automates many financial functions like budget entry, grant allocation, checking bill, passing bill and necessary reports for management. It is recommended to use by Anand Agricultural University.

(Action: PI / Director IT, Anand)

12.5.1.56

Development Web Based PG Module of Student Corner for Anand Agricultural University

Web based PG Module of Student Corner developed by Anand Agricultural University is useful to store and manipulate PG students' information like basic details, course, degree, major and minor subject, major guide, seminar and synopsis approval date, thesis title, thesis date and notification. It is also used for managing student progress in his/her studies and recommended to use by Anand Agricultural University.

(Action: PI / Director IT, Anand)

JUNAGADH AGRICULTURAL UNIVERSITY

12.5.2.1

Response of Groundnut to supplemental irrigation.

The farmers of North Saurashtra Agro-climatic Zone growing groundnut GG-20 are advised to apply supplemental irrigation at soil moisture deficit of about 40 % (about 20% soil moisture content) for obtaining higher productivity, maximum net returns and improving crop and field water use efficiency under dry farming conditions.

(Action: - Research Scientist Main Dry Farming Research Station, JAU, Targhadia)

12.5.2.2

Performance of MIS in Canal Command Area.

Irrigation planners are advised to use either the regressional formula or ANN approach for determining seasonal runoff from the seasonal rainfall for Uben command area:

$$Y = 0.010X^{1.118}$$
, $R^2 = 0.754$and

ANN model architecture 1 - 6 - 1 with $R^2 = 0.82$, $\eta_{\text{model}} = 80\%$

- Irrigation planners are advised to adopt the following optimal cropping pattern under surface irrigation system for Uben command area:
 - Under surface irrigation system, 250 ha groundnut and 2250 ha green gram during the Kharif season and 50 ha wheat and 1529 ha onion during the Rabi season can be irrigated to get maximum return with cropping intensity of 163.15.
- Irrigation planners are advised to adopt the following optimal cropping pattern under drip irrigation system for Uben command area:

Under drip irrigation system, 2475 ha groundnut and 25 ha green gram during the Kharif season and 50 ha wheat and 1992 ha onion during the Rabi season i.e. an additional 463 ha area can be brought under irrigation in Rabi season by constructing 315 intermediate storage structures having 260 m3 capacity each to serve one chuck (8 ha area).

Type of Irrigation system in Command Area	Season	Crop	Crop Area (ha)	Cropping Intensity (%)	Remark
Surface	Kharif	Ground nut	250	163.15	
		Green gram	2250		
	Rabi	wheat	50		
		Onion	1529		
Pressurized	Kharif	Ground nut	2475	181.68	315 intermediate storage structures having 260 m capacity (9m X 9m X 3.2m) each to serve a chuck of 8
		Green gram	25		ha area will bring additional area of 462 ha in Rabi season under
	Rabi	wheat	50		irrigation
		Onion	1992		

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

12.5.2.3

Online HRD Programme

It is recommended to Staff members of JAU to use the online HRD programme developed by Junagadh Agricultural University to obtain the permission from concerned authority for participating or attending the programmes as per statute 121 Item No. 28.

(Action:-HOD, Department of Processing&Food Engg., CAET, JAU, Junagadh)

12.5.2.4

Assessment of microbial floral strength during post-harvest handling of mango, custard apple and lemon.

The presence of harmful fungus and bacteria during transportation stage was observed maximum amongst all stages of post-harvest handling in mango, custard apple and lime fruits and found increasing in subsequent stages. Therefore, farmers and traders are recommended to take control measures to check microbial growth prior to transportation.

કેરી, સીતાફળ અને લીંબુ જેવા ફળોની કાપણી બાદના વિવિધ તબકકાઓ પૈકી પરિવહનના તબકકા દરમ્યાન હાનિકારક ફૂગ અને જીવાણુનું વધુ પ્રમાણ જોવા મળે છે અને ત્યારબાદ તેમાં ઉત્તરોત્તર વધારો થતો જાય છે. જેથી ખેડૂતો અને વેપારીઓને ભલામણ કરવામાં આવે છે કે આવા ફળોના પરિવહન પહેલાં સક્ષ્મ જીવાણંઓના નિયંત્રણ માટેના ઉપાયો કરવા જરૂરી છે.

(Action:- HOD, Department of Processing & Food Engg.,

CAET, JAU, Junagadh)

NAVSARI AGRICULTUFAL UNIVERSITY

12.5.3.1

Study relating to "Formulating long-term mechanization strategy for Dediapada taluka"

The mechanization tool level (MTL), which indicates percentage of mechanization used for particular farming operation in Dediapada taluka was found to be tillage 40%, sowing 11%, transplanting 0%, interculture 18%, spraying 35%, weeding 22%, harvesting 14% and threshing 33%. Therefore design, development and popularization of small hand tools and impliments suitable for sowing, transplanting and harvesting operations need to be done on priority basis in order to enhance mechanization index in selected operations and also to increase the income of farmers of Dediapada taluka.

(Action: Dean, CAET, Dediapada)

NEW TECHNICAL PROGRAMMES

ANAND AGRICULTURAL UNIVERSITY

Sr. No	Title	Suggestions	Action
12.5.1.1	Studies on quality changes of rice during ageing: Effect of different storage conditions	 Approved with suggestion Add metallic bean as one of the treatment cooking parameters should be included 	Action:- HOD, Dept. of PHE
12.5.1.2	Design & development of low cost portable mango ripening system	Approved with suggestion 1. Air movement may be removed from observations.	HOD, Dept. of PHE
12.5.1.3	Production of high quality powder with maximum retention of essential oil using cryogenic grinding of some selected spices	Approved with suggestion 1.Add one more treatment of - 40 degrees celcius.	HOD, Dept. of PHE
12.5.1.4	Standardization of process parameters for the development of partially defatted peanut	Approved	HOD, Dept. of PHE
12.5.1.5	Extension of shelf life of bread using suitable ingredient	Approved	HOD, Dept. of FPT
12.5.1.6	Title: Utilization of pumpkin carotenoid in food products	Approved	HOD, Dept. of FPT
12.5.1.7	Title: Energy assessment in selected food processing plant/s	Approved	
12.5.1.8	Title: Effect of gamma irradiation on cooking & milling characteristics of pigeon pea grains	Approved	HOD, Dept. of FE
12.5.1.9	Title: Popping of sorghum grain using microwave energy	Approved	HOD, Dept. of FE
12.5.1.10	Title: Development of Sesame spread production technology	Approved	HOD, Dept. of FQA
12.5.1.11	Title: Super critical fluid extraction of essential oil from curry leaves	Approved	HOD, Dept. of FQA
12.5.1.12	Title: Bioethanol production from potato processing starch waste by thermotolerant strain of <i>Saccharomyces cerevisiae</i> ETGS1	Approved	HOD, Dept. of FQA

12.5.1.13	Title: Development of method for Vitamin C estimation	Approved	HOD, Dept. of FQA
12.5.1.14	Title: Performance evaluation of a briquetting machine for effective use of loose biomass	House did not approve the study	HOD, Dept. of BE
12.5.1.15	Title: Development of technology for value-addition in Indigenous and Western dairy products Sub-title: Development of technology for carbonated lemon whey beverage	Approved with following suggestions 1. Amount of salt and ginger to be indicated	HOD, Dept. of DT
12.5.1.16	Title: Preparation of dairy/non-dairy analogue cheese of processed cheese and Mozzarella type. Sub-title: Value addition to mozzarella cheese analogue through incorporation of whey protein and vitamin A	Approved	HOD, Dept. of DT
12.5.1.17	Title: Development of <i>Petha</i> (Ash gourd sweetmeat) ice cream	Approved	HOD, Dept. of DT
12.5.1.18	Title: Development of cereal based <i>burfi</i>	Approved	HOD, Dept. of DT
12.5.1.19	Title: Development of a nutririch <i>chakka</i> based dip fortified with Moringa	Approved	HOD, Dept. of DT
12.5.1.20	Title: Technology for manufacture of extended shelf life of <i>basundi</i>	Approved	HOD, Dept. of DPO
12.5.1.21	Title: Development of methods for detection of adulteration in Milk and Milk Products Sub-title: Application of Infrared spectroscopy in detection of foreign fats and oils in ghee	Approved	HOD, Dept. of DC
12.5.1.22	Title: Evaluation of selected natural food additives for their suitability to enhance the quality of dairy products	Approved	HOD, Dept. of DC

12.5.1.23	Sub-title: Evaluation of common culinary spices as natural antioxidant for ghee Title: Utilization of whey in dairy and food products Sub-title: Development of whey based medium for biomass production of lactic acid bacteria	Approved	HOD, Dept. of DM
12.5.1.24	Title: Development of dairy starter cultures and value added dairy products Sub-title: Development of Greek Yoghurt Type Probiotic Fermented Milk using indigenous culture		HOD, Dept. of DM
12.5.1.25	Title: Development of dairy starter cultures and value added dairy products Sub-title: Development of Oat based probiotic smoothie	Approved	HOD, Dept. of DM
12.5.1.26	Title: Plasmid profiles of lactic acid bacteria and their use as bio-medical agents Sub-title: Development of probiotic cream for vaginal health of women	Not Approved House felt the product is related to medicinal / cosmetic nature and the group doesn't have expertise to recommend such products	HOD, Dept. of DM
12.5.1.27	Daily and monthly rainfall forecasting using extreme learning machines (ELMs), ANN with genetic algorithm (GANN) in the middle region of Gujarat	Approved	CAET, AAU, Godhara
12.5.1.28	Development of a low cost power operated maize Sheller for small and marginal farmers	Approved with suggestion Add name of Assistant Professor instead of mechanic	Prof. & HOD, FMPE, CAET, AAU, Godhara
12.5.1.29	Design and development of tractor – drawn potato harvester with elevator	Approved	Prof. & HOD, FMPE, CAET, AAU, Godhara

12.5.1.30	Determination and analysis of	Approved with suggestion	Prof. & HOD,
	vibration levels on Mini farm tractors	to measure Vibrations during	FMPE, CAET, AAU, Godhara
	tractors	operations like cultivation,	AAO, Godinara
		tillage, transportation.	
		Vibrations needs to be	
		measured at operator's seat	
		and Steering.	
12.5.1.31	Development of rapid system	Approved with suggestion	HOD, APE,
	for measurement of angle of	Paviga titla ag 'Davalanmant	CAET, AAU,
	repose for grains	Revise title as 'Development of rapid measurement system	Godhara
		for angle of repose of grains'.	
12.5.1.32	Development of Matlab based	Approved	HOD, RE,
	programming of seed	11	CAET, AAU,
	properties		Godhara
12.5.1.33	Development of multipurpose	Approved with suggestion	AIT / RE,
	solar dryer cum cooker		CAET, AAU,
		'incorporate flow regulator and suitable commodity'	Godhara
12.5.1.34	Design and development of	Approved	AE AIT / PAE,
	custard apple pulp extracting		Dahod
	machine with automatic		
12.5.1.35	feeding Quantification of seed quality	Approved with suggestion	AE AIT / RRS,
12.3.1.33	up gradation through seed	Approved with suggestion	Anand
	processing in wheat, green and	to remove the name of	
	paddy	company	
12.5.1.36	Web based application for	Approved	AIT, Anand
	analysis of completely		
	randomized design latin square		
10.5.1.05	design and strip plot design	A 1	A.E. A.E.
12.5.1.37	Development of web base	Approved	AE AIT,
	integrated attendance and result module for Polytechnic in		Anand
	student corner application		
12.5.1.38	Transformation of information	Approved	AE AIT,
	through multimedia based	11	Anand
	interactive media for desi		
	cotton crop		

12.5.1.39	Development of web based	Approved with suggestion to	AE AIT /
	annual budget management	remove word "close" from	DITAnand
	system	objective 1	
		Add one more objective in	
		consultation with Dr Radadia	
12.5.1.40	Web based application for dead	Approved	AE AIT /
	stock and IT assets information		DITAnand
	management		
12.5.1.41	Online information	Approved	AE AIT /
	management for extension		DITAnand
	centers of AAU		

JUNGADH AGRICULTURAL UNIVERSITY

Expt. No.	Experiment Title	Suggestions	Action
12.5.2.1	Design and development of seed drill for	Approved	HoD, Dept of
	small seeds.		FMP, CAET,
			JAU, Junagadh
12.5.2.2	Coriander crop response to deficit soil	Approved	HoD, Dept of
	moisture on various growth stages under		SWE, CAET,
	drip irrigation		JAU, Junagadh
12.5.2.3	Assessment of potential water resources	Approved with	HoD, Dept of
	of Aji river basin using SWAT Model	fallowing	SWE, CAET,
	system.	suggestions	JAU, Junagadh
		Ground truth data	
		be mentioned in the	
		programme	
12.5.2.4	In-situ moisture conservation in rain fed	Approved with	Research
	stressed region for increasing	following	Scientist, Main
	Productivity of cotton crop	suggestion	Dry Farming Res.
			Station, JAU,
		Mention main plot	Targhadi
		and sub plot in	
		treatments	
12.5.2.5	Design and development of on farm solar	Approved with	HoD, Dept of
	assisted dryer for drying of groundnut	following	PFE, CAET,
	pods.	suggestion	JAU, Junagadh
	, pouc.	NI 1 C	
		Number of	
		investigators should	
		be reduced	

12.5.2.6	To study the effect of different packaging	Approved	HoD, Dept of
	materials against Groundnut Bruchid		PFE, CAET,
	(Caryedonserratus Olivier) during		JAU, Junagadh
	storage.		
12.5.2.7	Lime grading simulation based on image	Approved with	HoD, Dept of
	processing techniques.	suggestion	PFE, CAET,
			JAU, Junagadh
		Tool to be	
		developed to	
		support Matlab for	
		data analysis and	
		included in	
		methodology	
		Add co PI's in the	
		study	
12.5.2.8	Constraints perceived in adoption of	Approved with	HoD, Department
	Agro- Processing Centres established by	suggestion	of Agricultural
	Junagadh Agricultural University,		Engineering
	Junagadh	Ranking has to be	Extension
		defined	Education,
		Design should be	CAET, JAU,
		mentioned	Junagadh

NAVSARI AGRICULTURAL UNIVERSITY

Experiment	Experiment Title	Suggestions	Action
No.			
12.5.3.1	Standardization of technology for preparation of Tomato (Solanum lycopersicum L.) Powder for home scale adoption	Approved with following suggestions Recast the title as "Development of technology for ready to use freeze dried tomato (Solanum lycopersicum L.) slice" with the objectives; 1.To standardize process parameters for freeze dried tomato slice.	Center of Excellence of PHT, Navsari

		2 To evaluate the	
		2. To evaluate the quality characteristics of freeze dried tomato slice during storage. 3.To evaluate rehydration characteristics of freeze dried tomato slices And treatment as Factor1:Slice	
		thickness	
		1. 5 mm 2. 10 mm 3.15 mm Factor 2: Blanching	
		at 80°C for 2min	
		2. Without hot water	
		Factor 3 :Freezing to -30°C with three rates	
		(6h, 8h, 12 h)	
		Factor4: Vacuum	
		freeze drying stage I: 35°C Stage II: 50 °C	
12.5.3.2	Technology for utilization of Orange Peel and Seed	Approved with following suggestions Characterization of processing waste Standardize drying Essential oil from seed, peel	Center of Excellence of PHT, Navsari
12.5.3.3	Evaluation of Land Leveling and Sowing Methods on Yield and Water use efficiency of Sorghum (Sorghum bicolor L.) Crop in Vertisol of South Gujarat	Approved with following suggestions Replace first treatment with ridge and furrow system. Furrow irrigation system is to be designed Modify the title as	Dept. of Agril. Engg., NMCA, Navsari
		Influence of land	

		configuration on productivity of sorghum	
12.5.3.4	Effect of different colour shade nets on biomass and quality of leafy vegetables (Fenugreek, coriander and garlic)	Approved	Research Scientist, Soil and Water Management Research Unit, N.A.U., Navsari
12.5.3.5	Modification of NAU designed hold – on type power operated Paddy thresher	Approved with suggestion to work out the economics	Research Scientist, Soil and Water Management Research Unit, N.A.U., Navsari
12.5.3.6	Evaluation of irrigation scheduling in rice crop by using field water tube (alternative wetting and drying method)	Approved with following suggestions Modify objectives as suggested To simulate soil moisture in root zone To work out the economics of paddy production	Research Scientist, Soil and Water Management Research Unit, N.A.U., Navsari
12.5.3.7	Performance evaluation of Scheffler Solar Concentrating Cooker for direct and indirect community cooking application	Not approved	Action: Dean, CAET, Dediapada
12.5.3.8	Design, development and performance evaluation of mixed mode cabinet solar dryer	Approved	Dean, CAET, Dediapada
12.5.3.9	Trends of Rainfall and temperature variation in Narmada District of Gujarat	Approved with suggestions Data independence / correlation needs to be established before using MK test. Probability	Dean, CAET, Dediapada

12.5.3.10	Development of studies of Sapota (Chikoo) Powder based value added product (pasta) using semolina (Suji) and maida	distribution selected need to be tested using Andarson-Darling test. The evaporation probability analysis to be carried out. ER procedure to be highlighted Irrigation requirements to be estimated with local Kc correction procedures. Approved Change it to control instead of "0" in treatment	Dean, CAET, Dediapada
12.5.3.11	comparative Studies on the different drying methods on ber (Ziziphus mauritiana)	Remove two different in statistical design Approved Change in treatment	Dean, CAET, Dediapada
12.5.2.12		instead of 40^{0} c take 70^{0} c	Doon CAET
12.5.3.12	Effect of laser levelling on water use efficiency and growth of gram crop	Approved Design border irrigation Compare the slope with recommended areas Plot leveling index	Dean, CAET, Dediapada
12.5.3.13	Design and development of raised bed former-cum-seeder for clay loam soil condition for Narmada	Vs yield Approved	Dean, CAET, Dediapada

12.5.3.14	Design and development of suitable furrow opener for heavy clay soil condition for South Gujarat	Approved Modify objectives as suggested	Dean, CAET, Dediapada
12.5.3.15	A Study on technical feasibility and development of online Financial Approval system for NAU	Approved	Department of Information & Communication Technology, AABMI, Navsari
12.5.3.16	Development program for online tour approval for NAU	Approved Modify 1 st objective as suggested To evaluate technical feasibility of online software as per statue 121	Dept. of ICT, AABMI, NAU, Navsari
12.5.3.17	Developing mobile App for the APMC operations.	Approved modify as suggested Modify 1 st objective as suggested To study the APMC Management operations and Farmers requirement. Modify 3 rd objective as suggested To develop the Mobile App for the APMC operation Drop 2 nd objective	Dept. of ICT, AABMI, NAU, Navsari
12.5.3.18	Developing web portal for the farmers of South Gujarat Region	Approved with modified 1 st objective To study the requirement of web portal to disseminate the agricultural Information to South Gujarat farmers	Dept. of ICT, AABMI, NAU, Navsari

12.5.3.19	Standardization of technology	Approved	I/c, CE on PHT,
	for preparation of Aloe vera based vermicelli	Also presented in Horticulture sub committee	Navsari
12.5.3.20	Standardization of technology for minimal processing of fresh cut cauliflower (<i>Brassica oleracea</i> var. botrytis L.).	Approved	I/c, CE on PHT, Navsari
12.5.3.21	Standardization of technology for minimal processing of fresh cut potatoes (<i>Solanum tuberosum</i> L.).	Approved	I/c, CE on PHT, Navsari
12.5.3.22	Standardization of technology for preparation of candy from ripe papaya (<i>Carica papaya</i> L.) fruits.	Approved	I/c, CE on PHT, Navsari
12.5.3.23	Development of technology for preservation of tender coconut water	Not Approved	I/c, CE on PHT, Navsari
12.5.3.24	Development of technology for health based digestive tablets from noni pomace powder.	Approved with change of title "Development of technology for value added tablets from noni pomace powder".	I/c, CE on PHT, Navsari
12.5.3.25	Characterization of the Sapota seed oil for extraction and value addition	Not Approved	I/c, CE on PHT, Navsari
12.5.3.26	Home scale ripening of Banana Cv. Grand Naine	Approved	I/c, CE on PHT, Navsari
12.5.3.27	Effect of pre-cooling on quality and shelf-life of Banana Cv. Grand Naine	Not Approved as the technology has already been developed by AAU & recommended by Combined Joint Agresco	I/c, CE on PHT, Navsari

S D AGRICULTURAL UNIVERSITY

Expt.	Experiment Title	Suggestions	Action
No.			
12.5.4.1	Effective utilization of kinetic energy available in output water of Submersible Pump.	Approved with suggestion Calculate net energy generated	Dean, College of RE & EE, SDAU
12.5.4.2	Effect of land configuration and mulching on productivity and resource use efficiency of castor.	Approved with suggestion Plastic mulch should be removed from treatment	Research Scientist, Centre for Natural Resource Management, SDAU
12.5.4.3	Feasibility of rabi crops using harvested rain water through MIS.	Approved with suggestion Specify MIS, give amount of water available, catchment area, number of irrigations, Pond size	Research Scientist, Centre for Natural Resource Management, SDAU
12.5.4.4	Technological Intervention for Fortification of Omega-3 Fatty Acids in Milk.	Approved with suggestion Target group should be identified	Dean, College of Dairy Science & Food Technology, SDAU,
12.5.4.5	Development of Carrot based blended ready-to-serve (RTS) beverages and its qualitative evaluation.	Approved with suggestion • Micrological observation should be added during storage • Addition of KMS as per FSSI • Weekly interval analysis • Refrigerated storage to be included in shelf life study	Dean, College of Home Science, SDAU,
12.5.4.6	Development and evaluation of functional cookies produced from whole wheat flour comprised with soya flour and rice bran.	Approved with suggestion • Functionality of the product to be defined • Title to be refined	Dean, College of Home Science, SDAU,

12.5.4.7	Development and evaluation of multigrain functional flour for traditional recipes.	Approved with suggestion • Rheological properties of the dough be included	Dean, College of Home Science, SDAU,
12.5.4.8	Design, Development & evaluation of lemon harvesting device.	Approved with suggestion Collaborators from JAU should be included	Dean, College of Horticulture, Jagudan, SDAU
12.5.4.9	Design and development / assembling of low cost overflow protection and temperature control system for overhead water tank	Approved with suggestion Economics be computed	Dean, College of RE & EE, SDAU
12.5.4.10	Design and development of single axis solar tracker to enhance efficiency of PV array for better operation of water pumping	Approved with suggestion Try to design for 5 Hp pump and compare it with locally available trackers	Dean, College of RE & EE, SDAU

KAMDHENU UNIVERSITY

Experiment	Experiment Title	Suggestions	Action
No.			
12.5.5.1	Development of milk - beetroot	Change title as	College of Dairy
	based fibre enriched low calorie	suggested by the	Science,
	burfi	house	Kamdhenu
			Univ. Amreli
		Observation related to	
		water activity should	
		be added	

12.6 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. Acharya, ADR, SDAU
		Dr. B.A. Golakiya, Head, Department of Biotechnology, JAU
Rapporteurs	:	Dr. A.D. Patel, Research Scientist, RRS, AAU
		Dr. Diwakar Singh, Asst. Prof., NAU

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

Universi ties		New Technical				
	Farming C	ommunity	Scientific		Programmes	
			Community			
	Proposed	Appro	Propos	Appro	Propos	Appro
		ved	ed	ved	ed	ved
AAU	2	2	-	ı	9	8
JAU	3	3	7	7	12	12
NAU	-	-	-	ı	12	12
SDAU	2*	2*	1	1	3	3
Total	7	7	8	8	36	35

^{*} Recommended for domestic and industrial use

Total number of recommendations:15

12.6.1 Recommendations 2016 A. FARMING COMMUNITY

71. 17111111	G COMMONTI			
Anand A	gricultural University			
12.6.1.1.1	Title of Recommendation: Influence of chemicals and PGR's on growth and			
	dry biomass yield of Dodi (Leptadenia reticulata (Retz.) W. & A.)			
	Text in English Language			
	The farmers of Middle Gujarat Agro-climatic Zone-III growing Dodi crop in			
	kharif season are recommended to spray urea 2% with potassium chloride (KCl)			
	2% at 45 and 75 days after planting for getting higher dry biomass yield as well as			
	net return.			
	Text in Gujarati Language			
	મધ્ય ગુજરાત ખેત આબોહવાકીય્ વિસ્તાર-૩ ના ચોમાસુ ઋતુમાં ડોડી (જીવંતિ) પાકનું વાવેતર			
	કરતા ખેડૂતોને વધુ ઉત્પાદન અને આર્થિક વળતર મેળવવા માટે ૨% યુરીયા અને ૨% પોટેશીયમ			
	ક્લોરાઇડના દ્રાવણનું મિશ્રણ રોપણી બાદ ૪૫ અને ૭૫ દિવસે છંટકાવ કરવાની ભલામણ કરવામાં			
	આવે છે.			
	Approved by house			
	(Action: Research Scientist, Medicinal and Aromatic Plant Research			
	Station, AAU, Anand)			
12.6.1.1.2	Title of Recommendation: Influence of source manipulation through			
	decapitation and PGR's on growth, yield and quality of cluster bean			
	(Cyamopsis tetragonaloba L. Taub.) seed cv. 'Pusa Navbahar'			
	Text in English Language			
	Farmers of Middle Gujarat Agro-climatic Zone-III growing cluster bean cv.			
	Pusa Navbahar in <i>kharif</i> season for seed production are recommended to spray			
	GA ₃ 20 mg/l at 45 DAS with decapitation of the plant at 70 DAS for getting higher			
	seed yield as well as net profit.			

