TAMIL NADU AGRICULTURAL UNIVERSITY

PROCEEDINGS

11th Scientists Meet on Community Science

(23rd May, 2024)

Lead Center

Community Science College & Research Institute
Madurai - 625 104

VENUE

Agricultural College & Research Institute
Madurai

Directorate of Research
Tamil Nadu Agricultural University
Coimbatore - 641 003

2024

PROCEEDINGS

11th Scientists Meet on Community Science
(23rd May, 2024)

The 11th Scientists Meet on Community Science was held at Community Science College and Research Institute, Tamil Nadu Agricultural University, Madurai on 23.05.2024. **Dr. M. Raveendran,** Director of Research, TNAU, Coimbatore delivered welcome address and offered opening remarks.

The Meeting was chaired by **Dr. V. Geethalakshmi**, Vice-Chancellor, TNAU, Coimbatore. Madam emphasized the need for obtaining external funded projects and making quality publications with high impact factor, in addition to promoting viable technologies of Community Science among stakeholders through commercialization.

Dr. S. Kanchana, Dean, CSC&RI presented the research highlights of CSC&RI, Madurai for 2023-2024. Dr. S. Amutha, Professor and Head (FSN) and Dr. R. Vijayalakshmi, Professor and Head (FRM&CS) presented the action taken report on recommendations of 10th Scientists Meet on Community Science and Action Plan (2024-2025) pertaining to their disciplines.

Booklets on Millets, Pulses, Avocado, Moringa, Underutilized horticultural crops, Banana and Green leafy vegetables, besides the Album on activities of PMFME, Common Incubation Centre and Compendium of the Food Processing Technologies prepared by the Scientists of CSC&RI, Madurai were released by Honourable Vice Chancellor. Dr. G. Hemalatha, Professor (FSN) and Research Coordinator (CSC) proposed the formal vote of thanks. The Pre review meetings was conducted on 13.05.2024, 14.05.2024 and 18.05.2024 (Hybrid mode) at CSC&RI, Madurai.

The proceedings of the 11th Scientists' Meet on Community Science 2024 are furnished under the following headings:

I. Remarks on the Ongoing Research Projects

Theme I Food Processing and Value Addition

S. No.	Project Number & Title	Period	Project Leader	Remarks
1.	CSC&RI/MDU/COMMUNITYSCI./2023/146 Model Prediction to process optimization for Development of Functional fruit Jelly by 3D Food Printing Technology	June 2023 - May 2025	Dr. M. Ilamaran, Assoc Prof (FSN) Co-project leader Dr. B. Sivasankari, Professor (Maths)	Focus on utilisation of nutraceutical components present in fruit/vegetable waste using 3-D food printing Incorporate appropriate nutrients in the formulation which will add value to the 3-D food printed food product
2.	CSC&RI/TRY/FSN/COMMUNITY SCI./2023/ 030 Retort Process Modelling for RTE Protein Enriched Milk based Sweet Dumpling	Feb 2023 - Jan 2025	D. K. Geetha Professor and Head (Hort.), ADAC&RI, Trichy	The technology may be released / commercialized
3.	CSC&RI/MDU/FSN/COMMUNITY SCI./2023/ 217 Development of pH responsive smart packaging film from selected bio-colours as food quality indicators	Sep 2023 - Aug 2025	Dr. G. Hemalatha Professor (FSN) Dr. M. Ilamaran, Assoc Prof (FSN) Dr. T. Umamaheswari Asst Prof (AGM)	The regulatory mechanisms for Intelligent packaging films in India may be looked into for developing the Intelligent packaging films The sensitivity of the intelligent packaging film may be tested with foods such as sambar.
4.	CSCRI/MDU/FRM&CS/CS/2022/001 Formulation and evaluation of cashew apple blended RTS beverages	Mar 2022 - Feb 2024	Dr. S. Kannan Professor (FSN) ICAR-KVK, Vridhachalam	The technology may be proposed for release. The completion report may be submitted.
5.	CSC&RI/MDU/FSN/COMMUNITY SCI./2024 /027 Eco friendly nutritive edible cup from jack fruit seeds	Oct 2023 – Sep 2025	Dr. G. Sashidevi Professor & Head (TSD) CSC&RI, MDU	The research may be carried out as per the project objectives.
6.	CSC&RI/MDU/FSN/COMMUNITY SCI./2024 /042 Formulation and evaluation of extruded products from pigmented and non-pigmented traditional rice landraces	Mar 2024 – Feb 2026	Dr. E. Tamilselvi Assistant Professor (FSN) CSC&RI, MDU	The research may be carried out as per the project objectives.
7.	CSC&RI/MDU/FSN/COMMUNITY SCI./2024 /027 Standardize the process parameters for development	Jan 2024 – Dec 2025	Dr. K. Shanthi Professor (FSN) CSC&RI, MDU	The research may be carried out as per the project objectives.

