Proceedings of 21st Agricultural Engineering Subcommittee Meeting of Navsari Agricultural University, Navsari

Date: 21st February, 2025
Day: Friday
Time: 09.30 to 18.30
Venue: Seminar Hall, College of Agricultural Engineering and Technology, NAU, Dediapada

INAUGURAL SESSION:

President	:	Dr. Z. P. Patel, Hon'ble Vice Chancellor, NAU, Navsari
Chairman	:	Dr. T. R. Ahlawat, Director of Research and Dean PG Studies, NAU, Navsari
Co-Chairman	:	Dr. P. K. Srivastava, Principal & Dean, CAET, NAU, Dediapada
Rapporteurs	:	Dr. S. H. Sengar, Professor & Head, Department of RERE,CAET, NAU, Dediapada
Rapporteurs	:	Dr. A. P. Lakkad, Asso. Professor & Head, Department of SWCE,CAET, NAU, Dediapada

The inaugural function was presided over by Dr. Z. P, Patel, Hon'ble Vice-Chancellor, NAU, Navsari accompanied by Dr. T. R. Ahlawat, Director of Research and Dean PG Studies, NAU, Navsari as Chairman and Dr. P. K. Srivastava, Principal & Dean, CAET, NAU, Dediapada as Co-chairman. The meeting was delighted by the presence of Dr. Lalit Mahatma, Associate Director of Research-NAU-Navsari, Mr. Chirag Naik, Director IT, NAU, Navsari Invited members, statistician, economist and other faculty members. Out of 30 regular members of committee; Dr. B. M. Solia and Dr. V. B. Patel were remained absent in the meeting with prior permission from Office of Director of Research and Dean PG Studies, NAU, Navsari.

The meeting began with the University song, soulful prayer, lightening of a lamp and floral welcome of President, Chairman, Co-chairman, Director IT, Associate Director of Research, Dean and Principal-CAET, NAU, Dediapada, Statisticians, Economist, Invited members and Scientists of NAU, Navsari. Dr. P. S. Pandit, Associate Professor-PHTC and Convener of the 21st AGRESCO Agricultural Engineering Subcommittee, NAU, Navsari delivered the welcome address and presented the Action Taken Report on the suggestions made during 20th AGRESCO of Agricultural Engineering Sub-committee meetings. The house has approved the action taken by concern scientists on (6 farmers + 2 Scientific) 8 recommendations and 06 New Technical Programs, which were approved in 20th AGRESCO meetings for Agricultural Engineering faculty.

In the inaugural function, Co-chairman has suggested to publish more popular articles for farmers in vernacular language based on recommendations, along with rated journal publication, patent filing, and external funded projects to uplift the agricultural engineering. The Chairman has appreciated the vision and action of Hon'ble Vice Chancellor in the area of research, its extension and documentations. With his soft node but strong voice, he has informed to members of the house to complete their task within the allotted time period. He encourage the members to frame farmer's problem oriented experiment and discuss the New Technical Program in details before Agresco meeting at local level, within investigation team

and then in the Agresco meeting to get desirable commercial technology. He has allowed mentioning the name of contractual staff in investigation team. He has encouraged the multi-disciplinary team instead of grouping of same mid-set inventors. He added that, each member of house must be engage in at least a research activity either as PI or Co-PI. He has emphasis on providing null hypothesis for the objectives of experiments and documenting research data on AEMS-ZP.

In his presidential address, Dr. Z. P. Patel, Hon'ble Vice Chancellor, NAU, Navsari has informed the house that, the research in Agricultural Engineering will be the game changing future of Agriculture Sector. It is at the highest priority included the areas like; artificial intelligence, farm mechanization, agricultural processing, machine learning, remote sensing, charcoal development, more crops per drop, etc. This branch of agriculture has direct linkage with farmers and industry. He advised to engineers to register IP design of their tools and machineries as it take less time compared to patent. He forced the engineering team to distribute replica of their developed or modified tools to some farmers to use that and give opinion and feed back. The popularization of developed technology could be possible, if and only if the technologies are published in local languages. Always talk about your developed technology in front of farmers, encourage farmers to take demonstration. If farmer use the technology, then only recognition of research is real. He advised to members for framing research experiment by focusing the problems of farming community and industry. The objective of experiment should be framed with some hypothesis, so statistically, it can be proved or null-and-void. At last he gave best wishes to agricultural engineering team for organizing the 21st AGRESCO meeting at College of Agricultural Engineering and Technology at Dediapada first time.

The inaugural session ended with a Vote of Thanks by Dr. P. S. Pandit, Associate Professor-PHTC and Convener of the 21st AGRESCO Agricultural Engineering Subcommittee, NAU, Navsari

TECHNICAL SESSION-I : RECOMMENDATIONS

Chairman	:	Dr. Z. P. Patel, Hon'ble Vice Chancellor, NAU, Navsari
Co-Chairman	:	Dr. T. R. Ahlawat, Director of Research and Dean PG Studies, NAU, Navsari
Rapporteurs	:	Er. Vibhuti Patel, Assistant Professor, Dept of BSAE, CAET, NAU, Dediapada
	:	Dr. Tilak Chavada, Assistant Professor, Dept. of RERE, CAET, NAU, Dediapada

The technical session – I on Recommendation began with the permission of Dr. Z. P. Patel, Hon'ble Vice Chancellor, NAU, Navsari as chairman. There were 06 experiments' research result reported, presented discussed in the house. All the 06 presented recommendations were approved. Out of 6 recommendations, 5 were approved for the farmers and 1 for scientists with some suggestions and modifications as compiled and given hereunder.