	Text in Gujarati Language
	મધ્ય ગુજરાત ખેત આબોહવાકીય વિસ્તાર-૩ ના ખેડુતોને ખરીફ ઋતુમાં ગુવાર (પૂસા
	નવબહાર)માં વધુ બીજ ઉત્પાદન અને આર્થિક વળતર મેળવવા માટે પાકની વાવણી બાદ ૪૫ દિવસે
	જીબ્રેલીક એસીડ ૨૦ મિગ્રા / લિટરનો છંટકાવ સાથે ૭૦ દિવસે છોડની ટોય (અગ્રકલિકા) કાપવાની
	ભલામણ કરવામાં આવે છે.
	Approved by house after recasting the language of recommendation.
Innocodi	(Action: Research Scientist, MVRS, AAU, Anand)
12.6.1.2.1	Agricultural University Title of Recommendation: Effect of foliar spray of micro-nutrients on
12.0.1.2.1	growth and yield parameters of summer groundnut
	Text in English Language The farmers of South Saurashtra Agro-climatic Zone growing summer groundnut are advised to apply the foliar spray of zinc sulfate 0.5% (2.5 Kg ha ⁻¹ in 500 liter water) at 35 and 70 DAS for higher vegetative growth, pod yield and net return.
	Text in Gujarati Language દક્ષિણ સૌરાષ્ટ્ર ખેત–આબોહવાકિય વિસ્તારના ઉનાળુ મગફળી ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે વધુ વાનસ્પતિક વૃઘ્ધિ તથા ઉત્પાદન અને ચોખ્ખી આવક મેળવવા માટે વાવણી બાદ ૩૫ અને ૭૦ દિવસે ર્ઝીક સલ્ફેટ ૦.૫% (૨.૫ કિ.ગ્રા./ હે., ૫૦૦ લીટર પાણીમાં) છંટકાવ કરવો. Approved by house after recasting the language of recommendation.
12 (1 2 2	(Action: Res. Sci., Main Oilseeds Research Station, J.A.U., Junagadh)
12.6.1.2.2	Title of Recommendation: Effect of plant growth regulators and detopping on yield of Bt cotton (Gossypium hirsutum L.) under rainfed condition
	Text in English Language The farmers of North Saurashtra Agro-climatic Zone growing Bt cotton in <i>kharif</i> season are advised for detopping at 75 DAS + spray of ethrel (Ethylene-39 %) 50 ppm (1.3 ml/10 liter water) at 90 DAS for obtaining higher yield and net return. This is due to higher values of tap root length, number of monopodia and number of sympodia per plant and improved quality of seed i.e. ginning percentage, increase uniformity ratio, elongicity percentage and tenacity.
	Text in Gujarati Language ઉત્તર સાૈરાષ્ટ્ર ખેત આબોહવાકીય વિસ્તારમાં ખરીફ ૠતુમાં વરસાદ આધારીત બી.ટી.કપાસ નું વાવેતર કરતા ખેડૂતોને વધુ ઉત્પાદન અને ચોખ્ખી આવક માટે બી.ટી.કપાસના પાકનાં વાવણી બાદ ૭૫ દિવસે છોડની ઉપરની ડૂંખ તોડવા તેમજ વાવણી બાદ ૯૦ દિવસે ઇથરેલ (ઇથીલીન–૩૯ %) ૫૦ પી.પી.એમ. (૧.૩ મિ.લિ.પ્રતિ ૧૦ લિટર પાણીમાં) નાં દ્રાવણનો છંટકાવ કરવાની ભલામણ કરવામાં આવે છે. આમ કરવાર્થી મૂળની લંબાઈ, મોનોપોડીયા અને સિમ્પોડીયાની સંખ્યા તથા બીજની ગુણવત્તામાં વધારાના કારણે ઉત્પાદનમાં વધારો થાય છે.
	Approved by house after recasting the language of recommendation. (Action: Research Scientist, Dry Farming Research Station, JAU, Targhadia)
12.6.1.2.3	Title of Recommendation: Effect of plant growth regulators and detopping on morpho-physiological components of yield in cotton (G. hirsutum L.)
	Text in English Language
	The farmers of South Saurashtra Agro-climatic Zone growing Bt cotton under irrigated condition are recommended for detopping the cotton plant at 75 DAS for
	inigated condition are recommended for detopping the cotton plant at 13 DAS 10f

	balance growth to obtain higher seed cotton yield and net return. This is due to high chlorophyll content, increases in thickness of leaves, length and number of sympodia, plant spread and number of bolls.			
	Text in Gujarati Language દક્ષિણ સૌરાષ્ટ્ર ખેત આબોહવાકિય વિસ્તારમાં પિયત બી.ટી. કપાસનું વાવેતર કરતા ખેડૂતોને વધારે ઉત્પાદન, વધુ આર્થિક વળતર અને ખર્ચના પ્રમાણમાં વધુ નફો મેળવવા માટે બી.ટી. કપાસની સપ્રમાણ વૃઘ્ધિ કરવા ૭૫ દિવસે કપાસના છોડની ટોચ કાપવાની ભલામણ કરવામાં આવે છે. આમ કરવાથી			
	પાનનાં હરિતદ્રવ્ય, પાનની જાડાઈ, સિમ્પોડીયાની સંખ્યા તથા લંબાઈ, છોડનો ઘેરાવો તેમજ જીંડવાની			
	સંખ્યામાં વધારાના કારણે ઉત્પાદનમાં વધારો થાય છે. Approved by house after recasting the language of recommendation.			
	(Action: Research Scientist, Cotton Research Station, J.A.U., Junagadh)			
Navsari A	Agricultural University			
	NIL			
	rushinagar Dantivada Agricultural University			
12.6.1.4.1	Title of Recommendation: Preparation and evaluation of nutritious Laddu			
	by incorporation of Ragi, Grain Amaranth, Sesame and Wheat			
	Text in English Language			
	For the preparation of nutritious <i>Laddu</i> following two protocols are			
	recommended: 1) Protocol-I			
	Blend coarse flour of wheat, roasted grain amaranth and crushed sesame seeds			
	to the proportion of 40:30:30 per cent, respectively. In this blended quantity add its			
	60 per cent shredded jaggery and 35 per cent pure ghee.			
	2) Protocol-II			
	Blend coarse flour of ragi, roasted grain amaranth and crushed sesame seeds to			
	equal proportions (i.e. 33.3 per cent of each). In this blended quantity add its 60			
	per cent shredded jaggery and 30 per cent pure ghee.			
	These <i>Laddu</i> contain more amount of quality protein, fiber, mineral			
	particularly calcium, iron and zinc besides essential amino acids mainly lysine,			
	methionine and tryptophan. Additionally the product is organoleptically acceptable by the end user with good keeping quality upto 20 days than control.			
	Text in Gujarati Language			
	પૌષ્ટિક લાડુ બનાવવા માટે નીચે મુજબની બે રીતોની ભલામણ કરવામાં આવે છે :			
	(૧) ઘઉનો કરકરો લોટ, શેકેલા રાજગરાનો લોટ અને કચરેલા તલને ૪૦ઃ૩૦ઃ૩૦ ટકા પ્રમાણે ક્રમાનુસાર લઈ			
	મિશ્રણ કરવું. આ મિશ્રણના ૬૦ ટકા છીણેલો ગોળ અને ૩૫ ટકા શુધ્ધ ઘી તેમા ઉમેરવું.			
	(૨) રાગીનો કરકરો લોટ, શેકેલ રાજગરાનો લોટ અને કચરેલા તલને સરખા પ્રમાણમાં (એટલે કે ત્રણેય			
	૩૩.૩૩ ટકા મુજબ) લઈ મિશ્રણ કરવું. આ મિશ્રણના ૬૦ ટકા છીણેલો ગોળ અને ૩૦ ટકા શુધ્ધ ઘી તેમાં ઉમેરવું.			
	આ લાડુમાં ગુણવત્તાયુકત પ્રોટીન, રેષા, ખનીજ તત્વો ખાસ કરીને કેલ્શિયમ, લોહ અને ઝીંક તેમજ આવશ્યક એમિનો			
	એસિડસ મુખ્યત્વે લાયસીન, મથીયોનીન અને ટ્રીપ્ટોફ્શનની માત્રામાં વધારો થાય છે. વધુમાં આ લાડુને લોકો ખાવામાં પસંદ કરે છે અને સામાન્ય લાડુ કરતાં તેની સંગ્રહશક્તિ ૨૦ દીવસ સુઘી રાખી શકાય છે.			
	Approved by house after recasting the language of recommendation.			
	(Action: Professor, Department of Food and Nutrition, ASPEE College of Home Science and Nutrition, SDAU, Sardarkrishinagar)			
12.6.1.4.2	Title of Recommendation: Preparation and evaluation of nutritious			
	Biscuits by incorporation of Ragi, Grain Amaranth, Sesame and Wheat			
	Text in English Language			
	For the preparation of nutritious biscuits following protocol is			
	recommended:			
	Blend whole wheat flour, ragi flour, roasted grain amaranth flour and			
	crushed sesame seeds to the proportion of $\underline{55:10:10:25}$ or $\underline{50:10:20:20}$ per cent,			
	respectively. In this blended quantity add its 50 per cent powdered sugar and 40			

per cent vegetable ghee. These biscuits contain more amount of quality protein, fiber, minerals particularly calcium, iron and zinc besides essential amino acids mainly lysine, methionine and tryptophan. Additionally the product is organoleptically acceptable by the end user and it has good keeping quality upto 90 days under room condition. Text in Gujarati Language પૌષ્ટિક બિસ્કીટ બનાવવા માટે નીચે મુજબ ભલામણ કરવામાં આવે છે : ઘઉં, રાગી અને શેકેલ રાજગરાના લોટમાં કચરેલા તલને ૫૫:૧૦:૧૦:૨૫ અથવા ૫૦:૧૦:૨૦ ટકા પ્રમાણે ક્રમાનસાર લઈ મિશ્રણ કરવં. આ મિશ્રણના ૫૦ ટકા દળેલી ખાંડ અને ૪૦ ટકા વેજીટેબલ ઘી ઉમેરવં. આ બિસ્કીટમાં ગુણવત્તાયુકત પ્રોટીન, રેષા, ખનીજ તત્વો ખાસ કરીને કેલ્શિયમ, લોહ અને ઝીંક તેમજ આવશયક એમિનો એસિડસ મુખ્યત્વે લાયસીન, મીથીયોનીન અને ટ્રીપ્ટોફાનની માત્રામાં નોઘપાત્ર વધારો થાય છે. વધુમાં આ **બિસ્કીટને લોકો ખાવામાં પસંદગી કરે છે અને સામાન્ય** વાતાવરણમાં તેને ૯૦ દિવસ સુધી સંગ્રહ કરી શકાય છે. Approved by house after recasting the language of recommendation. (Action: Professor, Department of Food and Nutrition, ASPEE College of Home Science and Nutrition, SDAU, Sardarkrishinagar)

B. SCIENTIFIC COMMUNITY

Anand Ag	gricultural University			
	NIL			
Junagadh	gadh Agricultural University			
12.6.1.2.1	Title: Effect of date of sowing and pre-treatment of seeds with GA ₃ on			
	seed germination and seedling vigour of cumin (Cuminum cyminum L.)			
	Text in English Language			
	It is informed to the scientific community that sowing of cumin seed in the			
	third week of November along with pre-soaking treatment of 50 mg/l gibberellic			
	acid (GA ₃) for 12 hrs to cumin seed at ambient temperature increases germination			
	with enhanced seedling vigour in cumin.			
	Approved by house after recasting the language.			
	(Action: Prof. & Head, Dept. of Genetics & Plant Breeding, JAU,			
11.6.1.2.2	Junagadh)			
11.0.1.2.2	Title: The study of fresh seed dormancy in sesame			
	Text in English Language It is informed to scientific community that the fresh seed dormancy of sesame			
	variety G Til-10 is broken after storage for a month (30 days) after harvest			
	followed by drying, this increases the seed germination percentage and seedling			
	vigour.			
	Approved by house after recasting the language.			
	(Action: Prof. & Head, Dept. of Genetics & Plant Breeding, JAU,			
	Junagadh)			
12.6.1.2.3	Title: Effect of plant growth regulators and detopping on morpho-			
	physiological components of yield in cotton (G. hirsutum L.)			
	Text in English Language			
	The scientific community is informed for detopping the cotton plant at 75 DAS			
	with foliar spray of growth inhibitor mleic hydrazide (MH)* 30 ppm (0.3g /10 lit.			
	water) at 90 DAS for balance growth to obtain higher seed cotton yield and net			
	return. This is due to high chlorophyll content, increased in thickness of leaves,			
	length, no. of sympodia, plant spread and no. of bolls.			

	*Use of MH is banned by Government of India.
	·
	Approved by house after recasting the language.
12.6.1.2.4	(Action: Res. Sci., Cotton Research Station, JAU, Junagadh)
12.0.1.2.4	Title: The effect of storage conditions, packing materials and seed treatments on viability and seedling vigour of onion (Allium cepa L.) seeds
	Text in English Language
	It is informed to scientific community that onion seed may be stored in cold
	storage (7° C $\pm 2^{\circ}$ C) condition packed with cloth bag or polythelene bag (500
	gauge) with seed treatment (Carbendazim 2g/kg seed or mancozeb 2g/kg seed
	or thirum 3g/kg seed or Neem leaf powder 10g/kg seed) or without seed
	treatment for a period of two years without deterioration in germination and
	seedling vigour.
	Approved by house after recasting the language.
	(Action: Res. Sci., Department of Seed Science and Technology, JAU,
	Junagadh)
12.6.1.2.5	Title: Seed viability in soybean (<i>Glycine max</i> (L.) Merr.) under different storage conditions and seed treatments
	Text in English Language
	It is informed to scientific community that soybean seed may be stored
	under cold storage (7° C $\pm 2^{\circ}$ C) condition in cloth bag with seed treatment of
	mancozeb 2g/kg seed or carbendazim 2g/kg seed or neem leaf powder 10 g/kg
	seed for a period of two years without deterioration in germination and
	seedling vigour.
	Approved by house after recasting the language. (Action: Res. Sci., Department of Seed Science and Technology, JAU,
	Junagadh)
12.6.1.2.6	Title: Qualitative and quantitative evaluation of seed vigour and
	viability by Tetrazolium test in pearl millet [Pennisetum glaucum (L.) R. Br.]
	Text in English Language
	It is informed to scientific community that pearl millet seed may be stored
	in air tight plastic containers for a period of 16 months without deterioration in
	germination seedling vigour
	Approved by house after recasting the language.
	(Action: Res. Sci., Department of Seed Science and Technology, JAU,
10 6 1 0 7	Junagadh)
12.6.1.2.7	Title: Performance of <i>neem</i> products on the storability of mungbean
	[Vigna radiata (L.) Wilczek]
	Text in English Language It is informed to scientific community that munches seed may be stored in
	It is informed to scientific community that mungbean seed may be stored in normal condition packed in HDPE bags (500 gauge) with seed treatment of
	cloth bag or polythelene bag (500 gauge) with seed treatment (<i>Neem</i> seed
	kernel powder 5 to 10 g/kg seed or <i>Neem</i> cake 5–10 g/kg seed) for a period of
	two years without deterioration in germination and seedling vigour.
	Approved by house after recasting the language.
	(Action: Res. Sci., Department of Seed Science and Technology, JAU,
	Junagadh)
Navsari A	gricultural University
	NIL

Sardarkrushinagar Dantivada Agricultural University 12.6.1.4.1 Title: Diversity screening for high iron and zinc content in hexaploid and tetraploid Wheat genotypes using molecular markers Text in English Language The differential staining techniques for iron (PPB 3.5%) and zinc (DTZ 0.5%) can be cost effectively, efficiently and ideally utilized for detecting variations in iron and zinc content (high, medium and low) in wheat flour and identifying iron and zinc rich varieties to be included for human consumption, particularly in mid day meal programmes to alleviate iron and zinc deficiencies among children. Accepted (Action: Biotechnology Section, CIL, S.D.A.U., Sardarkrishinagar)

12.6.2 New Technical Programmes 2016-17

Anand Agricultural University

Sr.	Title / Centre	Suggestions	Remarks
No.			
12.6.2.1.1	Centre: Department of Se	ed Science Technology, AAU, Anan	ıd
	Title	Approved with following	Approved
	Effect of zinc and iron	suggestion/s	with
	oxide nanoparticles on seed	1. Also present in the crop	suggestions
	viability and vigour in	improvement sub committee	
	soybean seeds under	at combine joined AGRESCO	
	artificial ageing	meeting. It was presented and	
		there it was suggested to	
		include storage period.	
		2. Include details regarding	
		nanoparticle used in study.	
		(Action: Professor and	
		Head, Seed Science and	
		Technology, BACA, AAU,	
		Anand)	
12.6.2.1.2	Centre: Department of Pl	ant Physiology, BACA, AAU, Anan	d
	Title	Approved with following	Approved
	Influence of seed	suggestion/s	with
	hardening on germination	1. Test the best treatment in the	suggestions
	and related gene expression	pot trial giving water stress	
	study in green gram (Vigna	treatment v/s control.	
	radiata L)	2. Also determine the gene	
		expression in pot trial.	
		(Action: Professor and	
		Head, Plant Physiology, BACA,	
12 6 2 1 2	G (DI (DI)	AAU, Anand)	
12.6.2.1.3	Centre: Plant Physiology,		Α 1
	Title	Approved with following	Approved
	Physiological	suggestion/s	with
	investigation on productivity	1. Measure the leaf thickness.	suggestions
	in rustica tobacco (Nicotiana	2. Analyze soil nutrient status	
	rustica L.)	before conducting experiment.	
		(Action: Res. Sci., Pl.	
		Physio., BTRS, AAU, Anand)	

12.6.2.1.4	Centre: Department of Ri	ochemistry, BACA, AAU, Anand	
12.0.2.1.4	Title	Approved with following	Approved
	Effect of benzyladenine	suggestion/s	with
	(BA) on water deficit stress	1. Mention the duration of	suggestions
	* *		suggestions
	in rice seedling	seed soaking in treatment.	
		(Action: Research Scientist	
		and Head, Biochemistry, BACA,	
12.6.2.1.5	Control Donostroont of A	AAU, Anand)	
12.0.2.1.3		gril. Biotechnology, AAU, Anand	A mmarra d
	Title	Approved	Approved
	Development of genomic	(A street Demonstrate Calantina	
	SSR markers in cluster bean	(Action: Research Scientist,	
		Agril. Biotechnology, AAU,	
		Anand)	
12.6.2.1.6	Contra Donortmont of A	mil Distanton alama AAII Amand	
12.6.2.1.6		gril. Biotechnology, AAU, Anand	A1
	Title	Approved	Approved
	Transcriptome profiling		
	of resistant and susceptible		
	solanum genotypes in		
	response to infection by	(Action: Research Scientist,	
	Tomato Leaf Curl Virus	Agril. Biotechnology, AAU,	
10 60 17	(ToLCV)	Anand)	
12.6.2.1.7	Centre: Plant Tissue Cult		NT /
	Title	Dropped	Not
	Genotype identification	1. Similar experiment is to be	Approved
	in date palm cultivars using	presented and approved for	
	molecular markers	SDAU due to its mandate crop.	
		So, need not to repeat same	
		experiment.	
		(Action: Res. Sci., Plant	
		Tissue Culture Lab, AAU,	
		Anand)	
12.6.2.1.8	Centre: Plant Tissue Cult		
	Title	Approved	Approved
	Development of		
	regeneration protocol for	(Action: Res. Sci., Plant	
	large scale production of	· · · · · · · · · · · · · · · · · · ·	
10 : 0 : :	Coconut (Cocos nucifera L.)	Anand)	
12.6.2.1.9	Centre: Plant Tissue Cult	,	
	Title	Approved with following	Approved
	Synthesis and	suggestion/s	
	characterization of	1. Determine the phospohorus	
	hydroxyapatite nanoparticles	use efficiency in pot	
	and its potential applications	experiment instead of seed	
	as phosphorous fertilizers in	treatment.	
	soybean.	(Action: Res. Sci., Plant	
		Tissue Culture Lab, AAU,	
		Anand)	

