

TAMIL NADU AGRICULTURAL UNIVERSITY

PROCEEDINGS

10th Scientists Meet on Community Science (May 2-4, 2023)

Lead Center

Community Science College & Research Institute
Madurai-625 104

Directorate of Research

Tamil Nadu Agricultural University
Coimbatore 641 003

2023

PROCEEDINGS
10th Scientists Meet on Community Science
(2-4 May, 2023)

The 10th Scientists Meet on Community Science was held at Tamil Nadu Agricultural University, Coimbatore from 02.05.2023 to 04.05.2023. The Technical review meeting was conducted on 02.05.2023 and 03.05.2023 at AEC&RI, TNAU, Coimbatore and Dr. S. Kanchana, Dean, CSC&RI and Dr. M. Raveendran, Director of Research, TNAU, Coimbatore reviewed the progress on of University Research Projects, Action Plans and Action taken on the recommendations of 9th Scientists Meet on Community Science.

The concluding session held on 04.05.2023 at Seminar Hall I was chaired by **Dr. V. Geethalakshmi**, Vice-Chancellor, TNAU, Coimbatore. The Vice Chancellor insisted to motivate the students towards developing entrepreneurial skills. It was suggested to take necessary steps to popularize the released products to the stake holders. Madam emphasized the need for commercialization and patenting of products wherever possible. It was suggested to utilize the Agricart platform for commercialization of our products.

Dr. M. Raveendran, Director of Research, TNAU, Coimbatore in his opening remarks, urged the Scientists working in Community Science to focus on developing health products and immune boosters as the need for them was increased among the stakeholders post COVID 19. The need for developing multi-flour using Elephant foot yam powder was stressed upon.

Dr. S. Kanchana, Dean, CSC&RI, Madurai presented the action taken report, Research highlights and Action plan for 2023-24.

Dr. P. Rajkumar, Dean (Engg.), AEC&RI, Kumulur proposed a formal vote of thanks.

The proceedings of the 10th Crop Scientists' Meet on Community Science 2023 are furnished under the following headings:

- I. Remarks on the ongoing University Research Projects**
- II. Action plan 2023-2024**
- III. Technologies for commercialization**
- IV. Remarks**
- V. List of Participants**

I. Remarks on the ongoing University Research Projects

S. No.	Project Number and Title	Name of the Scientists	Duration	Remarks
1.	CSCRI/MDU/FSN/2020/001- Development of value-added products from Palmyrah tuber (<i>Borassus flabellifer</i>)	Dr. K. Shanthi Professor (FSN)	Nov2019- Oct2022	<ul style="list-style-type: none"> Completion report of the project to be submitted and the scientist is requested to work with the scientist of AC&RI, Killikulam for commercialization/Popularization. New URP to be proposed based on the proceedings of Think Tank and 86th ASEOC
2.	CSCRI/CBE/FSN/2020/001 Extraction and encapsulation of betel (<i>Piper betle L.</i>) leaves extract and preparation of value-added products.	Dr. P. Geetha Professor (FSN)	Aug.2020- July 2022	<ul style="list-style-type: none"> Completion report of the project to be submitted and Betel leaf incorporated skim milk powder to be patented and the student entrepreneurial activity to be taken up for the betel leaf incorporated products. New URP to be proposed based on the proceedings of Think Tank and 86th ASEOC.
3.	CSCRI/MDU/FSN/2020/003 Exploitation of under-utilized pulses to achieve nutritional security.	Dr. E. Tamilselvi, Asst. Prof. (FSN)	June 2020 - May 2022	<ul style="list-style-type: none"> Completion report of the project to be submitted. The scientist involved is instructed to commercialize the product in consultation with Director (ABD). New URP to be proposed based on the proceedings of Think Tank and 86th ASEOC.
4.	CSC&RI/CBE/FSN/200/004 Standardization of the Process for Novel Flavor Retained High Value Jackfruit Products	Dr. G. Gurumeenakshi Professor and Head (FSN)	Oct20- Sept22	<ul style="list-style-type: none"> Completion report of the project to be submitted. Low GI products to be developed and validated. Commercialization of the product to be carried out in consultation with Director (ABD). New URP to be proposed based on the proceedings of Think Tank and 86th ASEOC.
5.	URP2020/0147CSCRI/TRY/FSN/2020/001 Studies on physico-chemical characteristics and its suitability in cooking of selected millets after parboiling and milling	Dr. M. Marimuthu Assoc. Professor (FSN)	Mar.20- Mar.22	<ul style="list-style-type: none"> Completion report of the project to be submitted. The scientist is instructed to submit the completion report with a Publication in NAAS rated journal above 6.0. New URP to be proposed based on the proceedings of Think Tank and 86th ASEOC.
6.	CSC&RI/CBE/FSN/2020/003 Development of Immune boosting RUTF from pulses, moringa/amla for severely Malnourished Children	Dr. G. Gurumeenakshi Professor and Head (FSN)	2020-2022	<ul style="list-style-type: none"> Completion report of the project to be submitted. Commercialization /Patenting of the product to be taken up. New URP to be proposed based on the