SN	Department	Expt. no.	Title of experiments	Suggestions	Status	Action - PI
21.1.1	Department of Farm Machinery & Power Engineering, CAET, Dediapada	12.5.3.14	Design and development of suitable furrow opener for clay loam soil condition for South Gujarat	Approved for farmers with following suggestions: • Use standard format for recommendation. Details of Experiments, Methodology, Conclusion, Paragraphs, Photo, Drawings, Graph / Tables. • Provide 'lay out' of experiment with respect to evaluation of furrow opener indicating replication and point of observations. • Add 7-views of drawings, machine/tool dimension and photographs in the report. • Prepared the video and submit to show into the house before joint AGRESCO. • Avoid calculations, equation and formula if possible. Give design point wise. • Replace the word 'TEST PLACES' by 'Sampling point' provided in Tables 3 to 10. • Recheck the data related to Mean/Average, S.D., C.V.% provided in Tables 3 to 10. • Check and correct subheading of table-3 and 4. • Check table -9 with respect to 'average or absolute value of data' in relation to tool evaluation 'lay out'. • Include technical data related to maize trial, field capacity. • Evaluate the tool with the released committee approved by o/o DR&DPGS, NAU, Navsari. • Attach report of release committee to the experiment results before 21st Joint AGRESCO. • Redraft the recommendation by providing the necessary data in English and Gujarati for farming community.	Farmers	Dr. Swagatika Jena, Asst. Prof., Dept. of FMPE, CAET, NAU, Dediapada

21.1.2	Department of Processing & Food Engineering, CAET, Dediapada	17.6.3.24	Drying of Mahua (*Madhuca Longifolia*) flower for powder.	Approved for farmers with following suggestions: • Use standard format for recommendation. Details of Experiments, Methodology, Flow Chart, Conclusion, Paragraphs, Photo, Graph / Tables. • Recheck the 400µm or gauge for plastic thicknesses. • Provide data of table no-1 to table-5 for two year experiment with pooled. If possible put all to gather in graphical form. • Provide table:6&7 with 2years data along with pooled. • Merge table-8(a) to 8(b) in single table. • Merge table-9(a) to 9(b) in single table. • Recheck the data provided in Table-11 and rearrange as 'Recovery (%), Shrinkage Ratio and RR. • Recheck the data with respect to 'dry basis' or 'wet basis' provided in Table-12: Chemical Properties of fresh Mahua flowers. Similarly recheck the values of Table 13 (a) to (c). Rearrange the data as; Moisture, Ash, Fat, Protein, Carbohydrate, Energy value, Reducing Sugar, Vitamin C, Iron, Pottasium, Calcium. • Keep only L, a* and b* data in Table-14(a) delete the rest parameter as it gives wrong representation. Remove Table-14(b), it is the repetition of colour values in another scale. • Add the data related to weather parameters in the report as 'sun drying' was the treatments. • Give treatment wise economics as point wise and in table. Consult with Dr. J. V. Varasani, Assistant Res. Scientist, Dept. of Economics, NMCA, NAU, Navsari for calculation of the cost economics. No need to give calculations. • Consult statistician for necessary analysis of data and correct the results accordingly. • Include storage related data as it is product related recommendation. • Recast the recommendation paragraph in English and Gujarati by removing the data related to packaging information. • If possible draft a second paragraph for scientific community based on model development and validation.	Farmers	Dr. S. N. Singh, Asst. Prof. , Dept. of PFE, CAET, NAU, Navsari

21.1.3	Department of Processing & Food Engineering, CAET, Dediapada	18.5.3.22	Studies of Mahua (*Madhuca Longifolia*) flower powder based value added biscuit.	Approved for farmers with following suggestions: • Use standard format for recommendation. Details of Experiments, Methodology, Flow Chart, Conclusion, Paragraphs, Photo, Graph / Tables. • Recheck the 400 Micron or gauge for plastic thicknesses. • Delete "Refined" word from "RMF = Refined Maida Flour" in the report. • Include the proximate composition data related to ragi flour, fresh soyabean flour, mahuva floer powder, and maida in report. • Provide table-1 and tbale -5 with two years data along with pooled. Provide the data related to recovery or output in table -1. • Recheck the data with respect to 'dry basis' or 'wet basis' provided in Table-2, chemical Properties of ingradients. Rearrange the data as; Moisture, Ash, Fat, Protein, Carbohydrate, Energy value, crude fibre. • Keep only L, a* and b* data in Table-3(a) delete the rest parameter as it gives wrong representation. Remove Table-3(b), it is the repetition of colour values in another scale. • Give treatment wise economics as point wise and in table. Consult with Dr. J. V. Varasani, Assistant Res. Scientist, Dept. of Economics, NMCA, NAU, Navsari for calculation of the cost economics. No need to give calculations. • Prepare the recommendation paragraph in English and Gujarati based on best significant parameter as per objectives only. • Include storage related data as it is product related recommendation. • Recast the recommendation paragraph in English and Gujarati by removing the data related to packaging information.	Farmers	Dr. S. N. Singh, Asst. Prof. , Dept. of PFE, CAET, NAU, Navsari