Junagadh Agricultural University

12.6.2.2.1	Centre: Department of B	iochemistry and Biotechnology, JAU, Junaga	dh
	Title	Approved with following Approve	ed
	Studies on	suggestion/s with	
	phytochemicals and	1. Include total protein suggestions	
	metabolomics profiling of	content.	
	seaweeds		
		(Action: Professor and	
		Head, Department of	
		Biochemistry and	
		Biotechnology, JAU, Junagadh)	
12.6.2.2.2		iochemistry and Biotechnology, JAU, Junaga	
	Title	Approved with following Approve	ed
	Elemental, nutritional	suggestion/s with	
	and microbiological	1. Foliar spray and soil suggestions	
	analysis of panchagavya	treatment may not be	
	(ancient organic liquid).	compared. So design should be decided with statistician.	
		(Action: Professor and	
		Head, Department of	
		Biochemistry and	
		Biotechnology, JAU, Junagadh)	
12.6.2.2.3	Centre: Department of Bi	ochemistry and Biotechnology, JAU, Junagadh	l
	Title	Approved Approve	
	Genome sequencing of		_
	cumin (Cuminum cyminum)	(Action: Professor and	
	to reveal insight of its	Head, Department of	
	genomic architecture.	Biochemistry and	
		Biotechnology, JAU, Junagadh)	
12.6.2.2.4		ochemistry and Biotechnology, JAU, Junagadh	l
	Title	Approved Approve	ed
	Transcriptome analysis		
	in coriander for	(Action: Professor and	
	identification of candidate		
	genes against stem gall	Biochemistry and	
	disease.	Biotechnology, JAU, Junagadh)	
12.6.2.2.5		ochemistry and Biotechnology, JAU, Junagadh	
	Title	Approved Approve	ed
	Transcriptome and		
	proteomic characterization		
	for identification of	(Action: Professor and	
	candidate genes responsible	Head, Department of	
	for pistillate inflorescence	Biochemistry and	
	and its reversion in castor.	Biotechnology, JAU, Junagadh)	
12.6.2.2.6	Centre: Main Dry Farmi	ng Research Station, JAU, Targhadia	

	Title	Approved	Approved
	Effect of integrated	Approved	Approved
	nutrient management on	(Action: Research Scientist,	
	growth and yield of	Main Dry Farming Research	
	chickpea under North	Station, JAU, Targhadia)	
	Saurashtra region.	station, offer, furginatal	
12.6.2.2.7	<u> </u>	arch Station, JAU, Jamnagar	
12.0.2.2.7	Title	Approved with following	Approved
	Evaluation of pearl	suggestion/s	Approved
	millet germplasm lines for	1. Salinity level should be	
	salinity	indicated in range (e.g. 4-	
	Sammey	5 EC)	
		(Action: Research Scientist,	
	!	Pearl Millet Research Station,	
	!	JAU, Jamnagar)	
12.6.2.2.8	Centre: Department of S	eed Science and Technology, JAU	. Junagadh
12.0.2.2.0	Title	Approved	Approved
	The effect of packing	Tr	rr
	materials and pod treatments		
	on viability and seedling vigour	(Action: Prof. and Head,	
	of groundnut (<i>Arachis</i>	Department of Seed Science	
	hypogaea) seeds.	and Technology, JAU	
		Junagadh)	
12.6.2.2.9	Centre: Department of S	eed Science and Technology, JAU	, Junagadh
	Title	Approved with following	Approved
	Effect of micronutrient	suggestion/s	with
	application on seed yield and		suggestions
	quality of coriander	1. Statistical design should be	
	(Coriandrum sativum).	FRBD and treatment	
	!	combinations should be decided in the consultation	
	!	with statistician.	
	!		
		(Action: Prof. and Head,	
	!	Department of Seed Science	
	!	and Technology, JAU	
		Junagadh)	
12.6.2.2.10	Centre: Department of S	eed Science and Technology, JAU	, Junagadh
	Title	Approved	Approved
	The effect of seed		
	treatments on viability and	(Action: Prof. and Head,	
	seedling vigour of groundnut	Department of Seed Science	
	(Arachis hypogaea) seeds stored under air tight container.	and Technology, JAU	
	stored under all tigrit container.	Junagadh)	
12.6.2.2.11	_	eed Science and Technology, JAU	, Junagadh
	Title	Approved	Approved
	Study the fresh seed		
	dormancy in sesame.	(Action: Prof. and Head,	
		Department of Seed Science	
		and Technology, JAU	
1	i '	lunogodh)	
12.6.2.2.12		Junagadh) eed Science and Technology, JAU	

Title	Approved	Approved
Application of brassinolide		
to mitigate saline stress during	(Action: Prof. and Head,	
germination and growth period	Department of Seed Science	
in chickpea.	and Technology, JAU	
	Junagadh)	

Navsari Agricultural University

Sr. No.	Title / Centre	Suggestions	Remarks
12.6.2.3.1	Centre: Main Cotton Resear	rch Station, NAU, Surat	
			Approved with suggestions
12.6.2.3.2	Control Main Cotton Boson	(Action: Main Cotton Research Station, NAU, Surat)	
12.0.2.3.2	Centre: Main Cotton Resear	Approved with following	Approved
	Biochemical traits in relation to insect tolerance of wild species and cross derivatives involving wild species of cotton	suggestion/s 1. Add tricom image in morphological parameter. 2. Analyze total sugar and reducing sugar. Remove non-reducing sugar.	with suggestions
		(Action: Main Cotton Research	
		Station, NAU, Surat)	
12.6.2.3.3	Centre: Main Cotton Resear	rch Station, NAU, Surat	
	Title Study of Bt proteins expression in cotton hybrids with different categories of parents	Approved with following suggestion/s 1. Cry proteins quantification should be incorporated.	Approved with suggestions
	1	(Action: Main Cotton Research	
		Station, NAU, Surat)	
12.6.2.3.4	Centre: Main Cotton Resear	· · · · · · · · · · · · · · · · · · ·	
	Title Isolation and characterization of endophytic bacteria from wild cotton plants and	Approved with following suggestion/s 1. Take also wild relative genus and species from	Approved with suggestions
		Surendranagar, Dhanduka,	

	avaloring insecticidal activity	Viramgam regions for	
	exploring insecticidal activity	Viramgam regions for isolation and characterization	
	against pink bollworm,	of endophytic bacteria.	
	Pectinophora gossypiella	or endopriyue bacteria.	
		(Action: Main Cotton Research	
		Station, NAU, Surat)	
12.6.2.3.5	Centre: ASPEE SHAKILA	M Agricultural Biotechnology Instit	tute, NAU, Surat
	Title	Approved	Approved
	Influence of various		
	nanoparticles on	(Action: Principal & Dean,	
	contamination in	ASPEE SHAKILAM	
	micropropagation of banana	Agricultural Biotechnology	
		Institute, NAU, Surat)	
12.6.2.3.6	Centre: ASPEE SHAKILA	M Agricultural Biotechnology Instit	tute, NAU, Surat
	Title	Approved	Approved
	Optimization of de novo		
	regeneration protocol and	(Action: Principal & Dean,	
	selection of glyphosate	ASPEE SHAKILAM	
	tolerant line for Cynodon	Agricultural Biotechnology	
	dactylon variety Selection 1	Institute, NAU, Surat)	
12.6.2.3.7	Centre: ASPEE SHAKILA	M Agricultural Biotechnology Instit	tute, NAU, Surat
	Title	Approved with following	Approved
	Optimization of amylase	suggestion/s	with suggestions
	production by soil isolate		
	under solid state fermentation	1. Sample should be collected	
	(SSF)	from dump site.	
		(Action: Principal & Dean,	
		ASPEE SHAKILAM	
		Agricultural Biotechnology	
10 10 00		Institute, NAU, Surat)	
12.6.2.3.8		t of Plant Molecular Biology and	l Biotechnology,
	ACHF, NAU, Navsari		
	Title	Approved	Approved
	Characterization and field	(Astion, Head Department of	
	efficacy of PGPRs from	(Action: Head, Department of	
	different banana cultivars	Plant Molecular Biology and	
		Biotechnology, ACHF, NAU, Navsari)	
12.6.2.3.9	Control Duck and Head Da	,	NATI Navgani
12.0.2.3.3	Title	partment of Plant Pathology, NMCA Approved	· · · · · · · · · · · · · · · · · · ·
	Effect of phosphate	7.pp10.00	Approved
	solubilizing microbes in	(Action: Prof. and Head,	
	wheat (Triticum aestivum)	Department of Plant Pathology,	
	under saline conditions	NMCA, NAU, Navsari)	
12.6.2.3.10		partment of Plant Pathology, NMCA	L. NAU. Navsari
	Title	Approved with following suggestion/s	Approved
	Isolation and	1. Add Indian bean rhizospheric soil	with suggestions
	characterization of plant	for isolation of actinomycetes.	
	growth promoting	,	
i		(Action: Prof. and Head,	
	Actinomycetes from	(Action: 1101. and 11cau,	
	rhizospheric soil	Department of Plant Pathology, NMCA, NAU, Navsari)	

12.6.2.3.11	Centre: Food Quality Testing Laboratory, NMCA, NAU, Navsari					
	Title	Approved	Approved			
	Surveillance of aflatoxin in					
	pasteurized and raw milk					
		Testing Laboratory, NMCA,				
		NAU, Navsari)				
12.6.2.3.12	Centre: Food Quality Testi	ng Laboratory, NMCA, NAU, Navsa	ari			
	Title	Approved with following suggestions:	Approved			
	Characterization of	 Add the detail of microbes 	with suggestions			
	bacteriocin produced by					
	isolated lactic acid bacteria.	(Action: Res. Sci., Food Quality				
		Testing Laboratory, NMCA,				
		NAU, Navsari)				

Sardar Krushinagar Dantiwada Agricultural University

Sr. No.	Title / Centre	Suggestions	Remarks
12.6.2.4.1	Centre: Biotechnology Secti	ion, CIL, SDAU, Sardarkrishinagar	
	Title DNA fingerprinting of Date palm genotypes using SSR markers	Approved with following suggestion/s 1. SCAR markers should be developed for varietal identification of at least 4-5 popular varieties. (Action: Head, Biotechnology Section, CIL, SDAU, Sardarkrishinagar)	Approved with suggestions
12.6.2.4.2	Centre: Biotechnology Secti	ion, CIL, SDAU, Sardarkrishinagar	
	Title Evaluation of inflorescence from Grain Amaranth (<i>Amaranth</i> spp.) genotypes for betalain pigment & Antioxidant activity	Approved (Action: Head, Biotechnology Section, CIL, SDAU, Sardarkrishinagar)	Approved
11.6.2.4.3	•	biology, College of Basic Science ar	nd Humanities,
	SDAU, Sardarkrishinagar		
	Title Isolation and identification of bacterial cultures against castor wilt pathogen Fusarium oxysporum	Approved with following suggestion/s 1. Add the observations to be recorded. 2. Isolate the bacteria from all the crops which is affected by Fusarium wilt. Collect diverse samples from different locations. (Action: Prof. and Head, Department of Microbiology, College of Basic Science and Humanities, SDAU, Sardarkrishinagar)	Approved with suggestions

12.6.3 General Suggestions

- 1. If there is difference in the ppt and report then the presenting scientist should inform at the time of presentation and should say that they will correct the difference.
- 2. Multidisciplinary program should be formulated with concerned discipline.
- 3. Scientific recommendation should go through publication.
- **4.** 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.

12.7 SOCIAL SCIENCE

Chairman : Dr. P.P. Patel, DEE, AAU (Dt. 11th April 2016)

Prof. (Dr.) Ashok Patel, Hon'ble VC, SDAU (Dt. 12th April 2016)

Co-Chairman: Dr. K.A. Thakkar, DEE, SDAU

: Dr.G.R. Patel, DEE, NAU

Rapporteurs : Dr. R. D. Pandya, NAU

: Dr. P.R. Kanani, JAU

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

Name		Recomi	mendations		New Technical		
of	Farming	Community	Sci	entific	Programmes		
University			Comn	nunity			
	Propose	Approv	Propose	Approv	Propose	Approv	
	d	ed	d	ed	d	ed	
AAU	-	-	6	6	41	41	
JAU	-	-	1+1*	1+1*	13	13	
NAU	-	-	5	0	31	31	
SDAU	-	-	-	-	19	19	
Total	-	-	13	8	104	104	

12.7.1 Recommendations for

A. Farming Community: NIL

B. Scientific Community: 07

C. Policy Makers: 01*

Out of thirteen recommendations, eight recommendations were approved which are given below.

given bere	···							
Anand Agricultural University								
12.7.1.1	Yard stick of CV% for accepting the results of Safedmusali							
	(Chlorophytum borivilianum) crop experiments							
	The yard stick of CV% for accepting the results of Safedmusali							
	(Chlorophytum borivilianum) crop experiments is 21 per cent for yield							

	chara	acter. Accepted by house for scientific commu	ınitv					
	Action: Professor & HOD, Department of Statistics, BACA, AAU, Anand							
12.7.1.2	Yard stick of CV% for accepting the results of Ashwagandha (<i>Withania</i>							
	somnifera) crop experiments							
		ne yard stick of CV% for accepting the						
	(With	nania somnifera) crop experiments is 22	per c	ent fo	or yiel	d cha	aracter.	
		Accepted by house for scientific commo	unity					
	А	ction: Professor & HOD, Department of St	atistic	cs, BA	ACA,	AAU,	Anand	
12.7.1.3		ard stick of CV% for accepting the results	of I	sabg	ul (P	sylliur	n) crop	
		riments ne yard stick of CV% for accepting the re	sults	of Is	sabau	ıl (Psv	/llium)	
		experiments is 23 per cent for yield charac				()	, ,	
		Approved by house for scientific comm	nunity	,				
		Action:Professor & HOD, Department of St						
12.7.1.4		ational level scale to measure attitude rds Agricultural Technology Management.				unctio	onaries	
		ecommendation Paragraph:	/ yell	oy (A	1 1VI/\)			
	Th	ne following national level scale to mea	asure	attit	ude d	of ext	ension	
	No	ionaries towards ATMA is recommended. Statements	Re	spon	ses 8	ջ Sco	rina	
		Claismonis	SA	A	UN	DA		
	1	I think that ATMA is the perfect platform						
		to coordinate agricultural research and extension activities at district level. (+)	_				_	
		મને લાગે છે કે જિલ્લાકક્ષાએ કૃષિસંશોધન અને	5	4	3	2	1	
		વિસ્તરણ પ્રવૃત્તિઓના સમન્વય માટેઆત્મા' આદર્શ'						
	2	મંચ છે. I think that ATMA is impractical way to						
		develop rural India.(-) હું માનું છું કે આત્મા'		•		_	_	
		ગ્રામીણ ભારતનાં વિકાસ માટે કામ કરવાની	1	2	3	4	5	
		અવ્યવહારુ પદ્ધતિ છે.						
	3	I believe ATMA is in real sense bottom- up approach to develop rural India. (+)						
		હું માનું છું કે આત્મા' વાસ્તવિક' અર્થમાં ગ્રામીણ	_	4	2	0	4	
		ભારતનાં વિકાસના કાર્યોમાં હિસ્સેદારીની દ્રષ્ટિએ	5	4	3	2	1	
		પાયાનાં સ્તરથી શરુ થઇ ઉપરનાં સ્તરે પહોંચતો						
	4	અભિગમ છે. I believe that ATMA means too many						
	+	cooks spoil the broth. (-) મને લાગેછે કે				_	_	
		આત્મા' એટલે' ઝાઝા રસોઈયાઓ રસોઈ બગાડે તેવી	1	2	3	4	5	
		વ્યવસ્થા છે.						
	5	I feel that ATMA is an ideal instrument for the development of district. (+) મને	5	4	3	2	1	
		ioi the development of district. (+) 44						

6			i			
	I feel that ATMA creates conflicts among neighboring farmers. (-) હું માંનુ 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
3	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 માંનુ છું કે આત્મા ખેડૂત હિતજૂથોને 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 લાગેછે કે આત્મા' તમામ' હિસ્સેદારોના સહિયારા પ્રયાસ દ્વારા જિલ્લાના વિકાસ માટેનો અસરકારક પ્રયાસ છે.	5	4	3	2	1

(Action: Professor & HOD, Dept. of Ext. Edu., BACA, AAU, Anand)

12.7.1.5 Scale to measure attitude of farmers toward use of mineral mixture in cattle

The following scale to measure attitude of farmers towards use of mineral mixture for cattle is recommended.

No	Statements		Responses and Scoring						
		SA	Α	UD	DA	SDA			
1	I trust adopting mineral mixture for milch animals. (+) હું દૂધાળાં પ્રાણીઓ માટે મિનરલ મિક્ષચર (ખનિજક્ષાર)અપનાવવામાં વિશ્વાસ રાખું છું.	5	4	3	2	1			
2	I believe that there is more propaganda about the use of mineral mixture as animal feed than truth. (-) હું માનું છું કે મિનરલ મિક્ષચરનો પશુઓના ખોરાક તરીકે ઉપયોગ કરવોએ વાસ્તવિકતા ઓછી અને પ્રચાર વધુ છે.	1	2	3	4	5			
3	I think that mineral mixture helps to feed crucial minerals to milch animals. (+) હું માનું છું કે મિનરલ મિક્ષચર પશુઓને અતિ આવશ્યક ખનીજો આપવામાં મદદકરે છે.	5	4	3	2	1			

		I believe that use of mineral mixture					
	4	I believe that use of mineral mixture helps boosting milk yield in animals. (+) હું માનું છું કે મિનરલ મિક્ષચરનો ઉપયોગ કરવાથી દૂધ ઉત્પાદન વધારવાનો જુસ્સોવધે છે.	5	4	3	2	1
	5	I think use of mineral mixture helps in making animal bones stronger. (+) હું માનું છું કે મિનરલ મિક્ષચર પશુઓના હાડકાં મજબૂત કરવામાં મદદકરે છે.	5	4	3	2	1
	6	I would like to advise my children to use mineral mixture for milch animals. (+) મારા સંતાનોને દૂધાળાં પ્રાણીઓ માટે મિનરલ મિક્ષચર ઉપયોગ કરવાની સલાહ આપું છું.	5	4	3	2	1
	7	Use of mineral mixture ensures higher fertility rate in milch animals. (+) મિનરલ મિક્ષચર વાપરવાથી પશુઓની પ્રજનન કાર્યક્ષમતા વધારી શકાય છે	5	4	3	2	1
	8	Use of mineral mixture reduces animal stress. (+) મિનરલ મિક્ષચરના ઉપયોગથી પશુઓમાં તણાવ ઘટે છે .	5	4	3	2	1
	9	I think that progressive livestock owner is one who uses mineral mixture for animal feed. (+) મને લાગેછેકે પ્રગતીશીલ પશુપાલક એને કહેવાય કે જે પશુઓ માટે મિનરલ મિક્ષચરનો ઉપયોગ કરતો હોય.	5	4	3	2	1
	10	I believe that health of milch animals can be improved faster using mineral mixture. (+) હું માનું છું કે મિનરલમિક્ષચરના ઉપયોગથી દૂધાળા પશુઓનું આરોગ્ય સુધારી શકાય છે.	5	4	3	2	1
	11	I believe that vigour of milch animal can be increased using mineral mixture. (+) મને લાગે છે કે મિનરલ મિક્ષચરનો ઉપયોગ કરવાથી દૂધાળા પશુઓનો જોમ વધારી શકાય છે.	5	4	3	2	1
	12	I think using mineral mixture for milch animals is feasible only to rich farmers. (+) હું માનું છું કે મિનરલ મિક્ષચરનો ઉપયોગ માત્ર સમૃધ્ધ પશુપાલક માટે અનુકુળ છે.	5	4	3	2	1
	SA	A= Strongly Agree , A=Agree, UD=Undecided, DA=Disa	gree, S	DA=	Strong	ly Disa	igree
		Approved by house for scientific commu	ınity				
	(/	Action: Professor & HOD, Dept. of Ext. E	<u>du.,</u> l	BAC	:A, A	AU, A	\nand)
12.7.1.6	Sc	cale to measure attitude of farmers towar	ds de	eho	rning	in ca	attle
		ne following Scale to measure attitud	de o	of fa	arme	rs to	wards
	No	orning in cattle is Recommended. Statements		Res	pons	es ar	nd
					Scor		
			SA	Α	UD	DA	SDA
	<u> </u>			i			i

1	The dehorning in cattle is advantages method. (+) પશુમાં શીંગડા ડામવા એ લાભકારક પધ્ધતિ છે.	5	4	3	2		1
2	I dislike purchasing dehorned milch animals for my farm. (-) મારા ફાર્મ માટે મને શીંગડા ડામેલાં દૂધાળાં પશુઓની ખરીદી કરવી પસંદ નથી.	1	2	3	4		5
3	The dehorning is the healthier approach to improve animal health. (+) શીંગડા ડામવાએ પશુઓની આરોગ્ય માટે તંદુરસ્ત અભિગમ છે.	5	4	3	2		1
4	I think that dehorning in animals is unreliable practice. (-) હું માનું છું કે પશુઓના શીંગડા ડામવા એ અવિશ્વનીય પધ્ધતિ છે.	1	2	3	4		5
5	I feel that adoption of recommended dehorning practices in animals involves risk but worth taking. (+) મને લાગે છે કે પશુઓના શીંગડા ડામવાની પધ્ધતિ જોખમી હોવા છતાં તેનો ઉપયોગ ફાયદાકારક છે.	5	4	3	2		1
6	I think that dehorning reduces productivity milch animals. (-) હું માનું છું કે દૂધાળ પશુઓના શં ડામવાથી તેની ઉત્પાદકતા ઘટે છે .		1	2	3	4	5
7	Dehorning helps in reducing risk of injury other animals. (+) શીંગડા ડામવાની પધ્ધતિ ર પશુઓને થતી ઈજાઓ ઘટાડવામાં મદદરૂપ થાય છે .		5	4	3	2	1
8	I think adoption of dehorning in animals adoptable only by rich farmers. (-) હું માનું દૂધાળ પશુઓના શીંગડા ડામવાની પધ્ધતિએ માત્ર સ ખેડૂતો માટે જ અપનાવવા લાયક છે.	છું કે	1	2	3	4	5
9	Dehorning helps in decreasing danger injury to cattle keepers. (+) શીંગડા ડામળ પધ્ધતિથી પશુધ્વારા પશુપાલકોને થતી ઈજાઓની શક્યતા છે	યાની	5	4	3	2	1
10	I believe dehorning helps animals behaving advantageously. (+) હું માનું છું કે શી ડામવાથી પશુઓને ફાયદો થાય તેવી વર્તણૂક કરવામાં મદ		5	4	3	2	1

I think that progressive animal keeper is one who believes in dehorning practices in their milch animals. (+) મને લાગે છે પ્રગતિશીલ પશુપાલક

એને કહેવાય જે પોતાના દુધાળ પશુઓનાં શીંગડા ડામવામાં

12 I would dislike advising my children to adopt

માનતો હોય.