				proceedings of Think Tank and 86 th ASEOC.
7.	CSCRI/PKM/FSN/2020/001 Studies on the formulation of value-added products from red colour Manila Tamarind (<i>Pithecellobium dulce</i>) var. PKM2 Under commercial Exploitation	Dr. V. Vani Assoc. Professor (FSN)	Jan20- Dec23	<ul style="list-style-type: none"> Necessary steps to be taken up for the commercialization of the technology in consultation with Director (ABD).
8.	CSCRI/CTN/FSN/2020/001 Application of Response Surface methodology for Optimization of Process parameters for Edible coating of jackfruit bulbs (<i>Artocarpus heterophyllus</i> L.)	Dr. S. Jesupriya Poornakala Assoc. Professor (FSN)	01.2.20- 31.1.23	<ul style="list-style-type: none"> Completion report of the project to be submitted. The scientist is instructed to submit the completion report with a Publication in NAAS rated journal above 6.0 and the technology is proposed for UVTRC technology release 2023. New URP to be proposed based on the proceedings of Think Tank and 86th ASEOC.
9.	CSCRI/PKM/FSN/2020/001 Formulation of value enriched Expanded RTE products from Germinated millets.	Dr. V. Meenakshi Assoc. Prof (FSN)	2021 - 2023	<ul style="list-style-type: none"> The completion report of the project to be submitted along with publication in NAAS above 7.0. New URP to be proposed based on the proceedings of Think Tank and 86th ASEOC.
10.	CSC&RI/MDU/HDFS/CS/2022/001 Immunity boosting products from underutilized west Indian cherry (<i>Malpighia glabra</i> L; <i>Barbados cherry</i>)	Dr. G. Sashidevi Professor (FSN)	2021 - 2023	<ul style="list-style-type: none"> The completion report of the project to be submitted along with publication in NAAS above 7.0. New URP to be proposed based on the proceedings of Think Tank and 86th ASEOC.
11.	SDPC/HCRI/PKM/PHT/2021/R/001 Development of Immune-booster from fruits, vegetables and herbs as remedial for viral infections - A novel food supplement	Dr. V. Vani Associate Professor (FSN)	2020 -2023	<ul style="list-style-type: none"> Student entrepreneurial activity on Immune boosting powders / drink to be taken as commercial venture. The completion report of the project along with publication in NAAS above 7.0 is requested.
12.	DR/P7/SPDC/TNSLURB/CSC&RI/MDU/2021 Formulation of Immune Boosting - Micronutrient Rich Soup Cubes	Dr. V. Meenakshi Associate Professor (FSN)	2021 - 2023	<ul style="list-style-type: none"> Vitamin profiling of <i>chekkurumani</i> to be completed and the technology to be submitted for Technology release UVTRC Meet 2023.
13.	CSC&RI/CBE/PHTC/ HOR/2021/001: Leaf extraction from Karpuravalli (<i>Coleus aromaticus</i>) and its value-added products	Dr. P. Geetha Professor (FSN)	2021 - 2023	<ul style="list-style-type: none"> The completion report of the project to be submitted along with publication in NAAS above 7.0. New URP to be proposed based on the proceedings of Think Tank and 86th ASEOC.
14.	CSC&RI/MDU/HDFD/NON/2021/001 Formulation of value-added foods from Avocado	Dr. K. Jothilakshmi Asst. Prof. (FSN)	2021-2023	<ul style="list-style-type: none"> Student entrepreneurship to be taken for Avacado value added products.