21.1.4	Centre of Excellence on PHT, Navsari	15.5.3.37	Standardization of processing technology for dried Broccoli (*Brassica oleraceavar. Italic*)	Approved for farmers with following suggestions: • Write gauge in micron for thickness of packaging materials in report. • Provide meaning of Y1, Y2 and P in report. • Recheck the data provided in Table with respect to value of CV % and CD @ 5%. • Recheck the data provided in Table-11 and explain with respect to storage studies in text. • Give treatment wise economics as point wise and in table. Consult with Dr. J. V. Varasani, Assistant Res. Scientist, Dept. of Economics, NMCA, NAU, Navsari for calculation of the cost economics. No need to give calculations. • Remove the highest BCR value. • Consult Dr. Dev Raj, Dr. P.S. Pandit and Dr. Y. A. Garde, statistician for necessary analysis of data and correct the results accordingly. • Write full form of KMS in paragraph. Recast the recommendation paragraph in English and Gujarati.	Farmers	Dr. A. K. Senapati, Asso. Prof. , PHTC, NAU, Navsari
21.1.5	Centre of Excellence on PHT, Navsari	16.7.3.28	Standardize storage parameters for *Sonpari* mango to extend shelf life.	Approved for farmers with following suggestions: • Recheck the data provided in Table-5, 6 & 10 as it has higher CV values at particular interval. • Provide meaning of Y1, Y2 and P in report. • Replace the cost of mongo Rs./kg by Rs./10kg in Column in (3) of Table-27. • Keep the control as T_0 not T_{11} in report. • Remove the BCR value from the recommendation paragraph. • Correct as '9°C' instead of '9°' in the English recommendation paragraph. • Recast the recommendation paragraph in English and Gujarati.	Farmers	Dr. Parag Pandit, Asso. Prof. , PHTC, NAU, Navsari

21.2.1	Department of Irrigation and Drainage Engineering, CAET, Dediapada	19.5.3.30	Identification of suitable sites for rainwater harvesting in Dediapada taluka of Narmada (Gujarat)	Approved for Scientist with following suggestions: • Use standard format for recommendation. Details of Experiments, Paragraph, Graph / Tables. • Include the method used for data analysis. Mention the dataset used. • Include the rainfall data in the report. If possible avoid less suitable site for recommendations. • Accordingly submit the strategy report to policy maker including, a map which suggest the structure with in the map of 'potential zones for water harvesting and ground water recharge' to the concern agency. • Consult with Dr. P. K. Shrivastava and Dr. Vipul T. Shinde for analysis of data and interpretation. • Rectify the report with revised data analysis. • Include the map for 'potential zones for water harvesting and ground water recharge' in the recommendation paragraph. • Modify the paragraph given in report and presentation; include 'based on used dataset'.	Scientific	Dr. K. N. Sondarva, Asst. Prof., Dept. of IDE, CAET, NAU, Dediapada

TECHNICAL SESSION-II : NEW TECHNICAL PROGRAM

Chairman	:	Dr. T. R. Ahlawat, Director of Research and Dean PG Studies, NAU, Navsari
Co-Chairman	:	Dr. P. K. Srivastava, Dean and Principal, CAET, NAU, Dedidiapada
Rapporteurs	:	Dr. Swagatika Jena, Assistant Professor, Dept. of FMPE, CAET, NAU, Dediapada
	:	Dr. Ketan Sondarva, Assistant Professor, Dept. of SWCE, CAET, NAU, Dediapada

The technical session – II on New Technical Programs began with permission of Dr. T. R. Ahlawat, Director of Research and Dean PG Studies, NAU, Navsari. It was instructed to investigator to include Null-Hypothesis or Hypothesis before objective, treatments and statistical design for all new proposed experiments. There were 15 proposed experiments were reported and presented and approved by the house with some suggestions and modifications as compiled and given hereunder.

NTP No	Title of NTP	Remarks/Suggestions	Action taken by
21.3.1	Evaluation of Landuse practices to study the status of erosion induced losses of SOC due to shifting cultivation for Dediapada region.	• Add Null hypothesis in report before objectives. • Modify 'objective-1' as 'Identify change detection of LULC of Dediapada region'. • Change 'objective-2' as 'Effect of change detection on SOC in dominant land use class in Dediapada region.' • Eemove 3rd objective • Add details of satellite image to be use for study. Use latest dataset and image for study. If possible use same satellite image for classification of LULC. • Finalize number of soil sample and locations in consult with Dr. D. P. Patel, Soil Scientist, NAU, Navsari • Include methodology and flowchart for the methodology.	Dr. A. P. Lakkad Dept. of SWCE, CAET, NAU, Dediapada