	dehorning in milch animals. (-) મારા સંતાનોને				
	તેમના દૂધાળા પશુઓમાં શીંગડા ડામવાની પધ્ધતિ				
	અપનાવવાની સલાહ આપવાનું નહી ગમે .				
	SA= Strongly Agree , A=Agree, UD=Undecided, DA=Disagree, SDA=Strongly Disagree				
	SA- Strongly Agree , A-Agree, Ob-Ondecided, DA-Disagree, SDA-Strongly Disagree				
	Approved by house for scientific community				
	(Action: Professor & HOD, Dept. of Ext, Edu., BACA, AAU, Anand)				
	Junagarh Agricultural University , Junagarh				
	Name of the Centre: Department of Agricultural Economics, JAU, Junagadh				
	Recommendation for policy				
12.7.1.7	Title: An Economic Analysis of Groundnut Productivity Differentials in				
	Saurashtra Region of Gujarat				
	Increase in the frequency of contact of extension functionaries with farmers				
	throughout the crop season for crop specific information would reduce the				
	productivity differences in groundnut crop. Increase in provision of incentives is				
	needed for mechanization, micro irrigation system and to develop the assured				
	irrigation sources to boost up the productivity. The availability of institutional				
	credit should increase adequately to adjust the prevailing inflation level to enhance				
	the productivity level.				
	Approved by house for scientific community				
	(Action: Professor & Head, Deptt. of Agril. Economics, JAU, Junagadh)				
	Name of the Centre: Department of Agricultural Statistics, JAU, Junagadh				
	Recommendation for scientific community				
12.7.1.8	Effective Number of Replications for Field Experiment on Wheat Crop in				
	Sourasthra (Triticum aestivum L.)				
	For effective control of soil variation, an experiment plot having 12 basic units				
	each of 0.90 m ² with size 4.0 m x 2.7 m (4x3 units) were found optimum with				
	minimum 2 replications are recommended for scientific community to conduct				
	field experiment on wheat crop at Junagarh.				
	Accepted by the house				
	(Action: Professor and Head, Deptt. of Agril. Statistics, JAU, Junagadh)				

12.7.2 New Technical Programmes Anand Agricultural University

Sr.	Title/Centre	Suggestions	Remark
			S
	Centre: Department	of Agricultural Economics, BACA, AAU,	, Anand
12.7.2.1	Futures and Spot	Approved by house	
	Price Relations: A Case		
	Study of Cotton	(Action : Prof. & Head, Dept. of	
	NCDEX Market in	Agricultural Economics, BACA, AAU,	
	India	Anand)	
		,	
	Centre: Collage of Ho	orticulture (Wing), BACA, AAU, Anand	
12.7.2.2	An Analytical Study	Approved by house	
	of Self Help Groups		

	(CHCs) functioning in	(Actions Do D I Dudhet Acet	
	(SHGs) functioning in		
	Anand District of	Prof. and Dr. PrityKumari, Asst. Prof.,	
	Gujarat	Collage of Horticulture (Wing), BACA,	
		AAU, Anand)	
	Centre: IABMI, AAU	L Anand	
12.7.2.3	A study on	Approved by house	
12.7.2.5	Consumer Behaviour	ripproved by nodise	
	for Inland Fish	(Action: Principal IABMI, AAU,	
	Consumption in Anand	-	
	City	Timina)	
12.7.2.4	A Study of	Approved by house	
	Drumstick Commodity	TT	
	System in Selected	(Action: Principal IABMI, AAU,	
	Talukas of Vadodara	•	
	District of Gujarat	, in the second of the second	
12.7.2.5	Economics of Milk	Approved by house	
	Production and its	,	
	Disposal Pattern in	(Action: Principal IABMI, AAU,	
	Central Gujarat	Anand)	
	Centre: Department	of DBM, SMC College of Dairy Science,	AAU,
	Anand		
12.7.2.6	AICT Awareness	Approved by house	
	among the participants		
	of training programme	(Action: Professor & HOD,	
	of Dairy Vigyan Kendra	Department of DBM, SMC College of	
10 5 0 5	T (C D 1	Dairy Science, AAU, Anand)	
12.7.2.7	Impact of Brand	Approved by house	
	Equity on consumer Purchase decision of	(Action: Ducfosson & HOD	
		(Action: Professor & HOD, Department of DBM, SMC College of	
	1 - 1	Dairy Science, AAU, Anand)	
	AMUL	Dairy Science, AAO, Anand)	
		PT & BE, AAU, Anand	
12.7.2.8	Study of consumer	Approved by house	
	awareness on food		
	labelling and use of	(Action:Dr. Samit Dutta ,Associate	
	pack information for	Professor, Department of Food	
	purchase of pre-	Business Management, College of FPT	
	packaged food products	& BE, AAU, Anand)	
12.7.2.9	Problems and	Accepted with the following	
	challenges faced by	Suggestions	
	working women in food	1. Use word unit instead of companies	
	processing companies in	in title	
	Gujarat	2. Respondent size should be increased	
		up to 100	
		(Action: Mr.Deval B Patel and	
		Dr.S. Dutta, Dept. of Food Business	
		Management, College of FPT & BE,	
	G	AAU, Anand)	
	Centre: Department	of Agricultural Statistics, BACA, AAU, Anand	

12.7.2.10	Statistical	Accepted with the following	
12.7.2.10	assessment to study	Suggestions	
	trend of crop	Title should be "Assessment of	
	productivity in long	trend of crop productivity in long term	
	term experiments	experiment"	
		(Action: Prof. & Head, Dept. of	
		Ag. Statistics, BACA, AAU, Anand)	
	Centre: Extension Ed	lucation Institute (EEI), AAU, Anand	
12.7.2.11	Attitude of extension	Approved by the house	
	personnel towards		
	training programmes	(Action: The Director, EEI, AAU,	
	organized by EEI,	Anand)	
	Anand	1 11111111111	
12.7.2.12	Development of the	Approved by the house	
	test to measure the	FF	
	knowledge about liquid	(Action: The Director, EEI, AAU,	
	bio-fertilizer of Farmers	Anand)	
12.7.2.13	Assessment of	Approved by the house	
	Training Needs of the		
	State officials of	(Action: The Director, EEI, AAU,	
	Agriculture and allied	Anand)	
	Departments of Western		
	India		
12.7.2.14	Follow-up study of	Approved by the house	
	Workshop on	,	
	"Knowledge	(Action: The Director, EEI, AAU,	
	Management System	Anand)	
	& Web Designing for	ŕ	
	Agriculture & Allied		
	Fields		
	Centre: Director of E		
12.7.2.15	Package of Practices	Approved by the house	
	Adopted by the Tomato		
	Growers in Anand	(Action: Dr. H. B. Patel, Ext.	
	district	Educationist, DEE, A.A.U., Anand,)	
12.7.2.16	Study on time lag in	Approved by the house	
	adoption of tissue	(Action: Dr. M. R. Patel, Assistant	
	culture raised banana	Extension Educationist (Information),	
	cultivation technology	SSK, DOEE, AAU, Anand)	
10 - 1 -	D 1		
12.7.2.17	Development and	Approved by the house	
	standardization of	(A (1) D 17	
	attitude scale of farmers	(Action:DrVinay Kumar H M,	
	toward Agricultural	Assistant Extension Educationist,	
	Produce Marketing	DOEE, AAU, Anand	
	Committee (APMC)		
	Cantra Danartment	of Animal Science, BACA, AAU, Anand	
12.7.2.18	Health and Bio-	Approved by the house	
14.7.4.10	11Carui and Di0-	Approved by the nouse	

	security measures	(Action:Dr R M Rajpura, Assistant	
	adopted by commercial	Professor, Department of Animal	
	poultry farmers of	Science, BACA, AAU, Anand)	
	Anandtaluka	, , , , , , , , , , , , , , , , , , , ,	
	Centre: RBR unit, Ve	eterinary College, AAU, Anand	
12.7.2.19	Effectiveness of	Approved by the house	
	training		
	programmeorganised	(Action: Dr. AnkitaKilledar,	
	under Surti buffalo	Research Scientist, RBR unit,	
	breeders association	Veterinary College, AAU, Anand)	
	scheme in terms of gain		
	in knowledge and		
	adoption of scientific		
	AH Practices for Surti		
	Buffalo conservation		
		riculture, AAU, Jabugam	
12.7.2.20	Attitude of Tribal	Approved by the house	
	Youth towards	(Action: Dr. S. R. Patel, Assoc. Prof.,	
	Agriculture as an	College of Agriculture, AAU, Jabugam)	
10 7 0 01	Occupation	A	
12.7.2.21	Training needs of	Approved by the house	
	farm women in animal	(Action: DrKiran U Chandravadia, Asstt	
	husbandry practices in chhotaudepur district	Prof., College of Agriculture, AAU, Jabugam	
		of Extension Education, BACA, AAU, A	and
12.7.2.22	Attitude of farmers	Approved by the house	lanu
12.7.2.22	towards Farmers	Approved by the house	
	Interest Group (FIG) in	(Action: Prof. & Head, Dept. of	
	Anand District of	Extension Education, BACA, AAU,	
	Gujarat state	Anand)	
12.7.2.23	Development and	Approved by the house	
	standardization of scale	, , ,	
	to measure attitude of	(Action: Prof. & Head, Dept. of	
	women towards kitchen	Extension Education, BACA, AAU,	
	gardening	Anand)	
10		Education, Veterinary Science College, A	AAU, Anand
12.7.2.24	Opinion of the	Approved by the house	
	clients regarding the	(A 10 =	
	services and facilities	(Action:Dr. A. C. Vaidya, Assoc.	
	provided by TVCC	Professor, Dept. of Ext. Education,	
	(Teaching Veterinary	Veterinary Science College, AAU,	
	Clinical Complex) of	Anand)	
	Veterinary Science		
	College, AAU, Anand		
	Centre Agriculture	College (Wing), Polytechnic in Agricult	ture. RACA
	AAU, Vaso	conege ("img), rolytechnic in Agricult	uic, DACA,
12.7.2.25	Study on	Approved by the house	
	occupational aspiration	11	
	1 1		

	of students pursuing B. Sc. (Hons.) Agriculture	(Action: Dr. A. R. Makwan , Ext .Educationist, Polytechnic in	
	degree programme at Vaso	Agriculture, AAU, Vaso)	
12.7.2.26	Study on level of knowledge and adoption of recommended bio- fertilizers (Anubhav Liquid Bio-fertilizers) by paddy growers of Vasotaluka of Kheda district of Gujarat State	Approved by the house (Action: Dr. B. M. Christian, Asstt. Educationists, Poli. Agri., AAU, Vaso)	
	Centre: Poly-technique	ue in food science & Home Economics, A	AU, Anand
12.7.2.27	Severity of underweight, stunting and wasting in children presenting to health benefits and utilization pattern by mother under ICDS	Accepted with Suggestion/s Title should be "Utilization pattern of health benefits by the mother under ICDS" (Action: Smt. HinaH.Chawda, Assoc. Prof.Poly-technique in food science & Home Economics, AAU,	
		Anand)	
	Centre: KVK, AAU,		
12.7.2.28	Assessment of nutritional knowledge among school teachers regarding diet in diseases - An intervention study	Approved by the house (Action: Dr. Gayatree Rajendrasinh Jadeja, SMS (Home Science), KVK, AAU, Arnej)	
12.7.2.29	Basic Agricultural Awareness among Rural Adolescent Boys in Adopted Villages of KVK Arnej: An Intervention Study	Approved by the house (Action: Dr. Gayatree Rajendrasinh Jadeja, SMS (Home Science), KVK, AAU, Arnej)	
	Centre: KVK, AAU,		
12.7.2.30	Awareness and knowledge regarding soil testing and use of soil health cards	Approved by the house (Action:Programme Coordinator, KVK, AAU, Devataj)	
		MangalBharti, Vadodr <u>a</u>	
12.7.2.31	Impact of BARODA Dugdh Utpadak Sahakari Sangh Ltd. on the Adoption of Improved	Accepted with Suggestion/s 1. Change in objective 1 as impact in terms of knowledge 2. Change in objective 2 as impact in terms of adoption	
	1	T	

	Animal Husbandry	(Action: Dr. B. L. Dhayal (SMS-	
	Practices in	Ext.), Dr. B. M. Mehta, Prog. Co-	
	Chhotaudepur	ordinator, KVK, MangalBharati,	
	district of Gujarat	Golagamdi, Dist-Vadodara)	
	district of Oujarat	Goragamur, Dist- v adodara)	
	Centre·KVK ICAR	Gujarat Vidyapeetha, Dethali Dist Kho	eda
12.7.2.32	Impact of front line	Approved by the house	
12.7.2.32	demonstrations on	ripproved by the nodse	
	Biopesticide	(Action: Action: Dr. P.K.	
	(Beauveriabassiana) to	Sharma, Senior Scientist & Headand	
	manage DBM	M.K. Choudhary, SMS- Horticulture,	
	(Diamond Back Moth)	KVK, ICAR, Gujarat Vidyapeeth,	
	in Cabbage	Dethali, Dist-Kheda)	
	in Cabbage	Deman, Dist-Kneda)	
	Centre KVK ICAR	Vejalpur, Dist- Panchmahal	
12.7.2.33	Impact of training	Accepted with Suggestion/s	
12.7.2.33	program on cultivation	1. Remove the trained and untrained	
	of summer til	word from second objective	
	(sesamum)	(Action: Dr. KanakLata, PC., KVK,	
	in Panchmahal district	· · · · · · · · · · · · · · · · · · ·	
	of Gujarat	Vejalpur, Dist- Panchmahal)	
	or Sujurur		
	Centre: KVK, AAU,	Dahod	
12.7.2.34	Technological gaps	Accepted with following	
	in adoption of improved	Suggestion/s	
	irrigated wheat	1. In title, eliminate 's' from the word	
	production technology	gaps and also from second objective	
	by wheat growers in		
	Dahod district	(Action: Programme Coordinator,	
		KVK, AAU, Dahod)	
12.7.2.35	A study on calf	Accepted with following	
	mortality pattern in the	Suggestion/s	
	tribal district of Dahod	1. Title should be "A study on calf	
		mortality pattern in the Dahod	
		district	
		2. Add objective as "To study the	
		profile of cow owners"	
		(Action: Programme Coordinator,	
		KVK, AAU, Dahod)	
		Territor, Bullou)	
	Centre: PashuVigyan	Kendra, AAU, Limkheda	
12.7.2.36	Adoption of	Approved by the house	
	scientific goat		
	management practices	(Action: Dr. S. G. Vahora, Assoc.	
	by the livestock keepers	Professor (Animal Nutrition) and Dr. G.	
	in operational area of	N. Thorat, Assist. Professor (Ext. Edu.),	
	PashuVigyan Kendra	Pashu Vigyan Kendra, AAU,Limkheda)	
12.7.2.37	Adoption of	Approved by the house	
	scientific feeding	(Action: Dr. S. G. Vahora, Assoc.	

	practices by the	Professor (Animal Nutrition) and Dr. G.
	livestock keepers in	N. Thorat, Assist. Professor (Ext. Edu.),
	Operational area of	Pashu Vigyan Kendra, AAU, Limkheda)
	PashuVigyan Kendra	
	Centre: FTTC, AAU,	Sansoli-Nenpur
12.7.2.38	A study on	Approved by the house
	knowledge and adoption	
	of recommended	(Action: Shri N. M. Vegad, Assistant
	practices of Summer	Extension Educationist,Farm
	Sesamum crop in	Technology Training Centre, AAU,
	Anand&Kheda	Sansoli-Nenpur)
	districts	
	Centre: TRTC and T	FTWC, AAU, Devgadh, -Baria
12.7.2.39	Knowledge of	Approved by the house
	Nutritional practices	
	among the Aganwadi	(Action: Unit Head, TRTC, AAU,
	workers of Dahod	Devgadh-Baria)
	district	
12.7.2.40	Attitude of tribal	Accepted with following
	farm women towards	Suggestion/s
	agriculture training	1. TFWTC word should be come in
	programme	chronology/ order in objectives
		(Action: Unit Head, TRTC, AAU,
		Devgadh-Baria)
		Kendra, ,AAU, Vejapur
12.7.2.41	Economic	Approved by the house
	Performance of Dairy	
	Farmers (Buffalo	(Action: Dr. J.K. Patel, Assoc. Prof.
	owners) in Operational	& Dr. S. J. Jadav ,SMC college of Dairy
	Area of DVK	Science, AAU, Anand)

Junagadh Agricultural University

Sr.	Title	Suggestions	Remarks
12.7.2.42	Centre: Department of A Total Factor Productivity of major crops and contribution of research investment to agricultural growth in Gujarat.	Agricultural Economics, JAU, Junagadh Approved by the house Action: Professor & Head, Department of Agricultural Economics, JAU, Junagadh	
12.7.2.43	in Saurashtra.	Accepted by with suggestion/s In last objective-adaptation word should be replaced by word suitable Action: Professor & Head, Department of Agril. Economics, JAU, Junagadh	
	Centre: Department of A	Agricultural Statistics, JAU, Junagadh	

12.7.2.44	Path	coefficient	Approved by the house	
	analysis selection in wheat.	tools for of genotype		

*	Extension Education, JAU, Junagadh
Consequences of	Approved with following suggestion/s
ATMA project in	Eliminate the second sain as 1 1
	Eliminate the word gain and use know
Saurashtra.	in second objective
	Action: Professor & Head, Department
	of Extension Education, JAU, Junagadh
Centre: Post Graduate I	nstitute of Agri-Business Management, JAU, Junagadh
Scope and opportunities of	Approved by the house with following
	suggestion/s
Agro-tourism in Saurashtra	Opportunity word should use in second
region	objective
1081011.	Action: Dean, Post Graduate Institute
	of Agri-Business Management, JAU,
	Junagadh
Weather based forecasting	Approved by the house
of imigated vul	Action: Dean, Post Graduate Institute
of irrigated wheat	of Agri-Business Management, JAU,
productivity for	Junagadh
Junagadh district.	
Status study of women	Approved by the house with following
-	suggestion/s
vegetable vendors in	Study word from title should be
Saurashtra region.	removed
Zudiusiniu i ogioni	Action: Dean, Post Graduate Institute
	of Agri-Business Management, JAU,
G + 5 2 : : =	Junagadh
†	Engin. Ext., CAET, JAU, Junagadh
_	Approved by the house with following
=	suggestion/s
	1. Beneficiary word should be added in
1	title and title should be :Constraints
	perceived beneficiaries in the adoption
Oniversity, Junagaun.	of Agro-Processing Centers established by JAU, Junagadh"
	2. Specific objectives should be recast
	accordingly
	Action: Prof. & Head, Dept.of Agril.
	Engineering Extension, CAET, JAU,
	Consequences of ATMA project in selected districts of Saurashtra. Centre: Post Graduate I Scope and opportunities of Agro-tourism in Saurashtra region. Weather based forecasting of irrigated wheat productivity for Junagadh district. Status study of women vegetable vendors in Saurashtra region.

		Junagadh	
	Name of the Centre: Kr	ishi Vigyan Kendra, JAU, Amreli	
12.7.2.50	Knowledge level of	Approved by the house	
	cotton growers about	Action: PC, KVK, JAU, Amreli	
	management of pink		
	bollworm		
	Name of the centre: Kr	rishi Vigyan Kendra, JAU, Pipalia	
12.7.2.51	Assessment of farmers'	Approved with following suggestion/s	
	attitude towards the use	1. Attitude word should be replaced by	
	of chemical fertilizer in	opinion	
	Bt. cotton	Action: PC, Krishi Vigyan Kendra,	
		JAU, Pipalia	

12.7.2.52	Determinants of	Approved by the house
		Action: PC, Krishi Vigyan Kendra,
	growers about IPM	JAU, Pipalia
	practices	
	Centre: KVK., JAU, Na	ana Kandhasar (Surendranagar)
12.7.2.53	Extent of knowledge	Approved by the house with
	and adoption about	suggestion/s
	organic farming	Title should be as Documentation of
	among farmers of	agronomical practices followed by
	Surendranagar district	organic farming units
		Action: PC, Krishi Vigyan Kendra,
		JAU, Nana Kandhasar (Surendranagar)
	Centre: Krishi Vigyan	Kendra, JAU, Khapat-Porbandar
12.7.2.54	Study on awareness of	Approved by the house with
	farmers about use of	suggestion/s
	bio fertilizers & bio	Word knowledge should be replaced by
	pesticides in adopted	awareness in specific objective
	and non adopted	Action: PC, KVK, JAU, Khapat-
	villages of KVK in	Porbandar
	Porbandar district	

SDAU, Sardarkrishinagar

Sr. No.	Title & Centre	Suggestions	Remark
			S
12.7.2.55	Adoption of contract farming in potato in Sabarkantha district	Accepted by the house with following suggestions 1. Title should be "Perception of potato growers following contract farming in Sabarkantha district 2. Specific objective should be recast accordingly (Action: Senior Scientist and Head, KVK, SDAU, Khedbrahma)	
12.7.2.56	Constraints faced	Accepted by the house	

	by the tribal women of Sabarkantha district in Agriculture and Animal husbandry activities	(Action: Senior Scientist and Head, KVK, SDAU, Khedbrahma)	
12.7.2.57	Impact of ICT on awareness of certification marks	Accepted with suggestions Imapet should be measure by comparing the beneficiaries and non beneficiaries and this should be included in methodology (Action: PC, KVK, SDAU, Khedbrahma)	
12.7.258	Assessment of Nutritional Status of Adolescent Tribal Girls of Sabarkantha District	Accepted by the house (Action: Prof, Food Science & Nutrition, ACHN,SDAU)	
12.7.2.59	Assessment of Knowledge and Adoption Level of Farm Women about Vegetable (other than potato)Cultivation Practices	Accepted by the house with following suggestions In title, word in bracket should be deleted and after word about 'selected' word should be incorporated (Action: Prof & Head, Dept of HECM, ACHN,SDAU)	
12.7.2.60	Impact of Social Networking Sites and Mobile Applications on Students	Accepted by the house with following suggestions Title should be changed as Utilization pattern of social networking sites and mobile application by the students (Action: Prof & Head, Dept of	
		HECM, ACHN,SDAU)	
12.7.2.61	Occupational Health of Farm Workers in Deesa Taluka	Accepted by the house (Action: Prof & Head, Dept of FRM, ACHN,SDAU)	
12.7.262	Assessment of Consumer Awareness amongst women of Deesa	Accepted by the house (Action: Prof & Head, Dept of FRM, ACHN,SDAU)	
12.7.2.63	Changing Trends in Traditional Costumes of Females' in Palanpur City	Accepted by the house (Action: : Prof & Head,Dept of TAD, A.C.H.N.,S.D.A.U)	
12.7.2.64	Adoption pattern of method of FYM preparation	Accepted by the house with following suggestions Adoption word should be added in specific objectives	