15.	CSCRI/TSM/DEE/FSN/2022/001 Study on effect of thermal processing on phytochemicals and antidiabetic properties of Bitter gourd and <i>Athalakkai</i>	Dr. L. Karpagapandi, Associate Professor (FSN)	2022 - 2024	<ul style="list-style-type: none"> The scientist in-charge is informed to work with the Horticultural Scientist for systematic cultivation and value addition.
16.	CSC&RI/ MDU /DE E&CM / CS / 2022 / 001 Study on glycemic index rice land races of Tamil Nadu	Dr. A. Kalaiselvan Assist. Professor (FSN)	2022- 2024	<ul style="list-style-type: none"> The scientist is instructed to develop suitable product and for the assessment of Glycemic index.
17.	CSC&RI/MDU/FRM&CS/2022 /001 Formulation and Evaluation on Cashew Apple Blended RTS Beverage	Dr. S. Kannan Professor (FSN)	2022- 2024	<ul style="list-style-type: none"> Product with Low sugar content to be developed from Cashew apple. The scientist is instructed to take up the product for Commercialization.
18.	ADAC&RI/TRY/HOR/FSN/2023 /001- Retort Process Modeling for RTE Protein Enriched Milk based Sweet Dumpling	Dr. K. Geetha, Prof. and Head Dr. M. Ilamaran, Assoc. Prof. (FSN)	Feb 2023- March 2025	<ul style="list-style-type: none"> The scientist is informed to carry out the work as per the objectives.
19.	Establishment of Common Incubation Centre for Dhal processing, fruit and vegetable processing	Dr. S. Amutha, Professor and Head (HD&FS)	Oct. 2021- Sept.2026	<ul style="list-style-type: none"> The scientists involved in the PMFME Scheme appreciated for their work and the unit may be effectively utilized for revenue generation.
20.	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 (Extended till 2022)	<ul style="list-style-type: none"> The scientists involved in the Scheme are appreciated for the work.
21.	AICRP on Women in Agriculture	Dr. S. Kanchana, Dean (CSC)	2021-2026	<ul style="list-style-type: none"> The scientists involved in AICRP activities are instructed to work as per the objectives.

II. Action plan for 2023-2024 on the identified themes

S. No.	Name of the Scientist	Title of the Action plan proposed
1.	Dr. K. Jothilakshmi, Asst. Professor (FSN) Dr. M. L. Mini, Assoc. Professor (Bio Chem.)	Development of Elephant foot yam (<i>Amorphophalus campanulatus</i>) Diabetic Friendly composite flour mix
2.	Dr. P S. Geetha, Professor and Head (DDAS) Dr. P. Kannan, Associate Professor (SS&AC)	Technologies for minimizing Sulphur and heavy metal content in Jaggery
3.	Dr. S. Kanchana, Dean Dr. M. Ilamaran, Dr. L. Karpagaandi, Assoc. Professor & Dr. D. Sugasini, Assistant Professor, University of Illinois, USA	Value addition research on health oil may be taken up
4.	Dr. G. Gurumeenakshi, Prof. and Head (FSN) Dr. R. Saravanakumar, Prof. and Head, Dept. of TSD, CSC&RI, Madurai	Development and Evaluation of high value turmeric products
5.	Dr. V. Meenakshi, Assoc. Professor (FSN) Dr. M. L. Mini, Associate Professor (Bio Chem.) Dr. Chithamparanathan, Vice Principal, KM College of Pharmacy	Formulation and efficacy testing of blended Oil from millet bran and rice bran
6.	Dr. G. Hemalatha, Professor Dr. T. Uma Maheshwari, Asst. Prof (AGM) Scientist - Central Institute of Packaging Technology, Madurai	Development of pH responsive smart packaging film from selected bio-colours as food quality indicators
7.	Dr. R. Saravanakumar, Professor and Head (TSD)	Processing of underutilized fibers for value addition.
8.	Dr. G. Gurumeenakshi, Professor and Head (FSN)	Efficacy of Traditional rice for its lactogogues properties
9.	Dr. P S. Geetha, Professor and Head (DDAS)	Formulation of Millet and therapeutic rice-based snack bar to combat diabetes
10.	Dr. K. Shanthi, Professor (FSN)	Standardize the process parameters for development of value-added products from bread fruit (<i>Artocarpus altilis</i>)

Project title: Development of Elephant foot yam (*Amorphophalus campanulatus*) Diabetic Friendly composite flour mix

Project leaders:

Dr. K. Jothilakshmi. Asst. Prof. (FSN.), Dept. of Human Development and Family Studies, CSC&RI, Madurai.