	of value-added products from bread fruit (*Artocarpus altilis*)			
8.	CSC&RI/CBE/FSN/COMMUNITY SCI./2024/055 Development of a test kit for identification of raw and parboiled rice based on physicochemical and microstructural analysis	May 2024 – April 2026	Dr. P. Geetha Professor (FSN) CPHT, AEC&RI, TNAU, CBE	The research may be carried out as per the project objectives.
9.	CSC&RI/CBE/FSN/COMMUNITY SCI./2024/054 Formulation of kodo millet incorporated sourdough bread	May 2024 – April 2026	Dr. P. Geetha, Professor (FSN) CPHT, AEC&RI, TNAU, CBE	The research may be carried out as per the project objectives.
10.	CSC&RI/FSN/COMMUNITY SCI./2014/011 Technology for retort processing of sugarcane juice	Dec 2023 - May 2024	Dr. V. Veeranan Arun Giridhari Assoc Prof (FSN), CPHT, AEC&RI, TNAU, CBE	The quality of the retort processed sugar cane juice may be analysed during storage period. The technology may be proposed for release.
11.	CSCRI/TRY/FSN/2020/001 Studies on physico chemical characteristics and its suitability in cooking of selected millets after parboiling and milling	Mar 2020 - Feb 2023	Dr. M. Marimuthu Assoc. Prof. (FSN)	The Completion report may be submitted immediately
12.	PMFME - Common Incubation Centre E28 AGL Establishing Common Incubation Centre for Dhal Processing and Fruits and Vegetables Processing" EFP)	2021 – 2026	Dr. S. Amutha Professor and Head (HDFS & FSN), CSC&RI, MDU	Work may be continued as per the objectives.
13.	DST-SHRI - Millet Programme E28 AJM Development of Nutritionally Fortified Millet based vegan Milk and Assessing its Bioavailability by *In vivo* Study. (EFP)	Dec 2023 – Dec 2025	Dr. S. Amutha Professor & Head (HDFS & FSN) Dr. K. Jothilakshmi, Assistant Professor (FSN)	Work may be carried out as per the objectives
14.	NRDC/AEC/CBE/PHT/2023/R001 Development of kodo millet beverage powder (EFP)	July 2023 – June 2024	Dr. P. Geetha, Professor (FSN) CSC&RI, MDU	The technology may be released / commercialized

Theme II Nutrition and Health

S. No.	Project Number & Title	Period	Project Leader	Remarks
15.	CSCRI/TSM/DEE/FSN/2022/001 Study on effect of thermal processing on phytochemicals and	May 2022 – April 2024	Dr. L. Karpagapandi Assoc. Prof. (FSN)	Study the effect of processing whether as raw juice, or in boiled form and its effect of the bitterness of

