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

ORGANIZED BY

ANAND AGRICULTURAL UNIVERSITY

(APRIL 07-09, 2015)

DIRECTORATE OF RESEARCH

ANAND AGRICULTURAL UNIVERSITY

ANAND – 388 110

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

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

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

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

Dr. B. R. Shah, Director of Horticulture informed the house about the new technologies required to sustain the protective cultivation in Gujarat state. He urged the

scientists to solve the problem of nematodes in crops grown in green house and poly-house.

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

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

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

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

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

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

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

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

11.1 CROP IMROVEMENT:

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

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

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

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

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

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

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

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

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

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

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

11.1.1 RECOMMENDATIONS

A. FARMING COMMUNITY

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI
There was no release proposal from Navsari.
B. Scientific Community
NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI
Dr.M.R.Naik, Convener, Crop improvement Sub-Committee of NAU presented 5 scientific recommendations related to diseases and pests as approved in Plant Protection Sub-Committee of NAU for the information of the house.

11.1.2 NEW TECHNICAL PROGRAMME

Sr. No.	Title	Suggestions	Remarks
Navsari Agricultural University, Navsari			
Main Sorghum Research Station, NAU, Surat			
11.1.2.6	Large Scale varietal Trial on Grain Sorghum (under conserved moisture condition)	Deferred with following suggestion. 1. The already ongoing experiment on the same aspect should be reformed and the proposed experiment be	-

		incorporated as part of that experiment. **(Action: Res. Sci. (Sorghum), NAU, Surat**	
11.1.2.7	Large Scale varietal Trial on Grain Sorghum (under protective irrigation)	Deferred with following suggestion. 1. The already ongoing experiment on the same aspect should be reformed and the proposed experiment be incorporated as part of that experiment. **(Action: Res. Sci. (Sorghum), NAU, Surat**	-
11.1.2.8	Preliminary Evaluation Trial on Sorghum (summer)	Approved with following suggestion 1. The word summer should be replaced by early summer in the title. **(Action: Res. Sci. (Sorghum), NAU, Surat**	-
11.1.2.9	Small Scale Varietal Trial on Grain Sorghum (summer)	Approved with following suggestion 1. The word summer should be replaced by early summer in the title. **(Action: Res. Sci. (Sorghum), NAU, Surat**	-

11.1.3. General Suggestions

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

11.2 CROP PRODUCTION AND NATURAL RESOURCE MANAGEMENT

Chairman	**:**	Dr. K.P.Patel, Principal and Dean (Agri.), B. A. College of Agriculture, AAU, Anand
Co-Chairman	**:**	Dr. M. K. Arvadia, Principal and Dean (Agri.), N.M. College of Agriculture, NAU, Navsari Dr. K.N. Akbari, ADR, JAU, Targhadia

Rapporteurs:	**:**	Dr. V.R.Bhatt, Professor and Head, Dept. of Agril. Chem & Soil Science, BACA, AAU, Anand Dr. A.U.Amin, Research Scientist, Centre of Excellence for Seed Spices, SDAU, Jagudan

SUMMARY

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

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

11.2.1 RECOMMENDATIONS

A. FARMING COMMUNITY

NAVSARI AGRICULTURAL UNIVERSITY
No.11.2.1.38
Study on levels of nitrogen and intra-row spacing on yield of drip irrigated castor (*rabi*)

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

System details:

Details	Operating time (Alternate days)	
	Month	Minutes
Lateral spacing: 2.40 m	November-December	1 Hrs. 30 min
Dripper spacing : 60 cm	January-February	2 Hrs.
Dripper discharge : 4lph	March onwards	3 Hrs.
Operating pressure : 1.2 kg/cm2		

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તાર–૧ માં ટપક પદ્ધતિથી શિયાળુ દિવેલા ૮નહજઢ,૯ વાવતા ખેડૂતોને ૨.૪ મીટર × ૦.૬ મીટર અંતર રાખી વાવેતર કરવાની ભલામણ કરવામાં આવે છે. તેમજ પાકને ૧૬૦ કિ.ગ્રા /હે નાઈટ્રોજન અને ૪૦ કિ.ગ્રા /હે ફોસ્ફરસ ખાતર આપવાની સલાહ આપવામાં આવે છે, જેમાં ૧૦ ટકા નાઈટ્રોજન અને બધો જ ફોસ્ફરસ

વાવેતર સમયે પાયામાં આપવો અને બાકીનો ૯૦ ટકા નાઈટ્રોજન ૧૦ સરખા હપ્તામાં વાવેતર બાદ ૧૫ દિવસ પછી ૮ થી ૧૦ દિવસના ગાળે ટપક પદ્ધતિથી આપવો.

ટપક પધ્ધતિની વિગત :

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

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

No.11.2.1.39

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

The farmers of South Gujarat heavy rainfall Agroclimatic Zone-I growing pigeonpea (GT 102) during *rabi* season are advised to follow paired row sowing (60x20:120 cm) with drip irrigation at 0.4 PEF and mulching with black plastic (50 µ and 56 % coverage) for getting higher yield and net return with 49 % water saving over surface method of irrigation.

System details:

Details	Operating time (Alternate days)	
	Month	Minutes
Lateral spacing: 1.80 m	January	1 Hrs. 45 min
Dripper spacing : 60 cm	February	2 Hrs.
Dripper discharge : 3 lph	March -April	2 Hrs. 30 min
Operating pressure : 1.2 kg/cm2		

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તાર–૧ માં શિયાળુ તુવેર ૮નતઢક્ષ૩×૯ વાવતા ખેડૂતોને જોડીયા હારમાં (૬૦×૨૦: ૧૨૦ સેમી) વાવેતર કરીને કાળા પ્લાસ્ટીકના આવરણ (૫૦ માઈક્રોન જાડાઈ , ૫૬ ટકા વિસ્તારમાં આવરણ) સાથે ૦.૪ પીઈએફ ટપક પધ્ધતિથી પિયત આપવાની ભલામણ કરવામાં આવે છે. આમ કરવાથી પુષ્ઠ પિયત પધ્ધતિની સરખામણીએ ટપક પધ્ધતિથી ૪૯ % પાણીની બચત સાથે વધારે ચોખ્ખો નફો મળે છે.

ટપક પધ્ધતિની વિગત :

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

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

No.11.2.1.40

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

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

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

System details:

Details	Operating time (Alternate days)	
	Month	Minutes
Lateral spacing: 5.0 m	October-December	30 min
No. of drippers/plant : 6	January-March	40 min
Dripper discharge : 8 lph	April- June	50 min
Operating pressure : 1.2 kg/cm2		

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

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

ટપક પધ્ધતિની વિગત :

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

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

No.11.2.1.4 1

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

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

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

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

No.11.2.1.42

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

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

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

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

No.11.2.1.43

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

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

Note:

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

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

નોંધ:

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

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

No.11.2.1.44

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

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

Note:

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

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

નોંધ:

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

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

B. Recommendation for Scientific Community

NAVSARI AGRICULTURAL UNIVERSITY

No. 11.2.1.62

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

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

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

No.11.2.1.63

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

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

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

No. 11.2.1.64

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

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

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

No.11.2.1.65

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

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

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

No.11.2.1.66

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

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

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

No.11.2.1.67

Analysis of climatic variability at Navsari and Bharuch region

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

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

No.11.2.1.68

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

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

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

No.11.2.1.69

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

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

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

11.2.2 NEW TECHNICAL PROGRAMMES

NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI

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

	Action: Res. Sci. (Sugarcane), Main Sugarcane Research Station, NAU, Navsari		
11.2.2.27	Agronomic requirement of promising hybrid of castor (NCH-1)	Not Approved	
	Action: Nodal Office, Pulses and Castor Res. Station, NAU, Navsari		
11.2.2.28	Optimization of Niger production under resource constraints	Approved	
	Action: Assoc. Res. Sci., Niger Research Station, NAU, Vanarasi		
11.2.2.29	Evaluation of method and levels of irrigation in summer groundnut	Approved with following suggestion 1. Write mini sprinkler instead of sprinkler in treatment M_2.	
	Action: Assoc. Res. Sci., Regional Rice Res. Station, NAU, Vyara		
11.2.2.30	Canopy management through Mepiquate chloride under high density planting system of cotton in irrigated conditions	Approved with following suggestions 1. Increase the intra row spacing i.e. 20 cm in plant density 2. Add two more treatments in plant density i.e. 90 X 20 cm and 120 X 20 cm 3. Delete treatment number 2 and 4 of Mepiquate choride 4. Write design *like* RBD(Factorial)	
	Action: Res. Sci. (Cotton), Main Cotton Res. Station, NAU, Surat		
11.2.2.31	Exploiting the potential of sub soiling in Bt cotton cultivation	Approved with following suggestions 1. Recast the title *like* Effect of sub soiling on Bt. cotton 2. Experiment design should be large plot technique 3. Delete gross & net plot size and kept plot size of 40 m x 10 m 4. Write sampling instead of replication and it must be 4 quadrate	
	Action: Res. Sci. (Cotton), Main Cotton Res. Station, NAU, Surat		

11.2.2.32	Response of fodder sorghum (*Sorghum bicolor* L. Moench) varieties to bio fertilizer and nitrogen levels	Approved with following suggestions 1. Delete objective number 4 and 5 2. Correct treatment B_2 *like Azospirillum* + PSB @ 10 ml each per kg seed (seed treatment) 3. Add 40 kg N/ha and delete 100 kg N/ha in treatments	
	Action: Prof. & Head, Dept. of Agronomy, NMCA, NAU, Navsari		
11.2.2.33	Study on critical periods of crop-weed competition in maize	Approved with following suggestions 1. Delete objective number 4 2. Write weed flora study instead of weed species study. 3. Add the observation on grain weight per cob and test weight 4. Delete observation on grain yield/plant.	
	Action: Prof. & Head, Dept. of Agronomy, NMCA, NAU, Navsari		
11.2.2.34	Application of Mixed Statistical Distributions in Fitting Rainfall Data of South Gujarat	Approved	
	Action: Asstt. Prof., Meteorology Dept. ,NMCA, NAU, Navsari		
11.2.2.35	Agronomical evaluation of different pigeon pea genotype under organic farming	Approved with following suggestions 1. Write the word varieties instead of genotypes in title of experiment. 2. Delete objective number 3 3. Delete treatment V_3, V_5, and V_6 and add variety AGT 2 as treatment 4. Recast the treatment of organic sources *like* O_1: 100 % RDN through FYM O_2: 100 % RDN through NADEP compost O_3: 100 % RDN through Vermicopost made from banana pseudostem	
	Action: Assoc. Prof., Dept. of SSAC, ACHF, NAU, Navsari		

11.2.2.36	Agronomical evaluation of promising sugarcane genotypes under organic farming	Approved with following suggestions 1. Recast title of experiment *like* Evaluation of sugarcane varieties under organic farming 2. Delete the treatment V_5 to V_{13} and V_{15}	
	Action: Assoc. Prof., Dept. of SSAC, ACHF, NAU, Navsari		
11.2.2.37	Effect of different systems of nutrient management on nagli	Approved with following suggestions 1. Delete objective number 3 2. Write forest tree leaf litter incorporation @ 5 t/ha in treatment M_1 3. change design as RBD (Factorial) 4. Include the chemical analysis of Zn content in grain.	
	Action: Asstt. Prof., College of Agriculture, NAU, Waghai		
11.2.2.38	Sustaining Castor Productivity in Relation to Green Manures and Fertility Levels	Approved with following suggestions 1. Delete objective number 5 2. Replace greengram with fodder cowpea in treatment G_3 3. Replace clusterbean variety G Guvar 2 with G Guvar 1 4. Delete common application of FYM/Compost 5. Add observation on green biomass yield of green manure crops	
	Action: Prof. and Head, Dept. of Agron., College of Agriculture, NAU, Bharuch		
11.2.2.39	Response of pigeon pea to different liquid fertilizers under various fertility levels	Approved with following suggestions 1. Recast the title of experiment as Response of pigeon pea to nutrient management 2. Factor B recast as Sources of nutrients (S)	
	Action: Prof. and Head, Dept. of Agron., College of Agriculture, NAU, Bharuch		
11.2.2.40	Agronomic requirements of pre released *herbaceum* variety in respect of plant density and fertilizer	Not Approved	

	requirement under rain fed conditions		
	Action: Assoc. Res. Sci., Cotton Research Station, Bharuch		
11.2.2.41	Effect of foliar fertilization on sorghum under conserved moisture conditions	Approved with following suggestion 1. Correct name of organic fertilizer as Nauroji Novel organic fertilizers	
	Action: Asstt. Res. Sci., Agricultural Research Station, NAU, Tanchha		
11.2.2.42	Studies on irrigation scheduling through drip and nitrogen management in cotton var. G. Cot. Hy-8 (BG II)	Approved	
	Action: Assoc. Res. Sci., Cotton Research Sub Station, NAU, Achhalia		
11.2.2.43	Effect of crop residue incorporation and nutrient management on nutrient economy and soil properties of drilled paddy based cropping systems	Approved with following suggestion 1. Delete objective number 3	
	Action: Assoc. Res. Sci., Cotton Research Sub Station, NAU, Achhalia		
11.2.2.44	Study of Land Configuration and Irrigation Scheduling on vegetable Indian bean (Var.: NPS-1)	Approved with following suggestions 1. Delete objective number 3 2. correct the name of variety as GNIB 21	
	Action: Assoc. Res. Sci., Cotton Research Sub Station, NAU, Achhalia		
11.2.2.45	Response of summer sesame to nutrient management and irrigation scheduling	Approved with following suggestions 1. Recast the title of experiment as Response of vegetable Indian bean to land configuration and irrigation schedules. 2. correct treatment F_2 as 125% RDF	
	Action: Assoc. Res. Sci., Cotton Research Sub Station, NAU, Achhalia		
11.2.2.46	Effect of foliar spray of silicon on growth and yield of paddy	Approved	
	Action: SMS (Agron.), KVK, NAU, Navsari		