CO- PI: Dr. M. L. Mini, Assoc. Prof. (Bio Chem.), Dept. of Biotechnology, AC&RI, Madurai.

Objectives	First year (2023- 2024)		Out come
	0-6 Months	7- 12 months	
Analyze the Nutritional and Therapeutic profile of Elephant Foot Yam flour To substitute elephant foot yam flour in development of low glycemic functional foods	<ul style="list-style-type: none"> • Identification of suitable pretreatments to prevent the browning and acidity during processing. • Development of low glycemic functional foods with different combination of elephant foot yam flour • Study the nutritional and therapeutic value through <i>in vivo</i> 		Elephant foot yam composite flour mix as health food which can be recommended in management of diabetes mellitus.
To study the shelf life of selected yam based functional foods		Analyze the shelf life of the developed function foods and to study the hypoglycemic effect of selected functional food	

Project Title: Technologies for minimizing Sulphur and heavy metal content in Jaggery.

Project Leader: Dr. P S. Geetha, Professor and Head (DDAS)

ACTION PLAN			
Objectives	First year	Second year	Expected outcome
	2023-2024	2024-2025	
Objective I To determine heavy metal contamination and to reduce the sulphur content in jaggery	Identifying the natural plant mucilage clarificants which will alter the physical and chemical properties of jaggery	<ul style="list-style-type: none"> • Assessing the physical and chemical properties of developed clarificants • Assessing the physical and chemical properties of treated sugarcane juice and jaggery • Assessing the heavy metal contamination in Jaggery 	In Jaggery manufacturing sodium hydrosulphite (hydros) is indiscriminately used for juice clarification beyond recommended limits (35 g hydros/1000 l Juice) for clarification of cane juice to impart light. Hence plant based clarificant is needed to reduce sulphur content and to prevent the loss of sucrose through oxidation process.

<p>Objective II To prepare ready to use vegetative clarificant powder to act as a chelating agent against heavy metals</p>	<ul style="list-style-type: none"> • Preparation of ready to use vegetative clarificant powder using plant mucilage as clarificants from <i>Hibiscus esculentus</i> (bhindi), Aloe vera, flax seeds (<i>Linum usitatissimum L.</i>), • Testing and standardizing the suitable chelating natural polymers. 	<p>Develop phytoclarificants will be popularized among the jaggery producers</p>	<p>The vegetative clarificant will act both as the chelating agent for heavy metals and also reduce the sulphur content</p>
<p>Objective III To identify the suitable pretreatment of the sugarcane juice to improve the color and to reduce the oxidation of sucrose content.</p>	<ul style="list-style-type: none"> • Standardizing the suitable technique for pretreatment of the sugarcane juice to improve the color • Treatment with ascorbic acid and citric acid to reduce the sulfur content • Effect of adsorbent in combination with acidulants • Carbonating by adding carbon dioxide and mixing inert gasses like nitrogen to reduce the poly phenol oxidase 	<p>Suitable pretreatment methods to reduce the change of color in jaggery so as to reduce sulphur content</p>	<p>This study will be an advantage to the sugar producers while plant based clarificants and natural antioxidants will be nontoxic, biodegradable, can be obtained from renewable resources and their applications are directly related to the improvement of quality of life for underdeveloped communities</p>

Project: Value addition research on healthy oil may be taken up

Project team: Dr. S. Kanchana, Dean, Dr. M. Ilamaran, Dr. L. Karpagaandi, Assoc. Professor & Dr. D. Sugasini, Assistant Professor, University of Illinois, USA

Objectives	First year 2023-2024	Second year 2024-2025	Expected outcome
	<p>Objective I Standardizing the blending of oils in different combinations and studying the physio chemical properties of blended oil</p>	<ul style="list-style-type: none"> • Selection of oil (refined and unrefined) and blending of oil at 10%, 20%, 30%, 40% & 50%. • Assessing the iodine value, saponification value and free fatty acid profile. 	