	antidiabetic properties of Bitter gourd and Athalakkai			the vegetable. Determine the health benefit of bitter gourd for its functional benefits, as beneficial for addressing hypercholesterolemia, hypertension and diabetes.
16.	CSC&RI/ MDU/ DEE&CM/CS/2022 /001 Study on assessment of glycemic index of selected rice landraces	June 2022 – May 2024	Dr. A. Kalaiselvan Assoc. Prof. (FSN)	The Glycemic index values of traditional rice land races are reported to be very low. The same may be rechecked and confirmed. It is advisable that the standard cooking quality procedures be followed to avoid erroneous results owing to difference in cooking procedures.
17.	CSCRI/MDU/FSN/2020/001 Empowerment of palmyrah growers of Tamil Nadu by Value addition of tuber from Palmyrah *(Borassus flabellifer)*	Nov 2019 – Oct 2022	Dr. K. Shanthi Professor (FSN)	Since palmyrah flour has antidiabetic activity, experimentations of blending palmyrah flour with yam flour at appropriate level may be taken up to develop a multigrain flour with scientifically proven hypoglycaemic effect. Further, it may be planned to carry out clinical testing for glycaemic index with yam at 30-40% level, validate and promote for commercialisation.
18.	CSC&RI/MDU/FSN/COMMUNITY SCI./2024 /036 Formulation of low-fat vegetable crispies to combat Non-Communicable Diseases (NCDs)	Mar 2024 – Feb 2026	Dr. R. Vijayalakshmi Professor & Head (FRM)	The testing for reduction in acrylamide content on baking of beetroot/okra chips may be estimated. Since okra mucilage is beneficial for diabetes, the hypoglycaemic effect of okra snacks may be studied.
19.	CSC&RI/MDU/COMMUNITY SCI./ 2024 /028 Formulation of antioxidant rich spread from gingelly and analysing its hypocholesterolemic effect	Mar 2024 – Feb 2026	Dr. V. Meenakshi Associate Professor (FSN)	The research may be carried out as per the objectives
20.	CSC&RI/MDU/COMMUNITY SCI./ 20234/287 Development of Elephant Foot yam (*Amorphophalus camanulatus*) diabetic	Sep 2023 – Sep 2025	Dr. K. Jothilakshmi Assistant Professor (FSN)	The myth that roots and tubers are not healthy for diabetics needs to be addressed. Develop a multigrain atta

	friendly composite flour mix			supplemented with elephant foot yam flour and palmyrah flour at optimum levels and compare the same with commercially available multigrain atta for quality characteristics and health benefits. Conduct cooking quality tests to reduce acridity of yam. The product may be commercialised.
21.	CSC&RI/MDU/FSN/COMMUNITY SCI./2023/ 213 Technologies for minimizing Sulphur and heavy metal content in Jaggery	Sep 2023 – Aug 2025	Dr. P.S. Geetha Professor and Head (DDAS)	The clarification of sugar cane juice for the purpose of making jaggery may be experimented using moringa seeds as clarification agent
22.	CSC&RI/MDU/FSN/COMMUNITY SCI./2023/279 Enhancing the market potential of low curcumin turmeric by developing nutraceutical foods	Oct 2023 – Sep 2026	Dr. G. Gurumeenakshi Professor (FSN) ICAR-KVK, Pongalur	The research may be carried out as per the objectives
23.	CSC&RI/VBN/FSN/COMMUNITY SCI./2024/038 Development of modified millet bran and exploring its application in the production of functional foods	Sep 2023 – Aug 2026	Dr. S. Jesupriya Poornakala Professor (FSN) ICAR-KVK, Vamban	The research may be carried out as per the objectives
24.	CSC&RI/MDU/FSN/COMMUNITY SCI./2023/280 Development and evaluation of lactogogues property rich food products from traditional rice	Oct 2023 – Sep 2026	Dr. G. Gurumeenakshi Professor (FSN) ICAR-KVK, Pongalur	The research may be carried out as per the objectives
25.	CSC&RI/NDM/FSN/COMMUNITY SCI/2023/130 Extraction of Virgin Coconut oil in selected TNAU and popular Coconut varieties and Enhancing Circular Economy by value addition of its by products	Jan 2023 - Jan 2025	Dr. S. Kamalasundari Associate Professor (FSN) DARS, Chettinad	The research may be carried out as per the objectives
26.	CSC&RI/MDU/FSN/Community Science/ 2023/154 Surface Electromyographic study of transplanting activity	June 2023 – May 2025	Dr. P. Parimalam Professor (FRM) CSC&RI, MDU	The research may be carried out as per the objectives
27.	CSC&RI/CBE/FSN/2020/003 Development of Immune boosting RUTF from Pulses,	Oct 2020 – Oct 2023	Dr. G. Gurumeenakshi Professor (FSN) ICAR-KVK, Pongalur	The technology may be proposed for release /commercialised