General Suggestions:

1. All are advised to mention the AGRESCO subcommittee number and year in which the technical programme was approved.

2. All the experiments on weed management having more than ten treatments must analyze data with DMRT test.
3. In case of fodder experiments wherein higher dose of nitrogen is used, NO_3 content should be taken.

4. 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. H. R. Patel, Res. Sci. (Pl. Path.) and Unit Officer BTRS, Anand Dr. G. G. Radadia, Prof. and Head, Dept. of Ento. and Registrar, NAU, Navsari

5. Summary of recommendations and new technical programmes

6.

Sr. no.	Name of university	Recommendations for farming community		Recommendations for scientific community		New technical programmes	
		Presented	Approved	Presented	Approved	Presented	Approved
1	**AAU**	06	05	24	24	**59**	**59**
2	**JAU**	20	16	01	09	**20**	**19**
3	**NAU**	08	02	15	21	**34**	**34**
4	**SDAU**	05	02	01	05	**21**	**21**
	Total	**39**	**25**	**41**	**59**	**134**	**133**

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

11.3.1	**RECOMMENDATIONS**
A	**FARMING COMMUNITY**
NAVSARI AGRICULTURAL UNIVERSITY, NAVSARI Dr. Z. P. Patel, Convener, Plant Protection Sub-Committee presented proposal for recommendations	
AGRICULTURAL ENTOMOLOGY	
11.3.1.22	**Bio-efficacy of some insecticides and neem products against *Helicoverpa armigera* (Hubner) on tomato** For effective control of tomato fruit borer, farmers of south Gujarat (AES III) are advised to apply two sprays of flubendiamide 20 WDG, 2.5 g/10 litre or chlorantraniliprole 18.5 SC, 3.0 ml/10 litre, first at the time of flowering and second at 15 days after first spray for obtaining higher yield and better return. Further, the residue content of these insecticides remained below MRL in tomato fruits after three days. દક્ષિણ ગુજરાતના ટામેટા ઉગાડતા ખેડૂતોને લીલી ઈયળના અસરકારક નિયંત્રણ માટે

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

Recommendation for PHI as per CIB guidelines:

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

વર્ષ	પાક	જીવાત	જંતુનાશક	માત્રા			વેઈટીંગ પીરીયડ (દિવસ)
				ગ્રા.સ.ત/ હે	સાંદ્રતા %	પાણીમાં મિશ્રણ	
૨૦૧૫	ટામેટા	ફળ કોરનાર ઈયળ	ફ્લુબેન્ડીયામાઈડ ૨૦ ડબ્લ્યુડીજી	૨૫ ગ્રામ	૦.૦૦૫%	૫૦૦ લી.	૩
૨૦૧૫	ટામેટા	ફળ કોરનાર ઈયળ	ક્લોરેન્ટ્રાનીલીપ્રોલ ૧૮ ૫. એસસી.	૩૦ ગ્રામ	૦.૦૦૬%	૫૦૦ લી.	૩

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

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

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

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

Recommendation for PHI as per CIB guidelines:

Year	Crop	Pest /Diseases	Pesticide with formulation	Doses			Waiting Period (days)
				Quantity of formulation	Conc. (%)	Dilution in water	
2015	Okra	Fruit borer, shoot borer and jassid.	Deltamethrin 2.8 EC	11.2 g a.i/ha	0.028 %	400 L	1.0

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

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

B	SCIENTIFIC COMMUNITY/INFORMATION
AGRICULTURAL ENTOMOLOGY	
11.3.1.59	**Residues of some insecticides in/on Indian bean pods** Following foliar application of thiamethoxam 25 WG (35 g a.i. /ha), novaluron 10 EC (33.5 g a.i. /ha), indoxacarb 14.5 SC (60 g a.i. /ha), spinosad 45 SC (75 g a.i. /ha), acetamiprid 20 SP (20 g a.i. /ha) and flubendiamide 39.35 SC (50 g a.i. /ha), PHI of 7 days was observed while, imidacloprid 17.8 SL (25 g a.i. /ha) it was ten days in Indian bean pods. **(Action :** Assoc. Prof. (Ento), Dept. of Ento., ACHF, NAU, Navsari)
11.3.1.60	**Status of residues of insecticides in/on Indian bean after *Ubadia* preparation** The residues of imidacloprid 17.8 SL (25 g a.i. /ha), thiamethoxam 25 WG (35 g a.i. /ha), novaluron 10 EC (33.5 g a.i. /ha), indoxacarb 14.5 SC (60 g a.i. /ha), spinosad 45 SC (75 g a.i. /ha), acetamiprid 20 SP (20 g a.i. /ha) and flubendiamide 39.35 SC (50 g a.i. /ha) were observed below detectable level in *Ubadia* prepared from Indian bean. **(Action :** Assoc. Prof.(Ento), Dept. of Ento., ACHF,NAU, Navsari)
11.3.1.61	**Integrated pest management in mango** IPM package consisting of first spray of spinosad 45 SC, 0.004%, 0.88 ml/10 litre water at panicle emergence stage followed by second spray with thiamethoxam 25 WG, 0.008%, 3.2 g/10 litre water at 21 days after first spray and third need based spray of Azadirachtin 1 EC, 30 ml /10 litre of water found effective for the management of mango hopper and thrips. **(Action :** Asstt. Res. Sci.(Ento), AES., Paria)
11.3.1.62	**Management of banana rust thrips, *Chaetanophothrips signipennis*** For effective control of rust thrips in banana, inject the bud with one ml solution of 0.6 ml imidacloprid 17.8 SL (2 ml solution of 5 ml azadirachtin 10000 ppm mixed in one lit of water) at the time of emergence of flower (upright position). **(Action :** Asstt.Res.Scientist (Ento.), FRS., NAU, Gandevi)
11.3.1.63	**Management of sapota seed borer *Trymalitis margarias* Meyrick** Sapota growers of South Gujarat Heavy Rainfall Zone-I AES-III are advised to apply three sprays of profenophos 50 EC, 15 ml or novaluron 10 EC, 5 ml per 10 litre water at 20 days interval from October for effective management of seed borer. **(Action :** Asstt.Res.Scientist (Ento.), FRS., NAU, Gandevi)
11.3.1.64	**Survey of natural enemies and occurrence of indigenous egg parasitoid, *Trichogramma* spp. using *Corcyra* egg cards in different vegetable crops** The activity of egg parasitoid, *Trichogramma* spp. found in Indian bean, cowpea, chilli, okra and tomato ecosystem while in brinjal ecosystem it did not appear under south Gujarat condition. **(Action :** Prof. and Head, Dept. of Ento., NMCA., Navsari)
11.3.1.65	**Screening of carnation cultivars for the resistance to *Tetranychus urticae* Koch** Under the polyhouse conditions the carnation variety Domingo was highly tolerant to spider mite attack, while variety Famosa and Cherry Solar were

	medium tolerant and Gaudina and Garuda were tolerant whereas the variety Rubisco was highly susceptible to spider mite attack. **(Action :** Prof. and Head, Dept. of Ento., NMCA., Navsari)
11.3.1.66	**Seasonal incidence of spider mite *Tetranychus urticae* (Koch.) (Tetranychidae: Acarina) infesting carnation under polyhouse conditions** The two spotted red spider mite, *Tetranychus urticae* Koch (Tetranychidae: Acarina) remains active throughout the crop season on carnation with the peak activities during first week of April. A significant positive correlation exist between spider mite population and average temperature whereas a significant negative correlation existed between mite population and average relative humidity under polyhouse conditions on carnation. **(Action :** Prof. and Head, Dept. of Ento., NMCA., Navsari)
11.3.1.67	**To test out feasibility of mass rearing of *Chrysoperla zastrowi sillemi* (Esben- Petersen) under laboratory conditions** The teared accordance white coloured paper stripes (5 x 2 cm) found the best and feasible alternative method for group rearing of *Chrysoperla zastrowi sillemi* under laboratory conditions. **(Action :** Prof. and Head, Dept. of Ento., NMCA., Navsari)
11.3.1.68	**Residue and dissipation pattern of bifenthrin, fipronil, chlorpyrifos and imidacloprid in clayey and sandy loam soils and their downward movement and leaching potential** Considering the leaching potential and depth wise distribution and chances of contamination of water, bifenthrin 10 EC, chlorpyrifos 20 EC and fipronil 5 SC should be preferred over imidacloprid 17.8 SL for the control of soil pests in sandy loam and clay soils. Bifenthrin, chlorpyrifos, fipronil and imidacloprid can be used to control soil pests in sandy loam and clay soils due to their moderate persistency and strong adsorption in the soil. **(Action :** Asstt. Prof.(Pesticide Residue), FQTL, Navsari)
11.3.1.69	**Screening of sugarcane varieties for early shoot borer resistance** Sugarcane genotypes viz., Co 08008, Co 08020, Co 08001 and 2007 N 469 are found less susceptible to early shoot borer. **(Action :** Asstt. Res. Sci.(Ento), MSRS, Navsari)
11.3.1.70	**Screening of sugarcane varieties for scale insect resistance** Sugarcane genotypes viz., Co 08008, 2007 N 535, 2007 N 469, CoSnk 08101, Co 08016 and VSI 08122 are found less susceptible to scale insect**.** **(Action** : Asstt. Res.Sci.(Ento), MSRS, Navsari**)**
PLANT PATHOLOGY	
11.3.1.71	**Management of powdery mildew of niger** Two sprays of wettable sulphur 80 WP @ 2.5 g/litre, first at the disease initiation and second after 15 days found effective for the management of powdery mildew of niger. **(Action :** Asstt.Res.Scientist (Patho), Niger Research Station, NAU, Vanarasi)

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

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

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

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

		month of October 3. Follow latest recommended schedule of patho and ento and remove all listed chemicals from the treatment **(Action:** Asstt. Res. Sci.(Pl. Path), AES, NAU, Paria)
College of Agriculture, NAU, Bharuch		
11.3.2.104	Evaluation of Bio-inoculants against Anthracnose of Banana	**Accepted with following suggestions** 1. Change the title as Isolation and *in-vitro* testing of bio-inoculants against Anthracnose of Banana **(Action:** Assoc. Prof. (Pl. Path), College of Agri., NAU, Bharuch)
FRS, NAU, Gandevi		
11.3.2.105	Assessment of yield losses due to pest and diseases in Banana	**Approved** **(Action:** Asstt. Res. Sci.(Pl. Path), FRS, NAU, Gandevi)
11.3.2.106	Assessment of yield losses due to pest and diseases in Papaya	**Approved** **(Action:** Asstt. Res. Sci.(Pl. Path), FRS, NAU, Gandevi)
KVK, NAU, Waghai		
11.3.2.107	Assessment of yield losses due to diseases in finger millet crop under Dangs district of South Gujarat	**Approved** **(Action:** SMS (Pl. Prot.), KVK, NAU, Waghai)
Regional Rice Research Station, NAU, Vyara		
11.3.2.108	Evaluation of Groundnut genotypes to identify the sources of resistance against stem rot caused by *Sclerotium rolfsii*	**Accepted with following suggestion** 1. Record the observation as per AICRP groundnut for screening **(Action:** Asstt. Res. Sci.(Pl. Path), RRRS, NAU, Vyara)
AES, NAU, Paria		
11.3.2.109	Cost effective management of post-harvest anthracnose of mango by pre and post harvest treatments	**Accepted with following suggestion** 1. Use the design CRD **(Action:** Assoc. Res. Sci. (Pl .Path), AES, NAU, Paria)
11.3.2.110	Management of Mango malformation at farmer's field	**Accepted with following suggestion** 1. Remove the words at farmers field from title **(Action:** Assoc. Res. Sci. (Pl. Path), AES, NAU, Paria**)**
Agroforestry, NAU, Navsari		
11.3.2.111	Influence of weather parameters on foraging activity of stingless bees	**Approved**

