

SRI PADMAVATI MAHILA VISVAVIDYALAYAM

RURAL WOMEN TECHNOLOGY PARK

1. DST SANCTION NUMBER & TITLE OF THE PROJECT:

DST Sanction Number: SEED/WTP/135/2015/G Dated 15th March 2017.

Title of the Project: Rural Women Technology Park, Chittoor District, Andhra Pradesh.

2. DATE OF START: 15th March 2017

3. SCHEDULED DATE OF COMPLETION: 14th March 2020.

4. TOTAL SANCTIONED COST OF THE PROJECT: Rs. 81, 57, 877.00.

SUMMARY OF THE PROGRESS:

Construction of Rural Women Technology Park building:

The Rural Women Technology Park building was constructed at Beside All India Institute of Local Self Government, Behind SPMVV, Tummalagunta Main Road, Tirupati, Andhra Pradesh – 517502. This building site has been sanctioned by Sri Padmavati Mahila Visvavidyalayam.

Equipment: All sanctioned equipment were procured.

Awareness Programmes:

- RWTP has conducted eight Training programs
- 390 members from the rural background were trained as entrepreneurs in different Technologies developed by the RWTP.
- RWTP has conducted an Exhibition cum sales on Herbal Food and Cosmetic Products on celebrations of important days like World Food Day, Republic Day, National Women's Day and International Women's day at SPMVV.

Technical development:

- Nineteen different Herbal products were developed using Tulasi leaves and Tender Mango leaves as raw material.
- 10 different dehydrated food products were developed using fruits and vegetables.
- Virgin coconut oil

All the products were screened for their organoleptic properties. Qualitative tests like Microbial analysis, Phytochemical studies, Sensory Evaluation, Stability of the products, and the Quantitative test like Nutrient analysis was conducted. (List was enclosed at part II Page No: 5)

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PART - II**1. INTRODUCTION: (Need Assessment for S & T Intervention in Proposed Aspect)**

The area of globalization and rapid technological development has changed people's lives dramatically. The government in both developed and developing countries recognized the importance of the Science and Technology betterment of society in general and women in particular. The DST has focused its attention to the socio-economic development of women through a scheme called S&T for Women. The emphasis is on improving their living conditions, reduce drudgery, provide income generation opportunities through skill development and by training them in health and nutrition and to enable them achieve a better quality of life. Science and Technology for Women is one of the first gender enabling schemes of the DST implemented during the 6th plan period with a vision to promote technology based empowerment of women with a focus on increasing opportunities for income generation, reduction of drudgery and thereby 65 improving the quality of life of rural women. A variety of technological innovations have been attempted in various sectors of economy both in farming and non-farming sectors. Efforts were made to optimize the production processes based on natural and human resources.

The women technology park has been established under a scheme of Department of Science & Technology with a view to empowering women through inputs of science and technology. This Rural Women Technology Park is endorsed by Herbal Food and cosmetics Products. The aim of Women Technology Park is to create awareness among rural community and give trainings of proven technology to reap maximum benefits from their existing resources. Its objective is to make them aware about “processing and preparation” that can enhance their income multiple times. It will also facilitate rural women in providing backward as well as forward linkages that ensure the marketability of their produces.

RWTP of SPMVV is an Incubation center for Women entrepreneurs. RWTP will act as a window for providing information, creating awareness, training for appropriate technologies leading to skill up-gradation for income generation through micro-enterprises for women besides doing on field trials for R&D, Modulation of the technology packages to address location-specific needs. Rural Women Technology Park focused to develop novel herbal products for Nutraceuticals, Pharmaceutical, Cleansing, and Cosmetic applications. Currently RWTP is involved in long term development of Natural Remedies for certain health problems such as Diabetes, Obesity and developing Immunity boosters suitable for all age groups.

2. APPROVED OBJECTIVES OF THE PROJECT:

- Rural Women Technology Park transfer the technologies to the rural areas are made to generate employment on a sustainable basis. Training programmes are conducted as a capacity building to the rural entrepreneurs.
- Tapping Traditional & Novel practices to develop value-added foods, dehydrated foods, Virgin coconut oil, Nutraceuticals, and Flower extracts.
- To develop & encourage the cultivation of medicinal plants with export potential which are feasible in the drought-prone regions of Rayalseema.
- To provide eco-friendly packaging technology with Paper Packing and natural fiber packing i.e. corn husk.
- To impart ICT training and networking of identified women entrepreneurs.
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3. ACHIEVED OBJECTIVES: Women Empowerment and Technology Development.