<p>Objective II Interesterification of oil with enzymes and studying its quality characteristics and scientific validation of the retention of properties by in-vivo studies</p>		<ul style="list-style-type: none"> Enzymes will be used for interesterification and assessing the free fatty acid profile and also the SMP ratio. Animal experiments will be conducted to assess the quality parameters and fatty acid profile 	Healthy oil with good SMP ratio of 1:1.2:1
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Project Title: Development and Evaluation of high value turmeric products

Project Leader: Dr. G. Gurumeenakshi, Professor and Head (FSN)

Co-PI: Dr. R. Saravanakumar, Professor and Head, Dept of TSD, CSC&RI, Madurai

Objectives	First year 2023-2024	Second year 2024-2025	Expected outcome
	<p>Objective I To develop and evaluate turmeric paste from different turmeric varieties.</p>	<ul style="list-style-type: none"> Screening of different turmeric varieties based on its curcumin content Standardization of Turmeric paste production Selection of suitable packaging material 	
<p>Objective II To develop and evaluate turmeric based beverages.</p>	<ul style="list-style-type: none"> Standardization of turmeric latte Turmeric based herbal squash/RTS/Concentrate 	Quality analysis, Shelf-life studies, Retention studies of the medicinal properties turmeric in the developed products Cost economics Commercialization Publications	<ul style="list-style-type: none"> A niche market product from turmeric suitable for niche market will be obtained. Improvement of value chain of turmeric Market potential of even low curcumin turmeric will also be improved.
<p>Objective III To develop and evaluate curcumin incorporated functional foods</p>	Standardization of RTE/ RTC Millet products, Bakery products, smart snack foods incorporated with encapsulated curcumin powders	Quality analysis, Shelf-life studies, Retention studies of the medicinal properties turmeric in the developed products Cost economics Commercialization Publications	Therapeutic/ smart snack foods will be obtained. Improvement of value chain of turmeric

Project title: Formulation and efficacy testing of blended Oil from millet bran and rice bran

Project leader: Dr. V. Meenakshi, Assoc. Professor (FSN)

Co- PI: Dr. L. Mini, Assoc. Professor (Bio Chem.) Dept. of Bio Technology, AC&RI, Madurai

Objectives	2023-24	2024-2025	Expected outcome
Objective 1 Standardization of process parameters for the extraction of oil from millet bran	<ul style="list-style-type: none"> Studying the proximate composition of Millet and rice bran - protein, fat, fiber, moisture and ash Standardization of process parameters for the extraction of oil from millet bran – Solvent extraction 	--	<ul style="list-style-type: none"> Utilization of bran for value addition Functional oil with health benefits Suitable for Millet processor for commercialization
Objective 2 Blending and quality evaluation of blended Millet bran and Rice bran	Blending and Studying the Quality characteristics of Different ratios of blended oil, Millet bran Oil and Rice bran oil Physiochemical properties <ul style="list-style-type: none"> Smoke point Frying temperature, Viscosity Specific gravity, refractive index Iodine value, Peroxide value Free fatty acid value, Saponification value Fatty acid profile, amino acid profile natural antioxidants and radical scavenging activity. 	--	
Objective 3 Studying the hypo cholesterolic effect of Millet and Rice bran blended oil through <i>in-vivo</i> models	--	Studying the hypo cholesterolic effect of Millet and Rice bran blended oil through <i>in-vivo</i> models	

Project Title: Development of pH responsive smart packaging film from selected bio-colours as food quality indicators

Project Leader: Dr. G. Hemalatha, Dept. of Food Policy & Public Health Nutrition

Co-PI: Dr. T. Uma Maheshwari, Asst. Prof (AGM), ADAC&RI, Trichy, Scientist - Central Institute of Packaging Technology, Madurai

Objectives	First year	Second year	Expected outcome
	2023-2024	2024-2025	
Objective I Optimizing methods for extraction of natural colorants from selected plant	<ul style="list-style-type: none"> Selection of plants sources for extraction of biocolours namely Betanins from beet root (<i>Beta vulgaris</i>), Bixin or annatto from (<i>Bixa orellana</i>), anthocyanins 		Standardization of extraction technique and assessing the yield of selected