	(*Tetragonula iridipennis* Smith) near the nests	**(Action:** Asstt. Prof. (Agroforestry), NAU, Navsari)
11.3.2.112	Nesting habitat and nest architecture of stingless bees (*Tetragonula iridipennis* Smith) in South Gujarat condition	**Approved** **(Action:** Asstt. Prof. (Agroforestry), NAU, Navsari)
11.3.2.113	Pilot study on domestication of stingless bees (*Tetragonula iridipennis* Smith)	**Approved** **(Action:** Asstt. Prof. (Agroforestry), NAU, Navsari

7. 11.3.3 General suggestions:

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

11.4 HORTICULTURE & AGRO-FORESTRY

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

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

Universities	**Recommendations**				**New Technical Programmes**	
	Farming Community		**Scientific Community**			
	Proposed	**Approved**	**Proposed**	**Approved**	**Proposed**	**Approved**
AAU	4	4	---	---	8	8
JAU	4	4	---	---	3	3
NAU	22	22	9	9	59	58
SDAU	8	8	---	---	11	11
Total	38	38	9	9	81	80

11.4.1 Recommendations for Farming Community

NAVSARI AGRICULTURAL UNIVERSITY	
11.4.1.9	**Effect of post-shooting bunch spray of fertilizers on banana (*Musa paradisiaca* L.) cv. Grand Naine**
	The farmers of South Gujarat Heavy Rainfall Zone growing banana cv. Grand Naine are advised to apply two spray of 1.5% Sulphate of Potash (SOP) on bunch after complete emergence and 15 days after first spray to get higher yield with quality fruits. Keep the bunch covered with blue polythene sleeve (18 µ). દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તારમાં કેળની ગ્રાન્ડ નૈન જાત ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, સારી ગુણવત્તાવાળા ફળોનું વધુ ઉત્પાદન મેળવવા માટે સલ્ફેટ ઓફ પોટાશ ૧.૫ ટકાના દ્રાવણનાં બે છંટકાવ, કેળની લૂમ પૂરેપૂરી નીકળ્યા બાદ અને પ્રથમ છંટકાવનાં ૧૫ દિવસ બાદ લૂમ ઉપર ૧૮ માઈક્રોનની ભુરા રંગના પ્લાસ્ટિકની બાંય ચઢાવવી. **(Action:-** Research Scientist, RHRS, ACHF, NAU, Navsar)
11.4.1.10	**Effect of different organics on growth, yield and quality of mango cv. Kesar under high density plantation**
	The farmers of South Gujarat Heavy Rainfall Zone intend to adopt organic farming in high density plantation (5 m x 5 m) adult mango cv. Kesar are advised to apply N 80 % of RDN from Neem Cake at 11.5 kg/ tree (5.22 % nitrogen) with *Azotobacter* + PSB (10^8 cfu) 50 ml each /tree in the month of June to get higher yield with quality production. It also improves the soil properties. દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તારમાં ઘનિષ્ઠ વાવેતર પધ્ધતિમાં (૫× ૫ મી.) આંબાની કેસર જાતમાં સેન્દ્રિય ખેતી પધ્ધતિ અપનાવવા માંગતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, સારી ગુણવત્તાવાળા ફળોનું વધુ ઉત્પાદન મેળવવા તેમજ જમીનની ગુણવત્તામાં સુધારા માટે પુખ્ત વયના કેસર ઝાડને ૮૦ ટકા નાઈટ્રોજનનો જથ્થો લીંબોળીના ખોળ ૧૧.૫૦ કિલો/ઝાડ (૫.૨૨ % નાઈટ્રોજન) ના રૂપમાં તેમજ ૫૦ મિ.લિ. એઝોટોબેકટર અને ૫૦ મિ.લિ. પી. એસ. બી. (૧૦૯ સીએફયુ) પ્રતિ ઝાડ જુન માસમાં આપવું. (Action:- Research Scientist, RHRS, ACHF, NAU, Navsari)
11.4.1.11	**Effect of heading back and training on growth, flowering, yield and quality of fruit in old orchard of mango cv. Kesar**
	The farmers of South Gujarat Heavy Rainfall Zone are advised to head back their high density planted (5 m x 5 m) old mango tree cv. Kesar at 4 to 5 m height from ground level and maintain 6 newly emerged tertiary limbs to get higher yield with quality production. **Note:** 1. Rejuvenation should be done after completion of monsoon (in month of October). 2. For rejuvenation slant cut should be made and cut portion should be treated with copper fungicide. 3. Care should be taken for controlling stem borer by frequent visit of rejuvenated orchard.

	દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તારમાં ઘનિષ્ઠ વાવેતર પધ્ધતિમાં (૫ x ૫ મી.) જુના કેસર આંબાના ઝાડ ધરાવતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે, સારી ગુણવત્તાવાળા ફળોનું વધુ ઉત્પાદન મેળવવા માટે જુના આંબાના ઝાડને જમીનથી ૪ થી ૫ મીટર ઉંચાઈથી કાપી નવી નીકળતી ડાળીઓ માંથી ૬ ડાળીઓની કેળવણી કરવી. નોંધ:- **1.** નવીનકરણ ચોમાસુ પૂર્ણ થયા પછી કરવું (ઓક્ટોબર માસમાં). **2.** નવીકરણ માટે ત્રાંસો કાપ મૂકી કપાયેલા ભાગ ઉપર તાંબાયુકત ફૂગનાશક દવા લગાવવી. **3.** નવીનીકરણ કરેલ આબાંવાડીમાં આંબાના મેઢનાં નિયંત્રણ માટે નિયમિત મુલાકાત લેતા રહેવું. (Action:- Research Scientist, RHRS, ACHF, NAU, Navsari)
11.4.1.12	Varietal trial in mango
	The farmers of South Gujarat growing mango are advised to grow varieties Alphanso, Sonpari, Kesar and Banglora for higher production with good economic return. However, Malgoa, Mankurad, Fernandin, Bombay Green and Kishen Bhog are not economical under south Gujarat condition. Varieties Alphanso and Sonpari gave higher TSS. દક્ષિણ ગુજરાતમાં આંબાની ખેતી કરતા ખેડૂતોને ભલામણ કરવામાં આવેછે કે, આંબાવાડીયામાં વધુ ઉત્પાદન સાથે આવક મેળવવા હાફુસ, સોનપરી, કેસર અને બેંગ્લોરા જાતનું વાવેતર કરવું .જ્યારે મલગોવા, માનકુરાદ, ફર્નાનડીન, બોમ્બે ગ્રીન અને કિષ્નભોગ દક્ષિણ ગુજરાતનાં વાતાવરણમાં નફાકારક નથી . હાફુસ અને સોનપરી જાતોમાં કુલ દ્રવ્ય ક્ષારનું પ્રમાણ સૌથી વધુ જોવા મળે છે. (Action:- Research Scientist, AES, NAU, Paria)
11.4.1.13	Nutrient requirement under high density planting in banana cv. Grand Naine
	The farmers of south Gujarat heavy rainfall zone (AES-III) growing banana cv. Grand Naine are advised to plant three (3) suckers/hill (in triangle fashion at 30 cm.) at 2x3 m (7x10 feet) spacing and apply 75 per cent recommended dose of fertilizers i.e. 225:67.5:150 N:P_2O_5:K_2O g/plant) for getting higher yield with higher net return. 10 kg FYM and 67.50 g P_2O_5/plant should be apply at planting, while 225 g N and 150 g K_2O/plant should be applied in three equal splits at 90, 120 and 150 days after planting. દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તારમાં કેળની ગ્રાન્ડ નૈન જાતની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે કેળની રોપણી ખામણા દીઠ ત્રણ (૩) છોડ (ત્રિકોણાકાર પધ્ધિતમાં ૩૦ સે.મી.ના અંતરે) ૨ x ૩ મીટર (૭x ૧૦ ફૂટ) ના અંતરે કરવાથી અને સાથે ભલામણ કરેલ રસાયણિક ખાતરના ૭૫ ટકા ખાતર એટલે કે ૨૨૫ -૬૭.૫-૧૫૦ ગ્રામ ના:ફો:પો પ્રતિ છોડ દીઠ આપવાથી વધુ ઉત્પાદન સહિત વધુ નફો મળે છે. છોડ દીઠ છાણિયુ ખાતર ૧૦ કિ.ગ્રા .અને ૬૭.૫ ગ્રામ ફોસ્ફરસ રોપની વખતે ખાડામાં આપવો જયારે છોડ દીઠ ૨૨૫ ગ્રામ નાઈટ્રોજન અને ૧૫૦ ગ્રામ પોટાશ રોપણી બાદ ૯૦, ૧૨૦ અને ૧૫૦ દિવસે ત્રણ સરખા હપ્તામાં આપવા. (Action:- Associate Res. Scientist, FRS, NAU, Gandevi)
11.4.1.14	Fertigation studies in banana cv. Grand Naine
	The farmers of south Gujarat heavy rainfall zone (AES-III) growing banana cv. Grand Naine and using drip irrigation system are advised to apply 75

per cent recommended dose of N and K_2O fertilizers i.e. 225 g N and 150 g K_2O/plant through drip at 15 days interval during the various growth stage as under for getting higher yield with higher net profit with 25 % saving of N and $K_2O$and 22 per cent saving of irrigation water.

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

10 kg FYM and 90 g P_2O_5 should be applied in pit at planting. The drip system should be operated for 90 minutes in winter and 150 minutes in summer everyday having two drippers of 4 lph spaced at 30 cm either side of pseudostem.

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

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

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

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

11.4.1.15 Chemical manipulation for higher yield and quality of banana cv. Grand Naine

The farmers of south Gujarat heavy rainfall zone (AES-III) growing banana cv. Grand Naine and using drip irrigation are advised to apply 250:90:250 g $N:P_2O_5:K_2O$/plant and one spray of 10 ppm 2,4-D five days after complete opening of bunch for getting higher yield with standard size of fruits for export quality. 10 kg FYM and 90 g P_2O_5 should be apply at planting, while N and K_2O should be applied each at 250 g per plant in three equal splits at 90, 120 and 150 days after planting.