		(Action: DEE, SDAU)	
12.7.2.65	Attitude and perception of farming as an occupation by	Accepted by the house with following suggestions Second objective should be as "To	
	sons of farmers	know the perception of farmers regarding farming as a sustainable occupation"	
		(Action: Prof and Head, Dept of Exn Edn, CPCA, S.D.A.U.)	
12.7.2.66	Prevailing practices of Kankrej cow breeding and factors associated with in Patan District	Accepted with following suggestions Title should be as Prevailing practices of Kankrej cow breeding in Patan district Second objective deleted	
		(Action: Principal, Polytechnic for Diploma in Animal Husbandry, SDAU)	
12.7.2.67	Impact Evaluation of Front Line Demonstration on Groundnut	Accepted with following suggestions Study should be conducted with 50 FLD and 50 non FLD farmers to measure the adoption impact	
		(Action: PC, KVK, Deesa)	
12.7.2.68	Status of Crop Insurance in Gujarat	Accepted by the house (Action: Prof and Head, Dept of	
12.7.2.69	An Economic	Agril Econ,CPCA,SDAU) Accepted by the house	
121/1210	Analysis of Marketing of Tomato in Banaskantha District	(Action: Prof and Head, College of ABM SDAU)	
12.7.2.70	Selection index	Accepted by the house	
	study in castor [Ricinus communis (L)]	(Action: Prof & Head,Dept of Agril Stat CPCA,SDAU)	
12.7.2.71	Pre-harvest forecasting of summer bajra crop yield in Banaskantha district of North Gujarat	Accepted by the house (Action: Prof and Head,Dept of Agril Stat, CPCA,SDAU)	
12.7.2.72	Selection index study in Maize crop	Accepted by the house (Action: Principal, Polytechnic in Agriculture, S.D.A.U.,Khedbrahma)	
12.7.2.73	Acreage response of Groundnut in Banaskantha district of North Gujarat	Accepted by the house (Action: Prof & Head,Dept of Stat, A.C.H.N.,S.D.A.U)	

Navsari Agricultural University, Navsari

Recommendations

Sr.	Centre/Station/Department: PC, KVK, Surat	
1	Title: Sustenance cropping system in tribal area of Surat district	
	Recommendation was not accepted due to inappropriate methodology. (Action:- Programme Coordinator, KVK, Surat)	
2	Title: Sustenance cropping system in tribal area of Surat district	
	Recommendation was not accepted due to inappropriate methodology. (Action:- Programme Coordinator, KVK, Surat)	
3	Title: Sustenance cropping system in tribal area of Surat district	
	Recommendation was not accepted due to inappropriate methodology. (Action:- Programme Coordinator, KVK, Surat)	
4	Title: Sustenance cropping system in tribal area of Surat district	
	Recommendation was not accepted due to inappropriate methodology. (Action:- Programme Coordinator, KVK, Surat)	
5	Title: Sustenance cropping system in tribal area of Surat district	
	Recommendation was not accepted due to inappropriate methodology. (Action:- Programme Coordinator, KVK, Surat)	

NEW TECHNICAL PROGRAMME

Sr.	Title/Centre	Suggestions	Remarks
	Centre:- KVK, Vyara		
12.7.2.74	Constraints in adoption of <i>kharif</i> groundnut production technology in Tapi district	Accepted with following suggestion/s 1. Farmers categories should be made/ considered in methodology 2. Respondent size should be 300 3. Objective on association should be incorporated (Action:- PC, KVK, Vyara)	

	Centre:- KVK, Waghai		
12.7.2.75	Training needs of farmers in vegetables cultivation in tribal areas" and "Impact of KVK activities in adopted villages of KVK-Dangs	Accepted with following suggestion/s 1. Words in tribal areas should be deleted 2. Fourth & fifth objective should be deleted 3. Selected vegetables should included in 2 nd objective and core methodology should be developed with the assistance of DEE, NAU (Action:- PC, KVK, Waghai)	
12.7.2.76	Impact of KVK activities in adopted villages of Dang district.	Accepted with following suggestion/s 1. Only FLD, OFT and training aspects are to be included in study 2. Methodology should be rectified with the assistance of DEE, NAU (Action:- PC, KVK, Waghai)	
	Centre:- KVK, Navsari		
12.7.2.77	Impact of FLD on fish culturist in Navsari district.	Accepted with following suggestion/s 1. Effect of FLD on adoption of fish farming in Navsari district 2. Methodology should be made accordingly (Action:- PC, KVK, Navsari)	
	Centre:- KVK, Dediyapa	ada	
12.7.2.78	Maternal Nutritional Knowledge and its Association with Nutritional Status of School Going Children.	Accepted with suggestion/s 1. Objective 1: Socio economic profile of parents should be studed 2. Objective fourth should be deleted 3. Proportionate sampling method should be adopted in methodology with 120 respondents and half of them should be boys and remove the age criteria of boys & girls (Action:- PC, KVK, Dediyapada)	
	Centre:- TWTC, Dediya	pada	
12.7.2.79	Impact of low drip kitchen garden demonstration organized by Tribal Women Training Centre, Dediyapada.	Accepted with following suggestion/s All the farmers under demonstration should be covered (Action: PC,KVK, Dediyapada)	

	Centre:- Deptt. of Ext. F	Edu., NMCA	
12.7.2.80	Knowledge of farmers about training programme organized by Mega Seed Project of NAU, Navsari on seed production technology of Paddy in Navsari district	Accepted by the house (Action:- Prof. & Head, Deptt. of Ext. Edu., NMCA)	
	Centre: Dept. of Vet. &	AH Ext. VCVSAH, NAU, Navsari	
12.7.2.81	Perception and attitude of young farm women towards animal husbandry as occupation.	Accepted by the house (Action:- Assoc. Prof., Dept. of Vet. & AH Ext. VCVSAH, NAU, Navsari)	
	Centre:- ATIC & Educa	ntorium, DEE, NAU	
12.7.2.82	Constraints faced by farmers regarding protected cultivation in South Gujarat	Accepted with following suggestion/s Crop based constraints should be taken in the study (Action:- DEE, NAU)	
	Centre:- College of Agri	culture, Bharuch	
12.7.2.83	Knowledge and adoption of cotton growers about recommended production technologies in Bharuch district	Accepted by the house (Action:- Asstt. Prof. (Ext.) CoA, Bharuch)	
	Centre:- College of Agri	culture, Waghai	
12.7.2.84	Aspiration level of farmers lived in tribe situation of Dangs	Accepted with following Aspiration levels of tribal farmers about all-round development of Dangs (Action:- Assoc. Prof. (Ext.) CoA, Waghai)	
	Centre:- Poly-technique Vyara		
12.7.2.85	Constraints faced by tribal farmers in adoption of export oriented okra production technology in Tapi district of South Gujarat	Accepted with following suggestion/s Adoption of export oriented cultivation technology should be added in objective (Action:- Principal, Poly-technique, Vyara)	

12.7.2.86	A Study on adoption of recommended production technology of brinjal by brinjal growers in Tapi district of Gujarat State Centre:- DEE, NAU, Na		
12.7.2.87	Group Dynamics of FIGs / CIGs working under ATMA in South Gujarat	Accepted by the house (Action: DEE,NAU, Navsari)	
	Centre:- Department of	Agricultural Economics, NMCA, NAU,	Navsari
12.7.2.88	Economic viability of layer poultry farms in Navsari district of Gujarat	Accepted with following suggestion/s Instead of mentioned methodology (cost A, B, C), use appropriate cost concepts like fixed and variable costs (Action:- Professor and Head, Agril. Economics, NMCA, NAU, Navsari)	
	Centre:- Department of	Agricultural Economics, ACHF, NAU,	Navsari
12.7.2.89	Economic analysis of palmyra palm(<i>Borassus flabellifer</i> L.) in South Gujarat	Accepted with following suggestion/s Economic viability should be worked out by using the appropriate methodology as expected in long term crop (Action:- Associate Professor, Agril. Economics, ACHF, NAU, Navsari)	
12.7.2.90	Economic analysis of sugarcane cultivation under straw burning practices	Accepted by the house (Action: Asso. Professor, Agril. Economics, ACHF, NAU, Navsari)	
	Centre:- Department of	Agril. Economics, College of Agricultur	re, Bharuch
12.7.2.91	Economics of production and marketing of papaya (Carica papaya L.) in Bharuch district of South Gujarat	Accepted with following suggestion/s Variables should be quantified in study (Action:- Assoc. Professor and Head, (Agril Eco.),CoA, NAU, Bharuch)	

	Centre:- Planning cell, I	Director of Research and Dean, PG Studio	es
12.7.2.92	Study of outlay of different sources of funds before and after formation of Navsari Agricultural University	Accepted with suggestion/s Appropriate method for measuring the value of rupee should be adopted (Action:- PO and Assoc. Professor (Agril. Eco.), DR, NAU, Navsari)	
	Centre:- Department of	Agril. Economics, College of Agriculture	, Waghai
12.7.2.93	An assessment of indebtness of agricultural households in different regions of Gujarat	Accepted by the house (Action:- Asst. Professor, Agril.Econ.),CoA,Waghai)	
12.7.2.94	Assessment of vulnerability to expected poverty among scheduled tribe farmers in South Gujarat	Accepted with following suggestion/s Expected word should be deleted from the title (Action:- Assit.Professor, Agril.Econ., CoA,Waghai)	
	Centre: Department of	Agril. Economics, Polytechnic in Agricult	ture, Vyara
12.7.2.95	A study on processing and marketing of vegetables in Tapi district of South Gujarat	Accepted by the house (Action:- Asst. Professor, Agril.Econ., Polytechnic, Vyara)	
	Centre:- ASPEE Agribu	isiness Management Institute, NAU, Navs	sari
12.7.2.96	A study of consumer behavior and factors affecting edible oil usage in Navsari	Accepted with following suggestion/s The factors affecting the consumption should be mentioned in methodology in its effect should be measured by regression analysis (Action:Dean AABMI NAU)	
12.7.2.97	Identification of marketing channels and constraints in fish marketing	Accepted with following suggestion/s Title should be changed as study of marketing channels and constraints in fish marketing (Action:Dean AABMI NAU)	
12.7.2.98	Study of Entrepreneurial intentions among the PG students of NAU, Navsari	Accepted with following suggestion/s 1. Method to measure the entrepreneurial intension should be mentioned in methodology 2. first objective should be changed accordingly (Action:Dean,AABMI,NAU)	
12.7.2.99	Career Management concerns of UG & PG	Accepted with following suggestion/s Wording in specific objectives should	

	Students of NAU	be change in accordance to the title
	Campus Navsari	(Action:Dean,AABMI,NAU)
12.7.2.100	Assessment of private plant nursery enterprise in Navsari and Surat districts	Accepted by house (Action:Dean,AABMI,NAU)
	Centre:- Dept. of Agril.	Statistics, NMCA, NAU, Navsari
12.7.2.101	Title: Comparison of different intrinsically nonlinear models for the prediction of milk yield of Surati Buffalo	Accepted with following suggestion/s Objective should be reconstruct in accordance to the title (Action:- Professor & Head, Ag. Stat., NMCA, Navsari)
	Centre:- Dept. of Agril.	Statistics, ACHF, NAU, Navsari
12.7.2.102	Uniformity trial in brinjal (seed purpose)	Accepted with suggestion/s Title of the study should be as Estimation of optimum plot size and shape in brinjal crop (Action: Asso. Professor (Ag. Stat.), ACHF, Navsari)
	Centre:- Dept. of Agril.	Statistics, CoA, NAU, Bharuch
12.7.2.103	Uniformity trial in cotton	Accepted with suggestion/s Title of the study should be as Estimation of optimum plot size and shape in cotton crop (Action:- Asso. Professor (Ag. Stat.), CoA, Bharuch)
	Centre:- Dept. of Agril.	Statistics, CoA, NAU, Waghai
12.7.2.104	Forecasting of rice (<i>Oriza sativa</i>) yield using ordinal logistic regression	Accepted by the house (Action: Asst. Professor (Ag. Stat.), CoA, Waghai)

PROCEEDINGS FOR XIITH COMBINED JOINT AGRESCO MEETING HELD AT NAU, NAVSARI DURING APRIL 11-13, 2016

NAME OF SUB COMMITTEE: ANIMAL PRODUCTION AND FISHERIES SCIENCE

ANIMAL HEALTH

Technical Session I and II

Chairman: Dr. D. B. Patil, Director of Research, KU, Gandhinagar

Co-Chairman: Dr. A. Y. Desai, Director of Research, JAU

Dr. D. V. Joshi, Dean and Principal, Veterinary College, SDAU

Rapporteurs: Dr. R. G. Shah, Associate Director of Research, KU, Gandhinagar

Dr. B. P. Brahmkshtri, Professor and Head, ILFC, Veterinary College,

NAU

SUMMARY

	Univer sity		Recommendation			New Te	chnical	
Sr.		Univer Committee	Scientists		Farmers		Program	
No.		Committee	Presented	Approve d	Presented	Approved	Presented	Approve d
1	NAU	Animal Production	3	3	5	5	9	8
		Animal Health	1	1	2	1	7	7
2	AAU	Animal Production	6	5	3	3	24	22
2		Animal Health	3	3	1	1	20	20
3	SDAU	Animal Production	3	3	2	2	4	4
3		Animal Health	4	4			8	8
4	JAU	Animal Production	4	2	2	2	9	9
4		Animal Health	9	9			12	12
5	KU	FISHERIES					1	1
5	Total	Animal Production	16	13	12	12	47	44
<i>J</i>		Animal Health	17	17	3	2	47	46
6	Gr	and Total	33	30	15	14	94	91

NAVSARI AGRICULTURAL UNIVERSITY

RECOMMENDATION FOR FARMERS

ANIMAL PRODUCTION

Sr. No.	Centre/Station/Department	Status
1	Livestock Research Station	
	Title of Recommendation: Effect of bypass fat supplementation on production performance and economics on lactating buffalo	
	Recommendation paragraph: The farmers of South Gujarat are recommended to supplement bypass fat @ 100 g/d for nearly 15 days pre-partum and 90 days post-partum to lactating Surti buffaloes to increase milk fat percentage and net profit.	Approved with modification
	દક્ષિણ ગુજરાતના પશુપાલકોને ભલામણ કરવામાં આવે છે કે સૂરતી ભેંસને વિયાણના આશરે	
	૧૫ દિવસ પહેલાથી અને વિયાણ બાદના ૯૦ દિવસ સુધી પૂરક આહાર તરીકે બાયપાસ ફેટ	
	૧૦૦ ગ્રામ/દિવસ આપવાથી દૂધમાં ફેટની ટકાવારી અને નફાનું પ્રમાણ વધે છે.	
	(Action:- Research Scientist, Livestock Research Station)	
2	Fisheries Science, SWMRU	
	Title of Recommendation: Optimization of stocking density of <i>Labeo rohita</i> (Rohu) for the production of stunted yearlings in cage culture condition	
	Recommendation paragraph: The fish farmers of Gujarat engaged with freshwater fish farming are recommended to rear 166 fingerlings/m³ in cage farming system to obtain profitable stunted yearlings. ગુજરાત રાજ્યના મીઠાપાણીમાં મત્સ્થપાલન કરતા ખેડૂતોને પિંજરા ઉછેર પદ્ધતિમાં નફાકારક	Approved with modification
	સ્ટંટેડ યરલીંગ ઉત્પાદન કરવા ૧૬૬ ફિંગરલીંગ્સ પ્રતિ ધન મીટરના દરે ઉછેર કરવાની ભલામણ	
	કરવામાં આવે છે.	
	(Action:- Research Scientist, Soil and Water Management Research Unit)	
3.	Livestock Production and Management	
	Title of Recommendation: Effects of rubber mat bedding on the lying behavior, cleanliness and hock injuries of crossbred cows.	

	Recommendation paragraph: The progressive farmers are recommended to use the rubber mat (6 feet x 4 feet x 17 mm) on concrete floor to improve the comfort level and minimize the limb affections of crossbred cows. પ્રગતિશીલ પશુપાલકોને ભલામણ કરવામાં આવે છે કે, પાકા ભોંચતળિયા ધરાવતા પશુઓના રહેઠાણમાં ભોંચતળિયા પર રબર મેટ (ક ફ્રટ × ૪ ફ્રટ × ૧૭ મી.મી.) નો ઉપયોગ કરવાથી સંકર ગાયોને આરામ મળવા સાથે પગની ઈજાઓ ઘટાડી શકાય છે. (Action:- Professor and Head, Dept. of Livestock Production Management)	Approved with modification
4	Animal Nutrition	
	Title of Recommendation: Economics of growth performance due to dietary inclusion of tanniferous leaves (<i>Ficus benghalensis</i>) in kids infested with gastrointestinal helminths.	
	Recommendation paragraph: The farmers of South Gujarat are recommended to include daily the fresh leaves of Banyan tree (120g/d) in the diet of Surti kids to control gastrointestinal worm load for better growth rate and income.	Approved with modification
	દક્ષિણ ગુજરાતના બકરાપાલકોને ભલામણ કરવામાં આવે છે કે સુરતી લવારાઓને દરરોજ	
	વડના તાજા પાન (૧૨૦ ગ્રામ/દિવસ) ખવડાવવાથી પાચનતંત્રમાં કૃમિનું ભારણ નિયંત્રિત	
	થાય છે અને વૃધ્ધિ દર તેમજ આવકમાં વધારો થાય છે.	
	(Action:- Professor and Head, Dept. of Animal Nutrition)	
5	Animal Science, NMCA	
	Title of Recommendation: Effect of supplementation of yeast on average daily growth, feed conversion ratio and cost economics in Surti goat kids.	
	Recommendation paragraph: The Surti goat keepers are recommended to supplement daily 6-7 g of yeast (Saccharomyces cerevesiae) along with concentrate to 4-6 month kids for better growth rate at lower feed cost. સુરતી બકરા રાખતા બકરાપાલકોને ભલામણ કરવામાં આવે છે કે ૪ થી ૬ મહિનાની ઉમરના લવારાઓને દરરોજ પૂરક આઠાર તરીકે ૬ થી ૭ ગ્રામ ચીસ્ટ/દિવસ દાણ સાથે આપવાથી	Approved with modification
	તેના વૃધ્ધિ દરમાં વધારો થાય છે અને આહારનો ખર્ચ ઘટે છે.	
	ાળા પૃાબ્ધ દરમા પવારા યાવ છ અળ આણરળા ખેવ ઘેઠ છે.	
	(Action:- Professor and Head, Dept. of Animal Science, NMCA)	

ANIMAL HEALTH

1	Veterinary Medicine Department	
	Recommendation paragraph: Liver and kidney function tests should be carried out regularly twice in a year under the supervision of Veterinarian to know the possibilities of ascites in dogs.	Deferred
	કુતરાઓમાં જલોદર થવાની સંભાવના ના આકલન માટે વર્ષમાં બે વખત નિયમીતપણે યકૃત અને મુત્રપિંડ ને લગતા પરીમાણોનું પરીક્ષણ નિષ્ણાંત પશુ ચિકિત્સિક પાસે કરાવવું જોઇએ. (Action:- Professor and Head, Veterinary Medicine)	
2	Veterinary Surgery and Radiology Department	
	Title of Recommendation: Medical and surgical management of corneal affections in canines.	
	Recommendation paragraph: Brachycephlalic breeds of dogs (Pug & Boxer) should be subjected to routine ophthalmic check up by veterinarians at every four months.	Approved with modification
	બ્રેકિસીફેલીક (પગ અને બોકસર) પ્રજાતિના કુતરાઓની આંખો નિયમિતપણે દર યાર મહિને તપાસ કરાવવી જોઇએ.	
	(Action: Professor and Head, Veterinary Surgery and Radiology)	

NAVSARI AGRICULTURAL UNIVERSITY RECOMMENDATION FOR SCIENTIST ANIMAL PRODUCTION

Sr. No.	Centre/Station/Department	
1	Livestock Research Station	
	Title of Recommendation: Effect of bypass fat supplementation on production performance and economics on lactating buffalo	
	Dietary supplementation of bypass fat (calcium salt of palm fatty acid) @	Approved with modification

2.	percentage (13%), feed efficiency in terms of FCM (29.24%) and serum triglyceride and cholesterol levels without affecting body condition score. (Action:- Research Scientist, Livestock Research Station) Title of Recommendation:	
	Study of suckling behavior and mothering ability vis-à-vis production performance of Surti goat	
	Recommendation paragraph: For early selection of breeding male Surti kids at 60 days of age more than 2.5 suckling and 1.0 maternal care scores are recommended. Suggestions: 1. Approved with modification (Action:- Professor and Head, Dept. of LPM)	Approved with modification
3	Animal Nutrition	
	Title of Recommendation: Economics of growth performance due to dietary inclusion of tanniferous leaves (<i>Ficus benghalensis</i>) in kids infested with gastrointestinal helminthes.	
	Dietary inclusion of fresh leaves of Ficus bengalensis (Banyan tree) to supply	Approved with modification

ANIMAL HEALTH

Sr. No.	Centre/Station/Department:	
1	Title of Recommendation : Diagnosis and management of Ascites in Canines	
	Recommendation paragraph: The combination of loop diuretics and silymarin @ 30mg/kg/day along with vitamin B complex orally for 15 days can be used to manage ascites of hepatic origin in dogs.	Approved
	Suggestions: 1. (Action:- Professor and Head, Veterinary Medicine)	

ANAND AGRICULTURAL UNIVERSITY

RECOMMENDATION FOR FARMERS

ANIMAL PRODUCTION

1	Animal Nutrition Research Station, Veterinary College, AAU,	
	Anand	
	Title of Recommendation:	
	Study on Nutritional Status of dairy animals of BOTAD district	
	Recommendation:	Approve
	The farmers of Botad district are advised to feed daily additional 1.0 and 1.5 kg compound concentrate mixture to cows and buffaloes yielding 5.0 to	d with modification
	9.0 and 9.0 to 13.0 kg milk daily respectively throughout the year in order	mounication
	to fulfill their nutrient requirement.	
	બોટાદ જીલ્લાના પશુપાલકોને દૈનિક ૫.૦ થી ૯.૦ અને ૯.૦ થી ૧૩.૦ કિ.ગ્રા. દૂધ આપતી	
	દૂધાળ ગાયો અને ભેંસોની પોષક તત્વોની જરૂરિયાત પૂર્ણ કરવા સમગ્ર વર્ષ દરમ્યાન હાલ	
	આપવામાં આવતા દાણ ઉપરાંત અનુક્રમે દૈનિક ૧.૦ કિ.ગ્રા અને ૧.૫ કિ.ગ્રા. વધારાનું સંયુક્ત	
	સમતોલ દાણ આપવાની ભલામણ કરવામાં આવે છે.	
	(Action: Research Scientist, Animal Nutrition Research Station,	
	Anand)	
2	Poultry Complex, Veterinary College, AAU, Anand	
	Recommendation for farming community/ Poultry Feed	
	Manufacturers	
	Title of Recommendation:	
	To study the effects of feeding different quality maize on production performance and egg quality parameters of White Leghorn birds	
	Recommendation:	Approve
	Significantly higher content of β-Carotene (8.559 ppm), protein	d
	(13.22%) and deep yellow colour of egg yolk are observed in the eggs of	
	White Leghorn birds fed on layer ration prepared by using yellow maize	
	(Gujarat Anand Yellow Maize Hybrid-1) as compared to white maize	
	(Gujarat Maize-3), High Quality Protein Maize-1 (HQPM-1) and purple	
	maize; thus resulting in value addition and satisfying consumer's preference	
	for deep yellow yolk. Hence, it is recommended to use yellow maize	
	(Gujarat Anand Yellow Maize Hybrid-1) in preparation of layer ration.	
	વ્હાઇટ લેગહોર્ન લેયર પક્ષીઓ માટેનો મરધાં આહાર (લેયર મેશ) બનાવવા માટે પીળી	
	મકાઇ (ગુજરાત આણંદ યલો મેઈઝ હાઇબ્રીડ-૧) નો ઉપયોગ કરવાથી સફેદ મકાઇ (ગુજરાત	
	મેઈઝ-3), હાઇ કવોલિટી પ્રોટીન મેઇઝ-૧ (HQPM-1) અને પર્પલ મકાઇના ઉપયોગની	
	સરખામણીએ ઇંડાંમાં બીટા કેરોટીન (૮.૫૫૯ પીપીએમ) અને પ્રોટીનનું (૧૩.૨૨ ટકા) મહત્તમ	
	પ્રમાણ તથા પીળી જરદીમાં ધાટો પીળો રંગ જોવા મળેલ હતો જે થકી ઇંડાંમાં મૂલ્યવર્ધન કરી	