	Moringa/Amla for severely malnourished children			
28.	DR/P7/ASO/SDPC/TNSLURB/ CSC&RI/MDU/2021 Formulation of immune boosting – micronutrient rich soup cubes (EFP)	2021 - 2023	Dr. V. Meenakshi Assoc. Prof. (FSN)	Efforts may be taken to demonstrate the convenience of utilisation of the immune boosting soup cubes to the APC&PS, GoTN. Chekurmani is popularly revered as vitamin greens and not much in terms of phytochemical profiling. Hence, the vitamin profiling of chekurmani may be carried out.
29.	SDPC – TNSLURB, Chennai F36PP Development of Immune – Booster from Fruits, Vegetable and Herbs as Remedial for Viral Infections – A Novel Food Supplement (EFP)	2021 - 2024	Dr. V. Vani Professor (FSN) CSC&RI, MDU	The project completion report may be submitted
30.	Value addition research on healthy oil (Action Plan of 2023-24)	2023 - 2025	Dr. S. Kanchana, Dean (CSC), Dr. M. Ilamaran, Assoc. Professor (FSN) Dr. L. Karpagapandi, Assoc. Professor (FSN) Dr. D. Sugasini, Assistant Professor University of Illinois, USA	The optimum fatty acid composition of the standardised blended oil may be compared with commercially available oil/blended oil.

ICAR - AICRP on Women in Agriculture

S. No.	Project	Project period	Project leaders	Remarks
1.	AICRP on WIA	2023 - 2025	Dr. R. Vijayalakshmi, Prof. & Head (FRM&CS) Dr. J. Pushpa Prof. & Head (EECM) Dr. G. Sashidevi Prof. & Head (TSD) Dr. R. Saravanakumar Professor (FSN), Dept. of HD&FS Dr. S. Arokiamary Assoc. Prof. (FSN) Dept. of FSN, CSC&RI, Madurai	- The activities of the AICRP on WIA may be continued and the data needs to be presented to the policy makers. - Work related to gender mainstreaming of farm women should be projected. Highlight the areas which needs to be addressed like drudgery reduction, seed technology, *etc*. - Validate the perception of

				farm women towards climate change and related indigenous traditional knowledge practiced.

II Action plan 2024 - 2025 on the identified themes

S. No.	Name of the Scientist	Title of the Action plan proposed
1.	Dr. V. Veeranan Arun Giridhari, Associate Professor (FSN), CPHT, AEC&RI, TNAU, Coimbatore Dr. S. Karthikeyan, Professor and Head, CPHT, AEC&RI, TNAU, Coimbatore	Optimization of retort processing of Garlic & Ginger paste
2.	Dr. G.G. Kavitha Shree, Assistant Professor (FSN), CPHT, AEC&RI, TNAU, Coimbatore Dr. S. Karthikeyan, Professor and Head, CPHT, AEC&RI, TNAU, Coimbatore	Minimal processing and value addition of coconut sprout (*Coconut Haustorium*) based food products
3.	Dr. V. Vani, Professor (FSN), CPHT, AEC&RI, TNAU, Coimbatore Dr. S. Karthikeyan, Professor and Head, CPHT, AEC&RI, TNAU, Coimbatore	Formulation of fruit and pulse-based spread as an alternate butter
4.	Dr. S. Arokiamary, Assoc Professor (FSN), CSC&RI, Madurai Dr. R. Renuka, Professor (Biotech), TNAU, Coimbatore	Formulation of moringa seed cake incorporated food products
5.	Dr. J. Selvi, Assistant Professor (FSN), ICAR-KVK, AC&RI, Madurai Dr. T. Uma Maheswari, Assistant Professor (AGM), Dr. M.S. Swaminathan AC&RI, Eachangkottai, Thanjavur	Evaluation of different technology to enhance the microbial safety of selected spices
6.	Dr. K.P. Sivakumar, Asst Professor (FSN), CSC&RI, Madurai Dr. G. Amuthaselvi, Assistant Professor, Dept of Food Process Engineering, AEC&RI, TNAU, Coimbatore	Developing Ready-To-Eat foods from traditional rice varieties using Retort Packaging
7.	Dr. R. Saravanakumar, Professor (FSN), CSC&RI, Madurai Dr. C. Rajamanikam, Professor (Hort), HC&RI, Periyakulam	Value addition of spice processing industry by products
8.	Dr. S. Kamalasundari, Assoc. Prof (FSN) DARS, Chettinad	Nutrition specific interventions targeting critically ill patients and Development of

	Dr. Ramesh Kumar, ICMR-NIRT, Rajaji Medical College, MDU Dr. R. Vijayalakshmi, Professor & Head (FRM&CS), CSC&RI, Madurai	micro nutrient enriched composite mix

Action plan 1

Project title: Optimization of retort processing of Garlic & Ginger paste
Project leader: Dr. V. Veeranan Arun Giridhari, Associate Professor (FSN), CPHT, AEC&RI, TNAU, Coimbatore
Co Project leader(s): Dr. S. Karthikeyan, Professor and Head, CPHT, AEC&RI, TNAU, Coimbatore

