



Sour to Sweet: Tamarind Tales of Empowerment Adding Value to Women's Lives

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Authors' contributions

This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.

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ABSTRACT

Tamarind (*Tamarindus indica* L.) is one of the important fruit crops of India. It is also termed as "Indian Date" due to its date like appearance of dried pulp. The preservation and processing of the tamarind through value added products is the effective way of retaining the nutrients content of fruits. Area of tamarind in Chikkaballapur district spread over 608 ha where fruits are just harvested and sold by farmers which most of the farmers are not even obtaining the nominal charges because of improper processing. One of the best features of the tamarind is its durability which incur no loss of the value-added products. As stated by the spice board of India, the tamarind area production was about 74.20 (000' ha), with average yield of 309.44 (000' MT). About 258.70 (000'MT) to 272.85 (000'MT) of tamarind is allotted for value addition products to processed and lot of labor is engaged in this processing in India. This indicates that there is a wide opportunity in value addition of tamarind. Different extension methods like on campus training programs, group discussion and folders were developed on the value addition of tamarind to create awareness among the public. In

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this perspective of Sri Lakshmi Venkateshwara Self Help Group (SHG) of 20 farms women was identified to be trained in KVK for the development of value added products and an on campus training programme for a week was provided to disseminate technology on production of tamarind value added products; tamarind puree, tamarind toffee, tamarind chutney powder lollypop and instant puliyoggar mix and to estimate cost benefit ratio. Raw materials, branding, labelling and packaging materials were distributed to the SHG to encourage them for the product development and selling of the products. Advertising and marketing of the products initially was carried on in the free stalls of exhibitions in krishi fair and in district agriculture fair where the products created huge demand. Results showed that processing of quintals of tamarind for four products like tamarind puree (130 Kg), tamarind toffee (241.25 Kg), tamarind chutney powder (165.50 Kg), tamarind lollypop (230 Kg) and tamarind instant puliyoggar mix (153.45) respectively with the monthly net profit of Rs. 12923 from puree, Rs. 13358 from toffee Rs. 9947 from chutney powder and Rs. 18098 from lollypop and Rs. 31146 from instant puliyoggar mix whereas unprocessed tamarind cost Rs. 120 per kg. The value addition of tamarind has helped to improve their family income per month is around 85,000 with cost benefit ratio of 1.42. These trained individuals of SHGs now serve as the resource persons in training the budding up SHGs.

Keywords: Tamarind; value addition; economics; women empowerment; self help group.

1. INTRODUCTION

“Rural Indian women are extensively involved in agricultural activities, but the nature and extent of their involvement differs with variations in agro-production systems. There are community-based differences regarding women’s participation in agriculture, therefore location, cropping patterns, ethnic affiliation and economic and educational background also have implications for the specific division of labour within a given family unit” [1].

“In addition to their role in agricultural production, women are gainfully employed in agri-based allied activities like dairying, animal husbandry, poultry, goatery, rabbit rearing, beekeeping, floriculture, horticulture, fruit preservation, value added food products. This would also help in generating self-employment and women entrepreneurship. and provides source income to women especially those living within rural area” [2]. “Entrepreneurship skills can help in building confidence and self-awareness through income generation” [3].

“Various activities can be taken up by rural women for income generation while being at home and by organizing themselves in Self Help Groups (SHGs). SHG is a small voluntary association of women, preferably from the same socio-economic background. Usually, women’s representation is greater in allied agriculture than in grain production, and poor households require the greater involvement of women in income-

generating activities than financially stable ones” [4].

“Tamarind (*Tamarindus indica* L.) is one of the important fruit crops of India. It is also termed as “Indian Date” due to its date like appearance of dried pulp. The preservation and processing of the tamarind through value added products is the effective way retain the contents of fruits” [5].

Area of tamarind production in Chikkaballapur district spread over 608 ha where fruits are just harvested and sold by which farmers are not even obtaining the nominal charges because of improper processing. One of the best features of the tamarind is its durability which incur no loss for the value-added products. As stated by the spice board of India, the tamarind area was 74.20 (000’ ha), production was 309.44 (000’ MT) and the productivity was 4.0 (MT/ha) in 2017-18. About 258.70 (000’MT) to 272.85 (000’MT) of tamarind is allotted for value addition products to processed and lot of labor is engaged in this processing in India. This indicates that there is a wide opportunity in value addition of tamarind [6].

Therefore, the specific objective of the present study is to enhance the income level and living standard of those farming families, there is an urgent need to provide their family members particularly women an occupation-based training like value addition of tamarind which not only provides them an occupation but also develop entrepreneurial characteristics amongst them.

