

# **TAMIL NADU AGRICULTURAL UNIVERSITY**

## **PROCEEDINGS**

### **9<sup>th</sup> Community Science Scientists Meet (August 10, 2022)**

#### **Lead Center**

Community Science College & Research Institute  
Madurai- 625 104

#### **Directorate of Research**

Tamil Nadu Agricultural University  
Coimbatore 641 003

**2022**

## PROCEEDINGS

### **9<sup>th</sup> Crop Scientists Meet on Community Science, 2022 (10<sup>th</sup> August, 2022)**

The 9<sup>th</sup> Crop Scientists Meet on Community Science was held at Tamil Nadu Agricultural University, Coimbatore on 10.08.2020 (2.00 PM and 5.00 PM) through hybrid mode. The session was chaired by **Dr. M. Raveendran**, Director of Research, TNAU, Coimbatore. The Director of Research highlighted that India is using only 10 % of value added products as compared to 50-60% in other developed countries and emphasized the Scientists to undertake more research on post harvest processing and value addition meeting the requirements of developed countries. He insisted the scientists to identify the technologies for further translation.

**Dr. S. Kanchana**, Dean (Community Science) delivered welcome address and presented the action taken report of 8<sup>th</sup> Scientists Meet on Community Science and action plan for 2022-23.

**Dr. S. Amutha**, Professor and Head, Dept of HDFS, CSC&RI, Madurai presented the University Research project and externally funded project progress report of the Theme 1 Food Processing and Value addition.

**Dr.G.Hemalatha**, Professor and Head, Dept. of Food Science and Nutrition presented the University Research project and externally funded project progress report of the Theme 2 Nutrition and Health.

**Dr.P. Parimalam**, Professor and Head, Dept. of Family Resource Management & Consumer Studies presented the progress report on AICRP on Women in Agriculture.

**Dr.R. Saravanakumar**, Associate Professor (FSN) and Head, Dept. of Textile Science and Design proposed a formal vote of thanks.

The proceedings of the 9<sup>th</sup> Crop Scientists' Meet on Community Science 2022 are furnished under the following headings:

- I. Remarks on the ongoing University Research Projects**
- II. Action plan for 2022-2025 on the Identified themes**
- III. Remarks**
- IV. List of Participants**

## I. Remarks on the ongoing University Research Projects

S. No.	Project Number and Title	Name of the Scientists	Project Duration	Remarks
1.	CSCRI/MDU/FSN /2020/002 Development of functional beverage from banana pseudo stem	Dr.G. Sashidevi Assoc. Prof (FSN)	Jan.19- Dec.20	Claim of the developed product should be mentioned and efforts may be taken for technology release.
2.	HSCRI/MDU/FSN/2018 /002 Developing and assessing the efficacy of antimicrobial food packaging material: a green technology	Dr.T.Uma Maheswari Asst. Prof. (Agrl. Micro.)	Dec.18- Nov.20	Gas transmission property of the developed packaging material has to be conducted
3.	CSCRI/MDU/FSN/2020/0 04 Extending the shelf life of Palmyra palm tender fruit endosperm(PTFE) by Canning	Dr.S. Kanchana Dean (CSC)	Oct. 20 – Sept. 22	The values of colour index may be rechecked and the quality of the filling agent to be studied.
4.	CSCRI/MDU/FSN/2020/0 01 -Development of value added products from Palmyrah tuber ( <i>Borassus flabellifer</i> )	Dr.K.Shanthi Professor (FSN)	Nov 19- Oct 22	Emphasis should be given to remove/reduce the bitter principle. The anti diabetic property to be studied. Systematic analysis to be carried out.
5.	CSCRI/CBE/FSN/2020/00 1 Extraction and encapsulation of betel ( <i>Piper betle</i> L.) leaves extract and preparation of value added products.	Dr.P. Geetha Assoc. Professor (FSN)	Aug.20 to July 22	The project may be extended and bio active compounds may be identified in consultation with Department of Bio Technology to select suitable genotype