Women Empowerment:

- **Base Line survey:** A survey was conducted in around Tirupati rural villages to identify the Women Entrepreneurs.
- **ICT Training and Networking of Women Entrepreneurs:** The Women ICT Frontier Initiative (WIFI) was launched on 19th Feb 2018 in partnership with Sri Padmavati Mahila Visvavidyalayam (SPMVV), Tirupati with a goal to create socially and economically empowered women through ICT-enabled Entrepreneurship development. In this regard. A three-day training program for women entrepreneurs was conducted from 20th -22nd Feb 2018.
- **Technical Training Programme for Women Entrepreneurs:** With a motto of providing Hands-on training, 7 Technical Training Programmes were organized for the potential Women Entrepreneurs to achieve an objective of small scale enterprises on their own in rural areas or as a part of DST-RWTP, at the RWTP building, University Campus. The training was imparted to the Rural Women Entrepreneurs on various Technologies developed on Herbal food, Cosmetics products, and dehydrated products.

Technology Developed

RWTP has developed startups with women entrepreneurs by their own small scale enterprises in rural areas with a brand name of SPURThE (**S**ri **P**admavati **U**niversity **R**ural women **T**ech**n**ology **E**nterprise) products. The products include health benefits such as antidiabetic, antimicrobial, anti-aging and antioxidants properties.

The technologies were developed based on the three categories of

- Raw material-based products
- Extraction based Products
- Dehydrated Products

RAW MATERIAL BASED PRODUCTS:

For the raw material based products with Tulasi and tender mango leaves, women entrepreneurs collected material effectively from their surrounding areas. So, the women entrepreneurs are aware of good practices in the collection of raw material like time (early morning before the start of photosynthesis), method of collection and morphology of leaves. The process of handling, drying, and storage of raw material was properly standardized and trained. These collected raw material samples were used to prepare herbal cosmetics and food products.

TULASI BASED PRODUCTS:

- Tulasi roti mix
- Tulasi Patti powder
- Tulasi Fryums
- Tulasi Toffees With Ginger (Zero Calorie toffee)
- Tulasi Toffees With Cloves (Zero Calorie toffee)

TENDER MANGO BASED PRODUCTS:

- Tender mango spicy mix
- Tender mango roti mix
- Tender Mango Leaves & Ginger (Zero Calorie toffee)

TULASI AND TENDER MANGO BASED PRODUCTS:

- Tulasi, Tender Mango Leaves & Ginger (Zero Calorie toffee)

COSMETICS:

- Tender mango face pack
- Tulasi herbal bath powder
- Tulasi face pack
- Hair growth promoter (Hibiscus Leaves and other ingredients)

EXTRACTION:

The Soxhlet extraction process to extract the active phytochemical components from selected raw materials was standardized and trained. The extract was used to produce home fragrances. Another technique of cold extraction process was developed, trained and used to extract pure coconut oil or virgin coconut oil.

COSMETIC PRODUCTS:

- Virgin coconut oil (Cold Compressed method)

HOME FRAGRANCES:

- Tulasi Air freshener spray
- Tender mango air freshener gel
- Tulasi air freshener gel

DEHYDRATED PRODUCTS:

The dehydrate foods were prepared by using the equipment like solar food dryer and lyophilizer (Freeze dryer).

DEHYDRATED PRODUCTS:

- Lemon powder (Lemon juice- Ready-mix)
- Ginger and Garlic Powder (Instant spices)
- Tomato Powder (Instant ready mix of tomato ketchup, Sauce and gravy)
- Amla Powder (used as Morning Freshener)
- Beetroot Powder (Used for Milkshake)
- Sapota Powder (Used for Milkshake)
- Wheatgrass powder (Used as Value-added products)

4. PROJECT AREA & AREA COVERED, COMMUNITY BACKGROUND:

Women belonging to Low and Middle-income background families both Educated and Uneducated would benefit through RWTP. The women who are trained belong to rural community backgrounds in and around Tirupati rural areas about a 30 km radius. The objective of the Park is to enable women in rural and peri-urban areas to improve their capabilities and entrepreneurs of skills to face multidimensional challenges and make them self-dependent and self-reliant. The trained women entrepreneurs through RWTP technologies were sharing knowledge with other rural background women and improve their capabilities. Most of the women forming in a group to produce **SPURThE** products together and distribute their own profits.