21.3.2	Optimization of existing solar powered water pumping system for village level.	• In line with suggestions made for 20.5.3.1 in CJA 2024 following change made in experiment;
		  • Modified the 'title' as 'Optimization of existing solar powered water pumping system for village level operations.
		• Add Null hypothesis in report before objectives.
		  • Modified the 'objective-1' as 'evaluation of present utilization of solar water pumping system in Dediapada region' remove word 'village level'.
		  • Modified the 'objective-2' as 'Optimize village level operations with respect to unused SPV power'.
		  • Modified the 'objective-3' as 'Performance evaluation of
			Dr. H. Sanchavat Dept. of FMPE, CAET, NAU, Dediapada

		various village level operations using SPV power'. • Use principally Chaff Cutter, and secondarily lighting, battery recharge, seed dressing, etc operations of suitable size as treatments. • Compare the performance between direct electric supply and SPV power supply. • Record all relevant data for torque, rpm, force, power, current, battery voltage and charging period, discharge period, etc. • Calculate the economics of each village level operations using standard methods. • Add flowchart for the methodology, Photo of various components with specification and use.	
21.3.3	Study on *Badhua* (Chemopodium Album L.) and soy cereals based value added pasta product.	• Modify 'title' as 'Development of rag-soya-cereals based pasta using *Badhua* (Chemopodium Album L.).' • Add Null hypothesis in report before objectives. • Modify 'objective-1' as 'Development of value added pasta using *Badhua* (Chemopodium Album L.) and incorporating rag-soya-cereals at various proportions. • Merge 'objective 2 to 5' as 'Evaluation of physic-chemical, nutritional, colorimetric, sensory, microbial and rheological properties of developed pasta during ambient storage. • Add photos of ingredients/ flow chart/ diagram and reviewed proximate compositions. • Duration of the experiment should be reduced. • Take 28% 'fresh *bathua* leaves' of total flour mix as common treatment. • Take only 'Maida pasta' as control treatment T_0 to compare with best treatments. • Write proportions of flours (ragi flour, soya flour, maida, maize flour, sorghum flour) in grams instead of percentage. If required consult with PHTC, NAU, Navsari. • Size of packing material should be in micron. • Take care of degree of freedom to identify the effect of ragi flour and soyaben flour on proximate composition of	Dr. S. N. Singh Dept. of PFE, CAET, Dediapada

		developed pasta. • Calculate ingredients required and Give sample size and storage conditions as per treatments replication combinations for one year. • In observation to be recorded; Write - 'shape' instead of 'sphericity'. Add - Vitamin A and Vitamin C, microbial load, rupture force, stress, strain, calorific value, iron, calcium. Remove duplicate color scale observation. Calculate economics for all treatments in consultation with economist.	
21.3.4	Drying of fresh green pea (Pisum Sativam L.) puree by reflectance window (RW) dryer for development of green pea powder.	• Modify 'title' as 'Drying of green pea (*Pisum Sativam* L.) puree using Reflectance Window (RW) dryer for powder production' • Add Null hypothesis in report before objectives. • Modify 'objective-1' as 'Optimization of drying parameters for green pea powder for Reflectance Window dryer'. • Merge 'objective 2 to 5' as 'Evaluation of physic-chemical, nutritional, colorimetric, sensory, microbial and rheological properties of developed green pea powder during ambient storage. • Add photos of green pea, dryer with specification and control parameters/ flow chart/ diagram. • Duration of the experiment should be reduced. • Crop will be 'Green Pea' mention variety. • Give blanching procedure; time temp., flow chart for pea. • Take care of degree of freedom to identify the effect of various factor on quality parameter of powder. • Calculate ingredients required and Give sample size and storage conditions as per treatments replication combinations for one year. • Size of packing material should be in micron. • In observation to be recorded; Add – Chlorophyll content, Vitamin A and Vitamin C, microbial load, calorific value, iron, calcium. Remove duplicate color scale observation. Calculate economics for all treatments in consultation with economist.	Dr. S. N. Singh Dept. of PFE, CAET, Dediapada

21.3.5	Paper making from banana Pseudo-Stem fibers with other agricultural wastes.	• Add Null hypothesis in report before objectives. • Modify 'objective-1' as 'Development of paper using banana Pseudo-Stem fibers and agricultural wastes blended pulp'. • Give reviewed chemical properties like; particle size, total suspended solids, pH, colour value, sedimentation, etc. for waste media; cow dung, cotton waste, paper waste, Paddy straw, sugarcane bagasse, banana Pseudo-Stem. • Standardize certain parameter before making the blend with banana Pseudo-Stem fibers pulp. Give process for preparation of standard pulp/puree from cow dung, cotton waste, paper waste, Paddy straw, sugarcane bagasse, banana Pseudo-Stem. • Include raw material procurement place. • Treatment table should be re-write as Pulp Ratio (BPF : Other Waste Media). • Design is CRD. • Include Photo of Waste Media, Banana Pseudo-Stem, banana Pseudo-Stem fibers, banana Pseudo-Stem fibers paper, and its machinery. Give proper flow chart for process of hand made paper sheet making. • In observation to be taken; Use word 'Weight of wet paper' and 'weight of dry paper'. Add chemical properties, particle size, total suspended solids, pH, colour value (L, a*, b*), sedimentation, etc parameters for all the ingredients like; cow dung pulp/puree, cotton waste pulp, paper waste pulp, Paddy straw pulp, sugarcane bagasse pulp. Take parameter for paper like; moisture, GSM, Busting Strength, Thickness. moisture absorption index, etc.	Dr. C. S. Desai, Er. B. M. Solia Associate Research Scientist, SWMRU, NAU, Navsari
21.3.6	Preparation of flavours crunchy bites from banana Pseudo stem central core.	• Title should be modified as " Preparation of hard boiled candy from Banana Pseudostem center core' • Add Null hypothesis in report before objectives. • Complete the 'objective-1' as Find out best blending of	Dr. C. S. Desai, Er. B. M. Solia Associate Research Scientist,