S. No.	Project Number and Title	Name of the Scientists	Project Duration	Remarks
				with high eugenol and charvicol content and viable product may be patented/commercialized.
6.	CSC&RI/CBE/FSN/200/004 Standardization of the Process for Novel Flavor Retained High Value Jackfruit Products	Dr.G.Gurumeena kshi, Professor (FSN)	Oct 20 to Sept 22	The scientist is requested to discuss with Professor and Head, VRS, Palur to select suitable genotype and low GI value added products may be developed.
7.	CSCRI/PKM/FSN/2020/001 Studies on the formulation of Value added products from red colour Manila Tamarind ( <i>Pithecellobium dulce</i> ) var.PKM 2 Under commercial Exploitation	Dr.V.Vani, Asst. Professor(FSN)	Jan 20- Dec 23	The scientist is requested to rework on the cost of the product and the technology may be released.
8.	CSCRI/CTN/FSN/2020/001 Application of Response Surface methodology for Optimization of Process parameters for Edible coating of jack fruit bulbs ( <i>Artocarpus heterophyllus</i> L.)	Dr.S.Jesupriya Poornakala Asst. Professor (FSN)	1.2.20- to 31.1.23	The organoleptic properties of the edible coated jack fruits for consumer acceptability are to be studied.
9.	URP2020-0147CSCRI/TRY/FSN/2020/001 Studies on physico-chemical characteristics and its suitability in cooking of selected millets after parboiling and milling	Dr.Marimuthu Assoc. Professor (FSN)	Mar.20 - Mar.23	The scientist is requested to compare the nutritional and functional properties of millets of the unparboiled and parboiled millets to assess the suitability

<b>S. No.</b>	<b>Project Number and Title</b>	<b>Name of the Scientists</b>	<b>Project Duration</b>	<b>Remarks</b>
				of the products.
10.	MFPI/AEC/CBE/PHT/2019/R007 Development of Natural Food Additives by Utilizing Grapes Wastes	Dr.G.Gurumeena kshi, Professor (FSN)	Oct. 19- Oct.21	The scientist is requested to propose a new URP in collaboration with horticulture.
11.	CSCRI/MDU/FSN/2020/003 Exploitation of underutilized pulses to achieve nutritional security	Dr.E.Tamil Selvi Asstt. Professor (FSN)	June20 – May 22	The scientist is requested to consult with Centre for Plant Breeding and Genetics and biochemistry for metabolimic studies of rice and moth bean. The effects of pretreatments on anti nutritional factors to be rechecked and corrected.
12.	CSC&RI/TSM/DEE/FSN/2022/001 Study on Effect of thermal Processing on Phytochemicals and Antidiabetic properties of Bittergourd and Athalakkai	Dr.L.Karpagapan di Assistant Professor(FSN)	May 22- April 24	Systematic studies should be carried out and one horticulturist to be included in the project to select suitable genotype. The anti diabetic property of athalakai to be checked.
13.	HSCRI/TRY/FSN/2018/001 Formulation of Millet Based Therapeutic Breakfast Foods	Dr.K.Geetha Associate Prof.(FSN)	July 19- July 21	Control/ reference sample (Rice) may be studied .

14.	CSC&RI/CBE/FSN/2020/003 Development of Immune Boosting RUTF from Pulses, Moringa/ Amla for Severely Malnourished Children	Dr. G. Gurumeenakshi, Assoc. Prof (FSN)	Oct. 2020 - Oct. 2022	The scientist is requested to carry out the bioavailability studies. Commercialization of RTUF to be taken up.
15.	CSCRI/MDU/FSN/2019/003 Assessing the Impact of Value addition technologies developed by CSC&RI, MDU.	Dr.R.Saravanakumar Assoc. Prof & Head (TDS)	Sept. 2021 - August 2021	Systematic documentation to be done. Data base to be created.
16.	SDPC/HCRI/PKM/PHT/2021/R001 Development of Immune-booster from fruits, vegetable and herbs as remedial for viral infections - A novel food supplement	Dr. V. Vani Assoc. Prof (FSN)	2020-2023	Dr. Saranya, Assistant Professor (Bioinformatics) may be consulted for selection of immune boosting foods.
17.	DR/P7/ASO/SDPC/TNSLU RB/CSC&RI /MDU/2021 Formulation of Immune Boosting - Micronutrient Rich Soup Cubes	Dr.V. Meenakshi & Dr.R. Vijayalakshmi	2021-2023	Statistical analysis to be furnished for the data and the technology may be released.
18.	CSC&RI/MDU/FRM&CS/CS /2022 /001 Formulation And Evaluation on Cashew Apple Blended RTS Beverage	Dr.S. Kannan Professor (FSN)	Mar.22- Mar.24	The technology may be released and a new URP is to be proposed.
<b>Action taken on Specific recommendation</b>				
21.	Medical textiles addressing for covid pandemic should be encouraged	Dr. R. Saravanakumar Associate Professor (FSN)	--	The scientist is requested to develop a mask of commercial value in collaboration with nanotechnology.