Action Plan			
Objectives	**First Year (2024-2025)**	**Second Year 2025-2026**	**Expected outcome**
Objective 1 To optimize the process parameters for garlic and ginger paste	Preliminary treatments -Blanching with citric acid; Soaking in salt solution to retain colour. Optimizing level of acidulants (citric acid, tartaric acid, lemon juice and tamarind paste). Control- acetic acid. Process standardization**:** Pressure, Holding time and temperature	--	- Process optimization for ginger and garlic paste packaging under retort. - Promising chemical free processing technology. - Stabilize the market price and improves returns for farmers. - Increase the export potential.
Objective 2 To study the storage behavior of the developed products	--	Studying the pH, acidity, crude fibre, gingerol, allyl sulfide, anaerobic microbes and gas composition of the pack for every 15 days (6 months).	

Action Plan 2

Project title: Minimal processing and value addition of coconut sprout (*Coconut Haustorium*) based food products

Project leader: Dr. G. G. Kavitha Shree, Assistant Professor (FSN), CPHT, AEC&RI, TNAU, Coimbatore

Co Project leader: Dr. S. Karthikeyan, Prof. and Head, CPHT, AEC&RI, TNAU, Cbe

Action Plan			
Objectives	**First Year 2024-2025**	**Second Year 2025-2026**	**Expected outcome**
Objective 1 To optimize the minimal processing for potential coconut, sprout based food products.	Survey on consumer perception & market potentiality of coconut sprout food products (100 Nos). Optimization of minimal processing for potential coconut sprout based food products (Spray dried sprout milk powder, flavored sprout milk, Syruping of coconut sprouts, retort processed coconut sprouts)	--	- Increased production and consumption of coconut sprouts - Improved livelihoods for coconut farmers and processors - Enhanced food security and nutrition for consumers with a new product dimension.
Objective 2 To validate the nutritional profile and shelf life of the designed coconut sprout products.	Biochemical analysis, shelf-life parameters and nutrient analysis of the fresh and the developed coconut sprout products	Shelf life of the developed coconut sprouts food products will be studied for a period of six months.	
Objective 3 To study the health claim of the coconut sprouts to identify the antiulcer property.	Clinical trials to validate the health claim of the coconut sprouts to identify the antiulcer property		
Objective 4 To commercialize the developed coconut sprout products.	--	Commercialization of the developed coconut sprout products Impact analysis will be done among the participants and entrepreneurs.	

Action Plan 3

Project title: Formulation of fruit and pulse-based spread as an alternate butter

Project leader: Dr. V. Vani, Professor (FSN), CPHT, AEC&RI, TNAU, Coimbatore
Co Project leader(s): Dr. S. Karthikeyan, Prof. and Head, CPHT, AEC&RI, TNAU, Coimbatore

Action Plan			
Objectives	**First Year 2024-2025**	**Second Year 2025-2026**	**Expected outcome**
Objective I To standardize the vegan fruit and pulse-based spreads as an alternate to animal fat.	Standardization of vegan fruit and pulse-based spread with the combination of Avocado and White chick pea with rosemary an alternate to butter. Processed and packed using retort processing.	--	Development of vegan fruit and pulse-based spreads with the increased shelf life using plant-based ingredients with maintaining taste and texture and as a healthier alternate to animal fat for the benefit of consumers finding healthy alternatives of foods for maintaining good health.
Objective 2 To analyses the chemical and sensory parameters of vegan fruit and pulse-based spreads.	Analysis of physical, chemical, sensory and microbial quality of vegan fruit and pulse-based spread	--	
Objective 3 To study storability of the product packing with different packaging materials	--	Conducted storage study for developed vegan fruit and pulse-based spread under different storage temperature	

Action Plan 4

Project title: Formulation of moringa seed cake incorporated food products

Project leader: Dr. S. Arokiamary, Associate Professor (FSN), CSC&RI, Madurai
Co Project leader(s): Dr. R. Renuka, Professor (Biotech), TNAU, Coimbatore

Action Plan			
Objectives	**First Year 2024-2025**	**Second Year 2025-2026**	**Expected outcome**
Objective I To study the suitable pre-treatments to remove bitterness in	Studying suitable pre-treatments *viz.,* soaking, boiling, pressure cooking,	--	- It is planned to collaborate with EDI Periyakulam.