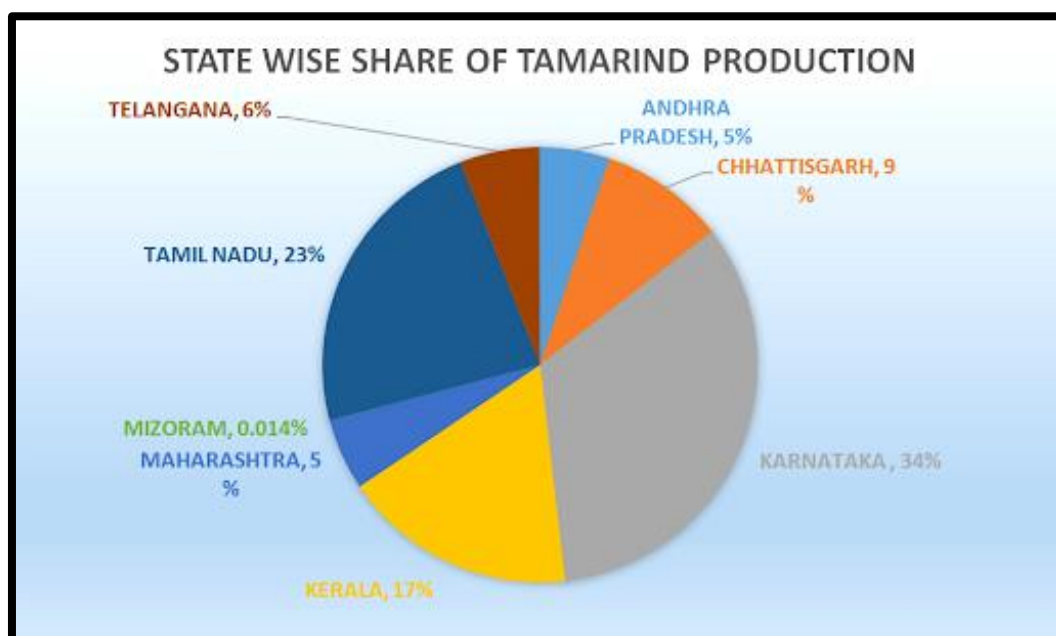


Fig. 1. State wise share of tamarind production
(Source: National Product Classification for Services Sector, 2021)

2. MATERIALS AND METHODS

Location: Krishi Vigyan Kendra, Chikkaballapura district undertaken a Entrepreneurship Development Program (EDP) through development of tamarind value added products during the year 2020-22. The EDP was approved by an Action Plan Committee of Indian Council of Agricultural Research (ICAR). The EDP was undertaken in Maadikere village, Chintamani taluk, Chikkaballapura district. It is one of the cluster village selected for implementation of activities of Krishi Vigyan Kendra, Chikkaballapura for the year 2020-2022. The supported activities conducted in the village are described below.

Socio demographic profile: The general information such age categorized into three groups: 21-25, 26-35 and 36-40 years, education status as illiterates, primary, secondary, high school, occupation classified as house wife and labour, family type as nuclear or joint and number of children as one, two or three and above were noted [7].

Trainings and Demonstrations: The trainings were concentrated on processing, method demonstration, licensing, packaging and labelling and also marketing of tamarind value added products. In total, 20 farm women were selected for detailed skill development training in

processing and value addition. Secondly, intensive value-added products trials were done by conducting on campus and off campus trainings and selected the suitable products having commercial potential for income generation and to facilitate enterprise building by the farm women. "Further training was also imparted to these farm women on nutrition education, importance of value addition in food products, handling of processing and value addition unit, maintaining hygienic practices while handling food products, labeling, packing, licensing and financial management. Besides, these women were also sensitized for the linkage development and marketing skills" [8].

Processing and value addition: The aim of processing and value addition of tamarind was to convert the grains into convenient food and to make the product nutritionally superior, to market easily and having a shelf life of minimum 3 months. Accordingly, four products namely Tamarind puree, toffee, chutney powder, lollipop and instant puliyogga mix were selected for preparation and marketing.

Establishment of processing unit: To bring systemization and regular production there was a need for establishment of their own processing unit for preparation of exclusively tamarind-based products. Hence a plan was developed for

establishment of processing unit with minimum necessary machineries.

Packaging and labeling: “Packaging serves as a silent sales man. To promote the products and to get better market opportunity, farm women were supported for development of attractive and suitable packaging with nutrition label” [8].

Statistical analysis: Statistical analysis was conducted using suitable statistical tools like frequency, percentage and cost benefit ratio.