22.	CSCRI/MDU/FSN/2019/005 Development and evaluation of value added products from bamboo shoots.	Dr. J. Selvi Assistant Professor (FSN)	Sep 2019- Aug 2021	Availability of raw material to be checked.  Basic data of raw material to be studied.  An external funded project to be proposed
23.	CSCRI/MDU/FSN/2019/004 Optimize the Production process for development of cereal based ice cream cones and cups by using mathematical models	Dr. M. Ilamaran, Assistant Professor Dr.B. Sivasankari, Asst.Prof.(Maths)	Sep 2019 Aug 2021	The technology is recommended for release.
24.	CSC&RI/ MDU/ HDFD/ NON / 2021 /001 Formulation of value added foods from Avocado	Dr.K.Jothilakshmi Asst. Prof (FSN)	21.12.21 - 4.4.23	Survey has to be conducted about the market potential channel for the fruit from the farmers.
25.	HSCRI/MDU/FSN/2018/003 Nutritional and sensory evaluation of tempeh prepared using <i>Dolichos lablab</i>	Dr.S. Kamalasundari Asst Prof (FSN)	Dec. 2018 – Nov. 2022	The scientist requested to recheck the phytic acid content in the sample.
26.	Establishment of Common Incubation Centre for Dhal processing, fruit and vegetable processing	Dr.S. Amutha, Professor and Head (HD&FS)	Oct. 2021 – Sept. 2026	The scientists involved in the PMFME Scheme appreciated for their work and work may be continued as per the objectives of the scheme.

27.	AICRP on Women in Agriculture	Dr.S. Kanchana Dean (CSC)	2021-2026	The scientists involved in AICRP activities are appreciated for collecting a good base line data. Work may be continued as per the objectives of the scheme.
28.	GoI-MSJE/ HSCRI/ MDU/ DAS/ 2018/T003"Financial Assistance for undertaking various activities for Person with Disabilities under the Scheme for Implementation of Persons with Disabilities Act (SIPDA)"	Dr. P.S. Geetha, Assoc. Prof (FSN)	Nov.2018 to Oct.2021	The scientist involved in the scheme is appreciated for the work and the work may be continued as per the objectives of the scheme.

## II. Action plan for 2022-2025 on the Identified themes

S. No.	Name of the Scientist	Title of the Action plan proposed
1.	Dr.M. Ilamaran Assistant Professor (FSN)	Standardization and Development of Antibiotic free A2 milk product for commercialization
2.	Dr. J.Ejilane, Assistant Professor (Agrl. Microbiology) Dept. of FSN, CSC&RI, Madurai	Extending the Shelf Life of Fresh Fruits and Vegetables using Lactic Acid Bacteria as an Antibacterial Agents

**Theme** : Food Processing and Value addition

**Title** : Standardization and Development of Antibiotic free A2 milk product for commercialization

**Theme leader** : Dr. M. Ilamaran, Asst. Professor (FSN)

S. No.	Objectives	Plan of work		Outcome of the Study
		I year	II Year	
1.	Standardization of Antibiotic free A2 milk based Value added products from milk	I year : <ul style="list-style-type: none"> <li>Products such as encapsulated functional spray dried powder, whey powder, panneer, yoghurt, mistidahi, fat filled milk powder will be standardized.</li> </ul>		Healthy Antibiotic free A2 milk product Fetches high remuneration to stakeholders.
2.	Studying the physical, nutritional and microbial characteristics of developed product	II Year: <ul style="list-style-type: none"> <li>Physical, Nutritional and Microbial characteristics, antibiotic activity of the developed products will be analysed.</li> </ul>		

**Theme** : Food Processing and Value addition  
**Title** : Extending the Shelf Life of Fresh Fruits and Vegetables using Lactic Acid Bacteria as an Antibacterial Agents  
**Theme leader** : Dr. J.Ejilane, Assistant Professor (Agrl. Microbiology), Department of Food Science and Nutrition Community Science College & Research Institute, Madurai - 625104.