Technology Developed

- ✓ Value-added products Curry powders and Spicy mixes used for antidiabetic and antiobesity.
- ✓ Cosmetics products with Tender Mango Leaf and Tulasi Face pack used for anti-aging and De -tanning property.
- ✓ Zero Calorie Candies using Aqueous Decoction of Tulasi and Tender Mango leaves for Expectorants and decongestants.
- ✓ Air fresheners with Tulasi and Tender Mango leaf Ethanolic extract as Sprays and Gels.
- ✓ Dehydrated food products (Lemon, Tomato, Amla, and Beetroot, Ginger and garlic, Wheatgrass).

Women Empowerment activities:

- Women Entrepreneurs have visited NIRD, Hyderabad to gain the knowledge and marketing skills of other related technologies of Herbal, cosmetics, and Food on 27th & 28th March 2019.
- Women Entrepreneurs have visited APMAS, Hyderabad for FPO (Farmer producing organization) to startup big basket online marketing and to get information on FPO registration.



Exposure cum awareness program on RTP technologies in association with NIRD&PR



Training on natural dyes at NIRD



APMAS

- Women Entrepreneurs were very enthusiastic to sell their products in exhibition cum sale at stalls in government events and important dates such as Gnana Bheri on August 4th, 2018, RWTP Market on November 17th, 2018, AP Crafts Mela on December 19th & 20th, 2018, World Food day exhibition cum sale on 16th October 2019, Republic day exhibition cum sale on 26th January 2020 and International Women's day exhibition cum sale on 07.03.2020.