3. RESULTS AND DISCUSSION

Socio-demographic profile: The socio-demographic profile of the farm women engaged in processing and value addition of tamarind is presented in Table 1. The age profile indicated that majority of farm women belonged to the age group of 26-35 years (60%) followed by 21-25 years (25%). With respect to literacy, 45% of women were educated up to high school level followed by secondary education level (30%) and 25% were illiterates. The occupation pattern indicated that (50%) of them were farm labourers and housewives (50%). Most of these women were having two children (80%). The results also showed that 70% of families were nuclear. The study conducted by Tripathi et al. 2023 resulted that the socio-economic attributes' majority of the respondents were literate and only few 11% respondents were illiterate. Additional income increased 20.52% in improved method compare to traditional method. Farm women are generating income through value addition and nutritional security through tamarind sauce in rural areas. It can be helpful to manage market price instability and losses of tamarind fruits.

Establishment of processing and value addition unit: After acquainting with processing, preparation of value-added products and packing, 20 farm women of Maadikere village, with the leadership of Mrs. Shilpa came forward to take up processing and value addition to tamarind as an entrepreneur activity is depicted in the Table 2. Under technical guidance of Krishi Vigyan Kendra through EDP on “Entrepreneurship development through value addition in tamarind” with the brand name “Sri Lakshmi Venkateshwara Sanga” they established a small-scale processing and value addition unit. For establishment of the unit first they procured a building having a unit area of 2000 square feet and then they purchased and installed the necessary equipment's viz.,

destoner, pulveriser, roaster, weighing scale and sealing machine. With the assistance of Krishi Vigyan Kendra, they registered tamarind value added products under Food Safety and Standards Authority of India 2006 (FSSAI Reg. No. 21219048000291).

Nutrients composition of tamarind value-added products: The nutrient composition of tamarind value added products namely malt, mixture, laddu and kurkure was calculated and given in Table 3. The nutrient content of the products which were promoted through these interventions ranged from 112-161 kilo calorie of energy, 0.47-1.83 g of protein, 0.63-1.36 g of fat, 137-196 mg calcium and 3.20-4.85 mg iron. Chimsah et al. [9] conducted a study on “proximate composition of locally sourced fruit pulp showed high levels of fats and oils 51.39% and fibre 15.10% while other parameters like protein, ash, vitamin C and moisture were similar to test results from other countries. The tamarind plant has undoubtedly great potential based on its benefits, and uses”.

Marketing of the value-added products: The value-added products were first commercialized by marketing through Krishi Vigyan Kendra market outlet introduced to some provision stores in Chintamani. Later they were made to participate in various exhibitions organized by agricultural universities, state departments and NGOs, to expand their market network. Presently, they are involved in preparation and marketing of tamarind value added products under the registered brand name of “Sri Lakshmi Venkateshwara Sanga” food products and selling them through their own provision store, Krishi Vigyan Kendra outlet, bakery and provisional stores in Chintamani, Chikkaballapura, Bangalore and mobile sales van arranged by the Department of Women and Child Welfare, Chikkaballapura. The monthly production of the products is around 800-900 kgs with a net profit of around Rs. 85,000/-. The similar study depicted that the adoption of new technology in production and management practices of tamarind results in more yield and would fetch additional income to farmers. The farmers skilled in processing and retailing can opt for value addition by adopting hygienic process at all stages of harvesting and marketing, and can also indulge in selling branded packages of tamarind to realize higher prices in potential markets [10].

Economics of value addition to tamarind: On the basis of two years data, the average results

of the present activity are presented in the Tables 2, 4 and 5 gives the economic analysis of the four products viz., tamarind puree, toffee, lollypop, chutney powder and instant puliyoggare mix. It is depicted from the Table 5 that the monthly sales are around 130 kg puree, 241.25 kg toffee, 165.50 kg chutney, 230 kg lollypop and 153.45 kg instant puliyoggare mix with the monthly net profit of Rs. 12923 from puree, Rs. 13358 from toffee Rs. 9947 from chutney powder and Rs. 18098 from lollypop and Rs. 31146 from instant puliyoggare mix whereas unprocessed tamarind cost Rs. 120 per kg. The similar study conducted by Israel et

al. [11] revealed that processing of one quintal of tamarind dried process for three products like tamarind pickle (131 kg), tamarind sauce (242.90 kg) and tamarind rasam paste (185.20 kg). Tamarind pickle, tamarind sauce and tamarind rasam paste of value addition cost was 15,421, 27,921.40 and 24,206.75 respectively. The total processing cost of tamarind pickle, tamarind sauce and tamarind rasam paste was 12,478, 14,453.00 and 14,453.00 respectively. The tamarind pickles of marketing efficiency ratio were 1.23, tamarind sauce was 1.04 and tamarind rasam paste was 1.17 [12].