		liquid glucose and sugar in preparation of hard boiled candy from Banana Pseudostem center core. • Merge 'objective-1' and 'objective-4' as Evaluation of storage study for prepared hard boiled candy from Banana Pseudostem center core. • Remove objective 3 • Re-write treatment table by deleting last column and mentioning common treatment if any. • Replication : 5 • Design : CRD • Provide photos of ingredients, center core, etc. / flow chart, storage conditions, sample size. • Mention packing materials, it specifications and storage study period. • Provide sugar, liquid glucose, center core physic-chemical composition. Provide photo of machine used for candy making. • In observation to be taken; include reducing sugar, non-reducing sugar, Sugar diffusion rate, bacterial and spore count, textural property – hardness, stickiness, chewiness, etc.,	SWMRU, NAU, Navsari
21.3.7	Studies on nutritional and snsory attributes of powered of banana Pseudo stem central core and finger millet cookies .	• Modify title as 'Formulation of banana Pseudostem central core powder and finger millet cookies.' • Add Null hypothesis in report before objectives. • Modify 'objective-1' as 'Standardization of drying process for banana Pseudostem central core powder using tray dryer.' • Change 'objective-2' as 'Formulation of banana Pseudostem central core powder and finger millet cookies.' • Add 'objective-3' as quality evaluation of cookies under ambient storage conditions. • Wheat proportion should be kept constant and take combination of other two ingredients level. • Revise treatments of experiment in consultation with	Dr. C. S. Desai, Er. B. M. Solia Associate Research Scientist, SWMRU, NAU, Navsari

		Scientist at PHT, NAU, Navsari • Provide photos of ingredients, center core, machinery, etc. • Provide flow chart for drying, biscuit making separately. • Mention storage conditions, sample size, packaging material and storage period. • In observation to be taken; include mesh size of ragi flour and banana Pseudostem central core powder. Measure chemical composition of wheat flour, ragi flour and banana Pseudostem central core powder. Add moisture content and calorific value of biscuit, instead of TPC measure TBC and TSC. Textural properties of biscuits like; strength, strain, stress, stickiness, etc.	
21.3.8	Development and storage of sweet sorghum based *halwa* premix.	• Add Null hypothesis in report before objectives. • Remove objective- 3 as economics is obvious for product development. • Provide the reviewed proximate physico-chemical parameters ingredients. Give the packaging materials specifications. Give sample size. • In observation to be taken; Use word 'cost benefit' in place of 'cost economics', Write milk in 'gm' instead of 'ml'. Add TBC and TSC as microbial parameters. • Provide photos of ingredients, machinery, etc.	Er. P. S. Pandit Associate Professor, PHTC, NAU, Navsari
21.3.9	Drying and storage study of sweet sorghum tender grain.	• Add Null hypothesis in report before objectives. • Remove objective- 3 as economics is obvious for product development. • Provide the reviewed proximate physic-chemical parameters ingredients. Give the packaging materials specifications. • In observation to be taken; Use word 'cost benefit' in place of 'cost economics', Write milk in 'gm' instead of 'ml'. Add TBC and TSC as microbial parameters. • Treatment and replication should be corrected • Correct procurement from 'nearby area' instead of Navsari only in methodology.	Er. P. S. Pandit Associate Professor, PHTC, NAU, Navsari