	શકાય તથા ધાટી પીળી જરદી વાળા ઇંડાં માટે ની ગ્રાહ્કોની પસંદગી સંતોષી શકાય છે. આથી	
	મરધાં આહાર (લેચર મેશ) બનાવવા માટે પીળી મકાઇ (ગુજરાત આણંદ યલો મેઈઝ હાઇબ્રીડ-૧)	
	નો ઉપયોગ કરવાની ભલામણ કરવામાં આવે છે.	
	(Action: Research Scientist, Poultry Complex, Anand)	
3	Department of Livestock Production Management, Veterinary	
	College, AAU, Anand	
	Title of Recommendation:	
	Performance of Indigenous Sheep under Water Restriction and	
	Rehydration in Middle Gujarat Agro climatic zone.	
	Recommendation:	Approve
	Marwari and Patanwadi hoggets can be maintained on 2.0 litres of water,	d with
	daily.	modification
	આથી ભલામણ કરવામાં આવે છે કે મારવાડી અને પાટણવાડી ઘેટાંઓનાં ઉછરતાં	
	બચ્યાઓને દૈનિક 2.0 લીટર પાણી પર નિભાવી શકાય છે.	
	(Action: Professor and Head, Department of Livestock Production	
	Management, Anand)	

RECOMMENDATION FOR FARMERS COMMUNITY ANIMAL HEALTH

Dept. of Vet. Parasitology, Veterinary College, AAU, Anand	
Recommendation for pet keepers	
Title of Recommendation:	
Studies on Clinico-biochemical aspects of Ancylostomosis in dogs:	
Recommendation:	Approved
The prevalence of Ancylostomosis (14-37%) has been observed round the	
year in pet dogs of Anand district. Hence, the pet owners are advised to	
follow the deworming schedule prescribed by veterinarians.	
આણંદ જિલ્લામાં કૂતરા પાળતા માલિકોને સલાહ આપવામાં આવે છે કે તેઓએ વર્ષપર્યંત (૧૪-	
૩૭%) જોવા મળેલ અંકુશકૃમિ (એંકાયલોસ્ટોમોસિસ)ના રોગના અટકાવ માટે નિયત કૃમિનાશક	
દવા, નિર્ધારિત સમયાંતરે ,પશુ ચિકિત્સક્ની સલાહ મુજબ આપવી.	
(Action: Prof. and Head, Dept. of Vet. Parasitology, Veterinary College, AAU, Anand)	

ANAND AGRICULTURAL UNIVERSITY FOR SCIENTIFIC COMMUNITY ANIMAL PRODUCTION

1	Livestock Research station, Veterinary College, AAU, Anand	
	Title of Recommendation:	
	Effect of climatic factors on daily milk production of dairy cows	
	Recommendation:	Approved
	Minimum Temperature, Morning Relative Humidity and Wind Speed	with
	are responsible for 66 % of total climatic variations in milk yield. Minimum	modification
	Temperature and Morning Relative Humidity are negatively correlated,	
	while Wind Speed has positive impact on milk yield.	
	(Action: Research Scientist, Livestock Research station, Anand)	
2.	Animal Nutrition Research Station, Veterinary College, AAU,	
	Anand	
	Title of Recommendation:	
	In vitro evaluation of Fenugreek (Trigonella foenum graecum) for its	
	influence on substrate degradation and methanogenesis.	
	Recommendation:	Approved
	Supplementation of Fenugreek seeds at 2% level in the total mixed	
	ration for adult goats significantly (P<0.01) improved in vitro digestibility	
	of dry matter and organic matter with reduction in methane emission.	
	(Action: Research Scientist, Animal Nutrition Research Station,	
	Anand)	
3	Animal Nutrition Research Station, Veterinary College, AAU,	
	Anand	
	Title of Recommendation:	
	Effect of incorporation of dried date palm (<i>Phoenix</i>	
	Effect of mediporation of direct date pain (<u>1 noems</u>	
	<u>dactylifera L.</u> [Arecaceae]) leaves in total mixed ration for adult sheep and	
	1	
	dactylifera L. [Arecaceae]) leaves in total mixed ration for adult sheep and	Approved
	dactylifera L. [Arecaceae]) leaves in total mixed ration for adult sheep and goats.	Approved
	dactylifera L. [Arecaceae]) leaves in total mixed ration for adult sheep and goats. Recommendation:	Approved
	dactylifera L. [Arecaceae]) leaves in total mixed ration for adult sheep and goats. Recommendation: Total mixed ration without or with air dried or green date palm leaves	Approved
	dactylifera L. [Arecaceae]) leaves in total mixed ration for adult sheep and goats. Recommendation: Total mixed ration without or with air dried or green date palm leaves replacing jowar hay at 40% DM equivalent basis, has no adverse effect on	Approved
	dactylifera L. [Arecaceae]) leaves in total mixed ration for adult sheep and goats. Recommendation: Total mixed ration without or with air dried or green date palm leaves replacing jowar hay at 40% DM equivalent basis, has no adverse effect on voluntary feed intake, body weights and cost of feeding in adult Surti goats and Marwari sheep.	Approved
	dactylifera L. [Arecaceae]) leaves in total mixed ration for adult sheep and goats. Recommendation: Total mixed ration without or with air dried or green date palm leaves replacing jowar hay at 40% DM equivalent basis, has no adverse effect on voluntary feed intake, body weights and cost of feeding in adult Surti goats	Approved
4	dactylifera L. [Arecaceae]) leaves in total mixed ration for adult sheep and goats. Recommendation: Total mixed ration without or with air dried or green date palm leaves replacing jowar hay at 40% DM equivalent basis, has no adverse effect on voluntary feed intake, body weights and cost of feeding in adult Surti goats and Marwari sheep. (Action: Research Scientist, Animal Nutrition Research Station,	Approved
4	dactylifera L. [Arecaceae]) leaves in total mixed ration for adult sheep and goats. Recommendation: Total mixed ration without or with air dried or green date palm leaves replacing jowar hay at 40% DM equivalent basis, has no adverse effect on voluntary feed intake, body weights and cost of feeding in adult Surti goats and Marwari sheep. (Action: Research Scientist, Animal Nutrition Research Station, Anand) Animal Nutrition Research Station, Veterinary College, AAU, Anand	Approved
4	dactylifera L. [Arecaceae]) leaves in total mixed ration for adult sheep and goats. Recommendation: Total mixed ration without or with air dried or green date palm leaves replacing jowar hay at 40% DM equivalent basis, has no adverse effect on voluntary feed intake, body weights and cost of feeding in adult Surti goats and Marwari sheep. (Action: Research Scientist, Animal Nutrition Research Station, Anand) Animal Nutrition Research Station, Veterinary College, AAU,	Approved
4	dactylifera L. [Arecaceae]) leaves in total mixed ration for adult sheep and goats. Recommendation: Total mixed ration without or with air dried or green date palm leaves replacing jowar hay at 40% DM equivalent basis, has no adverse effect on voluntary feed intake, body weights and cost of feeding in adult Surti goats and Marwari sheep. (Action: Research Scientist, Animal Nutrition Research Station, Anand) Animal Nutrition Research Station, Veterinary College, AAU, Anand	Approved
4	dactylifera L. [Arecaceae]) leaves in total mixed ration for adult sheep and goats. Recommendation: Total mixed ration without or with air dried or green date palm leaves replacing jowar hay at 40% DM equivalent basis, has no adverse effect on voluntary feed intake, body weights and cost of feeding in adult Surti goats and Marwari sheep. (Action: Research Scientist, Animal Nutrition Research Station, Anand) Animal Nutrition Research Station, Veterinary College, AAU, Anand Title of Recommendation:	Approved

	Recommendation:	Approved
	Total mixed ration without or with air dried or green date palm leaves	
	replacing jowar hay at 40% DM equivalent basis on feeding adult Surti	
	goats or Marwari sheep do not influence rumen fermentation patterns and	
	digestibility coefficient for dry matter, organic matter, proximate	
	constituents, neutral detergent fibre and acid detergent fibre.	
	(Action: Research Scientist, Animal Nutrition Research Station,	
	Anand)	
5	Poultry Complex, Veterinary College, AAU, Anand	
	Title of Recommendation:	
	To study the effects of feeding different quality maize on production	
	performance and egg quality parameters of White Leghorn birds	
	Recommendation:	Approved
	Significantly higher content of lysine (0.427%), tryptophan (0.216%),	
	anthocyanin (0.874 mcg %) and total anti-oxidant activity (13.876 mg/100	
	g.) are observed in eggs of White Leghorn layer birds fed layer mash	
	containing purple colour maize in comparison with white maize (Gujarat	
	Maize-3), yellow maize (Gujarat Anand Yellow Maize Hybrid-1) and High	
	Quality Protein Maize-1 (HQPM-1).	
	(Action: Research Scientist, Poultry Complex, Anand)	
6	Department of Livestock Production Management, Veterinary	
	College, AAU, Anand	
	Title of Recommendation:	
	Performance of Indigenous Sheep under Water Restriction and	
	Rehydration in Middle Gujarat Agroclimatic condition	
	Recommendation:	Deferred
	It is recommended that Marwari and Patanwadi hoggets kept on 40 %	
	water restriction of their normal requirement of 2.5 liters showed	
	significantly (P<0.05) increased level of physiological responses, PCV,	
	glucose, urea, creatinine, cortisol and aldosterone with significant (P<0.05)	
	decrease in body weight, feed and nutrients intake.	
	(Action: Professor and Head, Department of Livestock Production	
	· · · · · · · · · · · · · · · · · · ·	
	Management, Anand)	

ANAND AGRICULTURAL UNIVERSITY FOR SCIENTIFIC COMMUNITY ANIMAL HEALTH

1	Dept. of Vet. Pharmacology & Toxicology, Veterinary College, AAU, Anand	
	Title of Recommendation: Study on effect of biherbal drug of <i>Bryophyllum calycinum</i> and <i>Tribulus terrestris</i> on urolithiasis.	
	Recommendation: The biherbal methanolic extract of <i>Bryophyllum calycinum</i> (Panfuti) and <i>Tribulus terrestris</i> (Gokharu) (1:1) at the dose rate of 400 mg/kg body weight, orally, once in a day, for four weeks has antiurolithiatic effect on ethylene glycol induced urolithiasis in Wistar rat.	Approved
	(Action: Prof. and Head, Dept. of Vet. Pharmacology & Toxicology, Veterinary College, AAU, Anand)	
2	Dept. of Gynaecology and Obstetrics, Veterinary College, AAU, Anand	
	Title of Recommendation: Effect of Inclusion of Antioxidants - Cysteine and Taurine - in TFYG Extender on Refrigeration (5°C) and Cryopreservation (-196°C) of Buffalo Semen"	
	Recommednation: Taurine @ 4 mg/ml or cysteine @ 1 mg/ml in standard Tris Fructose Yolk Glycerol (TFYG) extender is recommended to the semen banks as a routine antioxidant additive for improved cryopreservation and/or refrigeration preservation of buffalo semen as it significantly (p<0.01) enhanced sperm progressive motility, viability, and membrane integrity with reduced sperm/acrosome abnormalities.	Approved with modification
	(Action: Prof. and Head, Dept. of Gynaecology and Obstetrics, Veterinary College, AAU, Anand)	
3	Dept. of Gynaecology and Obstetrics, Veterinary College, AAU, Anand	
	Recommendation for scientific community Title of Recommendation: "Seasonal Influence on Efficacy of Estrus Induction and Synchronization Protocols in Anoestrus Cows and Buffaloes"	
	Recommendation: Three estrus/ovulation synchronization protocols, viz., Ovysynch, Heatsynch and Triu-B used in true anoestrus crossbred cows during winter	Approved with modification

and summer seasons resulted in per cent estrus induction (corresponding values during winter and summer seasons - 100.00, 100.00, 100.00; 88.88, 92.30, 90.90, respectively) and conception rates (58.33, 41.66, 50.00; 44.44, 46.15, 45.45, respectively). In anoestrus buffaloes, during winter and summer seasons the corresponding per cent estrus induction and conception rates were 83.33, 91.66, 83.33; 73.33, 84.21, 83.33; and 58.33, 50.55, 50.00; 26.66, 21.05, 33.33, respectively. Hence, the three protocols can be used round the year in cows, whereas in buffaloes Ovysynch protocol to be used only during winter season.

CORRECTION:

Three estrus/ovulation synchronization protocols, viz., Ovysynch, Heatsynch and Triu-B used in true anoestrus crossbred cows during winter and summer seasons resulted in per cent estrus induction (corresponding values during winter and summer seasons - 100.00, 100.00, 100.00; 88.88, 92.30, 90.90, respectively) and conception rates (58.33, 41.66, 50.00; 44.44, 46.15, 45.45, respectively). In anoestrus buffaloes, during winter and summer seasons, the corresponding per cent estrus induction and conception rates were 83.33, 91.66, 83.33; 73.33, 84.21, 83.33; and 58.33, 50.55, 50.00; 26.66, 21.05, 33.33, respectively. Hence, the three protocols can be used round the year in cows, whereas in buffaloes Ovysynch protocol to be used only during winter season.

(Action: Prof. and Head, Dept. of Gynaecology and Obstetrics, Veterinary College, AAU, Anand)

SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY

FOR FARMERS COMMUNITY ANIMAL PRODUCTION

Sr.	Centre/Station/Department: Livestock Research Station	
No.		
1.	Title of Recommendation:	
	Effect of feeding of cotton seed cake on body weight gain in Kankrej	
	female calves (3-6 m).	
	Recommendation paragraph in English	Approved
	Feeding of cotton seed cake and compound concentrate mixture @ 850	with
	and 500 g/day, respectively or compound concentrate mixture alone @	modification
	1500 g/day is recommended to achieve the higher growth rate in 3 to 6	
	months old Kankrej calves.	
	Recommendation paragraph in Gujarati	

	(Action: Research Scientist, LRS, SDAU, Sardarkrushinagar)	
	આવે છે.	
	દૈનિક ૧.૫ કીલોગ્રામ સંયુક્ત સમતોલ દાણ ખવડાવવાની પશુપાલકોને ભલામણ કરવામાં	
	૩ થી ૬ માસ ઉંમરની મહેસાણી ઓલાદની પાડીઓમાં વધારે વૃધ્ધિ દર મેળવવા માટે	
	Recommendation paragraph in Gujarati	
	old Mehsana buffalo calves results in higher growth rate.	modification
	Recommendation paragraph in English Feeding of compound concentrate mixture @ 1.5 kg/day in 3 to 6 month	Approved with
	buffalo female calves (3-6 m).	Ammuowad
	Effect of feeding of cotton seed cake on body weight gain in Mehsana	
2.	Title of Recommendation:	
	(Action :Research Scientist, LRS, SDAU, Sardarkrushinagar)	
	સમતોલ પશુ દાણ ખવડાવવાની પશુપાલકોને ભલામણ કરવામાં આવે છે.	
	કપાસીયા ખોળ અને ૫૦૦ ગ્રામ સંયુક્ત સમતોલ દાણ અથવા ૧.૫ કીલોગ્રામ સંયુક્ત	
	૩ થી ૬ માસ ઉંમરની કાંકરેજ વાછરડીઓમાં વધારે વૃધ્ધિ દર મેળવવા માટે ૮૫૦ ગ્રામ	

SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY FOR SCIENTIFIC COMMUNITY ANIMAL PRODUCTION

В	RECOMMENDATION FOR SCIENTIFIC COMMUNITY	
1.	Title of Recommendation:	
	Study of Seasonal effect on sexual behavior of Kankrej bull.	
	Recommendation paragraph	Approved
	In Kankrej bulls, the mean scores of sexual behavioral components, viz.,	with
	temperament (0-5), libido (0-9), erection (0-4), protrusion (0-4),	modification
	Flehman's reaction (0-1) and ejaculatory thrust (0-4) are 1.98±0.02,	
	6.23±0.08, 3.39±0.03, 2.90±0.02, 0.51±0.03 and 3.43±0.04, respectively;	
	and the reaction time (sec) and total time (sec) is 110.05±3.45 and	
	168.47±7.23, respectively. The mean values for seminal attributes, viz.,	
	volume (ml), concentration (million/ml), colour (score 1-4), pH, mass	
	activity (grade 0-5), per cent initial motility and live sperm are 5.03±0.07,	
	1414.83 ± 24.69 , 3.71 ± 0.02 , 6.72 ± 0.01 , 4.11 ± 0.04 , 83.27 ± 0.27 and	
	90.29±0.22, respectively. Hence these values can be used as reference for	
	the selection/evaluation of Kankrej bulls by the frozen semen banks.	

	(Action :Research Scientist, LRS, SDAU, Sardarkrushinagar)	
2.	Title of Recommendation:	
	Study of Seasonal effect on sexual behavior of Kankrej bull.	
	Recommendation paragraph	Approved
	The Kankrej bulls evinced good sexual behavior with the better semen	with
	quality throughout the year and during the summer months a significantly	modification
	higher sex drive (6.69, score 0-9) and semen quality (volume 5.28 ml,	
	initial motility 85.19 %, live sperm 90.63%). Hence it is recommended	
	that the semen can be harvested throughout the year from Kankrej bulls.	
	(Action :Research Scientist, LRS, SDAU, Sardarkrushinagar)	
3.	Title of Recommendation:	
	Study of Seasonal effect on sexual behavior of Kankrej bull.	
	Recommendation paragraph	Approved
	During semen collection, the Kankrej bulls preferred buffalo bulls	with
	(78.26%) as dummy instead of Kankrej bull, with no risk and significant	modification
	reduction in training period (5 months). Hence, at semen stations for	
	effective semen collection from the Kankrej bulls it is recommended to	
	use the buffalo bull as dummy.	
	(Action :Research Scientist, LRS, SDAU, Sardarkrushinagar)	

SARDAR KRUSHINAGAR DANTIWADA AGRICULTURAL UNIVERSITY FOR SCIENTIFIC COMMUNITY ANIMAL HEALTH

1.	Title of Recommendation:	
	To study the prevalence of cardiac diseases in local canine population	
	using electrocardiography and cardiac biomarkers.	
	Name of Department:	
	Department of Veterinary Medicine, College of Veterinary Science &	
	A.H., SDAU	
	Recommendation paragraph	Approved
	The prevalence of cardiac dysfunction in canines of Banaskantha District	with
	is 10.86 percent (154/1417) with highest percentage of cardiac	modification
	arrhythmias (83.13 %), followed by dilated cardiomyopathy (9.09%) and	
	acute heart failure (1.29%).	
	(Action: Professor and Head, Department of Veterinary Medicine)	
2.	Title of Recommendation:	

	Study on status of acaricide resistance and development of alternate	
	strategy to control ticks in northern Gujarat	
	Name of Department:	
	Department of Veterinary Parasitology, College of Veterinary Science & A.H, SDAU.	
	Recommendation paragraph	Approved
	In Banaskantha district under <i>in vitro</i> studies, Flumethrin (1%) is more effective in control of both adults and larval stages of <i>Rhipicephalus</i> (<i>Boophilus</i>) <i>microplus</i> ticks in comparison to deltamethrin (1.25%) and fipronil (1.0%).	with modification
	(Action: Professor and Head, Department of Veterinary Parasitology)	
3.	Title of Recommendation: Study on status of acaricide resistance and development of alternate strategy to control ticks in northern Gujarat.	
	Name of Department:	
	Department of Veterinary Parasitology, College of Veterinary Science & A.H, SDAU.	
	Recommendation paragraph	Approved
	In Banaskantha district under <i>in vitro</i> studies, crude methanolic extracts of Papaya (Carica papaya) seeds at 100 mg/ml concentration is effective in control of both adult and larval stages of Rhipicephalus (<i>Boophilus</i>) microplus ticks.	with modification
	(Action: Professor and Head, Department of Veterinary	
	Parasitology)	
4.	Title of Recommendation: Evaluation of surgical treatment of obstructive urolithiasis in bovines in clinical cases.	
	Name of Department: Department of Veterinary Surgery & Radiology, College of Veterinary Science & A.H, SDAU.	
	Recommendation paragraph	Approved
	Surgico-therapeutic management of urolithiasis in Kankrej male calves with tube cystotomy followed by ammonium chloride feeding @ 5 gm total dose for 10 days is effective.	with modification
	(Action: Professor and Head, Department of Veterinary Surgery & Radiology)	

JUNAGARH AGRICULTURAL UNIVERSITY

FOR FARMERS COMMUNITY

ANIMAL PRODUCTION

Sr. No.	Centre/Station/Department	
	12.1.3: COLLEGE OF FISHERIES, VERAVAL	
1.	Title of Recommendation: Study of density dependent growth and survival	
	of Macrobrachium rosenbergii (scampi)	
	Recommendation paragraph: Fish farmers are recommended to stock	Approved
	freshwater prawn Macrobrachium rosenbergii (Scampi) seeds @ 20,000	with
	per hectare in grow-out ponds for obtaining better growth, survival rate and economic returns.	modification
	મત્સ્ય ખેડુતોને ભલામણ કરવામાં આવે છે કે મીઠાપાણીના મેક્રોબ્રેકીયમ રોજનબર્ગી	
	(સ્કામ્પી) પ્રજાતીના ઝીંગાનો ઉત્તમ વૃધ્ધિદર, જીવંતદર તથા વધુ આર્થિક દર મેળવવા	
	માટે ઉછેર તળાવોમાં ઝીંગાબીજનો સંગ્રહ દર ૨૦,૦૦૦ નંગ હેકટર દીઠ રાખવો.	
	(Action: Associate Professor, Inland Fisheries Research Station)	
	12.1.5 Fisheries Research Station, Sikka-	
2	Title of Recommendation: Aspects of biology and fishery of Scylla serrata	
	and Portunuspelagicus in and around Sikka	
	Recommendation paragraph: Fishermen community engaged in Crab fishing	Approved
	are advised to avoid capture of berried female Crabs having orange,	with
	greenish, brownish or blackish eggs for sustainable Crab resource. મત્સ્ય ખેડૂતોને ભલામણ:	modification
	આથી માછીમાર સમુદાયને સલાહ આપવામાં આવે છે કે કરચલાના સાતત્યપુર્ણ	
	પકડાશ માટે કેસરી, લીલા, ભુખરા કે કાળા રંગના ઇંડા ધરાવતી માદા પકડવી નહી	
	(Action: Assistant Research Scientist, Fisheries Research Station)	