દક્ષિણ ગુજરાતના ભારે વરસાદવાળા વિસ્તારમાં ટપક સિંચાઈ પદ્ધતિ સાથે કેળની ગ્રાન્ડ નૈન જાતની ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે ,છોડ દીઠ ૨૫૦:૯૦:૨૫૦ ગ્રામ ના:ફો:પો

	આપવા સહિત લૂમ ખુલી ગયા પછીના પાંચમા દિવસે લૂમ ઉપર ૧૦ પીપીએમ ૨ ,૪ ડીના દ્રાવણનો છંટકાવ કરવાથી વધુ ઉત્પાદન મળવા સહિત નિકાસના ધારાધોરણ મુજબની ગુણવત્તાવાળા ફળોનું ઉત્પાદન મળે છે. છાણિયું ખાતર ૧૦ કિ.ગ્રા .અને ૯૦ ગ્રામ ફોસ્ફરસ પ્રતિ છોડ રોપણી સમયે આપવો તેમજ નાઈટ્રોજન અને પોટાશ દરેક ૨૫૦ ગ્રામ પ્રતિ છોડ મુજબ ત્રણ સરખા હપ્તામાં રોપણી બાદ ૯૦ ,૧૨૦ અને ૧૫૦ દિવસે આપવો. (Action:- Associate Res. Scientist, FRS, NAU, Gandevi)
11.4.1.16	Integrated Nutrient Management in Little gourd
	The farmers of South Gujarat Heavy Rainfall Agro-climatic Zone (AES III) cultivating little gourd cv. Gujarat Navsari Little Gourd-1 (GNLG-1) are advised to follow INM to fertilize the crop as per the schedule given below to get higher better quality fruits and net realization. Basal dose:Apply 10 t/ha well decomposed FYM, 25 kgN/ha through Bio compost on equivalent N basis along with 50 kg/ha each of P and K by chemical fertilizer. Top dressing: Apply 25 kg N/ha in two splits through chemical fertilizer at 30 and 60 days after Planting . Note: 1. In subsequant years, apply fertilizer as above schedule. 2. Prunning should be done in month of December. **દક્ષિણ ગુજરાતમાં ટીંડોળાની ગુજરાત નવસારી ટીંડોળા–૧ જાતની ખેતી કરતા ખેડૂતોને ટીંડોળાનું વધુ ઉત્પાદન અને ચોખ્ખો નફો મેળવવા માટે સંકલિત ખાતર વ્યવસ્થા દ્વારા પાકને ખાતરનો જથ્થો નીચે મુજબ આપવો.** **પાયામાંઃ ૧૦ ટન છાંણીયુ ખાતર, ૨૫ કીગ્રા નાઈટ્રોજન બાયો કમ્પોસ્ટના સ્વરૂપમાં (બાયો કમ્પોસ્ટમાં રહેલા નાઈટ્રોજન તત્વના પ્રમાણનાં આધારે) તથા ૫૦ કિગ્રા ફોસ્ફરસ / હે અને ૫૦ કિગ્રા પોટાશ / હે રાસાયણિક ખાતર દ્વારા આપવો.** **પૂર્તિ ખાતરમાંઃ બાકી રહેલો ૨૫ કિ.ગ્રા. નાઈટ્રોજન / હે રોપણી કર્યાના ૩૦ અને૬૦ દિવસે બે સરખા હપ્તામાં રાસાયણિક ખાતર દ્વારા આપવો.** **નોંધઃ ૧. પછીના વર્ષોમાં ઉપર મુજબ ખાતર આપવું.** **૨. પાકની છટણી ડિસેમ્બર માસમાં કરવી.** (Action:- Res. Scientist, Veg. Sci, ACHF, NAU, Navsari)
11.4.1.17	Effect of different organics on growth and yield of brinjal cv. *Surti Ravaiya* (pink)
	The farmers of South Gujarat heavy rainfall agro-climatic zone (AES III) intend to grow brinjal variety Surti Ravaiya (Pink) organically are advised to apply castor cake (4.5 % N ; dry weight basis) in two equal proportion to supply N @ 100 kg/ha for achieving higher yield and net income as well as to improve the soil health. Apply 4.5 t/ha castor cake in two equal splits at the time of transplanting and one month after transplanting. **Note :** – *Trichoderma viride* should be applied at the rate of 5 kg/ha at the time of transplanting. – Maize should be grown as trap crop on the border. – Sticky trap should be used @ 40/ha. – Tricho card should be used @ 5/ha. After transplanting apply foliar spray of neem based pesticide and cow

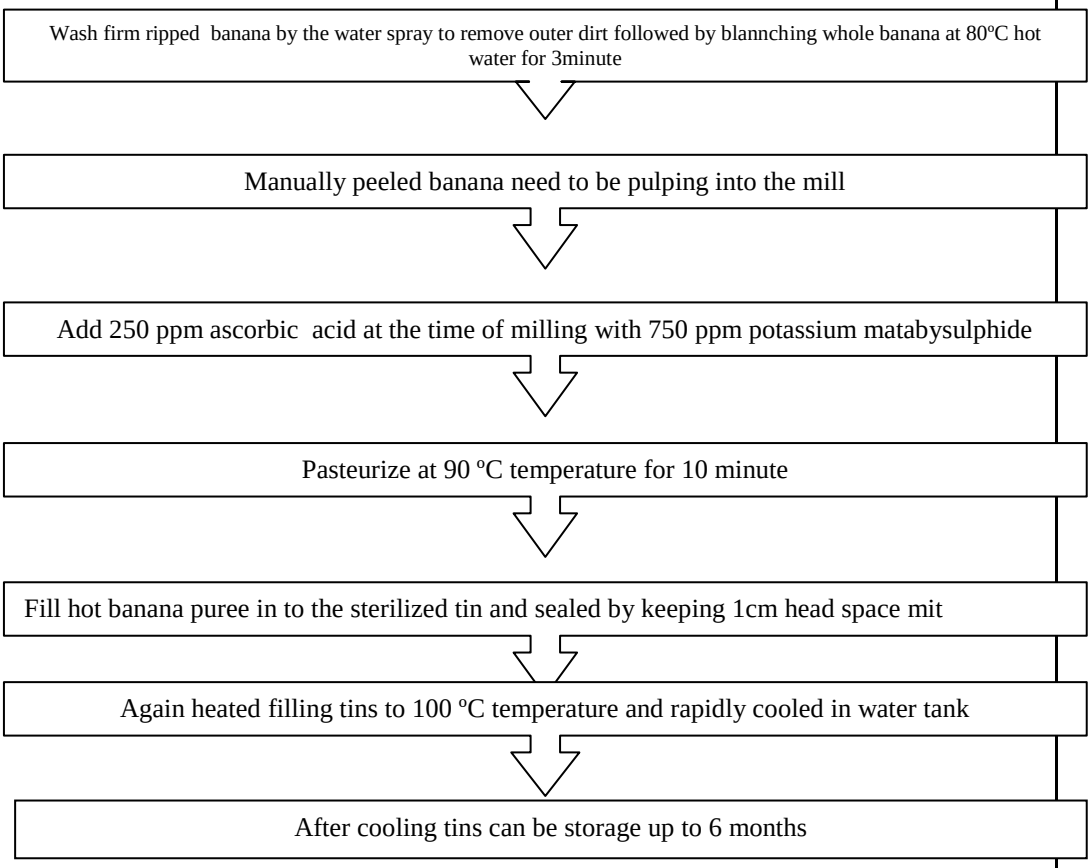
	urine at monthly intervals. દક્ષિણ ગુજરાતના ભારે વરસાદીય વાતાવરણ વિસ્તાર (એઈએસ ૩) ના સેન્દ્રિય ખેતી કરતાં ખેડૂતોને ભલામણ કરવામાં આવે છે કે રીંગણ જાત (ગુલાબી) ને દિવેલી ખોળ (૪.૫ ટકા નાઈટ્રોજન ; સૂકાં વજન આધારિત) બે સરખાં ભાગમાં ૧૦૦ કિ.ગ્રા./ હેકટરના દરે નાઈટ્રોજન આપવાથી વધુ ઉત્પાદન અને ચોખ્ખી આવક તેમજ જમીનની તંદુરસ્તીમાં સુધારો થાય છે. ૪.૫ ટન/હેકટર દિવેલી ખોળ ફેરરોપણી સમયે અને ફેરરોપણી બાદ એક મહીને બે સરખાં ભાગમા આપવો. નોંધ : • ૫ કિ.ગ્રા./હેકટર ફેરરોપણી સમયે આપવું. • રીંગણ પાક ફરતે મકાઈનો પિંજર પાક ઉગાડવો. • સ્ટીકી ૫ *પ્રતિ હેકટર લગાડવા.* ફેરરોપણી બાદ મહીનાના અંતરે લીમડા આધારીત દવા અને ગૌમુત્રનો છંટકાવ કરવો. (Action:- Res. Scientist, Veg. Sci, ACHF, NAU , Navsari)
11.4.1.18	Response of seed sowing on germination, growth, flowering and yield of Spine gourd (*Momordica dioica* Linn.) cv. Local
	The farmers of South Gujarat Heavy Rainfall Agro-climatic zone (AES-II and AES-III) interested to grow spine gourd cv. Local through seed are advised to sow five seeds per dibble on raised bed in last week of March and mulch with paddy straw for higher fruit yield. દક્ષિણ ગુજરાતમા કંકોડાની ખેતી બીજ દ્વારા કરવામાં રસ ધરાવતા ખેડૂતોને કંકોડાનુ વધુ ઉત્પાદન મેળવવા માટે ગાદી કયારા બનાવી, ખામણા દીઠ કંકોડાના પાંચ બીજનુ માર્ચ માસના અંતિમ અઠવાડિયામાં વાવેતર કરી ડાંગરના પરાળનું આવરણ કરવાની ભલામણ કરવામાં આવે છે. (Action:- Res. Scientist, Veg. Sci, ACHF, NAU , Navsari)
11.4.1.19	Performance of greater yam (*Dioscorea alata* L.) under different stacking systems.
	The farmers of south Gujarat Heavy Rainfall Agro-climatic Zone (AES III) growing greater yam cv. Local Round are advised to plant greater yam at the distance of 90 cm × 90 cm with elephant foot yam cv. Local as a live stacking crop in-between two rows of greater yam at a distance of 90 cm × 90 cm and train the vines of greater yam on the plants of elephant foot yam with application of 15 tonne of FYM and 120:90:120 kg NPK/ha to obtain higher yield and net return. દક્ષિણ ગુજરાતમાં રતાળુની લોકલ ગોળ જાતનું વાવેતર કરતાં ખેડૂતોને વધુ ઉત્પાદન તથા ચોખ્ખો નફો મેળવવા માટે રતાળુની રોપણી ૯૦ × ૯૦ સે.મી. ના અંતરે કરવા તથા રતાળુની બે હાર વચ્ચે દેશી સુરણનું પણ ૯૦ × ૯૦ સે.મી. ના અંતરે વાવેતર કરવા અને રતાળુના વેલાને સુરણના છોડ પર કેળવણી કરવાની તથા ૧૫ ટન છાણિયું ખાતર અને ૧૨૦:૯૦:૧૨૦ કિલો નાઃફોઃપો. તત્વો પ્રતિ હેકટર આપવાની ભલામણ કરવામાં આવે છે. (Action:- Asstt. Res. Scientist, Tuber crops, ACHF, NAU, Navsari)
11.4.1.20	Effect of rates of castor cake and Banana Pseudostem sap on yield and quality of organically grown Garlic (*Allium sativum* L.)
	The farmers of South Gujarat Heavy Rainfall Zone (AES III) growing garlic organically are advised to apply recommended 100 kg N/ha through organic manures as per schedule given below to get higher yield and net profit. • Apply 1.4 t/ha biocompost and 3.3 t/ha vermicompost at the time of sowing and 0.7 t/ha castor cake one month after sowing. • Apply 2000 lit/ha banana pseudostem sap at 35 and 55 days after sowing

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

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

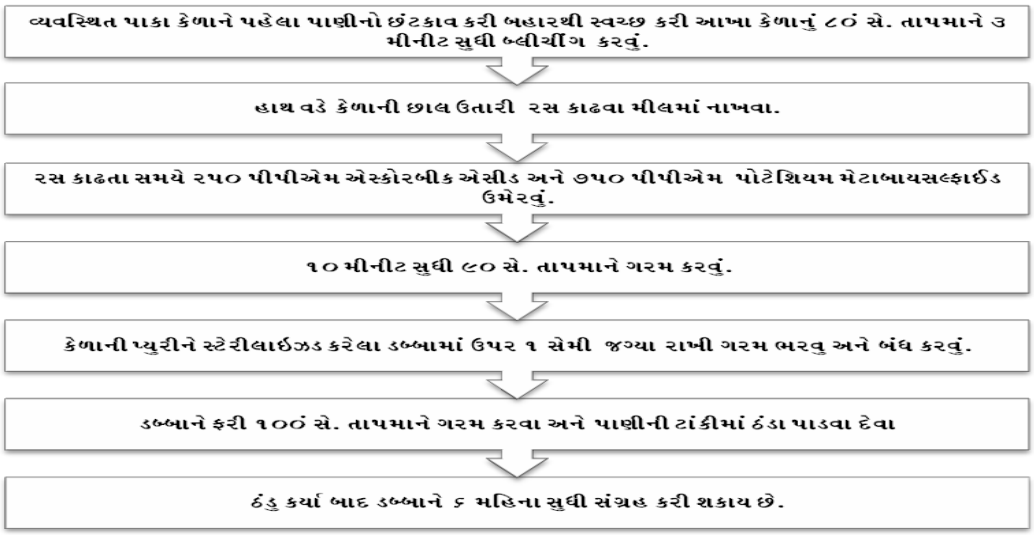
Recommendation for processors:

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



પ્રોસેર્સસ માટે ભલામણઃ

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

	 (Action: Res. Scientist, SWM, NAU, Navsari)
11.4.1.27	Residues of Some Insecticides in/On Indian Bean Pod
	Indian bean growers of South Gujarat (AES-III) are advised to keep waiting period of seven days after spray of thiamethoxam 25 WG (35 g a.i. /ha), novaluron 10 EC (33.5 g a.i. /ha), indoxacarb 14.5 SC (60 g a.i. /ha), spinosad 45 SC (75 g a.i. /ha), acetamiprid 20 SP (20 g a.i. /ha) and flubendiamide 39.35 SC (50 g a.i. /ha) and ten days for imidacloprid 17.8 SL (25 g a.i. /ha). દક્ષિણ ગુજરાતના વાલ પાપડી ઉગાડતા ખેડૂતોને સલાહ આપવામાં આવે છે કે થાયામેથોક્ષામ ૨૫ ડબ્લ્યુજી (૩૫ ગ્રા.સક્રિય તત્વ/હે), નોવાલ્યુરોન ૧૦ ઈસી (૩૩.૫ ગ્રા.સક્રિય તત્વ/હે), ઈન્ડોક્ઝાકાર્બ ૧૪.૫ એસસી (૬૦ ગ્રા.સક્રિય તત્વ/હે), સ્પીનોસાડ ૪૫ એસસી (૭૫ ગ્રા.સક્રિય તત્વ/હે), એસીટામીપ્રીડ ૨૦ એસપી (૨૦ ગ્રા.સક્રિય તત્વ/હે) અને ફ્લુબેન્ડીયામાઈડ ૩૯.૩૫ એસસી (૫૦ ગ્રા.સક્રિય તત્વ/હે)નો છંટકાવ બાદ સાત દિવસનો પ્રતિક્ષા સમય રાખવો અને ઈમીડાકલોપ્રીડ ૧૭.૮ એસએલ (૨૫ ગ્રા.સક્રિય તત્વ/હે) નો દસ દિવસનો પ્રતિક્ષા સમય રાખવો. (Action: Assoc. Prof., Ento., ACHF, NAU, Navsari)
11.4.1.28	Status of residues of insecticides in/on Indian bean after *Ubadia* Preparation
	The residues of imidacloprid17.8 SL (25 g a.i. /ha), thiamethoxam 25 WG (35 g a.i. /ha), novaluron 10 EC (33.5 g a.i. /ha), indoxacarb 14.5 SC (60 g a.i. /ha), spinosad 45 SC (75 g a.i. /ha), acetamiprid 20 SP (20 g a.i. /ha) and flubendiamide 39.35 SC (50 g a.i. /ha) observed below detectable level in Indian bean after *Ubadia* preparation. ઉબાડીયુ બનાવ્યા બાદ ઈમીડાકલોપ્રીડ ૧૭.૮ એસએલ (૨૫ ગ્રા.સક્રિય તત્વ/હે), થાયામેથોક્ષામ ૨૫ ડબ્લ્યુજી (૩૫ ગ્રા.સક્રિય તત્વ/હે), નોવાલ્યુરોન ૧૦ ઈસી (૩૩.૫ ગ્રા.સક્રિય તત્વ/હે), ઈન્ડોક્ઝાકાર્બ ૧૪.૫ એસસી (૬૦ ગ્રા.સક્રિય તત્વ/હે), સ્પીનોસાડ ૪૫ એસસી (૭૫ ગ્રા.સક્રિય તત્વ/હે), એસીટામીપ્રીડ ૨૦ એસપી (૨૦ ગ્રા.સક્રિય તત્વ/હે) અને ફ્લુબેન્ડીયામાઈડ ૩૯.૩૫ એસસી (૫૦ ગ્રા.સક્રિય તત્વ/હે)ના અવશેષો વાલ પાપડીમાં જોવા મળતાં નથી.

	(Action: Assoc. Prof., Ento., ACHF, NAU, Navsari)
11.4.1.29	Bioefficacy of some insecticides and neem products against *Helicoverpa armigera* (Hubner) on Tomato
	For effective control of tomato fruit borer, farmers of south Gujarat (AES III) are advised to apply any one of following insecticides, first at the time of flowering and second at 15 days after first spray for obtaining higher yield and better return. Further, the residue content of this insecticide remained below MRL in tomato fruits after three days. Flubendiamide 20 WDG @ 2.5 g/10 lit. Chlorantraniliprole 18.5 SC @ 3.0 ml/10 lit. ટામેટામાં લીલી ઈયળ ના અસરકારક નિયંત્રણ માટે દક્ષિણ ગુજરાતના ટામેટા ઉગાડતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે નીચેની જંતુનાશક દવાઓ પૈકી કોઈપણ એકનો પ્રથમ છંટકાવ ફૂલ બેસવાની અવસ્થાએ અને બીજો છંટકાવ પ્રથમ છંટકાવના પંદર દિવસ બાદ કરવાથી વધુ ઉત્પાદન મેળવી સારૂ વળતર મળે છે. • ૧. ફ્લુબેન્ડીયામાઈડ ૨૦ ડબ્લ્યુડીજી ૨.૫ ગ્રા./૧૦ લી. • ૨. ક્લોરેન્ટ્રાનીલીપ્રોલ ૧૮.૫ એસસી ૩ મી.લી./૧૦ લી. (Action: Assoc. Prof., Ento., ACHF, NAU, Navsari)
11.4.1.30	Growth and yield of Tannia (*Xanthosoma sagittifolium* L. Schott.) as affected by different pruning intensities of tree crops
	The farmers of South Gujarat heavy rainfall zone (AES- III) growing *Terminalia arjuna*- Arjun Sadad, *Mitragyna parvifolia* -Kalam and *Adina cordifolia*- Haldu at 10 X 2.5 m spacing and growing Tannia as an intercrop are advised to remove side branches up to 1/3 height of trees from ground level which is helpful in maximum utilization of land with additional income. **દક્ષિણ ગુજરાતના ભારે વરસાદીય ઝોન , ખેત આબોહવાકીય પરિસ્થિતી ૩ માં અર્જુન સાદડ, હલ્દુ તેમજ કલમ જેવા વૃક્ષોને ૧૦ × ૨.૫ મીટરે ઉછેરી તેની સાથે આંતરપાક તરીકે અળવીની ખેતી કરતા ખેડુતોને ભલામણ કરવામાં આવે છે કે જમીનથી વૃક્ષને તેમની ઉચાઈના ૧/૩ ભાગની ડાળીઓની છટણી કરી વૃક્ષોની વચ્ચેની જગ્યાનો મહત્તમ ઉપયોગ કરવાથી વધુ આવક મેળવી શકે છે.** (Action: Principal, College of Forestry , ACHF, NAU, Navsari)

Recommendation for Scientific Community

11.4.1.31	Study of genetic variability in tamarind (*Tamarindus indica* L.) from South Gujarat.
	On the basis of overall performance, tamarind genotypes GT-1 and GT-5 were found to be promising among all genotypes for yield and quality parameters, respectively. Whereas, for pulp recovery of above 45 percentage, tamarind genotypes GT-1, GT-2, GT-5, GT-10, GT-11 and GT-12 were found to be promising, so these genotypes may further assessed on different locations after propagating vegetatively or may be exploited as potential parents to develop qualitative and high yielding stable genotypes. (Action:- KVK, Waghai, NAU and AES, Paria)

11.4.1.32	Optimization of Level of TSS and Anti-Caking Agent in Spray Solution for Preparing Powder from Ripe Banana at Pilot Scale
	For preparing spray dried banana powder, use 10 ^{o}Brix spray solution of banana puree after adding 15 % Maltodextrin as anti-caking agent. Spray should be done by keeping feed flow rate 35.0 kg/hr, feed temperature 70 ^{0}C, inlet temperature 170 ^{0}C and outlet temperature 100 ^{0}C for minimizing the sticking issue of banana puree in the inner chamber of spray drier. (Action: Res. Scientist, SWM, NAU, Navsari)
11.4.1.33	Characterization of pectate lyase in banana
	1. Best stage for maximum recovery of pectate lyase (PEL) enzyme from Grand Naine banana pulp is 4 days after 5% ethrel treatment. 2. Optimum activity of PEL enzyme is obtained in 20mM sodium phosphate buffer at pH 8.5 and temperature 37^{o}C. 3. PEL enzyme activity was increased by two thiol group chemicals (cystine and cysteine at 5.0 mM concentration) and one metal ion i.e. Mg^{2+} as $MgCl_2$ (0.6 mM concentration), where as phenolics (ferulic acid, caffeic acid, ρ-Coumaric acid and salicylic acid), reducing agents (ascorbic acid and sodium metabisulphite), thiol groups (β-ME and DTT) and metal ions (Ba^{2+}, Co^{2+}, Cu^{2+}, Fe^{2+} and Zn^{2+}) were identified as inhibitor of PEL enzyme. (Action: Professor, Biotech, ACHF, NAU, Navsari)
11.4.1.34	**Effect of nano-micronutrients (Zn and Cu) on physiology and stevioside production in stevia.**
	In the micropropagation of stevia, nano particles(< 50 nm) of ZnO (10 µM) and CuO (0.05 µM) can be incorporated in place of $ZnSO_4$ & CuSO4 in the MS medium for getting more number of shoots per culture, higher fresh weight, dry weight & stevioside content (1.40% FW). (Action: Professor, Biotech, ACHF, NAU, Navsari)
11.4.1.35	**Screening for Resistance to *Fusarium* wilt in Tomato varieties**
	Tomato genotypes, NTL-2, NTL-6, NTL-7 and NTL-10 are resistant against *Fusarium* wilt, while, genotypes N TL-1, NTL-8, NTL-9, and GT-2 are moderately resistant against tomato wilt. (Action: Assoc. Prof., Patho., ACHF, NAU, Navsari)
11.4.1.36	Detection of fungal pathogens from forest tree seeds *in vitro*
	Alternaria sp, *Aspergillus* sp., *Fusarium* sp, *Trichoderma* sp are found the most frequently associated fungal genera with six forest trees *viz.*, *Tectona grandis* (Teak), *Leucaena leucocephala* (Subabul), *Delonix regia* (Gulmohar), *Acacia mangium* (Mangium), *Adenanthera pavonina* (Ratangunj) and *Cassia fistula* (Garmalo) using blotter and agar plate method. (Action: Assoc. Prof., Patho., ACHF, NAU, Navsari)

11.4.1.37	Rapid multiplication of *Bambusa vulgaris* through in vitro regeneration techniques from juvenile explant
	It is recommend to scientific community and tissue culture industries involved bamboo tissue culture that to get rapid multiplication of *Bamboosa vulgaris L*. through *in vitro* regeneration from juvenile explants using tissue culture technique to use auxiliary bud as explants source and absolute alcohol (100%) for 30 Sec + mercuric chloride (0.1%) for 4 min. for contamination control and maximum establishment. Whereas, for shoot multiplication, culture established on simple MS media followed MS + 1mg/l BAP + 0.25 Kin. However, for rooting it is advice to use MS + 20mg/l IBA which gives highest rooting percentage and for acclimatization FYM + Soil + Cocopeat (1:1:1). (Action: Principal Forestry , ACHF, NAU, Navsari
11.4.1.38	Rapid multiplication of *Dendrocalamus strictus* Nees. through *in vitro* regeneration techniques from juvenile explant
	It is recommend to scientific community and tissue culture industries involved bamboo tissue culture that to get rapid multiplication of *Dendrocalamus srtictus L.* through in vitro regeneration from juvenile explants using tissue culture technique for large scale multiplication of the plantlets in which farmers can get true to type plants with all the advantages of vegetative propagation (clonal propagation). it is recommended to use auxiliary bud as explants source and absolute alcohol (100%) for 30 Sec + mercuric chloride (0.1%) for 4 min. for contamination control and maximum establishment. Whereas, for culture establishment and for shoot multiplication it is advise to use MS liquid media with 2.0 mg/lit BAP. However, for rooting it is advice to use MS + 1.5mg/l NAA + 3mg/l IBA and for acclimatization it is advice to use FYM+ Soil + Cocopeat (1:1:1). (Action: Principal Forestry , ACHF, NAU, Navsari
11.4.1.39	Collection and evaluation of *Mucuna* germplasm from South Gujarat for L-DOPA and protein content.
	For higher L-DOPA (L-3, 4-dihydroxyphenylalanine) it is advisable to collect Mucuna from Valsad, Chikhali, Budhakeshwar village (Navsari Mahuva road), Bardoli and Vyara. Breeders willing to enhance L-DOPA content in *Mucuna pruriens* may incorporate accessions namely 29, 10, 14 and 13 in breeding stock. (Action: Principal Forestry , ACHF, NAU, Navsari