Table 1. Socio demographic profile of the farm women in self-help group

Variables	Category	n=20	
		Number	Percentage
Age	21-25Years	05	25
	26-35 Years	12	60
	36-40 Years	03	15
Education	Illiterates	05	25
	Primary	05	25
	Secondary	06	30
Occupation	High School	09	45
	Housewife	10	50
Type of family	Labourer	10	50
	Nuclear	14	70
Family size	Joint	06	30
	2-4 members	12	60
Number of children	5-7 members	08	40
	One	02	10
	Two	16	80
	Three and above	02	10

Table 2. General information of the developed enterprise

Particulars	
Number of farm women	20 members
Training cum method demonstration	Entrepreneurship development through value addition in tamarind
Brand name	Sri Lakshmi Venkateshwara Sanga (SLVS)
Marketing	Tamarind value added products are being sold in local provisional stores and in exhibition
License no.	21219048000291
Place	Maadikere village, Chintamani taluk, Chikkaballapura, Karnataka

Table 3. Nutritional composition of the tamarind value added products per 100 gm

Products	Protein (g)	Energy (kcal)	Fat (g)	Calcium (mg)	Iron (mg)
Tamarind puree	0.83	112	0.77	193	3.20
Tamarind toffee	0.47	136	0.63	164	4.85
Tamarind chutney powder	1.08	120	0.70	137	4.63
Tamarind lollypop	0.77	143	0.68	181	3.26
Tamarind instant puliyoggare mix	1.83	161	1.36	196	4.13

Table 4. Economics of Tamarind toffee production

Particulars	Amount (Rs.)
Variable cost (raw material+ fuel+ labor)	58,000
Fixed cost	1,987
Total cost of production 1500 kg/annum	59,987
Gross income = 100 × 1500	1,50,000
Net income = Gross income – total expenditure	1,50,000 - 59,987= 90,000
B/C ratio (benefit/cost)	1.8 (benefit of one rupee 80 paise for every rupee spent)

Table 5. Cost benefit of the value addition in tamarind

SI. No.	Name of the product	Quantity of products prepared (bi-monthly)	Net return (Rs.)	CB Ratio
01	Tamarind paste	130 Kg	12923	1.22
02	Tamarind toffee	241.25 Kg	13358	1.8
03	Tamarind chutney powder	165.50 Kg	9947	1.19
04	Tamarind lollypop	230 Kg	18098	1.26
05	Tamarind instant pulioggare mix	153.45 Kg	31146	1.54
	Total		85472	1.40



Pic. 1. Group discussion



Pic. 2. Development of folder



Pic. 3. Method demonstration of value added products



Pic. 4. FSSAI licencing on the food products



Pic. 5. Labelling of the value added products



Pic. 6. Packaging of the value added products



Pic. 7. Press coverage on the EDP on tamarind value addition



Pic. 8. Marketing and use of free stall in district level Krishi mela



Pic. 9. Awarded as Best entrepreneur at the taluk level -2019



Pic. 10. Awarded as Best entrepreneur at the district level -2020

The value-added products, were first commercialized by the SHGs during the Krishi Mela (farmers' fair) festival held on 19th-20th October, 2019 at the UAS Campus, Bangalore and then at Chintamani, where an event organized on 13th August 2019, by the District witnessed a large participation of both rural and

urban people. As a result of increasing demand of the products, these are now sold in retail outlets of Chintamani, general stores and health care centers under the brand name established by the SHG (Sri Lakshmi Venkateshwara Enterprises).

In an overall estimation has been found that Rs. 85,472 is the profit obtained. From the obtained profit Shilpa has bought tamarind deseeding machine. She is presently producing cleaned tamarind of 8-10 q/month. The cost-benefit ratio (1.40) of the enterprise indicates that the Shilpa's enterprise is economically viable and sustainable.

4. CONCLUSION

The study shed more light on the role played by SHG in empowering a women to become women entrepreneur in promoting socio-economic empowerment of women in India through a more effective use of local biodiversity and its products. As a result of capacity building interventions to enhance local skills in value addition, SHG woman are able to generate substantial income and use this towards their own family welfare developments. At present there are 10 skilled workers working in the business at Maadikere village. The net profit on an average is in the range of Rs. 5.00 lakhs to Rs. 5.50 lakhs per annum. The study shows that each member is having the potential to increase her annual income by Rs. 6 to 8 lakhs in the coming years.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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