		• Provide photos of ingredients, machinery, etc.	
21.3.10	Development and storage study of mixed variety mango RTS.	• Add Null hypothesis in report before objectives. • Provide photos of ingredients, machinery, etc.	Er. P. S. Pandit Associate Professor, PHTC, NAU, Navsari
21.3.11	Drying and storage study of fried okra pod.	• Modify 'Title' as 'Development of technology for dried and fried okra pod'. • Add Null hypothesis in report before objectives. • Modify 'objective-2' as 'Standardization of shallow frying of dried okra pod'. • Include 'vacuum' word in freeze drying parameters at treatment factor -1 drying method (M1). • Add photos/ flow chart/ diagram • In observation to be taken; ash 'fiber',	Er. P. S. Pandit Associate Professor, PHTC, NAU, Navsari
21.3.12	Design, Development and Performance Evaluation of Solar Operated Seed Pelleting Machine 	• Modify 'Title' as 'Development of SPV operated seed pelleting machine for small farmers' • Add Null hypothesis in report before objectives. • Modify 'objective-1' as 'Design and development of SPV based seed pelleting machine for small farmer'. • Modify 'objective-2' as performance evaluation of seed pelleting machine.' • Separate the name of SRF from the list of investigator. • Mention seed name and variety. • Design will be F-CRD. • In observation to be taken; Measure the properties of soil used for pelleting. Measure the seed germination related parameters for each seed separately. Measure the seed specification, dimensions, size, shape, etc. add 1000 seed weight. Add seed and seed pallet textural parameters, measure current, voltage, power, with load and without load for SPV. Measure current, voltage, power with respect to rpm, weight as rolling capacity, material loss in pelleting, etc. add pellet rolling resistance.	Dr. A. V. Sonawane Assistant Professor, Dept. of AE, NMCA, NAU, Navsari

		• Add photos/ flow chart/ diagram of ingredients, conceptual drawing. • Use VFD for varying the rotational speed of pelleting machine. • Review seed pelleting developed earlier by AAU, Anand for treatment finalization.	
21.3.13	Effect of Deficit Irrigation and Biochar amendment on the growth, yield and quality of Brinjal.	• Add Null hypothesis in report before objectives. • Specify brinjal variety generally grown at NAU, Farm consult Deprt. of Vegetable Science, ACH, NAU. • Give package of practices for brinjal in term s of Plan Layout, Spacing, Seed rate, Planting Method, FNM, Irrigation, IPDM, etc. • Physiological parameters of growth of brinjal should be mentioned • Doses of biochar should be rechecked from review with authenticity also consult with Dr. Vikas Naik, Res. Sci. SWMRU, NAU, Navsari. • Give Treatment Combination Tables accordingly Plan Layout of Experiment in visible and clear form. • In observation to be taken; Add no of picking, picking interval, Infestation of pest and dieses, and quality parameters like; weight of fruit in specific size, observation related to malformation in fruits, phenol content of fruits. Add soil parameter with respect to modifications in properties due to in corporation of bio-char. Water Use observation, Water saving, etc.	Dr. A. V. Sonawane Assistant Professor, Dept. of AE, NMCA, NAU, Navsari
21.3.14	Influence of bed planting and irrigation scheduling on growth and productivity of Mango Zinger crop in black soil of south Gujarat.	• Add Null hypothesis in report before objectives. • Reduce the investigator up to 4 • Consult with Dr. Savani, SWMRU, Navsari for layout and experiment plan. • Provide clear and large picture of Lay out showing Net plot and Treatments as well as Gross Plot.	Dr. Reena Kumari, Assistant Professor, Dept. of AE, NMCA, NAU, Navsari
21.3.15	Optimization of Drone Spraying Parameters for Sugarcane Crop Under South Gujarat	• Add Null hypothesis in report before objectives. • Modify ‘objective-1’ as ‘Optimization of drone spraying	Dr. V. T. Shinde Assistant Professor,

	Conditions.	parameters for sugarcane crop in south Gujarat'. • Modify 'objective-2' as 'Performance evaluation of drone spraying for sugar cane in south Gujarat.' • Modify 'objective-3' as 'Comparison of drone and conventional spraying for sugarcane'. • Separate the name of SRF from the list of investigator. • Mention variety name. • Give treatment combination table with respect to factors. • Increase the replication up to 3. As the study is in south Gujarat, take the final performance comparative study in consultation with statistician. • Provide layout of field for comparative performance study evaluation by showing safe distance. • In observation to be taken; add economics of spraying per acre. • Add photos/ flow chart/ diagram of ingredients, conceptual drawing. • Mentions the reference of government guideline for drone spraying.	Dept. of AE, NMCA, NAU, Navsari

TECHNICAL SESSION-III : ONGOING TECHNICAL PROGRAM

Chairman	:	Dr. P. K. Srivastava, Dean and Principal, CAET, NAU, Dediapada
Co-Chairman	:	Dr. D. D. Patel, Principal, CoA, NAU, Bharuch
Rapporteurs	:	Er. Piyush Akbari, Assistant Professor, Dept of AE, CoA, NAU, Bharuch
	:	Er. Balkrishna Patel, Assistant Professor, Dept of BEAS, CAET, NAU, Dediapada

The technical session – III on Ongoing Technical Programs began with the approval of Dr. P. K. Srivastava, Dean and Principal, CAET, NAU, Dediapada. There were 26 continued experiments reported. Out of 26 experiments 11 were discussed in house. House has approved the request from concerned scientists to conclude the 02 experiments with justifications. Extension request was approved by house for one year to 09 ongoing experiments. The suggestions made by the house are given hereunder.