JUNAGARH AGRICULTURAL UNIVERSITY FOR SCIENTIFIC COMMUNITY

ANIMAL PRODUCTION

	12.1.2 CATTLE BREEDING FARM, JUNAGADH:	
1.	Title of Recommendation: Efficacy comparision among different medicaments on Anoestrus Gir	
	heifers.	Deferred
	Recommendation paragraph:	
	It is recommended that true anestrous Gir heifesr having average body condition, when treated with GnRH (Buserelin acetate) for estrus	

	in testing the setons in testing are set tisted and are in testing of	
	induction, the estrus induction response was higher and majority of	
	heifers (88.88%) conceived with two inseminations indicating	
	effectiveness of GnRH treatment.	
	(Action: Research Scientist, Cattle Breeding Farm, Junagadh)	
2.	Title of Recommendation: Effect of stage, season and parity of lactation on	
	fat, SNF, protein and sugar content in milk of Gir cattle.	
	Recommendation paragraph:	Deferred
	It is informed to animal scientists that season of lactation, stage of	
	lactation and order of lactation significantly influenced the fat content of	
	the milk in Gir cow. All the four constituents fat, SNF, protein and	
	lactose in milk of Gir cow were found to vary due to Season of	
	lactation. Maximum fat content was observed in milk of animals that	
	produced milk in July-Sept months and lowest in summer (April-June).	
	Stage of lactation was found to influence only fat content of milk.	
	(Action: Research Scientist, Cattle Breeding Farm, Junagadh)	
3.		
3.	Title of Recommendation: Impact of insectivorous Birds on Fish Drying Grounds at Veraval	
	Recommendation paragraph:	Approved
		with
	Fishes dried on open grounds during the fishing season are infested with	modification
	maggots and adults of technids fly attracting of several insectivorous	
	birds especially cattle egret, which play an important role in the natural	
	control of the infested pests.	
	(Action: Professor, Fisheries Resource Management)	
	12.1.4 Fisheries Research Station, Okha	
4.	,	
7.	Title of Recommendation: Study of seaweed diversity at selected intertidal	
	areas of Saurashtra and Diu (UT) Recommendation paragraph:	A
	In the coastal belt of Saurashtra and Diu, 117 seaweed species are	Approved with
	available (Intertidal and drifted), of which 38 Chlorophyceae, 34	
	Phaeophycea and 45 species of Rhodophyceae are found during	modification
	September to April. The economically important species from	
	Rhodophyceae group 15.	
	(Action: Associate Professor and Head, Fisheries Research	
	Station)	
	1	

JUNAGARH AGRICULTURAL UNIVERSITY

FOR SCIENTIFIC COMMUNITY ANIMAL HEALTH

	12.1.1 COLLEGE OF VETERINARY SCIENCE & A.H., JUNAGADH	
1.	Title of Recommendation: Preliminary evaluation of antibacterial activity of extracts of Cassia auriculata, Prosopisjuliflora and Annona	
	squamosa	
	Recommendation paragraph:	Approved
	Alkaloid rich fractions of <i>Prosopis juliflora</i> leaves can be a good drug	with
	entity against resistant bacteria due to its antibacterial property against various bacteria including Methicillin-Resistant <i>Staphylococcus aureus</i> .	modification
	(Action: Professor and Head, Department of Veterinary Pharmacology & Toxicology)	
2.	Title of Recommendation : Survey on indigenous plants use for	
	medicinal purpose in animals in Junagadh region	
	Recommendation paragraph: Farmers of Junagadh, Mendarda and Vanthali taluka are commonly using <i>Adansonia</i>	Approved
	digitata (Gorakh ambli) for gastric problems, Elephantopus scaber (Ghaa Jadvu) and	
	Clerodendrum phlomidis (Arni) for wound healing, Psoralea corylifalia (Baauchi) for	
	skin infection, Enicostemma littorale (Mamejvo) for internal parasites and Tecomella	
	skin infection, <i>Enicostemma littorale</i> (Mamejvo) for internal parasites and <i>Tecomella undulata</i> (Ragat rohido) for fracture healing in animals. (Action: Professor and Head, Department of Veterinary	
	skin infection, <i>Enicostemma littorale</i> (Mamejvo) for internal parasites and <i>Tecomella undulata</i> (Ragat rohido) for fracture healing in animals. (Action: Professor and Head, Department of Veterinary Pharmacology & Toxicology)	
3.	skin infection, <i>Enicostemma littorale</i> (Mamejvo) for internal parasites and <i>Tecomella undulata</i> (Ragat rohido) for fracture healing in animals. (Action: Professor and Head, Department of Veterinary	
3.	skin infection, Enicostemma littorale (Mamejvo) for internal parasites and Tecomella undulata (Ragat rohido) for fracture healing in animals. (Action: Professor and Head, Department of Veterinary Pharmacology & Toxicology) Title of Recommendation: Assessment of Blood cells' Immunocompetence around Parturition in Gir cows and Jaffarabadi	
3.	skin infection, Enicostemma littorale (Mamejvo) for internal parasites and Tecomella undulata (Ragat rohido) for fracture healing in animals. (Action: Professor and Head, Department of Veterinary Pharmacology & Toxicology) Title of Recommendation: Assessment of Blood cells' Immunocompetence around Parturition in Gir cows and Jaffarabadi buffaloes	
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3.	skin infection, Enicostemma littorale (Mamejvo) for internal parasites and Tecomella undulata (Ragat rohido) for fracture healing in animals. (Action: Professor and Head, Department of Veterinary Pharmacology & Toxicology) Title of Recommendation: Assessment of Blood cells' Immunocompetence around Parturition in Gir cows and Jaffarabadi buffaloes Recommendation paragraph: During peripartum period phagocytic activity and lymphocyte	with
3.	skin infection, Enicostemma littorale (Mamejvo) for internal parasites and Tecomella undulata (Ragat rohido) for fracture healing in animals. (Action: Professor and Head, Department of Veterinary Pharmacology & Toxicology) Title of Recommendation: Assessment of Blood cells' Immunocompetence around Parturition in Gir cows and Jaffarabadi buffaloes Recommendation paragraph: During peripartum period phagocytic activity and lymphocyte proliferation responses are lower in Gir cows as compared to Jaffarabadi	Approved with modification
3.	skin infection, Enicostemma littorale (Mamejvo) for internal parasites and Tecomella undulata (Ragat rohido) for fracture healing in animals. (Action: Professor and Head, Department of Veterinary Pharmacology & Toxicology) Title of Recommendation: Assessment of Blood cells' Immunocompetence around Parturition in Gir cows and Jaffarabadi buffaloes Recommendation paragraph: During peripartum period phagocytic activity and lymphocyte	with
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	skin infection, Enicostemma littorale (Mamejvo) for internal parasites and Tecomella undulata (Ragat rohido) for fracture healing in animals. (Action: Professor and Head, Department of Veterinary Pharmacology & Toxicology) Title of Recommendation: Assessment of Blood cells' Immunocompetence around Parturition in Gir cows and Jaffarabadi buffaloes Recommendation paragraph: During peripartum period phagocytic activity and lymphocyte proliferation responses are lower in Gir cows as compared to Jaffarabadi buffaloes. (Action: Professor and Head, Department of Veterinary Physiology & Biochemistry) Title of Recommendation: Haemato-biochemical profiles of horses in	with
	skin infection, Enicostemma littorale (Mamejvo) for internal parasites and Tecomella undulata (Ragat rohido) for fracture healing in animals. (Action: Professor and Head, Department of Veterinary Pharmacology & Toxicology) Title of Recommendation: Assessment of Blood cells' Immunocompetence around Parturition in Gir cows and Jaffarabadi buffaloes Recommendation paragraph: During peripartum period phagocytic activity and lymphocyte proliferation responses are lower in Gir cows as compared to Jaffarabadi buffaloes. (Action: Professor and Head, Department of Veterinary Physiology & Biochemistry) Title of Recommendation: Haemato-biochemical profiles of horses in and around Junagadh	with modification
	skin infection, Enicostemma littorale (Mamejvo) for internal parasites and Tecomella undulata (Ragat rohido) for fracture healing in animals. (Action: Professor and Head, Department of Veterinary Pharmacology & Toxicology) Title of Recommendation: Assessment of Blood cells' Immunocompetence around Parturition in Gir cows and Jaffarabadi buffaloes Recommendation paragraph: During peripartum period phagocytic activity and lymphocyte proliferation responses are lower in Gir cows as compared to Jaffarabadi buffaloes. (Action: Professor and Head, Department of Veterinary Physiology & Biochemistry) Title of Recommendation: Haemato-biochemical profiles of horses in and around Junagadh Recommendation paragraph:	with modification
	skin infection, Enicostemma littorale (Mamejvo) for internal parasites and Tecomella undulata (Ragat rohido) for fracture healing in animals. (Action: Professor and Head, Department of Veterinary Pharmacology & Toxicology) Title of Recommendation: Assessment of Blood cells' Immunocompetence around Parturition in Gir cows and Jaffarabadi buffaloes Recommendation paragraph: During peripartum period phagocytic activity and lymphocyte proliferation responses are lower in Gir cows as compared to Jaffarabadi buffaloes. (Action: Professor and Head, Department of Veterinary Physiology & Biochemistry) Title of Recommendation: Haemato-biochemical profiles of horses in and around Junagadh	with modification Approved with
	skin infection, Enicostemma littorale (Mamejvo) for internal parasites and Tecomella undulata (Ragat rohido) for fracture healing in animals. (Action: Professor and Head, Department of Veterinary Pharmacology & Toxicology) Title of Recommendation: Assessment of Blood cells' Immunocompetence around Parturition in Gir cows and Jaffarabadi buffaloes Recommendation paragraph: During peripartum period phagocytic activity and lymphocyte proliferation responses are lower in Gir cows as compared to Jaffarabadi buffaloes. (Action: Professor and Head, Department of Veterinary Physiology & Biochemistry) Title of Recommendation: Haemato-biochemical profiles of horses in and around Junagadh Recommendation paragraph: In Kathiawari horses, total granulocyte per cent and MCHC (g/dl) are	with modification

5.	Title of Recommendation: Diagnosis of <i>Babesia bigemina</i> and <i>Trypanosoma evansi</i> in bovines in and around junagadh: traditional vs molecular detection and assessment of risk factors. Recommendation paragraph:		Approved
	In cattle and buffaloes PCR is the most diagnosis of subclinical and latent infections of <i>Ba</i> 100%; Specificity, 82.90%) and <i>Trypanosme</i> sp Specificity, 95.92%).	with modification	
	(Action: Professor and Head, Depart Parasitology)	rtment of Veterinary	
6.	Title of Recommendation :Study of parasitic inf animals presented at TVCC, Junagadh	fections/infestations in	
	Recommendation paragraph: The major parasites recorded in domesticated a Junagadh are as below:	animals in and around	Approved with modification
	Name of Parasite	Animal species	
	Buxtonella sulcata, Eimeria spp., Fasciola gigantica, Aamphistomes, Babesia spp.	Cattle, Buffaloes	
	Eimeria spp.	Goat, Bird	
	Strongyle, Babesia spp.	Horse	
	Hook Worm, Babesia spp., Demodex	Dog	
	Trypanosoma evansi	Camel	
	(Action : Professor and Head, Depart Parasitology)	rtment of Veterinary	
7.	Title of Recommendation: Effect of replacement of with raw and detoxified mango seed kernel conventional concentrate mixture on <i>in vitro</i> pattern.	(<u>Mangifera indica</u>) in	
	Recommendation paragraph: Total phenol content in raw mango seed kerne	els is reduced by 60.00	Approved with
	per cent and 70.40 per cent by boiling in water and treatment with 1.0		
	per cent calcium hydroxide, respectively. Based treated mango seed kernel can replace 100 per cer concentrate mixture for cattle.		
	(Action: Professor and Head, Department	of Animal Nutrition	
8	Title of Recommendation: Aetio-Pathological studie		
	in and around Junagadh.		

	Recommendation paragraph:	Approved
	E. coli infection is the major cause (31.21 per cent) of mortality in	with
	broilers of 16-30 days (22.55 per cent) during winter (22.40 per cent) in	modification
	and around Junagadh.	
	(Action: Professor and Head, Department of Veterinary	
	Pathology)	
9.	Title of Recommendation : Study on Postnatal Development of Adrenal	
	Gland in Gohilwadi	
	Goat (Capra hircus).	
	Recommendation paragraph:	Approved
	Adrenal gland of day old Gohilwadi kid has definite foetal, cortex and	with
	medulla, while adult adrenal exhibits the structures of typical zones of	modification
	cortex and medulla. Width of definite cortex increases, while that of	
	foetal zone decreases with increasing age.	
	(Action: Professor and Head, Department of Veterinary Anatomy)	

New Technical Programmes

University: Anand Agriculture University

Sr. No.	Title	Suggestions	Status
1	Identification of coccidial species and evaluation of anticoccidial drugs in calves.	Accepted with following suggestion/s: 1. 2. 3. (Action: Research Scientist, Livestock Research Station)	Dropped
2	Association of Body Condition Score (BCS) and milk production to Ketosis.	Accepted with following suggestion/s: 1.Title should be "To study the metabolic profile of cows with BCS 2.Measurement of NEFA at regular intervals (Action: Research Scientist, Livestock Research Station)	Approved with modification
3	Prevalence of clinical and subclinical mastitis and sensitivity pattern of antibiotics	Accepted with following suggestion/s: 1. Add dry cow therapy at the end of the title. 2. Year of completion will be 2018 3. Economic loss should be estimated. (Action: Research Scientist, Livestock Research Station)	Approved with modification
4	Effect of supplementing Fenugreek (<i>Trigonella foenum graecum</i>) seeds in total mixed ration (TMR) of Surti goats on nutrient utilization and milk production.	Accepted with following suggestion/s: 1. 2. 3. (Action: Research Scientist: Animal Nutrition Research Station)	Approved
5	Effect of supplementing Fenugreek (Trigonella foenum graecum) seeds in the ration of crossbred cows on nutrient utilization and milk production. (In Collaboration with Livestock Research Station)	Accepted with following suggestion/s: 1. 2. (Action: Research Scientist: Animal Nutrition Research Station)	Approved
6	To evolve area specific mineral mixture for dairy animals in Mahisagar district.	Accepted with following suggestion/s: 1. 2.	Approved

		(Action :Research Scientist:	
		Animal Nutrition Research Station)	
7	Formulation and evaluation of	ŕ	
/		Accepted with following	
	total mixed ration comprising of	suggestion/s:	
	pigeon pea (Cajanus cajan) straw	2.	Approved
	in adult sheep.	(Action: Research Scientist:	
		Animal Nutrition Research Station)	
8	Formulation and evaluation of	Accepted with following	
0	total mixed ration comprising of	suggestion/s:	
	Gram (<i>Cicer arietinum</i> L) straw in	suggestion/s.	
	· · · · · · · · · · · · · · · · · · ·	2.	Approved
	adult goats.	(Action: Research Scientist:	
		Animal Nutrition Research Station)	
9	Studies on aflatoxin M ₁ level in	Accepted with following	
	milk of dairy animals in Anand	suggestion/s:	
	District.	suggestion/s.	Approved
	District.	(Action: Research Scientist:	Approveu
		Animal Nutrition Research Station)	
10	Study of nutritional status of	Accepted with following	
10	dairy animals of Chhotaudepur	suggestion/s:	
	district.	1.	
	district	2.	Approved
		(Action :Research Scientist:	
		Animal Nutrition Research Station)	
11	Methane mitigation in	Accepted with following	
	buffaloes on legume straw based	suggestion/s:	
	total mixed ration.	1.	
		2.	Approved
		3.	
		(Action :Research Scientist:	
		Animal Nutrition Research Station)	
12	Studies on the effect of	Accepted with following	
	different levels of SSF Biomass	suggestion/s:	
	based on Wheat straw, Jowar	1.	
	straw and Paddy straw in Total	2.	Approved
	Mixed Rations (TMR) on In vitro	3.	
	digestibility and methane	(Action :Research Scientist:	
	emission.	Animal Nutrition Research Station)	
13	Studies on effect of different	Accepted with following	
	SSF Biomass in TMR on	suggestion/s:	
	digestibility of nutrients and	1.	
	rumen fermentation in small	2.	Approved
	ruminants.	3.	PP- 0 1 CG
		(Action :Research Scientist:	
		Animal Nutrition Research Station)	
4.4	G	A 1	
14	Screening of indigenous and	Accepted with following	
	crossbred cattle and buffalo breeds	suggestion/s:	Approved
	of Gujarat state for β casein milk	l.	• •
	protein variants (A1/A2 variants)	(Action: Professor and Head,	

	using PCR-RFLP.	Department of Animal Genetics and	
		Breeding)	
15	Genetic Characterization of Gujarat Malvi cattle population using microsatellite markers.	Accepted with following suggestion/s: 1. 2. (Action: Professor and Head, Department of Animal Genetics and Breeding)	Approved
16	Genetic Characterization of Kahmi Goat using microsatellite markers.	Accepted with following suggestion/s: 1. 2. (Action: Professor and Head, Department of Animal Genetics and Breeding)	Approved
17	Genetic Characterization of Halari donkey using microsatellite markers.	Accepted with following suggestion/s: 1. 2. (Action: Professor and Head, Department of Animal Genetics and Breeding)	Approved
18	Genetic Characterization of <i>Desi</i> fowl populations from North and South Gujarat using microsatellite markers.	Accepted with following suggestion/s: 1. 2. (Action: Professor and Head, Department of Animal Genetics and Breeding)	Approved
19	Udder and teat characteristics in relation to milk yield and incidences of sub clinical mastitis in Zebu cows.	Accepted with following suggestion/s: 1. Replace word Zebu with Gir 2. Sample size should be 150 animals 3. (Action: Professor and Head, Dept. of Livestock Prod. Managementt.)	Approved with modification
20	Udder and teat characteristics in relation to milk yield and incidences of subclinical mastitis in water buffaloes.	Accepted with following suggestion/s: 1. Sample size should be 150 animals 2. (Action: Professor and Head, Department of Animal Science, BACA)	Approved with modification
21	Study of Physiological, Haematological, Biochemical and Hormonal Changes in Preweaned Lambs and Kids.	Accepted with following suggestion/s: 1.IGF-1 should be estimated with Ovine kit	Approved with modification

		2.	
		3.	
		(Action : Professor and Head,	
		Dept of Physiology and	
		Biochemistry)	
22	Study of Physiological,	Accepted with following	
	Hematological, Biochemical and	suggestion/s:	
	Hormonal Changes in Preweaned	1. IGF-1 should be estimated	
	Calves.	with Bovine kit	Approved
		2.	with
		3.	modification
		(Action: Professor and Head,	
		Dept of Physiology and	
		Biochemistry)	
23	Validation of seed germination	Accepted with following	
	inhibition test for pregnancy	suggestion/s:	
	diagnosis in goat and cattle.	1. This experiment should be	
		treated as pilot study	
		2.	Dropped
		3.	Dropped
		(Action: Research Scientist,	
		PSC, Ramna Muvada and	
		Minawada)	
24	To study the testicular	Accepted with following	
	biometry, sexual behaviour, semen	suggestion/s:	
	quality and sex steroid and	1. Replace the word adolescence	
	biochemical profile in growing	with sexual maturity.	Approved
	Surti male kids up to the age of	2.Start the experiment from 6	with
	adolescence.	months of age rather than 3 month	modification
		3. Action: Research Scientist,	
		Action: Research Scientist, Ramna Muvada and Minawada)	
		Kannia wiuvaua anu wiinawaua)	

ANAND AGRICULTURAL UNIVERSITY

ANIMAL HEALTH

Sr. No.	Centre / Title	Suggestions	Remarks
1	To determine <i>in-vitro</i> antibacterial activity of aqueous and alcoholic extracts of <i>Solanumxanthocarpum</i> (Kantkari) and <i>Achyranthesaspera</i> (chaffflower).	Accepted with following suggestions: Nil (Action: Prof. and Head, Dept. of Vet. Pharmacology & Toxicology, Veterinary College, AAU, Anand)	Approved
2	Studies on prevalence, haemato-biochemical alterations and diagnostic aspects of <i>Trypanosomaevansi</i> using blood smear examination and polymerase chain reaction (PCR) in cattle and buffaloes.	Accepted with following suggestions: 1. Enumeration of microorganisms in subclinical and clinical cases of disease should be added in observations.	Approved with modification
		(Action: Prof. and Head, Dept. of Vet. Parasitology, Veterinary College, AAU, Anand)	
3	Studies on clinico-pathological changes and therapeutic management of canine babesiosis.	Accepted with following suggestions: 1. Modify title as "Clinicopathological studies in on canine babesiosis in cases presented at TVCC, Anand". 2. Objective 1: Incorporate "To study the prevalence and clinical signs" instead of "epidemiology". 3. Minimum of 400 animal be screened over a period of two years. 4. The treatment protocols should be adopted based on the recent published references. (Action: Prof. and Head, Dept. of Vet. Medicine, Veterinary College, AAU, Anand)	Approved with modification
4	Pathological and molecular studies on Low Pathogenic Avian Influenza virus and <i>E. coli</i> infection in broilers	Accepted with following suggestions: 1. NIL 2. (Action: Prof. and Head, Dept. of Vet. Pathology, Veterinary College, AAU, Anand)	Approved