11.4.2 New Technical Programmes

NAVSARI AGRICULTURAL UNIVERSITY

SN	Title/Centre	Suggestions	Remarks
	Centre: RHRS, NAU, Navsari		

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

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

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

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

	yield and other horticultural traits.		
11.4.2.42	Evaluation of tomato cultivars under NVPH for yield and other horticultural traits.	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.43	PET in CHILLI	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.44	Tomato (Determinate) IET	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.45	Tomato (Determinate) AVT-I	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.46	Tomato (Determinate) AVT-II	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.47	Tomato (Indeterminate) AVT-II	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.48	Chillies AVT-I	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.49	Chillies AVT-II	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.50	Ash gourd AVT-II	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.51	Pumpkin IET	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
11.4.2.52	Bitter gourd hybrid- IET	**Approved as such** (Action:- Professor (Veg. Sci.), ACHF, NAU, Navsari)	
	Centre: Department of Floriculture, ACHF, NAU, Navsari		

11.4.2.53	Exploration and evaluation of local flora for value addition through dehydration.	**Accepted with following suggestion/s** **1.** Add common name of weed (Action:- Professor (Flori), ACHF, NAU, Navsari)	
11.4.2.54	Standardization of dehydration technique in Rose var. Top secret, Gold strike and Rewine.	**Accepted with following suggestion/s** **1.** In treatment silica and sand grade should be mention (Action:- Professor (Flori), ACHF, NAU, Navsari)	
11.4.2.55	Assessment of genetic diversity of pot roses in soilless media under Greenhouse conditions	**Not approved** (Action:- Professor (Flori), ACHF, NAU, Navsari)	
11.4.2.56	Genetic variability studies in Adenium using soilless media under Greenhouse condition	**Accepted with following suggestion/s** **1.** Recast the title as " Evaluation studies in Adenium using soilless media under green house condition **2.** Remove the name of Sachin Chavan **3.** Add observation on hardening of Adenium (Action:- Professor (Flori), ACHF, NAU, Navsari)	
	Centre: Department of PHT, ACHF, NAU, Navsari		
11.4.2.57	Processing and Value Addition Of Watermelon [*Citrullus lanatus*]"	**Accepted with following suggestion/s** **1.** Add observation on Viscosity in Part 2 **2.** Use inner albeno portion of rind instead of rind in Part 3 (Action:- Professor (PHT), ACHF, NAU, Navsari)	
11.4.2.58	Standardization of technology for foam mat dehydration of sapota for powder making	**Accepted with following suggestion/s** **1.** Use Repetition instead of replication (Action:- Professor (PHT), ACHF, NAU, Navsari)	
11.4.2.59	Standardization of technology for foam mat dehydration of mango for powder making	**Accepted with following suggestion/s** **1.** Use Repetition instead of replication (Action:- Professor (PHT), ACHF, NAU, Navsari)	
11.4.2.60	Study the effect of hot water dip treatment on the irradiation fruit fly, ripening and quality of	**Accepted with following suggestion/s** **1.** Treatments should be divided in two factors with two controls Factor I: Temperature- 48,50, 52 and 55^0	

	mango for export purpose (cv. Kesar and Alphonso)	C Factor II Dipping time- 5, 10, 15 & 20 min. **2.** Design FCRD instead of CRD 3. Storage period upto 20 days (Action:- Professor (PHT), ACHF, NAU, Navsari)	
	Centre: Organic Farm, ACHF, NAU, Navsari		
11.4.2.61	Effect of liquid manures on quality and productivity of banana and papaya grown under alternate row system.	**Approved as such** (Action:- Assoc. Professor, Organic Farm, ACHF, NAU, Navsari)	
	Centre: Department of Plant Molecular Biology and Bio-Technology, ACHF, NAU, Navsari		
11.4.2.62	Standardization of microspore culture in egg plant	**Approved as such** (Action:- Professor (Bio-Tech), ACHF, NAU, Navsari)	
11.4.2.63	Effect of exogenous application of brassinosteroid on yield and quality of tomato *(Solanum lycopersicum* L.)	**Approved as such** (Action:- Professor (Bio-Tech), ACHF, NAU, Navsari)	
11.4.2.64	Effect of pre-harvest water stress on yield and post harvest quality of cabbage (*Brassica oleraceae var. capitata* L.)	**Accepted with following suggestion/s** **1.** Add observation on head cracking (%) (Action:- Professor (Bio-Tech), ACHF, NAU, Navsari)	
	Centre: Department of Plant Pathology, ACHF, NAU, Navsari		
11.4.2.65	Assessment of crop loss due to complex of diseases and pests in bottle gourd	**Approved as such** (Action:- Professor (Patho), ACHF, NAU, Navsari)	
	Centre: Forestry College, ACHF, NAU, Navsari		
11.4.2.66	Annual biomass, volume and carbon stock estimation of *Melia composita* Willd. through	**Accepted with following suggestion/s** **1.** Add treatment 1.5 m x 1.5 m and 1.5 m x 2.0 m **2.** Design RBD	

	destructive method	**3.** Replications should be 5 (Action:- Principal, Forestry College, NAU, Navsari)	
11.4.2.67	Refinement o**f** protocol for mass multiplication of Teak	**Approved as such** (Action:- Principal, Forestry College, NAU, Navsari)	
11.4.2.68	Influence of weather parameters on foraging activity of stingless bees (*Tetragonula iridipennis* Smith) near the nests	**Approved as such** (Action:- Principal, Forestry College, NAU, Navsari)	
11.4.2.69	Nesting habitat and nest architecture of stingless bees (*Tetragonula iridipennis* Smith) in South Gujarat condition	**Approved as such** (Action:- Principal, Forestry College, NAU, Navsari)	
11.4.2.70	Pilot study of Domestication of stingless bees (*Tetragonula iridipennis* Smith)	**Approved as such** (Action:- Principal, Forestry College, NAU, Navsari)	

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

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

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

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

11.5.1 Recommendations

A. Farming/Industry Community

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

	House suggested to present this recommendation next year after incorporating following suggestions 1. Higher transmittance covering material should be used. 2. Change the shape giving more surface area facing the sun. **(Action: Dean, CAET,Dediapada)**

B. Scientific Community

Navsari Agricultural University	
11.5.1.42	**Data Mining approach for improvement in co-operative operations: A case of Amalsad co-operative with special reference to Sapota value chain**
	The software developed by NAU using Amalsad co-operative with special reference to Sapota value chain case study can be replicated for other co-operative societies of south Gujarat region trading in Sapota. **(Action: Director of IT, NAU, Navsari)**

11.5.2 New Technical Programmes

Navsari Agricultural University

Sr. No.	Centre/ Title	Suggestions	Remarks
11.5.2.44	**Centre:Department of Natural Resource Management, ACHF, Navsari**		
	Irrigation Scheduling of teak seedling grown in nurseries	Approved with following suggestion/s: 1. Irrigation must be given at every day, every alternate day, every 2 day interval and every 3 day interval. 2. Irrigation must be given in control treatment by *zara*. 3. Total no. of plots must be 4. **(Action: Prof. & Head, NRM, ACHFNavsari)**	-
11.5.2.45	**Centre: Center of Excellence on PHT, Navsari**		
	Packaging studies of freshly roasted immature sorghum 'Sorghum Bicolor' seed (Pauk)	Approved with following suggestion/s 1. In place of glass jar, use PET jar. 2. Observations must be taken upto 2 months or till the product is acceptable. **(Action: I/c, CE on PHT, Navsari)**	-
11.5.2.46	Packaging and storage	Approved with following suggestion/s:	-

	studies of drumstick *'Moringaoleifera'* and its pulp.	1. Treatment T5, T6 should be removed for 6 cm size drumstick preservation. 2. Add above treatments for whole drumstick. 3. Take the observations of only moisture content, tenderness, organoleptic evaluation and microbial count. 4. For pulp, study chemical spoilage and organoleptic evaluation. 5. Add one more treatment of shrinkage wrapping of 40 µ LDPE film. 6. For pulp, only tin can must be used. 7. Observations must be taken weekly. **(Action: I/c, CE on PHT, Navsari)**	
11.5.2.47	Design of Card Board box for Packaging of Kesar Mango	House suggested to drop the experiment due to existence of the design of such boxes in market. **(Action: I/c, CE on PHT, Navsari)**	-
11.5.2.48	**Centre: Department of Agricultural Engineering, NMCA, Navsari**		
	Determining feasibility of an on farm reservoir for rice based cropping system in south Gujarat under climatic change scenario	House approved the project. **(Action: I/c Prof.& Head, Dept. of Agril. Engg., NMCA, Navsari)**	-
11.5.2.49	Evaluation of the laser leveled land leveling technology on crop yield, water use productivity & growth of Banana crop in South Gujarat	Approved with following suggestion/s: 1. Leveling index must be calculated. 2. Slope is to be matched with the design of furrow irrigation. 3. Define whether blocked or open furrow. **(Action: I/c Prof.& Head, Dept. of Agril. Engg., NMCA, Navsari)**	-
11.5.2.50	**Centre: College of Agricultural Engineering and Technology, Dediapada**		
	Modeling yield and Evapotranspiration (*Oryza sativa* L.) of rice as	Approved with following suggestion/s: 1. Use software ORIZA instead of DSSAT	-

	influenced by transplanting date and weather parameters	2. Weather parameters accounted to predict yield should be spelled. 3. Spell whether AET or PET modeling. **(Action: Dean, CAET, Dediapada)**	
11.5.2.51	**Centre: College of Agriculture, Waghi**		
	Quantitative Determination of Soil Erosion and Prioritization of Micro-watersheds using Remote Sensing and GIS	Approved with following suggestion/s: 1. Use the software MUSLE in place of USLE. **(Action: Dean, College of Agriculture, Waghai)**	-
11.5.2.52	Assessment of Water Resources of Navsari and Dang Districts using water Quality Index and GIS	Approved with following suggestion/s: 1. Revise the title as "Assessment of quality and quantity ofWater Resources of Navsari and Dang Districts using GIS and water Quality Index. 2. In place of PRM and POM, use the words pre-monsoon and post-monsoon. **(Action: Dean, College of Agriculture, Waghai)**	-
11.5.2.53	**Centre: LPT, College of Veterinary Science & A.H., Navsari**		
	Studies on development of *burfi* utilizing watermelon (*Citrullus lanatus*) rind	Approved with following suggestion/s: 1. Remove the words 'Studies on' in the title. **(Action: Prof. & Head, Dept. of LPT, College of Veterinary Science & A.H., Navsari)**	-

11.5.3 General Suggestions

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

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

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

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

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

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

11.6.1 Recommendations

A. Farming Community

Navsari Agricultural University	
	Nil

B. Scientific Community

Navsari Agricultural University	
11.6.1.14	**Screening of cotton genotypes for water stress tolerance**
	Cotton entries GSHV-162 and H-1454/12 were found drought tolerant, whereas RHC-0717 and BS-79 were found drought susceptible based on physiological parameters, yield stability index, drought susceptibility index, root length and yield related factors. **(Action: Research Scientist, MCRS, NAU, Surat)**
11.6.1.15	**Characterization of pectate lyase in banana**
	Best stage for maximum recovery of pectate lyase (PEL) enzyme from G-9 variety of banana pulp is 4 days after 5% etheral treatment. Optimum activity of PEL enzyme is obtained in 20mM sodium phosphate buffer at pH 8.5 and temperature 37oC. PEL enzyme activity was increased by two thiol group chemicals (cystine and cysteine at 5.0 mM concentration) and one metal ion i.e. Mg2+ as MgCl2 (0.6 mM concentration). Major inhibitors of PEL enzyme are phenolics (ferulic acid, caffeic acid, ρ-Coumaric acid and salicylic acid), reducing agents (ascorbic acid and sodium metabisulphite), thiol groups (β-ME and DTT) and metal ions (Ba2+, Co2+, Cu2+, Fe2+ and Zn2+), which may increase shelf life of

	banana variety G-9. **(Action: Prof. and Head, Dept. of Plant Molecular Biology and Biotechnology, ACHF, NAU, Navsari)**
11.6.1.16	**Effect of nano-micronutrients (Zn and Cu) on physiology and stevioside production in stevia**
	In the micropropagation of stevia, nano particles(< 50 nm) of ZnO (10 μM) and CuO (0.05 μM) can be incorporated in place of $ZnSO_4$ & CuSO4 in the MS medium for getting more number of shoots per culture, higher fresh weight, dry weight and stevioside content (1.40% FW). **(Action: Prof. and Head, Dept. of Plant Molecular Biology and Biotechnology, ACHF, NAU, Navsari)**