Stalls at Gnana Bheri program



Stalls at SPMVV Humanities block



Stalls at AP Crafts Mela



Stalls on World food day celebrations at SPMVV

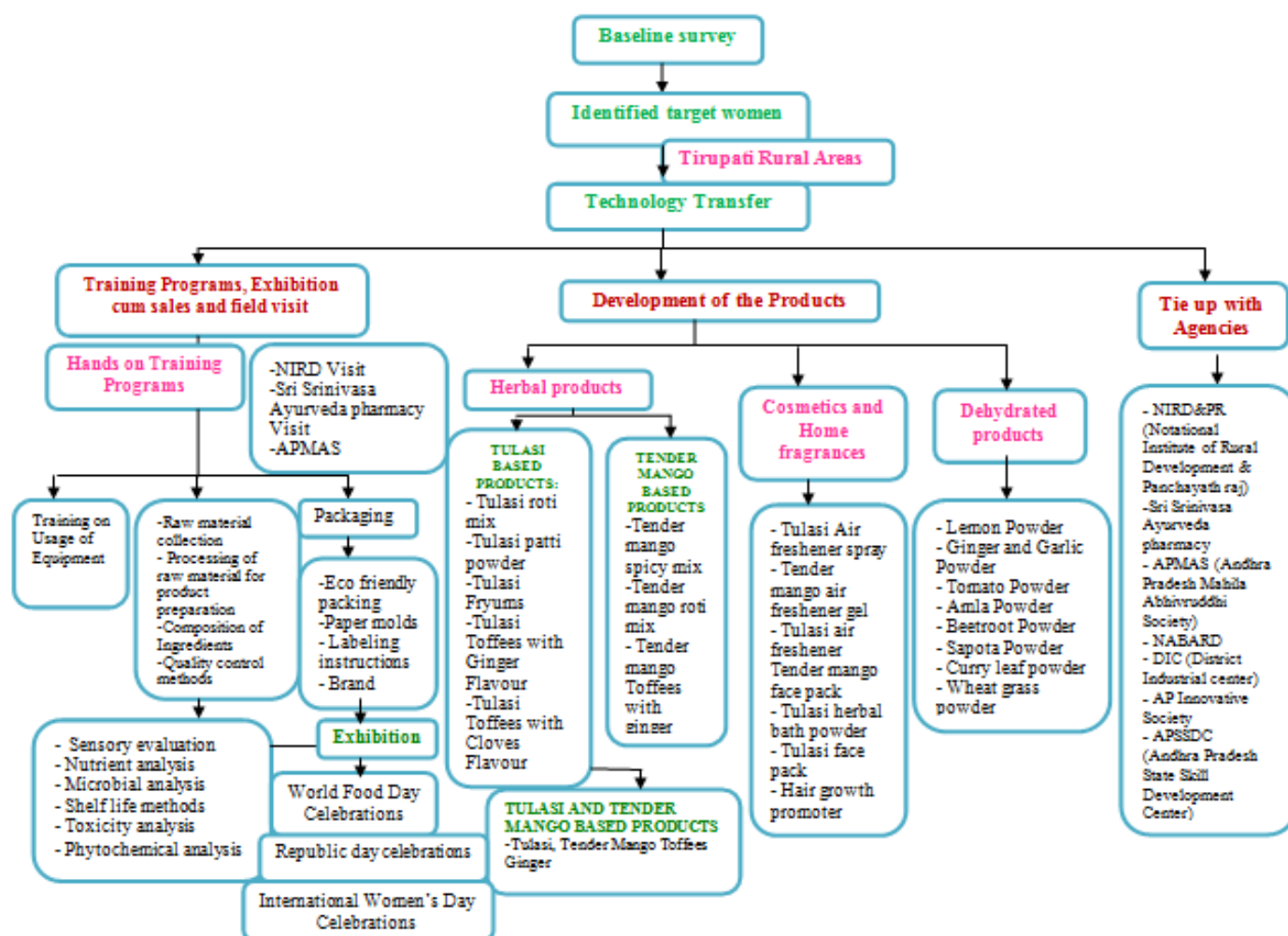


Stalls on Republic day celebrations at SPMVV



Stalls on International Women's day celebrations at SPMVV

5. A. DETAILS OF PROTOTYPE DEVELOPED IF ANY & MECHANISM FOR DISSEMINATION/PRODUCTION



A. Methodology & systems approach adopted:

- Herbal Technology and Value-added Products
- Women Empowerment: Field survey, Technical Training, Field visits and Exhibition cum sales on RWTP herbal food and cosmetic products.

1. Herbal Technology: As a part of Herbal technology following products were developed

S. NO	RAW MATERIAL	PRODUCT	METHODOLOGY
1	Tender Mango Leaves	<ul style="list-style-type: none"> • Patti Powder • Leaf Concentrate • Air Freshener Spray • Face Pack 	<ul style="list-style-type: none"> • Preliminary Phytochemical Screening. • Macroscopic Analysis of Leaf Powder, • Microscopic Analysis of Leaf Powder, • Microbial Content Analysis, • Sensory Evaluation, • Shelf Life Studies, • Skin Irritation Tests for Face Pack
2	Tulasi Leaves	<ul style="list-style-type: none"> • Patti Powder • Extract • Air Freshener (Gels and Spray) • Face Cleanser • Bath Soap • Hair growth promoter 	

2. Value Added Products: The following value-added products based on Tender Mango leaves and Tulasi were developed.

S. No	Raw Material	Product	Methodology
1	Tender Mango Leaves	<ul style="list-style-type: none"> • Herbal Tea • Zero Calorie Candies • Spicy Mix 	<ul style="list-style-type: none"> • Nutrient Analysis of Leaf Concentrate and Prepared Products, • Phytochemical Analysis, (Alkaloids, Amino Acids, Volatile Oils, Glycosides, Phenolic Compounds, Proteins, Carbohydrate Tests, Saponins, Steroids). • Total Protein Content, • Sensory Evaluation, • Shelf Life Studies.
2	Tulasi Leaves	<ul style="list-style-type: none"> • Curry Powder • Roti Mix • Flavoured Rice Mix • Zero Calorie Toffee • Fryums 	
3	Dehydrated products	<ul style="list-style-type: none"> • Lemon Powder • Ginger and Garlic Powder • Tomato Powder • Amla Powder • Beetroot Powder • Sapota Powder • Curry leaf powder • Wheatgrass powder 	

B. Technical back-up support & linkages with nearby institutions/user groups (target population/industries etc.):

- NIRD, TBI, AYUSH, Golden Jubilee Biotech Park for Women Society Chennai have extended technical knowledge.
- Women Entrepreneurs are trained to start their own units with support from banks, District Industries Centre, STEVEN, NABARD.
- Society for Employment Promotion & Training in Twin Cities (SETWIN), Mission for Elimination of Poverty in Municipal Areas (MEPMA), Development of Women and Children in Rural Areas (DWCRA), Durgabhai Deshmukh Mahila and Shishu Pramgamam (NGO) helped to identify Women Entrepreneurs.
- UN-APCICT, WIFI has supported with training modules in Telugu to train Women.
- Linkage with DES Fergusson Testing Laboratory for products analysis is under process.

C. Science & Technology component (technology package, development-new innovations/observations etc):

The rural women must be sensitized and encouraged to interact with their families and society to question; and discuss on various issues to communicate more effectively. Eco-Friendly packaging methods were developed using Paper packing and logo, brand name and labeling instructions were developed to promote the marketing of RWTP products, etc.