Objectives	2022-23	2023-24	2024-25	Expected outcome
<p><b>Objective I</b> Isolation of <i>Lactobacillus</i> sp. from Milk, Curd, Idly Batter and Fermented rice</p>	<p>✓ Isolation of <i>Lactobacillus</i> from Milk, Curd, Batter and Cold rice</p>			<p>✓ Indigenous <i>Lactobacillus</i> from different sources is isolated and characterized</p>
<p><b>Objective II</b> Characterization of the isolated organisms morphologically and biochemically</p>	<p>✓ Morphological and Biochemical Characterization of isolated organisms</p>			
<p><b>Objective III</b> Screening of isolated organisms and detecting the antagonistic activities, acid and bile salt tolerance, antibiotic resistance and sensitivity pattern</p>		<p>✓ Isolation and characterization of bacterial flora from spoiled fruits and Vegetables.</p> <p>✓ Screening of isolated organisms for antagonistic activities against the isolated microbial from spoiled fruits and vegetables, acid and bile salt</p>		<p>✓ Antagonistic organisms spoiling the fruits are isolated and its sensitivity to isolated <i>Lactobacillus</i> is screened.</p> <p>✓ The isolated lactobacillus strained is confirmed by 16srRNA Analysis</p>

		tolerance, antibiotic		
<p><b>Objective IV</b> Confirmation of the screened organism by 16s rRNA Analysis</p>		<p>resistance and sensitivity pattern. ✓ Molecular characterization of the isolated organisms using 16s rRNA analysis.</p>		
<p><b>Objective V</b> Evaluating the shelf life of Fresh Fruits and Vegetables by biofilm coating of Lactic Acid Bacteria</p>			<p>Evaluating the shelf life of Fruits and Vegetables by coating with the identified strain of probiotics</p>	<p>A promising technology to extend the shelf life of the fresh fruits and vegetables coated with the biofilms of LAB is evolved which may have potential to be used as a bio-preservatives and also as a probiotic at cheaper cost without hazardous to the human health.</p>

### **III. Remarks**

#### **a. General recommendations**

1. Inventory of technologies/products may be taken up and possibilities of registration may be explored.
2. Products developed from the completed research projects may be explored for commercialization
3. Brain storming to be organized at CSC&RI, Madurai to identify products for commercialization under the section 8 company or through start-ups
4. Multi-disciplinary research may be intensified
5. Experimental design of URPs to be reviewed critically before commencement of the project
6. Experimental data to be subjected to thorough statistical analysis
7. A compiled report on value addition of important crops may be documented
8. Students may be encouraged to take up entrepreneurial activities.
9. Products developed under medical textiles may be refined in consultation with Nanotechnologists to enhance the commercial value.
10. Publications in journals of NAAS rating >6 may be given priority
11. All scientists may be encouraged to attract external funding

#### **b. Food Processing & Value Addition**

1. Health benefits of bamboo shoot powder may be assessed
2. Nutritional profiling of tamarind seed kernel powder may be carried out
3. Diversification of Palmyrah products may be given importance
4. Bioavailability of minerals in millets to be studied in detail
5. Research on *Chekurmanis* may be intensified

#### **c. Nutrition & Health**

1. Nutritional profiling of betel vine for anti diabetic/anti cholesterol/anti cancerous properties may be carried out in consultation with the scientists of CPMB&B.
2. Report on nutritional and health benefits of important crops may be documented

## **IV. List of Participants**

### **Offline participants**

1. Dr. M. Raveendran, Director of Research, TNAU, Coimbatore.
2. Dr. S. Karthikeyan, Professor and Head, CPHT, AEC&RI, TNAU, Coimbatore.
3. Dr. C. Babu, Professor (PBG), Directorate of Research, TNAU, Coimbatore.
4. Dr. A. Christopher Lourdhuraj, Prof. (ENS), Directorate of Res., TNAU, Coimbatore.
5. Dr. Pandiyarajan, Professor (FPE), AEC&RI, TNAU, Coimbatore.
6. Dr. G. Gurumeenakshi, Professor (FSN), CPHT, AEC&RI, TNAU, Coimbatore.
7. Dr. P. Geetha, Associate Professor (FSN), CPHT, AEC&RI, TNAU, Coimbatore.