sources.	<p>from purple onion peel (<i>Allium cepa</i>) and chlorophyll extracts from moringa leaf (<i>moringa oleifera</i>), tree lettuce (<i>Pisonia alba</i>) extracts etc.,</p> <ul style="list-style-type: none"> • Identification of suitable solvent for colour extraction and extraction method. • Optimizing extraction techniques of biocolours (choice of solvent, time and temperature of extraction) for maximizing yield of biocolours by RSM and ANN. 		biocolorant using the identified solvent.
<p>Objective II Characterization of natural colorants from selected sources</p>	<ul style="list-style-type: none"> • Qualitative and quantitative analysis of the extracted biocolorants. • Testing the pH responsiveness of the biocolorant to different pH range (pH-2-12). • Studying the antibacterial activity and antioxidant activity of the selected bio-colorants 		<ul style="list-style-type: none"> • Correlation of pH responsiveness to food safety parameters of selected food products. • Antibacterial activity and antioxidant activity of the biocolorants as shelf-life enhancers
<p>Objective III Development of functional and pH responsive indicator film.</p>		<ul style="list-style-type: none"> • Identification of suitable biopolymer for developing the smart packaging film. • Incorporation of the selected biocolorant into the biopolymer and development of the biopolymer-biocolorant embedded composite film • Characterization and study of the properties of functional biopolymer - Surface morphology, Surface colour and optical properties - measuring light absorbance spectra and transmittance of the film. Thermal stability, Mechanical properties – Film thickness, tensile strength Oxygen permeability and water permeability 	Development of smart/ intelligent packaging film.

Validation of the functional biopolymer as smart packaging options.		<ul style="list-style-type: none"> • Study of the halochromic smart packaging film for pH responsiveness during storage of selected foods. • Shelf-life prediction of selected foods packed in the developed halo chromic smart packaging film. 	Development of pH responsive food safety indicator for selected food products. Publication in high impact factor journals.
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Project title: Processing of underutilized fibers for value addition

Project Leader: Dr. R. Saravanakumar, Professor and Head (TSD)

Objectives	First year	Second year	Expected outcome
	2023- 2024	2024-2025	
<p>Objective I To extract and process the underutilized fibres for product diversification</p> <p>Objective II To study the physico – chemical properties of fibres for value addition / textile applications</p> <p>Objective III To develop textile /composite structures from underutilized fibres</p>	Extraction and processing of the underutilized fibres Analysing the quality parameters of the fibres	<ul style="list-style-type: none"> • Designing and development textile/composite structures from underutilized fibers • To evaluate the structural and physical parameters of developed structures. 	<ul style="list-style-type: none"> • Subsidiary income to the farmers from underutilized weed plant • Standardized method of fiber extraction method will support farmers / SHGs to take up fiber extraction activity during off seasons • Support for the textile industries, handloom boards and processing industries for processing the particular fiber • The low-cost fiber will also reduce the demand for cotton in future

Project Title: Standardize the process parameters for development of value-added products from bread fruit (*Artocarpus altilis*)

Project team- PI: Dr. K. Shanthi, Professor (FSN), CSC&RI, Madurai

S. No.	Objectives	Activities		Expected outcome
		First Year (2023-2024)	Second year (2024-2025)	
1.	<ol style="list-style-type: none"> 1. To standardize the techniques for processing of bread fruit 2. To study the shelf life, chemical and sensory characteristics of the developed products 	Standardizing the techniques for processing of bread fruit products (dehydrated slice, flour and bread fruit flour incorporated products).	<p>Studying the shelf life, chemical and sensory characteristics of the developed products during storage</p> <ol style="list-style-type: none"> 1. Chemical characters- Moisture, TSS (°B), pH, acidity (g), total sugars (g), reducing sugars(g), ascorbic acid (mg), crude fiber and protein 2. Sensory characters 3. Microbial load - 4. Cost analysis of product will be done 	<ul style="list-style-type: none"> • Process for the new product with high protein • Market potential of bread fruit will be increased. • New venture for jackfruit processing industry for domestic and overseas market.

Project Title: Efficacy of Traditional rice for its lactogogues properties

Project Leader: Dr. G. Gurumeenakshi, Professor and Head (FSN)