5	Isolation and identification of bacteria from various ocular afflictions of dogs.	suggestions: 1. Modify title as "Isolation and identification of bacteria from various ocular affections in dogs." (Action: Prof. and Head, Dept. of Vet. Microbiology, Veterinary College, AAU, Anand)	Approved with modification
6	'N' gene sequencing of rabies virus obtained from animals.	Accepted with following suggestions: 1. Modify title as "Nucleoprotein gene sequencing of rabies virus obtained from animals". (Action: Prof. and Head, Dept. of Vet. Microbiology, Veterinary	Approved with modification
7	Isolation and characterization of <i>Brucella</i> isolates from the reproductive disorders in large domestic ruminants.	College, AAU, Anand) Accepted with following suggestions: 1. Third objective shall be: To detect the Brucella organism load. 2. Sequence of 3 rd & 4 th objectives' sequence should be interchanged. 3. Use of PCR/digital PCR technique should be added. (Action: Prof. and Head, Dept. of Vet. Microbiology, Veterinary College, AAU, Anand)	Approved with modification
8	Standardization of Polymerase Chain Reaction technique for diagnosis of <i>Theileria equi</i> (Babesia equi) directly from blood.	Accepted with following suggestions: 1. Modify title as "Standardization of Polymerase Chain Reaction technique for diagnosis of <i>Theileria equi</i> directly from blood. 2. Objective: To be modified as: Use of PCR technique for specific detection & quantification (Action: Prof. and Head, Dept. of Vet. Microbiology, Veterinary College, AAU, Anand)	Approved with modification
9	Study on the prevalence, causes and therapeutics of genital infections in repeat breeders and postpartum dairy cows.	Accepted with following suggestions: 1. Metagenomics work may be initiated. (Action: Prof. and Head, Dept. of Gynaecology and Obstetrics, Veterinary College, AAU, Anand)	Approved with modification

10	Study on relative merits of homemade TFYG extender and commercial extenders Andromed and Optixcell for cryopreservation of buffalo semen.	Accepted with following suggestions: 1. The title shall be modified as "Study on relative merits of egg yolk and soybean based extenders for cryopreservation of buffalo semen" (Action: Prof. and Head, Dept. of Gynaecology and Obstetrics, Veterinary College, AAU, Anand)	Approved with modification
11	Effect of nutritional management of transition period on blood profile, puerperal events and postpartum fertility in buffaloes: a demonstration to tribal farmers.	Accepted with following suggestions: 1. Nil (Action: Prof. and Head, Dept. of Gynaecology and Obstetrics, Veterinary College, AAU, Anand)	Approved
12	Prevalence of bovine infertility in different regions of Gujarat.	Accepted with following suggestions: 1. NIL (Action: Prof. and Head, Dept. of Gynaecology and Obstetrics, Veterinary College, AAU, Anand)	Approved
13	Effect of peripartum nutritional (multi-minerals and bypass fat) supplementation on uterine involution, postpartum fertility and reproductive peridata in Jafarabadi buffaloes	Accepted with following suggestions: 1. (Action: Prof. and Head, Dept. of Gynaecology and Obstetrics, Veterinary College, AAU, Anand)	Approved
14	To study the sero-prevalence of Brucellosis by using Brucellamelitensisantigen in small ruminants and human"	Accepted with following suggestions: 1. Statistically viable number of samples should be increased. 2. PCR based diagnostic method should be adopted. 3. Specify the human population to be included in the study (Vets/Paravet/Occupationals etc.) (Action: Prof. and Head, Dept. of Vet. Public Health, Veterinary College, AAU, Anand)	Approved with modification
15	Studies on Xylazine- Ketamine, Midazolam-Ketamine and Isoflurane Anaesthesia in Butorphanol premedicated birds.	Accepted with follwing suggestions: 1. First group of treatment proposed should be dropped. 2. Title to be changed as Studies on Midazolam-Ketamine and Isoflurane Anaesthesia in Butorphanol premedicated birds. (Action: Prof. and Head, Dept.	Approved with modification

		of Vet. Surgery & Radiology, Veterinary College, AAU, Anand)	
16	Ultrasonographic Evaluation of Udder and Teat in Dairy Animals.	Accepted with following suggestions: 1.	Approved
		(Action: Prof. and Head, Dept. of Vet. Surgery & Radiology Veterinary College, AAU, Anand)	
17	Studies on Management of Canine Mammary Tumours with Dendritic Cell Therapy.	Accepted with following suggestions: 1.	Approved
		(Action: Prof. and Head, Dept. of Vet. Surgery & Radiology Veterinary College, AAU, Anand))	
18	Studies on Incidence, Diagnosis and Management of Surgical Affections of Urinary System in Dogs.	Accepted with following suggestions: 1.	Approved
		(Action: Prof. and Head, Dept. of Vet. Surgery & Radiology Veterinary College, AAU, Anand)	
19	Clinical Studies on Tube- Cystotomy in Bovines Calves.	Accepted with following suggestions: 1.	Approved
		(Action: Prof. and Head, Dept. of Vet. Surgery &RdiologyVeterinary College, AAU, Anand)	
20	Studies on Clinical Use of Orthosis in Dogs and Goats with Locomotary Disorders.	Accepted with following suggestions: 1.	Approved
		(Action: Prof. and Head, Dept. of Vet. Surgery & Radiology Veterinary College, AAU, Anand)	

JUNAGADH AGRICULTURAL UNIVERSITY, JUNAGADH ANIMAL PRODUCTIN AND HEALTH

Sr . No.	Title/Centre	Suggestions	
1.	Preliminary evaluation of antibacterial activity of various extracts of selected medicinal plants	Accepted: (Action:PI: Dr. U. D. Patel, Asso. Professor, Vety. Pharm. CVS & AH, JAU, Junagadh)	Approved
2.	In-vitro anti-inflammatory activity of different extracts of selected medicinal plants	Accepted with following suggestion/s: 1. In vitro evaluation of cytokine profiles for evaluation of anti-inflammatory cytokines, may be included if feasible. 2. (Action:PI: Dr. U. D. Patel, Asso. Professor, Vety. Pharm., CVS & AH, JAU, Junagadh)	Approved with modification
3	In-vitro antioxidant activity of various extracts of selected medicinal plants	Accepted with following suggestion/s: 1. Oxidative stress model should be described properly. 2. Parameters for estimation of oxidative stress like SOD, H ₂ O ₂ and Lipid Peroxidase may be included, if possible. 3. (Action:PI: Dr. U. D. Patel, Asso. Professor, Vety. Pharm., CVS & AH, JAU, Junagadh)	Approved with modification
4.	In-vitro anti-diabetic activity of different extracts of selected medicinal plants	Accepted with following suggestion/s: 1. The study may be supported with <i>in vivo</i> in experimental laboratory animal model. 2. 3. (Action:PI: Dr. U. D. Patel, Asso. Professor, Vety. Pharm., CVS & AH, JAU, Junagadh)	Approved with modification
5.	Molecular characterization of A1 and A2 β-Casein genes in Gir cattle	Accepted: (Action:PI: Dr. A. R. Ahlawat, Asso. Professor, AGB, CVS & AH, JAU, Junagadh)	Approved
6.	Molecular characterization of BoLA-DRB3 gene in Gir cattle	Accepted with following suggestion/s: 1. Restriction enzyme analysis may be excluded. 2. Sequencing of the amplified product has to be included. 3. (Action:PI: Dr. A. R. Ahlawat, Asso. Professor, CVS & AH, JAU, Junagadh)	Approved with modification
7.	Hematological and Biochemical aspects associated with hemoprotozoan infection in cows, buffaloes and horses in and around Junagadh	Accepted with following suggestion/s: 1.Biochemical estimation namely TSH, Glutathione, SOD, LPO, TAS may be included, if feasible. 2.	Approved with modification

		3.	
		(Action:PI: Dr.Arjun Odedara,Professor, Vety. Phy. CVS & AH, JAU, Junagadh)	
8.	Seroprevalence of Infectious Bovine Rhinotracheitis (IBR) in Dairy Animals with Reproductive Disorders	Accepted: (Action: PI: Dr. J.B. Kathiriya, Asst. Professor, VPH, CVS & AH, JAU, Junagadh)	Approved
9.	Etiological and Therapeutic studies on Canine Dermatoses in and around Junagadh	Accepted with following suggestion/s: 1. Exclude the hormone profiling from the study. 2. (Action :PI: Dr. Joice P. Joseph, Asst. Professor,TVCC, CVS & AH, JAU, Junagadh)	Approved with modification
. 10	Clinical epidemiology of Gir cattle and Jaffrabadi buffalo at CBF	Accepted: (Action :PI: Dr. Shivaji H. Talekar, Asso. Research Scientist, CBF, JAU, Junagadh)	Approved
. 11	Management of mastitis in Gir Cattle and Jaffrabadi Buffalo	Accepted with following suggestion/s: 1. Reframe the title as "Incidence and management of mastitis in Gir Cattle and Jaffrabadi Buffalo". 2. (Action :PI: Dr. Shivaji H. Talekar, Asso. Research Scientist, CBF, JAU, Junagadh)	Approved with modification
. 12	Comparative efficacy of hormonal regimens for estrous induction in post-partum Jaffrabadi buffaloes	Accepted with following suggestion/s: 1. Replace the word 'oestrous' with 'estrus' in the title. 2. (Action :PI: Dr. H. P. Vijyeta, Asst. Research scientist, CBF, JAU, Junagadh)	Approved with modification
13	Effect of Methyl ergometrine and $PGF_2\alpha$ during puerperium period in Gir cows"	Accepted with following suggestion/s: 1. Club 2 nd and 3 rd objectives. 2. (Action :PI: Dr. G. B. Solanki, Asst. Research scientist, CBF, JAU, Junagadh)	Approved with modification
14	Sexual behaviour and its relationship with semen quality parameters in Jaffarabadi breeding bulls	Accepted with following suggestion/s: 1. Omit 'morphological abnormalities' in Seminal attributes. 2. (Action :PI: Dr. J. K. Chaudhary Asst. Research scientist, CBF, JAU, Junagadh)	Approved with modification
15	Effects of vitamin E and minerals supplementation during peri-partum period on BCS, milk yield, body weight and performance of calves in Gir heifer	Accepted with following suggestion/s: 1. Workout the dose of Vit. E before conducting the actual experiment. 2. 3. (Action :PI: Dr. P. M. Gamit, Asst.	Approved with modification

		Research scientist, CBF, JAU, Junagadh)	
16	Effect of a high-pressure fogger cooling on body comfort, milk yield and composition in Jaffrabadi ouffaloes during summer season	Accepted with following suggestion/s: 1. Microclimate recording of shed may be undertaken using Data logger. 2. 3. (Action: PI: Dr. B. D. Savaliya,	Approved with modification
		Asst. Research scientist, CBF, JAU, Junagadh)	
17	Utilization of duckweed (Lemnaminor) meal as partial supplementation in the diet of Catlacatlafish.	Accepted with following suggestion/s: 1. 2. 3. (Action: PI: Prof. A.A. Vyas, Associate Professor, Inland Fisheries, JAU, Junagadh)	Approved
18	Study of copepod diversity in coastal region of Okhamandal and its culture potential as live feed.	Accepted: (Action :PI: Prof. M. P. Patel, Assist. Professor, FRS, Okha)	Approved
. 19	Seed production of mud spiny lobster <i>Panuliruspolyphagus</i> (Herbst, 1793) in hatchery.	Accepted: (Action :PI: Prof. M. P. Patel, Assist. Professor, FRS, Okha)	Approved
. 20	Diversity and Distribution of Opisthobranch fauna at Sikka Coast	Accepted: (Action :PI: Dr. Hitesh K Kardani, Research Officer, FRS, Sikka)	Approved
. 21	Breeding and Larval rearing of Opisthobranch fauna (Elysiatomentosa, Hypselodorisinfucata, Erronea onyx (cowry))	Accepted: (Action :PI: Dr. Hitesh K Kardani, Research Officer, FRS, Sikka)	Approved

NAVSARI AGRICULTURAL UNIVERSITY

ANIMAL PRODUCTION AND FISHERIES SCIENCE

Sr. No.	Title/Centre	Suggestions	Remarks
1	Effect of dietary protein levels on growth performance of Surti buffalo calves.	Accepted with following suggestion/s 1. 2. (Action:- RS, Livestock Research Station	Deferred
2	Effect of different floor types on the growth performance and behavioral traits of surti buffalo calves during winter.	Accepted with following suggestion/s 1. 2. (Action:- RS, Livestock Research Station	Approved
3	Study of marine Finfish and Shell fish landings and their taxonomical identification at Dholai fish landing centre.	Accepted with following suggestion/s 1. Add DNA bar-coding of fish 2. Remove the statement on photography of different fish species (Action:- Principal Investigator, COF, NAU, Navsari	Approved with modification
4	Study of Indian white shrimp (Fenneropenaeus indicus) growth under varying salinities, of SWMRU.	Accepted with following suggestion/s 1. 2. (Action:- PI & RS, SWMRU, NAU)	Approved
5	Strategies to mitigate the impact of climate change.	Accepted with following suggestion/s 1. Modify the title as follows: Strategies to mitigate the impact of climate change: Effect of 75 % agro-green net on production, reproduction and stress parameters in Surti buffaloes. 2. Add micro RNA of blood circulation 3. (Action:- PI & Head, Vety Phy., COVS, NAU)	Approved with modification

6	Effect of feeding processed maize on fattening of male Surti kids.	Accepted with following suggestion/s 1. The days of fattening should be restricted to 1-2 months. 2. 3. (Action:- PI & Head, ANN, COVS, NAU)	Approved with modification
7	Effect of bedding materials on broiler performance.	Accepted with following suggestion/s 1. 2. 3. (Action:- PI & Head, ILFC, COVS, NAU)	Approved
8	Study on managemental practices adopted by the commercial layer farmers in Navsari district	Accepted with following suggestion/s 1. 2. 3. (Action:- PI & I/c Dean, Polytechnic In Animal Husbandary, COVS, NAU)	Approved
9	Study on managemental practices adopted by the commercial broiler farmers in Navsari district	Accepted with following suggestion/s 1. 2. 3. (Action:- PI & I/c Dean, Polytechnic In Animal Husbandary, COVS, NAU)	Approved

Navsari Agricultural University

ANIMALHEALTH

Sr.No.	Title/Centre	Suggestions	Remarks
1	Evaluation of <i>in vitro</i> pharmacological activities of <i>Morus alba</i> .	Accepted with following suggestion/s 1. Write local name of plant under title 2. Cytokines studies may be included for anti -inflammatory effects. (Action:- Professor, Pharmacology, COVS, NAU)	Approved with modification
2	Sero-diagnosis of caprine paratuberculosis in selected organized farms and panjrapoles of South Gujarat.	Accepted with following suggestion/s 1. 2. 3. (Action:- Professor, Pathology, COVS, NAU)	Approved
3	Development of plastination technique for long term preservation of macro parasites.	Accepted with following suggestion/s 1. 2. 3. (Action:-Asso. Professor, Parasitology, COVS, NAU)	Approved
4	Evaluation of various therapeutic techniques for posterior paresis in dogs.	Accepted with following suggestion/s 1. 2. 3. (Action:- Professor, Surgery & Radiology, COVS, NAU)	Approved

5	Management of corneal ulcers in dogs.	Accepted with following suggestion/s 1. Indolent word to be replaced with "non- healing" ulcers under treatment 2. 3. (Action:- Professor, Surgery &	Approved
6	Management of traumatic reticulo-pericarditis (TRP) in bovines.	Accepted with following suggestion/s 1. Pericardio-centensis under USG Guidance to be carried out. 2. Action:- Professor, Surgery & Radiology, COVS, NAU)	Approved with modification
7	Studies on goniometry of limbs in Labrador Retriever, German Shepherd, Spitz and Pug breeds of dogs.	Accepted with following suggestion/s 1. To include Anatomist as CO-PI 2. Adult dogs of 2-4 years be used. 3. (Action:- Professor, TVCC, COVS, NAU)	Approved with modification

SARDAR KRUSHINAGAR AGRICULTURAL UNIVERSITY, DANTIWADA

ANIMAL PRODUCTION

Sr. No.	Title & Centre	Suggestions	Remarks
1.	Effect of different ratios of DM intake from green and dry fodder on growth performance of Kankrej heifer calves	Accepted with following suggestions 1. Blood biochemical and hormonal parameters to be removed (Action :Research Scientist, LRS, SDAU, Sardarkrushinagar)	Approve d with modification
2.	Effect of different ratios of DM intake from green and dry fodder on production performance of Mehsana buffaloes	Accepted with following suggestions 1. Blood biochemical and hormonal parameters to be removed (Action :Research Scientist,	Approve d with modification
		LRS, SDAU, Sardarkrushinagar)	
3.	Estimation of genetic, phenotypic and environmental trends for traits of economic importance in Kankrej cattle	Accepted with following suggestions 1. 2. 3. (Action: Professor & Head, Dept. of AGB, COVS, SDAU,	Approve d
4.	Study on milk composition with reference to biochemical, enzymatic mineral and insulin profile of Kutchi camels (Camelusdromedarius) at different lactating stages	Sardarkrushinagar) Accepted with following suggestions 1. Colostrum may also be tested for insulin hormone levels 2. technique for estimation of insulin hormone may be mentioned in material and methods (Action: Professor & Head, Dept. of Physiology & Bio., COVS, SDAU, Sardarkrushinagar)	Approve d with modification

SARDAR KRUSHINAGAR AGRICULTURAL UNIVERSITY, DANTIWADA

ANIMAL HEALTH

Sr. No.	Title & Centre	Suggestions	Remarks
1.	Comparative evaluation and efficacy of the commonly used acaricides against <i>Hyalomma anatolicum</i> Ticks by in-vitro tests.	Accepted with following suggestions 1. Remove the word 'if any' from objective no. 2 (Action: RADIC Scheme and Dept of VPH, College of Veterinary Science & A.H, SDAU.)	Approve d with modification
2.	Hemato-biochemical and electrocardiographic changes in caprine diarrhea.	Accepted with following suggestions 1. Parameters BUN, Serum Creatinine and Chloride to be included (Action: Department of Veterinary Medicine, College of Veterinary Science & A.H., SDAU.	Approve d with modification
3.	Evaluation of homeopathic formulation in anemia in goat and dog	Accepted with following suggestions 1. Detailed blood profile under complete blood count to be included 2. Treatments to be specified (Action: Department of Veterinary Medicine, College of Veterinary Science & A.H., SDAU.	Approve d with modification
4.	Development of multiplex PCR for the simultaneous detection of haemoprotozoan infections in livestock	Accepted with following suggestions 1. Provision for positive as well as negative control to be made (Action: Department of Animal Biotechnology and Veterinary Microbiology, College of veterinary Science & A.H., SDAU)	Approve d with modification

5.	Anti cancer effect of curcumin against cancer cell line	Accepted with following suggestions 1. Extract of <i>curcumin</i> should be validated by HPLC	Approve d with modification
		2. Transcriptom analysis needs to be attempted (Action: Department of Animal Biotechnology and Veterinary Microbiology, College of veterinary Science & A.H., SDAU	
6.	Optimization of diagnostic techniques for detection and confirmation of rabies virus from suspected field cases	Accepted with following suggestions 1. 2. 3. (Action: Department of Veterinary Microbiology, College of veterinary Science & A.H., SDAU	Approved
7.	Histopathological and Molecular	Accepted with following	Ammanad
	Characterization of Canine Mammary Tumors	Accepted with following suggestions 1. Canine Mammary Tumors should be replaced with the word 'non-inflammatory Canine Mammary Tumors' in the title. 2. Sample should be collected from non spayed (intact) female. (Action: Department of Veterinary Pathology, College of veterinary Science & A.H., SDAU.	Approved with modification

FISHERIES SCIENCE, KAMDHENU UNIVERSITY GANDHINAGAR

1.	Title: Comparative study of in integrated farming of Indian major carps with mussels (Lamellidens marginalis) and Indian major carps.		Approved
		(Action:- PI, Fisheries Science, Kamdhenu University Gandhinagar)	

PLENARY SESSION:

Plenary session of 12th Combined Joint AGRESCO meeting of SAUs was Chaired by Dr. C. J. Dangaria, Hon'ble Vice Chancellor of NAU, Navsari and Co-Chaired by Dr. A. R. Pathak, Hon'ble Vice Chancellor, JAU, Junagadh; Dr. N. C. Patel, Hon'ble Vice Chancellor of AAU, Anand, Dr. Ashok Patel, Hon'ble Vice Chancellor of SDAU, Sardarkrushinagar were guest of hounor. Besides, Dr. A. N. Sabalpara, Director of Research, NAU, Navsari and Dr. G. R. Patel, Director of Extension Education, NAU, Nasari, Director of Research of SAUs, Director of Extension Education of SAUs, Principals and Deans of SAUs and Associate Director of Research of SAUs remained present. After the formal welcome by Dr. A. N. Sabalpara, Director of Research, NAU, Navsari, the session began with the presentation of proceedings of all the sub-committees by the respective conveners, where in recommendations and new technical programmes of different sub-committees were approved by house. Dr. D. M. Korat, ADR, AAU, S. K. Nagar; Dr. I. U. Dhruj, ADR, JAU, Anand; Dr. Sankhela, SDAU, Junagadh and Dr. K. A. Patel, ADR, NAU, Navsari, Dr. H. M. Virdia, Associate Professor, NAU, Navsari and Dr. P. B. Patel, Associate Professor, NAU, Navsari were the rapporteurs for this session.

During discussion on crop improvement Sub-committee presentation, Dr. A. R. Pathak, Hon'ble Vice Chancellor, JAU, Junagadh suggested that local check should be included in trials. As per the norms of SAUs, nomenclature of variety should be given.

During discussion on Crop production and NRM Sub-committee presentation, Dr. Ashok Patel, Hon'ble Vice Chancellor of SDAU, Sardarkrushinagar suggested to include methodology of PROM with full name.

During discussion on Crop protection Sub-committee presentation, Dr. Ashok Patel, Hon'ble Vice Chancellor of SDAU, Sardarkrushinagar suggested solar system may be effective for wire fencing. He also suggested for reducing the height of chain link to reduce the cost of fencing.

During discussion on Horticulture and Forestry Sub-committee presentation, Dr. N. C. Patel, Hon'ble Vice Chancellor of AAU, Anand suggested to give details of soil properties in recommendations on organically grown crops. For multidisciplinary experiments, the recommendations need to be passed in various research sub committees.

During discussion on Agricultural Engineering, AIT, Diary and Food technology Sub-committee presentation, Dr. N. C. Patel, Hon'ble Vice Chancellor of AAU, Anand suggested that comb cutter recommendation should be mentioned in Horticulture sub-committee with a language as per engineering discipline.

Dr. A. R. Pathak, Hon'ble Vice Chancellor, JAU, Junagadh suggested to take demonstration of new technology on large scale by KVKs, Research stations and line departments. He also suggested, for healthy discussion of recommendation and new technical programmes, the AGRESCO report should be circulated to all the Director of Research of all SAUs by E-mail and Director of Research should forwarded the report to concerned members of respective Agresco Sub-committees well in advance, so as to save the precious time during Combined Joint Agresco meeting.

Dr. Ashok Patel, Hon'ble Vice Chancellor of SDAU, Sardarkrushinagar suggested that many recommendations are not adopted by the farmers; hence more focus should be given on farm trials and extension programmes of SAUs. Last five years recommendations should be demonstrated on research stations and KVKs. He further suggested to preapare colourful leaflets of important new technologies for wide publications among the farmers.

CONCLUDING REMARKS:

Dr. C. J. Dangaria, Hon'ble Vice Chancellor, NAU, Navsari 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.

Dr.S. R. Chaudhary, Associate Director of Research, NAU, Navsari proposed the vote of thanks at the end of plenary session.