moringa seed cake (MSC)	soaking and boiling, soaking and pressure cooking		- FPO linkage will be created with M/s. Miracle Tree, Madurai - Utilization of waste for developing food products - Moringa seed oil extracting FPOs will get benefitted
Objective II To analyse anti-nutritional factors responsible for bitterness in raw and pre-treated MSC	Analysing the anti-nutritional factors in raw and treated samples	--	
Objective III To develop value added products by incorporating moringa seed cake	--	Developing food products by incorporating moringa seed cake (chapathi, rice momos and health mix). Shelf life studies	
Objective IV To study the physico-chemical characteristics of MSC and MSC incorporated food products	--	Studying the nutritional value of moringa seed cake incorporated food products	

Action Plan 5

Project title: Evaluation of different technology to enhance the microbial safety of selected spices

Project leader: Dr. J. Selvi, Ph.D., Assistant Professor (FSN), ICAR-KVK, AC&RI, Madurai

Co-Project leader: Dr. T. Uma Maheswari, Assistant Professor (AGM),
Dr. M. S. Swaminathan Agricultural College Research Institute, Eachangkottai, Thanjavur

Action Plan			
Objectives	**First Year 2024-2025**	**Second Year 2025-2026**	**Expected outcome**
Objective I To optimize the processing technology for selected spices	Optimization of process technology of selected spices (pepper, red chilli and coriander) by Conventional technology (Drying method - Sun drying) and Alternative preservation techniques (Irradiation, Stream treatments, Solar drying, Vacuum	--	- Reduces microbial loads - Prevents mycotoxin contamination - Improves the safety and enhance the quality of intermediate and final products

	drying, Freeze Drying)		
Objective II To validate the nutritional profile and shelf life of the selected spices	Physico chemical analysis (texture and colour values) and nutrient analysis of the selected fresh and processed spices will be studied.	--	
Objective III To study the microbial safety of selected spices.	--	Assessing the microbial safety of spices	
Objective IV To study the Storage stability of selected spices, product and assessing the economic feasibility of the developed products	--	Storage stability of the selected spice using different packaging technology and assessing the economic feasibility analysis will be studied Statistical analysis and validation. Submission of completion report	

Action Plan 6

Project title: Developing Ready-To-Eat foods from traditional rice varieties using Retort Packaging

Project leader: Dr. K.P. Sivakumar, Assistant Professor (FSN), CSC&RI, Madurai

Co-Project leader: Dr. G. Amuthaselvi, Assistant Professor, Department of Food Process Engineering, AEC&RI, TNAU, Coimbatore

Action Plan			
Objectives	**First Year 2024-2025**	**Second Year 2025-2026**	**Expected outcome**
Objective I Standardization of cooking quality of Chithrakar, Thuyamalli, Kattuyanum and Kullakar traditional rice landraces	Assessment of cooking quality gelatinization temperature, alkali value, Gel consistency Water Uptake Ratio, Volume Expansion Ratio, Dispersed solids on soaking in water, soaking in boiling water, Partial cooking of selected rice.	--	- Utilization of traditional rice varieties - Reduction in cooking time. - Promotion of traditional rice varieties through convenience foods. - Introduction to different food establishments (Railways, Airlines, Military,
Objective II Optimization of process parameter	Development of lemon rice, veg. biryani, pongal and tomato rice.	--	

for retort packaging of standard recipes from selected rice varieties	Standardization of process parameters for retort processing of the developed variety rice samples.		Emergency ration)
Objective III Quality evaluation and storage studies of retort packed rice.		Quality evaluation and product shelf-life testing Analysis of Chemical constituents: Carbohydrate, protein, Antioxidant activity, fibre, iron and calcium. Sensory evaluation & Microbial Analysis	

Action Plan 7

Project title: Value addition of spice processing industry by products
Project leader: Dr. R. Saravanakumar, Professor (FSN), CSC&RI, Madurai
Co-Project leader: Dr. C. Rajamanikam, Professor (Hort), HC&RI, Periyakulam