### **Online participants from Other Directorates / Colleges / KVKs**

1. Dr. P.P. Mahendran, Dean, AC &RI, Madurai
2. Dr. P. Irene Vethamoni, Dean, HC &RI, TNAU, Coimbatore.
3. Dr.P. Shanthi, Programme coordinator, KVK, Tiruvallur
4. Dr.S. Kannan, Professor, RRS, Vridhachalam, Cuddalore
5. Dr.K. Geetha, Associate Professor (FSN), KVK, Sirugamani, Trichy
6. Dr. Marimuthu, Associate Prof., Dept. of Agronomy, ADAC&RI, Trichy
7. Dr.S. Jesupriya Poornakala, Asst. Prof. (FSN), KVK, Vamban, Pudukottai
8. Dr.V. Vani, Asst. Prof., Department of Post Harvest Technology, HC&RI, Periyakulam
9. Dr.S. Kamalasundari, Assistant Professor (FSN), KVK, Needamangalam, Thiruvallur
10. Dr.B. Nallakurumban, Assistant Professor (FSN), KVK, Virinjipuram, Vellore
11. Dr.V. Veeranan Arun Giridhari, Asst. Prof. (FSN), KVK, Pappalapatti, Dharmapuri
12. Dr.L. Karpagapandi, Assistant Professor, KVK, Tirupathisaram, Kanyakumari
13. Dr.S. Arokiamary, Assistant Professor, KVK, Madurai
14. Dr.G.G. Kavithasree, Assistant Professor, KVK, Thiruppur
15. Dr. K.P. Sivakumar, Assistant Professor, KVK, Ramanathapuram
16. Dr.A. Vijayakumar, Assistant Professor, KVK, Virudhunagar
17. Dr.T. Uma Maheswari, Assistant Professor (Agrl. Micro), ADAC&RI, Trichy.

### **Online participants from CSC &RI, Madurai**

1. Dr.S. Kanchana, Dean, CSC &RI, Madurai
2. Dr.S. Amutha, Professor and Head, Dept. of HD&FS
3. Dr.G. Hemalatha, Professor and Head, Dept. of FSN
4. Dr.P. Parimalam, Professor and Head, Dept. of FRM & CS
5. Dr.R. Saravanakumar, Associate Professor (FSN), Dept. of TSD, CSC &RI, Madurai

6. Dr. J. Pushpa, Professor and Head, Dept. of EE &CM
7. Dr.K.Shanthi, Professor (FSN), Dept. of FSN, CSC &RI, Madurai
8. Dr.G. Sashidevi, Associate Professor (FSN), Dept. of HD &FS, CSC &RI, Madurai
9. Dr.P.S. Geetha, Associate Professor (FSN), Dept. of DAS, CSC &RI, Madurai
- 10.Dr.R.Vijayalakshmi, Associate Professor (FSN), Dept. of FSN, CSC &RI, Madurai
- 11.Dr.M. Ilamaran, Assistant Professor (FSN), Dept. of FSN, CSC &RI, Madurai
- 12.Dr.V. Meenakshi, Assistant Professor (FSN), Dept. of FSN, CSC &RI, Madurai
- 13.Dr.J. Selvi, Assistant Professor (FSN), CSC &RI, Madurai
- 14.Dr. K. Jothilakshmi, Assistant Professor (FSN), CSC &RI, Madurai
- 15.Dr. A. Kalaiselvan, Assistant Professor (FSN), Dept. of EE&CM, CSC &RI, Madurai
- 16.Dr. Cissie Theeblyn David, Assistant Professor (FSN), FRM, CSC &RI, Madurai
- 17.Dr. E. Tamil Selvi, Assistant Professor (FSN), Dept. of TSD, CSC &RI, Madurai