ACTION PLAN			
Objectives	First year	Second year	Expected outcome
	2023-2024	2024-2025	
<p>Objective I To analyze the nutritional and nutraceutical, lactogogues properties in traditional rice.</p> <p>To develop good cooking practices for traditional rice</p>	<ul style="list-style-type: none"> • Screening of different traditional rice varieties for nutritional, nutraceutical and lactogogues properties • Standardization of level of inclusion of traditional rice in normal and every day meal of lactating mother. 	<ul style="list-style-type: none"> • Quality analysis of the traditional rice incorporated every day meal foods • Studies on retention of the medicinal properties in the everyday meal with traditional rice. • Publications 	<ul style="list-style-type: none"> • Everyday use of traditional rice will be enhanced. • Market demand for the traditional rice will be improved.
<p>Objective II To develop and evaluate high value products from traditional rice.</p>	Standardization of traditional rice incorporated conventional value-added products, therapeutic products and Niche market product.	Quality analysis Shelf-life studies Cost economics Patent	<ul style="list-style-type: none"> • A niche market product from traditional rice suitable for niche market will be obtained. • Improvement of value chain of traditional rice.
<p>Objective III Efficacy studies of the latogogues properties</p>	Bio accessibility studies of the lactogogues nutrient in the developed products	Animal experiments on improvement in the quality and quantity of mammalian feeding milk for its off springs.	<ul style="list-style-type: none"> • Demand for lactogogues property rich traditional rice will be improved • Increases farmer's income.

Project Title: Formulation of Millet and therapeutic rice-based snack bar to combat diabetes

Project Leader: Dr. P S. Geetha, Professor and Head (DDAS)

Objectives	First year	Second year	Expected outcome
	2023-2024	2024-2025	
<p>Objective I Processing and standardization of snack bar with low fat and low sugar and high protein and fiber for diabetic using whole puffed millets, therapeutic rice, underutilized seeds and nuts and popped pulses along with moringa leaf powder</p>	<ul style="list-style-type: none"> • Pre-processing and standardization of millets, therapeutic rice, pulses, seeds and moringa leave powder. • Evaluation of physico-chemical parameters of nutria dense bar. 	<ul style="list-style-type: none"> • To analyse shelf-life studies with respect to chemical, sensory quality and microbial characteristics and also to evaluate cost analysis. 	Millets based snack bars have health benefits and can reduce diabetes, obesity and malnutrition. It is well marked on vitamins, minerals and phytochemicals and it also helps beat hypertension, colon cancer and cardiovascular diseases as it reduces triglycerides present in the body.

<p>Objective II Evaluation of physico-chemical parameters of snack bar shelf-life studies with respect to chemical, sensory quality and microbial characteristics and also to evaluate cost analysis.</p>		<ul style="list-style-type: none"> • Popularization and commercialization • Using modern logistics and mass media materials • Exposing training programmes through venture capital schemes 	<p>The demands of the growing snack markets can be gratified with new healthy millet and therapeutic rice products. There is an increasing necessity to innovate, improve or by modifying the composition of ready to eat snack for additional health benefits.</p>
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III. Technologies for commercialization

1. Value added jack fruit product
2. Value added avocado product
3. Value added grape product
4. Green chilli powder and paste
5. Banana Health mix

IV. Remarks

- Cataloguing of all technologies/products developed from CSC&RI, Madurai may be taken up and possibilities of registration may be explored.
- All the Scientists may be sensitized to propose adequate number of URPs/EFPs involving multi-disciplinary Scientists.
- As the demand for health products increased Post COVID 19, the Scientists working in FSN may be sensitized to develop new health products and immune boosters
- Frequent meetings between Industries and Academia may be organized to commercialize our products and to reorient the research programme
- Sincere attention may be given for the compilation of CSM report. The report must have relevant data scrutinized statistically.
- Nutritional/ Phytochemical profiling of Tamarind seed kernel, Mango seed kernel and *Chekurmani* may be carried out and documented.
- Possibility of utilizing Millet bran oil for human consumption may be explored
- Efforts may be taken to develop pH responsive packaging material to reduce the loss due to perishability
- Development of Multi-flour with Elephant foot yam powder may be given priority
- Students' entrepreneurial activity / Agripreneurship developmental activities to be taken up.
- Scientists may be encouraged to publish their research findings in the peer reviewed journals having NAAS rating more than 7
- Efforts may be made to obtain more externally sponsored schemes

VI. List of Participants

Participants from CSC&RI, Madurai

S. No.	Name of the Scientist	Designation & Department
1.	Dr. S. Kanchana	Dean, CSC&RI, Madurai
2.	Dr. S. Amutha	Prof. & Head, Dept. of Human Development and Family Studies
3.	Dr. J. Pushpa	Prof. & Head, Dept. of EE&CM
4.	Dr. R. Saravanakumar	Prof. & Head, Dept. of Textile Science and Design
5.	Dr. R. Vijayalakshmi	Prof. & Head, Dept. of FRMCS.
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