D. Details of field trials and testing, if any

- More Awareness Programmes in rural areas should be organized; and efforts must be made to sensitize the rural women through participatory events and scientific knowledge and by enhancing their access to markets.
- The rural women must be sensitized and encouraged to strengthen their capabilities by utilizing natural resources around them for developing ecofriendly techniques facilitating their sustenance and socio-economic development.
- Identified Prospective Women Entrepreneurs and Trained on relevant Technologies.
- Qualitative and Quantitative tests such as mainly nutritive values, Functional values, Sensory Evaluation, Microbial Content, and Stability Studies.
- Field trials and Testing of the Products were demonstrated through the training program.
- Entrepreneurship of the women promoted through exhibition cum sales.

8. SPECIAL FEATURES/ HIGHLIGHTS

- Tulasi and Mango leave based Herbal and value-added Products and dehydrated products, virgin coconut oil, Tulasi and Tender mango leaves based cosmetics, and hair growth promoter.
- Cost-effective and Eco-Friendly packing with Paper and Cornhusk.
- Handmade paper packing has the advantage of being 100% wood free which makes it most eco-friendly form of paper. Handmade paper is excellent for writing as well as printing. It has greater tensile, bursting, tearing and double fold strength compared to conventional papers.
- Handmade paper packing is eco-friendly, bio-degradable, recyclable, the best in quality as well as utility and above all availability at an affordable cost.



Cornhusk Pack of SPURThE product Paper Pack of SPURThE product

- Empowering the Rural women through Technology transfer and ICT training to Women Entrepreneurs.

9. Equipment SANCTIONED AND PROCURED:

Major Types of equipment procured:



**Laboratory
Spray dryer**



Freeze dryer



Refrigerator



Autoclave



Hot plate



Hot air oven



Soxhlet apparatus



P^H Meter



Melting point apparatus



Digital weighing balance (0.1 mg)



Solar food dryer



Digital weighing balance-0.01 mg



Rotary Evaporator



Heating mantle



Magnetic Stirrer

10. DETAILS OF PROJECT STAFF

A. Staff sanctioned: Senior Research Fellow -01, Project Assistants: 02.

B. Staff in position: Senior Research Fellow -01, Project Assistants: 02

C. Brief biodata of the staff

1. Senior Research Fellow:

1. B, Charitha, M.Sc Biotechnology

Experiences: 2years 6 Months worked as a research associate on screening of multiple tomato lines with molecular marker linked to different bacteria, viral, fungal and nematode disease resistance genes.

2. Project Assistants:

1. S. Sai Swathi Varma, M. Pharmacy (Pharmaceutical Chemistry).

2. I. Vanaja, M.Sc Food Science and quality control; Pursuing M.phil in Biofortification with Spirulina to elevate the nutrient quality of greens.

11. PROGRESS INDICATORS-- DETAILS OF TRAINING HELD, TOTAL NUMBER OF BENEFICIARIES (DETAILS THEREOF), QUALITATIVE & QUANTITATIVE ANALYSIS -- LIST OF BENEFICIARIES WITH ADDRESS, EMAIL IDS & TELEPHONE NUMBERS (ANNEXURE 2)

S. No	Name of The Training Programme	Conducted on	No. of Participates	Venue
1.	National Launch of WIFI Saavisikara and Training of Trainers Workshop in India	19 th to 24 th February 2018	40 Members	Indira Priyadarshini Auditorium in SPMVV
2.	Technical Training Programme for Women Entrepreneurs	23 rd to 25 th March 2018	40 Members	Humanities block in SPMVV
3.	Empowerment of Women in Herbal Technology	29 th -31 st , October 2018	40 Members	Pallam Panchayath Hall in yerpedu
4.	DST-SEED Onsite Visit cum Two - Day workshop on Herbal Technologies in Empowering Rural Women	27 th to 28 th November 2018	40 Members	Saaveri Seminar Hall in SPMVV
5.	Know your Business	March 19 th , 2019	40 Members	Saaveri Seminar Hall in SPMVV
6.	Three Day Hands-on Training Programme on Dehydrated Foods and Natural Dyes	24 th to 26 th June 2019	60 Members	Seminar hall, RWTP building, beside SPMVV
7.	Three Day Hands-on Training on Dehydrated Products And Cosmetics From Natural Sources	5 th – 7 th August 2019	40Members	Seminar hall, RWTP building, beside SPMVV
8.	Three Day Workshop on “Capacity Building on Entrepreneurship Skills Among Students On Herbal Products	14 th – 16 th September 2019	90Members	Seminar hall, RWTP building, beside SPMVV