Sr. No.	Title of Experiment (CJA Registered Number)	Suggestions
21.4.1	Drying kinetics of fresh and osmotically pre-treated star fruit (*Averrhoa carambola*L.) slices. (**9.5.3.7)**	**Justifications:** Due to some experimental error, one lot data is giving erroneous result so needed to continue the study for one year and the experiment will be ready for recommendation by next AGRESCO **Suggestions:** Accepted to continue the study for one year ***Action:*** Dr. F. M. Sahu, Assistant Professor, PHTC, NAU, Navsari
21.4.2	Design and development of centrifugal dewatering machine for vegetable. **(13.5.3.69)**	**Justifications:** Due to fabrication is in final stage so needed to continue the study for one year and the experiment will finish by next AGRESCO **Suggestions:** Accepted to continue the study for one year ***Action:*** Dr. F. M. Sahu, Assistant Professor, PHTC, NAU, Navsari
21.4.3	Standardization of process parameters for microwave assisted convective drying of bell pepper. **(14.5.3.50)**	**Justifications:** Some Data analysis part is pending so needed to continue the study for one year and the experiment will finish by next AGRESCO **Suggestions:** Accepted to continue the study for one year ***Action:*** Dr. F. M. Sahu, Assistant Professor, PHTC, NAU, Navsari
21.4.4	A study on technical feasibility and development of Online Digital Medicinal Plants Identification and Knowledge Management System of NAU **(17.6.3.27)**	**Justifications:** For machine learning for Plant Identification more time require so needed to continue the study for one year and the experiment will finish by next AGRESCO **Suggestions:** Accepted to continue the study for one year ***Action:*** *Prof.* Bhavesh Chaudhary, Assistant Professor, AABMI, NAU, Navsari
21.4.5	Development of Automatic Plant Target Liquid Fertilizer Sprayer for Banana Crop **(19.5.3.31)**	**Justifications:** Due to resignation of PI need to change PI. (Dr. P. S. Pandit will act as PI instead of Dr. Vineet Kumar). Supporting Investigator: Er. Krunal Chaudhri, Asst. Prof. (*Contractual*). **Suggestions:** Accepted to change PI and addition of supporting Investigator w.e.f 21.02.2025. ***Action:*** Dr. P. S. Pandit, PHTC, & *Dept. of Agril. Engg.*, COA, NAU, Waghai

21.4.6	Development of multipurpose biomass based water heating and cooking system for EWS (Economical Weaker Section) people**. (14.5.3.55)**	**Justifications:** Proposed to discontinue the experiment as result were not found satisfactory. **Suggestions:** Accepted to discontinue the experiment. ***Action:*** *Prof*. P. D. Akabari, Assistant Professor, COA, NAU, Bharuch
21.4.7	Effect of Various Tillage Practices in Established Mango Orchard **(17.9.3.30)**	**Justifications:** Due to retirement of PI and resignation of Co-PI need to change PI and Co-PI. (Dr. Ashish Sonawane will act as PI instead of Er. P. R. Pandey and Dr. Reena Kumari act as Co-PI instead of Dr. Manjushree Singh.) also more observation data require so needed to continue the study for one year and the experiment will finish by next AGRESCO **Suggestions:** Accepted to continue the study for one year and to change PI & Co-PI w.e.f 13.02.2025. ***Action:*** *Dr*. A. Sonawane, Assistant Professor, Dept. of AE, NMCA, NAU, Navsari
21.4.8	Influence of Tillage and drainage practices on growth and yield of papaya in heavy rainfall zone of south Gujarat. **(19.5.3.33)**	**Justifications:** Due to resignation of PI, need to change PI & Co-PI. (Dr. Reena Kumari act as PI instead of Dr. Manjushree Singh and Dr. Ashish Sonawane will act as Co-PI instead of Dr. Reena Kumari) **Suggestions:** Accepted to change PI & Co-PI w.e.f 13.02.2025. ***Action:*** *Dr*. Reena Kumari, Assistant Professor, Dept. of AE, NMCA, NAU, Navsari
21.4.9	Monitoring and assessment of soil pH, salinity, and soil chemical properties in agricultural land of Navsari district using remote sensing and GIS based machine learning technique. **(19.5.3.34)**	**Justifications:** Due to resignation of PI, need to change PI & Co-PI. (Dr. Vipul Shinde act as PI instead of Dr. Manjushree Singh and Dr. Ashish Sonawane will act as Co-PI instead of Dr. Vipul Shinde) **Suggestions:** Accepted to change PI & Co-PI w.e.f 13.02.2025. ***Action:*** *Dr*. Vipul Shinde, Assistant Professor, Dept. of AE, NMCA, NAU, Navsari
21.4.10	Development of low –cost weighing type lysimeter and measurement of actual evapotanspiration of various crop of south Gujarat. **(17.9.3.25)**	**Justifications:** Proposed to discontinue the experiment due to unavailability of required experimental material. To dropped experiment approval already taken from DR and Dean PGS, NAU, Navsari. **Suggestions:** Accepted to discontinue the experiment. ***Action:*** *Dr*. Vipul Shinde, Assistant Professor, Dept. of AE, NMCA, NAU, Navsari
21.4.11	Identification of potential soil erosion zones in Karjan River basin using remote sensing and GIS. **(20.5.3.3)**	**Justifications:** Due to transfer of PI, need to change PI & Co-PI. (Dr. K. N. Sondarava act as PI instead of Dr. Priti Jayswal and Dr. A. P. Lakkad will act as Co-PI instead of Dr. K. N. Sondarava) **Suggestions:** Accepted to change PI & Co-PI w.e.f 21.02.2025. ***Action:*** *Dr*. K. N. Sondarava, Assistant Professor, Dept. of IDE, CAET,NAU, Dediyapada