Action Plan			
Objectives	**First Year 2024-2025**	**Second Year 2025-2026**	**Expected outcome**
Objective I Analyzing the nutritional composition and bio active compounds in selected spice spent (Turmeric, pepper and ginger)	Assessing proximate components - Moisture, carbohydrate, Protein, Fat, Fibre, Minerals - Calcium, phosphorus, iron, potassium, Bio active compounds – Turmeric (turmerone and curcumenoids), Pepper – (Phenolic compounds, capsaicin, carotenoids and anthocyanin) and Ginger – (ginderols and shogaols)	--	- Development of functional foods - Bio waste into value added products - Saving the expenditure being spent for disposal of the spice processing industries waste - Available at low cost throughout the year
Objective II Standardization of functional foods using spice spent	Standardization of functional foods by incorporating spice spent - Bakery products - Cookies, cakes, Extruded products – noodles, Ready mixes – Health mix/ Nutrimix Analysing the proximate composition, bioactive compounds present in standardized products	--	

Objective III Analyzing the physico - chemical, microbial and sensory characteristics of the functional foods during storage	--	Studying the Physico chemical characteristics of functional foods during storage Assessing the sensory and microbial quality of the functional foods	

Action Plan 8

Project title: Nutrition specific interventions targeting critically ill patients and Development of micro nutrient enriched composite mix

Project leader: Dr. S. Kamalasundari, Assoc. Prof (FSN) DARS, Chettinad

Co-Project leader(s): Dr. Ramesh Kumar, ICMR-NIRT, Rajaji Medical College, Madurai, Dr. R. Vijayalakshmi, Professor & Head (FRM&CS), CSC&RI, Madurai

Action Plan			
Objectives	**First Year 2024-2025**	**Second Year 2025-2026**	**Expected outcome**
Objective I To improve health, nutrition through Nutrition-specific and nutrition-sensitive interventions in critically ill patients	Assessment of nutritional status of the critically ill patients Develop baseline data on their physical health To develop simplified field chart	--	- The chart enables the estimation of the desirable body weight without the use of any calculation in field situation - Diet Counselling and the standardized diet mix will promote reduction in mortality related to critical illness - The standardized diet mix will promote reduction in rates of adverse drug events and promotes reduction in rates of relapse.
Objective II To provide guidance on Identifying the gap between food intake and deficiency of nutrients	Dietary survey and identify the intake of Protein, Calcium, zinc, selenium, iron, copper, folic acid, and vitamins A, B2, B6, C, D and E based on the RDA	--	
Objective III To standardize simple and affordable Ready to use mixes	--	Develop Ready mixes combination of cereal (traditional rice), protein source (pulses, animal protein), vegetable source (curry leaves /moringa/amla/dry fruits) micronutrients (Vitamin C, iron, zinc and selenium)	

III Technologies for Commercialization / Release

1. Cashew blended RTS beverage
2. Ready to Eat (RTE) Protein enriched milk based sweet dumplings
3. Jackfruit conserve
4. Retort processed sugar cane juice
5. Avocado powder
6. Diabetic friendly bitter gourd based *idli karapodi* and *parrupu podi*
7. Palmyrah *puttu* mix
8. Elephant foot yam based multigrain composite flour mix
9. Immune Boosting Ready to Use Therapeutic Food (RUTF)

IV. Remarks

- The application of tamarind seed kernel as food additive and its prospects for industrial utilization may be explored.
- The feasibility and safety of utilisation of mango seed kernel for human consumption may be studied.
- Research on value addition of millet waste by-products may be carried out.
- The products and technologies developed at CSC&RI may be popularized to reach the stakeholders.
- The food certification process may be combined with the NABL Accredited Laboratory of CPHT, AEC&RI, TNAU, Coimbatore.
- Efforts may be taken to intensify research on value addition of agricultural and horticultural crops to improve the income and livelihood of farmers.
- Research may be intensified towards development of nutritious food products.
- Healthy Multigrain Atta may be developed and efforts may be taken to fix an attractive brand name for commercialization through industries.
- Commonly consumed traditional foods may be categorised based on the glycaemic index values and the same may be documented to create awareness on healthy eating habits among the general public.
- Research may be intensified towards development of functional foods to address Diabetes mellitus and Cardiovascular diseases.
- With regard to developing agricultural tools to reduce drudgery of farm women, the scientist concerned may work in collaboration with the Agricultural Engineers to fabricate machinery to minimise drudgery.
- SOPs may be developed for specific foods/food products to minimise hazards and enhance product quality and credibility for export purpose.
- Entrepreneurship Development Workshop may be arranged for the students in collaboration with the Director, ABD and MABIF to inculcate entrepreneurial activities.
- Food products without preservatives or other additives with focus on safe, healthy, nutritive values may be developed.
- Research on development of Smart package film may be carried out
- All the scientists are encouraged to propose externally funded projects and publish articles in Scopus indexed journals / > 7 NAAS rated Journals