11.6.2 New Technical Programme

Navsari Agricultural University

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

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

	Characterization of endophytic bacterium from various plants	suggestion/s 1. Submit isolated new bacterial cultures for identification at MTCC, Chandigarh. 2. Mention the plant parts from where samples are to be collected. **(Action: Principal and Dean, GABI , NAU, Surat)**	suggestions
11.6.2.24	**Centre: GABI, NAU, Surat**		
	Molecular Variability of *Trichogramma chilonis* strains	---- **(Action: Principal and Dean, GABI , NAU, Surat)**	Approved
11.6.2.25	**Centre: MCRS, NAU, Surat**		
	Identification and validation of molecular marker linked to Genetic male sterility in cotton (*G. hirsutum*)	---- **(Action: Research Scientist (Cotton), MCRS, NAU, Surat)**	Approved
11.6.2.26	**Centre: Food Quality Testing Laboratory, NAU, Navsari**		
	Exploring microbes for their siderophore production and their biocontrol potential	---- **(Action: Professor & Head, Food Quality Testing Laboratory, NAU, Navsari)**	Approved
11.6.2.27	**Centre: Food Quality Testing Laboratory, NAU, Navsari**		
	Exploring microbes for their exopolysaccharides (EPS) production	Approved with following suggestion/s 1. Modify the title as, "Exploring microbes for exopolysaccharides (EPS) production". 2. Mention the source of water and site of soil collection. **(Action: Professor & Head, Food Quality Testing Laboratory, NAU, Navsari)**	Approved with suggestions

11.6.3 General Suggestions

1. The new technical programmes and recommendations should be submitted in the prescribed format only.
2. The text in report and presentation should be similar.
3. In case of recommendation for scientific community avoid use of words, "It is recommended to/for".
4. In future technical programmes concentration of chemicals should be given in M (Molar) concentration.

5. Action taken reports of recommendations as well as new technical programmes should be submitted by the indicated Scientist / Unit Head through the Convener of the sub-Committee to the Director of Research of respective University.

11.7 SOCIAL SCIENCE

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

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

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

11.7.1 Recommendations

A. Farming Community

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

1.7.2 New Technical Programmes

Navsari Agricultural University

Sr.	Title/Centre	Suggestions	Remarks
11.7.2.52	**Centre**: KVK, NAU, Vyara		
	Impact of KVK Activities in Adopted Villages of Tapi district	Accepted with the suggestion that the objective should be: To ascertain the relationship between impact and profile of the respondents. (Action: PC, KVK, NAU, Vyara)	
11.7.2.53	**Centre**: KVK, NAU, Waghai		
	Change in cropping pattern in tribal area of Dang district	Accepted with the following suggestions: Title should be : The study on Change in cropping pattern in tribal area of Dang district Third objective should be added as :	

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

	in South Gujarat	of Ext. Edu., VCVS & AH, NAU, Navsari)	
11.7.2.61	**Centre**: ATIC, DEE, NAU, Navsari		
	Usefulness of ATIC as Perceived by the Farmers	Accepted (Action : DEE, NAU, Navsari)	
11.7.2.62	**Centre**: Educatorium, DEE, NAU, Navsari		
	Training needs of Agricultural input dealers in transfer of agriculture technology	Accepted (Action : DEE, NAU, Navsari)	
11.7.2.63	**Centre**: Deptt. of Ext. Edu., CoA,NAU, NAU, Bharuch		
	Knowledge and adoption of Pigeon Pea growers about recommended production technologies in Bharuch district of South Gujarat	Accepted (Action: Asstt.Prof.(Ext.), CoA, NAU, Bharuch)	
11.7.2.64	**Centre**: Deptt. of Ext. Edu., CoA, NAU, Waghai		
	Study on Expectations and Motivational Sources of enrolled students of College of Agriculture, Waghai	Accepted with the suggestion that aspects concerning to academic, residence, infrastructure and teaching staff should be covered under aspect of expectations. (Action : Prof. (Ext.), CoA, NAU, Waghai)	
11.7.2.65	**Centre**: SSK, NAU, Navsari		
	Comparative study on successful and unsuccessful SHGs of Navsari	Accepted with the suggestion that word "personal" and "constraints and suggestions for getting benefits from various institutions as perceived by successful and" should be deleted from the objective one and four respectively. (Action : PO, SSK, Navsari)	
11.7.2.66	**Centre**: Department of Agricultural Economics, NMCA, NAU, Navsari		
	Economic assessment of post harvest losses in Kesar mango in South Gujarat	Accepted (Action : Professor & Head, Agril.Eco., NMCA, NAU, Navsari)	
11.7.2.67	**Centre**: Department of Agricultural Economics, ACHF, NAU, Navsari		
	Climate change impacts on livestock and adaptation strategies for sustainable production.	Accepted (Action : Associate Professor, Agril. Eco., ACHF, NAU, Navsari)	
11.7.2.68	**Centre**: Director of Research and Dean, PG Studies, NAU, Navsari		
	Analysis of fund allocation and expenditure under plan schemes of NAU	Accepted (Action: Planning officer and Associate Research Scientist (Agril.	

		Eco.) , Directorate of Research, NAU, Navsari)	
11.7.2.69	**Centre**: Department of Agricultural Economics ,College of Agriculture, NAU, Bharuch		
	Economics and marketing of major flower crops in Bharuch district of South Gujarat	Accepted with the suggestion that sample size should be 25 respondents per crop. (Action : Asso. Prof.& Head, Deptt of Agril Eco, CoA, NAU, Bharuch)	
11.7.2.70	**Centre**: ASPEE Agribusiness Management Institute, NAU, Navsari		
	Technical efficiency of sugarcane production in South Gujarat	Accepted (Action : Dean, AABMI, NAU, Navsari)	
11.7.2.71	**Centre**: ASPEE Agribusiness Management Institute, NAU, Navsari		
	An appraisal of rice flakes(Poha) processing units in Navsari district of South Gujarat".	Accepted (Action : Dean, AABMI, NAU, Navsari)	
11.7.2.72	**Centre**: ASPEE Agribusiness Management Institute, NAU, Navsari		
	A comparison of consumer perception towards organized and unorganized retailing in South Gujarat	Accepted (Action : Dean, AABMI, NAU, Navsari)	
11.7.2.73	**Centre**: ASPEE Agribusiness Management Institute, NAU, Navsari		
	Title: Market acceptability and preference for Ready to Cook foods in Navsari district	Accepted with following suggestion: Growing word should be deleted from objective one and selection word should be replaced by preference. (Action : Dean, AABMI, NAU, Navsari)	
11.7.2.74	**Centre**: Polytechnic in Agriculture, NAU, Waghai		
	Analysis of crop insurance for notified crops in Dang district	Accepted with the suggestion that the third objective should be deleted. (Action : I/c Principal, Polytechnic in Agriculture, NAU, Waghai)	
11.7.2.75	**Centre**: Polytechnic in Agriculture, NAU, Waghai		
	An economic analysis of value addition and collective marketing of major agricultural commodities in Dang district of South Gujarat	Accepted (Action : I/c Principal, Polytechnic in Agriculture, NAU, Waghai)	
11.7.2.76	Polytechnic in Agriculture, NAU		
	Title: Awareness of farmers about organic farming and its marketing in Dang district	Accepted (Action : I/c Principal, Polytechnic in Agriculture, NAU, Waghai)	

11.7.2.77	**Centre**: Dept. of Agril. Statistics, NMCA, NAU, Navsari		
	Growth and instability of major field crops of South Gujarat	Accepted with the suggestion that the third objective should be : To compare the exponential model and intrinsically non linear models (Action: Professor & Head,Ag. Stat., NMCA, NAU, Navsari)	
11.7.2.78	**Centre**: Dept. of Agril. Statistics, NMCA, NAU, Navsari		
	A study on some useful correlation techniques in social sciences	Accepted with the suggestion that the first objective should be reframed as: To investigate the applicability of point- biserial, Biserial and tetrachoric correlation in various characteristics of the farmers of South Gujarat. (Action : Professor & Head,Ag. Stat., NMCA, NAU, Navsari)	
11.7.2.79	**Centre**: Dept. of Agril. Statistics, ACHF, NAU, Navsari		
	Effect of intercropping in banana under organic farming	Accepted (Action : Associate Professor (Ag. Stat.), ACHF, NAU, Navsari)	
11.7.2.80	**Centre**: Department of ICT, AABMI, NAU, Navsari		
	A study on technical feasibility and development of Mobile App for Agricultural Information Dissemination to the farming community	Accepted (Action : Dean, AABMI, NAU, Navsari)	
11.7.2.81	**Centre**: Department of ICT, AABMI, NAU, Navsari		
	A study on technical feasibility and development of the KIOSK system for the information dissemination to the farmers	Accepted (Action : Dean, AABMI, NAU, Navsari)	
11.7.2.82	**Centre**: Department of ICT, AABMI, NAU, Navsari		
	Developing mobile App for strengthening co-operative operations	Accepted (Action : Dean, AABMI, NAU, Navsari)	
11.7.2.83	**Centre**: Department of ICT, AABMI, NAU, Navsari		
	Title: A study on perception and satisfaction of agricultural information delivered by the KVK through SMS	Accepted (Action : Dean, AABMI, NAU, Navsari)	

General Suggestion:

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

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

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

(Action: Director, EEI, AAU, Anand)

ANIMAL HEALTH /ANIMAL PRODUCTION / ANIMAL PRODUCTION AND FISHERIES / ANIMAL SCIENCE AND FISHERIES SCIENCE/ ANIMAL HEALTH AND FISHERIES

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

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

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

11.8.1 Recommendations

A. Recommendations for Farming Community

Navsari Agricultural University, Navsari	
11.8.1.14	**Effect of polyherbal ecbolic, minerals and vitamins supplementation as a prophylactic treatment regimen at time of calving on reproductive performance in Surti buffaloes**.
	The dairy farmers are advised to initiate the following oral prophylactic treatment regimen within 3 hrs of calving in Surti buffaloes for better economic benefits as it had significant effect to reduce post-partum oestrus and service period.

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

આથી પશુપાલકોને ભલામણ કરવામાં આવે છે કે સુરતી ભેંસોમાં વિયાણ બાદના ૩ કલાકની અંદર નીચે જણાવ્યા મુજબનું મિશ્રણ (પ્રોફાયલેક્ટીક ટ્રીટમેન્ટ રેજીમ) પીવડાવવાનું ચાલુ કરવાથી અસરકારક રીતે વિયાણ બાદ વેતરમાં આવવાના અને ગાભણ થવાના સમય ગાળામાં ઘટાડો થવાથી આર્થિક રીતે ફાયદાકારક રહે છે.

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

Action : Res. Sci. & Head, LRS, NAU, Navsari

11.8.1.15 **Study on banana shrimp (*F. merguiensis*) growth under different water salinity levels**

The farmers of coastal area of Gujarat undertaking brackish water shrimp culture are recommended to maintain pond water salinity of 30 to 40 parts per thousand (ppt) for better growth and economic returns in banana shrimp rearing.

ગુજરાતના દરિયા કાંઠા વિસ્તારમાં ભાંભરા પાણીના ઝીંગા પાલન કરતા ખેડૂતોને ભલામણ કરવામાં આવે છે કે બનાના ઝીંગા પ્રજાતિના ઉછેરમાં તળાવના પાણીની ખારાશ ૩૦ થી ૪૦ પાર્ટસ પર થાઉઝંડ (પીપીટી) જાળવવાથી વધુ સારો વિકાસ અને વળતર મેળવી શકાય છે.