PLENARY SESSION

President of Plenary Session	:	Dr. T. R. Ahlawat, Director of Research and Dean PG studies
Chairman		Dr. D. D. Patel, Principal, CoA, NAU, Bharuch
		Dr. P. K. Srivastava, Dean and Principal, CAET, NAU, Dediapada
Co-Chairman	:	Dr. Alok Singh, Principal, PAET, NAU, Dediapada
Rapporteurs	:	Dr. Bhavesh Chaudhari, Assistant Professor AIT, AABMI, NAU, Navsari
	:	Dr. Ashish Sonavane, Assistant Professor, Dept. of Agril Engg, NMCA, NAU, Navsari

The Plenary session was presided over by Dr. T. R. Ahlawat, Director of Research and Dean PG Studies, NAU, Navsari accompanied by Dr. D. D. Patel, Principal, CoA, NAU, Bharuch and Dr. P. K. Srivastava, Dean and Principal, CAET, NAU, Dediapda as Chairman and Dr. Alok Singh, Principal, PAET, NAU, Dediapada as Co-chairmen.

The meeting began with presentation of rapporteurs of respective sessions. They summarized and presented the reports as per details given in summary table hereunder. The co-chairman has expressed his view with respect to reporting of research data and online submission of same at AEMS-ZP of university website. He added that, if individual scientists will have access to upload NTP at AEMS-ZP, followed by locking of experiment details by Head, the process became faster and in time, as many time Department head is not member of CJA. Chairmen have appreciated the work of scientists in area of Agricultural Engineering in general and particularly with respect to the other agency project sanctioned at Dept of Agril Engg, NMCA. The president has congratulated the scientists for proposing farmer's and scientific information as well as new technical programs. He stressed on timely submission of research conclusions for either commercialization or for scientific publications. He encouraged the scientists to publish higher rated journal publication from each and every recommendations of the sub-committee within shortest period. He also emphasis to popularize the develop tools and technology among farmers or targeted users by local magazine articles, demonstration, etc. He repeatedly told the scientist about Honorable Vice-chancellors' vision for NAU as progressing university of agricultural sector. The plenary session ended with a Vote of Thanks by Dr. P. S. Pandit, Assistant Professor-PHTC and Convener of the 21st meeting of AGRESCO Agricultural Engineering Subcommittee, NAU, Navsari

Summary of 21st AGRESCO Agricultural Engineering Sub-committee:

Sr. No	Name of Department/ Institute	Recommendations						New Technical Programs					On Going		
		Reported	Presented	Approved for Farmer	Approved for Scientist	Differed / Withheld	Total	Reported	Presented	Approved	Differed	Total	Drop	Cont.	Total
1	Dept. of BEAS, CAET/PAE, Dediapada	0	0	0	0	0	**0**	0	0	0	0	**0**	0	1	**1**
2	Dept. of FMPE, CAET/PAE, Dediapada	1	1	1	0	0	**1**	1	1	1	0	**1**	0	1	**1**
3	Dept. of IDE, CAET/PAE, Dediapada	1	1	0	1	0	**1**	0	0	0	0	**0**	0	1	**1**
4	Dept. of SWCE, CAET/PAE, Dediapada	0	0	0	0	0	**0**	1	1	1	0	**1**	0	0	**0**
5	Dept. PFE, CAET/PAE, Dediapada	2	2	2	0	0	**2**	2	2	2	0	**2**	0	1	**1**
6	Dept. REE, CAET/PAE, Dediapada	0	0	0	0	0	**0**	0	0	0	0	**0**	0	1	**1**
7	AABMI, Navsari	0	0	0	0	0	**0**	0	0	0	0	**0**	0	1	**1**
8	CoA, Bharuch	0	0	0	0	0	**0**	0	0	0	0	**0**	1	0	**1**
9	CoA, Waghai	0	0	0	0	0	**0**	0	0	0	0	**0**	0	1	**1**
10	PHTC, Navsari	2	2	2	0	0	**2**	4	4	4	0	**4**	0	10	**10**
11	SWMRU,Navsari	0	0	0	0	0	**0**	3	3	3	0	**3**	0	1	**1**
12	NMCA, Navsari	0	0	0	0	0	**0**	4	4	4	0	**4**	1	3	**4**
Total		**6**	**6**	**5**	**1**	**0**	**6**	**15**	**15**	**15**	**0**	**15**	**2**	**24**	**26**

POST MEETING CEREMONY:

The dignitaries of meeting and all the members gave best wishes to Er. N. G. Savani as it was the last Agresco-Agril. Engg. Subcommittee meeting for the scientists due to their retirement in days to go. The Engineers have discussed the activities of Indian Sociaety of Agricultural Engineering – Gujarat Chapter like; participation in ISAE conventions, Workshop organized on Processing and PHM, Special lectures for students and Upcoming EC-ISAE election.