V. List of Participants

S. No.	Name	Designation and Department
1.	Dr. M. Raveendaran	Director of Research, TNAU, Coimbatore
2.	Dr. S. Kanchana	Dean, CSC&RI, Madurai
3.	Dr. S. Amutha	Prof. & Head, HD&FS, CSC&RI, Madurai
4.	Dr. S. Karthikeyan	Prof. & Head, PHTC, TNAU, Coimbatore
5.	Dr. R. Vijayalakshmi	Prof. & Head, FRM&CS, CSC&RI, Coimbatore
6.	Dr. J. Pushpa	Prof. & Head, Women in Agriculture, CSC&RI, Madurai
7.	Dr. P.S. Geetha	Prof. & Head (DAS), CSC&RI, Madurai
8.	Dr. G. Sashidevi	Prof. & Head, TSD, CSC&RI, Madurai
9.	Dr. K. Geetha	Prof. & Head (FSN), Horticulture, ADAC&RI, Trichy
10.	Dr. P. Jeyaseelan	Professor (Agrl. Extn.), EE&CM, CSC&RI, Madurai
11.	Dr. P. Parimalam	Professor, FSN, CSC&RI, Madurai
12.	Dr. G. Hemalatha	Professor, FSN, CSC&RI, Madurai
13.	Dr. G. Gurumeenakshi	Professor (FSN), KVK, Pongalur
14.	Dr. P. Geetha	Professor (FSN), CPHT, AEC&RI, Coimbatore
15.	Dr. K. Shanthi	Professor (FSN), CSC&RI, Madurai
16.	Dr. V. Vani	Professor (FSN), CPHT, AEC&RI, Coimbatore
17.	Dr. R. Saravanakumar	Professor (HDFS), CSC&RI, Madurai
18.	Dr. S. Kannan	Professor (FSN), KVK, Vridhachalam
19.	Dr. B. Sivasankari	Professor (Maths), Agrl. Economics, AC&RI, Madurai
20.	Dr. P. Vellaichamy	Professor (Tamil), O/o. The Dean, CSC&RI, Madurai
21.	Dr. K. Ramakrishnan	Professor (Extension), AC&RI, Madurai
22.	Dr. N. Balakrishnan	Professor (Ento.), O/o. DR Office, TNAU, Coimbatore
23.	Dr. C. Babu	Professor (PBG), O/o. DR Office, TNAU, Coimbatore
24.	Dr. B. Nallakurumban	Assoc. Professor (FSN), KVK, Aruppukottai
25.	Dr. S. Arokiamary	Assoc. Professor (FSN), CSC&RI, Madurai
26.	Dr. L. Karpagapandi	Assoc. Professor (FSN), FRM&CS, CSC&RI, Madurai
27.	Dr. S. Kamalasundari	Assoc. Professor (FSN), DARS, Chettinad
28.	Dr. V. Meenakshi	Assoc. Professor (FSN), CSC&RI, Madurai
29.	Dr. M. Ilamaran	Assoc. Professor (FSN), CSC&RI, Madurai
30.	Dr. A. Kalaiselvan	Assoc. Professor (FSN), EE&CM, CSC&RI, Madurai
31.	Dr. P.K. Padmanathan	Assoc. Professor, FMPE, AEC&RI, Coimbatore
32.	Dr. V. Veeranan Arun Giridhari	Assoc. Professor (FSN), CPHT, AEC&RI, Coimbatore
33.	Dr. G. Amuthaselvi	Asst. Professor (FPE), AEC&RI, Coimbatore
34.	Dr. J. Selvi	Asst. Professor (FSN), KVK, Madurai
35.	Dr. A. Vijayakumar	Asst. Professor, KVK, Ramanad
36.	Dr. K.P. Sivakumar	Asst. Professor, CSC&RI, Madurai
37.	Dr. K. Tamilselvi	Asst. Professor (FSN), TS&D, CSC&RI, Madurai
38.	Dr. T. Anitha	Asst. Professor (Biochemistry), HC&RI, Periyakulam

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