Action : Res. Sci., Coastal Soil Salinity Research Station, Danti, NAU, Navsari

11.8.1.16 ***In vitro* evaluation of sugarcane bagasse treated with different level of urea and moisture**

During the fodder scarcity, the farmers are recommended to treat 100 kg sugarcane

	bagasse with 3.5 kg urea in 40 liters of water and ensile it for three weeks to improve its crude protein content and digestibility.
	પ્રતિ ૧૦૦ કી.ગ્રા. શેરડીની બગાસને, ૩.૫ કિ.ગ્રા. યુરીયાવાળા ૪૦ લિટર પાણીનો છંટકાવ કરીને, ત્રણ અઠવાડીયા સુધી ચુસ્ત રીતે બંધ રાખવાથી તેના નત્રલ પદાર્થોમાં અને પાચ્યતામાં વધારો થાય છે. આથી ઘાસચારાની અછતના સમયમાં પશુપાલકોને તેની ભલામણ કરવામાં આવે છે.
	Action: Prof. & Head, Dept. of Animal Nutrition, Vet. College, NAU, Navsari
11.8.1.17	**Evaluation of phytogenic feed additive supplementation on growth performance, nutrient utilization, anti-oxidants and health status of Surti kids**
	The Surti goat keepers are recommended to supplement garlic bulb (12 gram or 8-10 cloves/day) to the growing kids (5-6 months) for two months to achieve better growth rate and profit.
	સુરતી બકરા પાલકોને ભલામણ કરવામાં આવે છે કે પાંચથી છ મહીનાનાં લવારાઓને પુરક આહાર તરીકે લસણ (૧૨ ગ્રામ અથવા ૮ થી ૧૦ કળી/દિન) બે મહીના સુધી ખવડાવવાથી શારિરીક વૃધ્ધિ દરમાં અને આવકમાં વધારો થાય છે.
	Action: Prof. & Head, Dept. of Animal Nutrition, Vety. College, NAU, Navsari

B. Recommendations for Scientific Community

Navsari Agricultural University, Navsari	
11.8.1.49	**Eco-friendly plastination technology for preservation of biological specimens**
	Plastinated specimens are odourless, dry and everlasting teaching aids and overcomes the existing formalin embalmed preservation method having various health hazards.
	Action: Prof. & Head. Dept. of Vet. Anatomy, Vanbandhu Veterinary College, NAU, Navsari
11.8.1.50	**1) Studies on pharmacokinetics and pharmacodynamic relationship of Cefquinome in cow calves; 2) Studies on pharmacokinetics and pharmacodynamic relationship of Cefquinome in goats**
	Based on pharmacokinetics and pharmacodynamics relationships of cefquinome in cattle and goat, it is recommended that a dose of 20 mg/kg repeated at 8 h interval after intravenous and 12 h after intramuscular administration is sufficient to maintain %T>MIC above 60% of dosage interval for bacteria with MIC values <0.4µg/ml.
	Action: Prof. & Head. Dept. of Vet. Pharmacology & Toxicology, Vanbandhu Veterinary College, NAU, Navsari
11.8.1.51	**Evaluation of gene specific primer sets in the molecular detection of *Anaplasma* organism in bovine**
	The *msp5* gene primers (forward: 5'-GTG TTC CTG GGG TAC TCC TAT GTG-3' and reverse: 5'-AAG CAT GTG ACC GCT GAC AAA C-3') are useful for specific detection of *Anaplasma marginale* in bovines with 576 bp amplicon using

	PCR.
	Action: Prof. & Head. Dept. of Vety. Para., Vanbandhu Veterinary College, NAU, Navsari
11.8.1.52	**Ultrasonography, diagnosis and surgical management of abdominal disorders in bovines**
	Distended intestinal loops through right flank and collapsed intestinal loops through ventro-lateral abdominal view using 3.5 to 5 MHz convex probe is suggestive of intestinal obstruction, whereas bull's eye appearance using 6-8 MHz trans-rectal probe is confirmatory for diagnosis of intussusceptions in bovines.
	Action: Prof. & Head. Dept. of Vet. Surgery & Radiology, Vanbandhu Veterinary College, NAU, Navsari
11.8.1.53	**Ultrasonography, diagnosis and surgical management of abdominal disorders in bovines**
	Presence of reticular motility at 5^{th} right inter-costal space (ICS) in advanced pregnant animal is normal but is suspected for diaphragmatic hernia in recently calved animals. Presence of reticular motility at 4^{th} right inter-costal space in advanced pregnant and recently calved animals is confirmatory diagnosis of diaphragmatic hernia on ultrasonography in bovines.
	Action: Prof. & Head. Dept. of Vety. Surgery & Radiology, Vanbandhu Veterinary College, NAU, Navsari
11.8.1.54	***In vitro* evaluation of sugarcane bagasse treated with different level of urea and moisture**
	Treatment of sugarcane bagasse at level of 3.5% urea and 40% moisture ensiled for three weeks improves nutritive values, *in vitro* digestibility of dry matter (27.7%) and organic matter (29.9%) and VFA production by 4 units as compared to untreated.
	Action : Prof. & Head, Dept. of Animal Nutrition, Vanbandhu Veterinary College, NAU, Navsari
11.8.1.55	**Evaluation of phytogenic feed additive supplementation on growth performance, nutrient utilization, anti-oxidants and health status of Surti kids**
	Supplementation of garlic bulb (2% DMI) to the growing Surti goat kids (5-6 months) for two months improves utilization of protein and fibre with higher retention of nitrogen (0.94 g/d) accompanied by improved feed conversion efficiency (18.29%) and oxidative status.
	Action : Prof. & Head, Dept. of Animal Nutrition, Vanbandhu Veterinary College, NAU, Navsari

1.8.2 New Technical Programme

Navsari Agricultural University, Navsari

Sr. No.	Title/ Centre	Suggestions	Remarks
11.8.2.55	Livestock Research Station, NAU, Navsari		
	Effects of bypass fat supplementation on production performance and economics of lactating Surti buffaloes	Approved (**Action**: Research scientist and Head, LRS, NAU, Navsari)	-

11.8.2.56	SMS, KVK, NAU, Vyara		
	Effect of weather on physiological profile of heifers	Approved with following modifications: 1. To include meteorological data on animal sheds in the experimental details. (**Action**: Research scientist, SMS, KVK, NAU, Vyara)	-
11.8.2.57	Department of Instructional Livestock Farm Complex		
	Cytogenic study of HF cross bred cattle	Approved with following modifications: 1. Change the title as "Cytogenetic studies of HF crossbred cattle". 2. Treatment: Blood collection should be carried out at the earliest stage instead of periodical collections. (**Action:** Prof. and Head, Department of Instructional Livestock Farm Complex, NAU, Navsari)	-
11.8.2.58	Department of Veterinary Physiology and Biochemistry		
	Study of GHG emissions from dairy animals	Differed and suggested to conduct as a filler trial. (**Action**: Prof. and Head, Department of Veterinary Physiology and Biochemistry, NAU, Navsari)	-
11.8.2.59	Department of Livestock Products Technology		
	Studies on development of burfi utilizing watermelon (*Citrullus lanatus*) rind	Approved (**Action**: Prof. and Head, Department of Livestock Products Technology, NAU, Navsari)	suggested to present it in Dairy Science & FPT group for better insight
11.8.2.60	Department of Animal Nutrition		
	Effect of fenugreek (*Trigonella foenum-graecum* L.) supplementation on milk yield and quality in lactating Surti buffaloes	Approved (**Action**: Prof. and Head, Department of Animal Nutrition, NAU, Navsari)	-
11.8.2.61	Department of Animal Nutrition		

	Economics of growth performance due to dietary inclusion of tanniferous leaves in kids infested with gastrointestinal helminths	Approved with following suggestions: 1. To specify the name of tree in the title. 2. Observations should include fecal egg count. (**Action**: Prof. and Head, Department ofAnimal Nutrition, NAU, Navsari)	-
11.8.2.62	Department of Animal Science, N M C A, NAU, Navsari		
	Evaluation of yeast (*Saccharomyces cerevisiae*) supplementation on selected level of roughage to concentrate ratio in Surti goat kids	Approved with following suggestions: 1. Change the title as "To study the effect of yeast (*Saccharomyces cerevisiae*) on growth, feed conversion efficiency and cost of feeding in Surti kids". 2. Treatment: To workout ratio of concentrate to roughage keeping in view of national standards. 3. Treatment should include minimum of '8' animals instead of '6'. (**Action**: Prof. and Head, Department of Animal Science, N M C A, NAU, Navsari)	-
11.8.2.63	Department of Pharmacology and Toxicology, College of Veterinary Sci. & A.H., NAU, Navsari		
	Evaluation of *in vitro* antimicrobial (EP021 to EP030) and anti-inflammatory (EP011 to EP020) activity of medicinal plants	Differed as it is an ongoing Programme. (**Action**: Prof. and Head, Department of Pharmacology and Toxicology, College of Veterinary Sci. & A.H., NAU, Navsari)	-
11.8.2.64	Department of Pharmacology and Toxicology, College of Veterinary Sci. & A.H., NAU, Navsari		
	Evaluation of in *vitro* antimicrobial properties of endophytes isolated from medicinal plants	Approved with following suggestions: 1. Experiment should include two plant species namely *Terminalia bellirica* and *Bixaorellana*. (**Action**: Prof. and Head, Dept. of Pharmacology and Toxicology, College of Veterinary Sci. & A.H., NAU, Navsari)	-
11.8.2.65	Department of Veterinary Surgery & Radiology, College of Veterinary Sci. & A.H.,		

	NAU, Navsari		
	Cataract management by extra capsular cataract extraction technique in dogs	Approved with following suggestions: 1. To exclude objective no.2. (**Action**: Prof. and Head, Dept. of Vet Surgery & Radiology, College of Veterinary Sci. & A.H., NAU, Navsari)	-
11.8.2.66	Department of Veterinary Medicine, College of Veterinary Sci. & A.H., NAU, Navsari		
	Diagnosis and management of ascites in canines	Approved with following suggestions: 1. Objective No. 2 to be replaced with "To generate clinical data on diagnosis and treatment of ascites in canines". (**Action**: Prof. and Head, Department of Veterinary Medicine, College of Veterinary Sci. & A.H., NAU, Navsari)	-
11.8.2.67	Department of Veterinary Gynaecology and Obstetrics, College of Veterinary Sci. & A.H., NAU, Navsari		
	Evaluation of frozen semen of buffalo, crossbred and indigenous cow bull by Hypo Osmotic Swelling Test and supra-vital staining technique	Approved (**Action**: Prof. and Head, Department of Veterinary Gynaecology and Obstetrics, College of Veterinary Sci. & A.H., NAU, Navsari)	-
11.8.2.68	Department of Veterinary Public Health and Epidemiology,College of Veterinary Sci. & A.H., NAU, Navsari		
	Detection of Classical Enterotoxigenic coagulase positive *Staphylococcus aureus* in Raw milk, Dairy food products and Handlers' hand swabs	Approved (**Action**: Prof. and Head, Department of Veterinary Public Health and Epidemiology, College of Veterinary Sci. & A.H., NAU, Navsari)	-
11.8.2.69	Department of Veterinary Public Health and Epidemiology,College of Veterinary Sci. & A.H., NAU, Navsari		
	Sero-molecular epidemiological study of Brucellosis in Navsari and Jalalpore Taluka of Navsari district	Approved with following suggestions: 1. Change the title as "Sero-molecular epidemiological study of Brucellosis in animals in Navsari and Jalalpore Taluka of Navsari district". (**Action**: Prof. and Head,	-

		Department of Veterinary Public Health and Epidemiology,College of Veterinary Sci. & A.H., NAU, Navsari)	

PLENARY SESSION:

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

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

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

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

CONCLUDING REMARKS :

Dr. A. R. Pathak, Hon'ble Vice Chancellor, JAU, Junagadh emphatically opined that our own farms/research stations should follow the recommendations approved by this house. This is not only important to further verify our own research, but also to gain confidence while suggesting to the farmers. He also stressed on working in collaboration and not in isolation, as the present era of agricultural science demands such an approach for better output. According to his view, research on farming systems should be given more weightage. He also appealed to all those concerned for providing their inputs in finalizing the proceedings of this meeting, so that the booklet with final recommendations and new technical programmes can be published without delay.

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