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**Geetha M Yankanchi**  
Subject Matter Specialist (Home  
Science) Krishi Vigyan Kendra,  
Chintamani, Chikkaballapura  
District University of  
Agricultural Sciences, Bengaluru,  
Karnataka, India

**Majula N**  
Subject Matter Specialist  
(Agriculture Extension) Krishi  
Vigyan Kendra, Chintamani,  
Chikkaballapura District  
University of Agricultural  
Sciences, Bengaluru, Karnataka,  
India

**Correspondence**  
**Geetha M Yankanchi**  
Subject Matter Specialist (Home  
Science) Krishi Vigyan Kendra,  
Chintamani, Chikkaballapura  
District University of  
Agricultural Sciences, Bengaluru,  
Karnataka, India

### Entrepreneurship development among farm women through finger millet processing and value addition: A case study in Karnataka

**Geetha M Yankanchi and Majula N**

#### Abstract

Finger millet is a major staple food crop of Chikkaballapura district. It is a coarse grain appropriately called as “nutritious millet”. People use it extensively in their daily diet in the form of dumpling. Finger millet has certain intrinsic quality characteristic suited for product development. The excellent and unique taste is found suitable for making variety of food products suitable for marketing. The present study was undertaken on value addition and market linkage to the various products of finger millet which have a commercial feasibility and to enhance the income of the farm families. With this intension the women members of farm family of Talagawara village, Chintamani taluk were extensively trained on processing, preparation of value added products, packing, branding and various possible avenues for market linkages. After acquaint with these aspects, the farm women under the leadership of Mrs. Roopa Rajendra with technical guidance of Krishi Vigyan Kendra established a small scale processing and value addition unit and registration was done for marketing of finger millet value added products under Food Safety and Standards Authority of India – 2006. At present, they are involved in preparation and marketing of value added finger millet products viz., *malt*, *laddu*, *Chakkuli* and *hurihittu* under a brand name of “CHIRAYUSH” food products and marketing in and around chikkaballapura district and Bangalore. The monthly production of the products is 550 to 600 kgs with a turnover of Rs. 60,000-70,000/-.

**Keywords:** Entrepreneurship, processing, value addition, packing, branding and labeling

#### 1. Introduction

Finger millet (*Eleusine corecona*) also known as *ragi* in Kannada is important millet grown extensively in southern part of Karnataka which is a staple crop of Chikkaballapura district and serves as a main food for majority of people in the district. It is a coarse grain called nutritious millet. This is extensively taken in their daily diet in the forms of whole meal for preparation of traditional food such as *mudde* (dumpling), *roti* (pancake) and *ambli* (porridge). The grain is nutritious with balanced protein, higher calcium and iron and dietary fibre. Apart from this the seed coat is an edible component of the kernel and is rich source of phytochemicals (Chetan and Malleshi, 2007) [1].

Despite recognized as health food, the food uses of millets including finger millet have however been confirmed to traditional consumers, limited especially to area of their cultivation and still have remained underutilized. The main reasons are the unawareness about its benefits as health food and secondly unavailability in the convenient form to the consumers. Processing of finger millet using traditional as well as contemporary methods for preparation of value added and convenience products would certainly diversify their food uses. Their exploitation to ready to prepare and ready to eat products would help in increasing the consumption pattern of finger millet among non millet consumers. The enhanced consumption of finger millet will open up an avenue for the generation of employment and additional income for the stakeholders. The present paper describes the efforts made by Krishi Vigyan Kendra to establish village level enterprise on processing and value addition to finger millet with the objective of additional employment and income generation for the farming family.

#### 2. Material and Methods

Krishi Vigyan Kendra, Chikkaballapura district undertaken a Front Line Demonstration (FLD) on Entrepreneurship development through branding and market linkage for value added finger

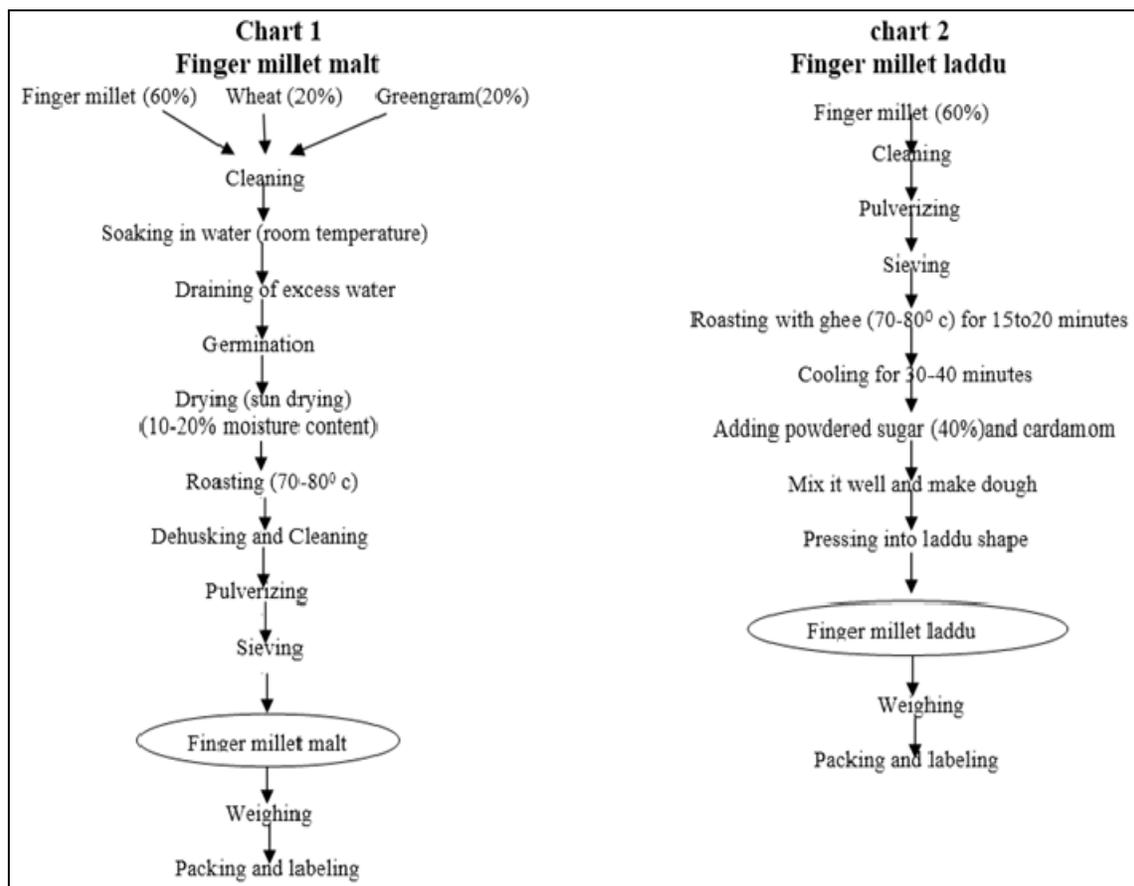
millet products during the year 2013-14. The FLD was approved by an Action Pan Committee of ICAR. The FLD was undertaken in Talagawara village, Kaiwara cluster, Chintamani taluk, Chikkaballapura district. It is one of the cluster village selected for implementation of activities of Krishi Vigyan Kendra, Chikkaballapura for the year 2013-14. The supported activities conducted in the village are described below.

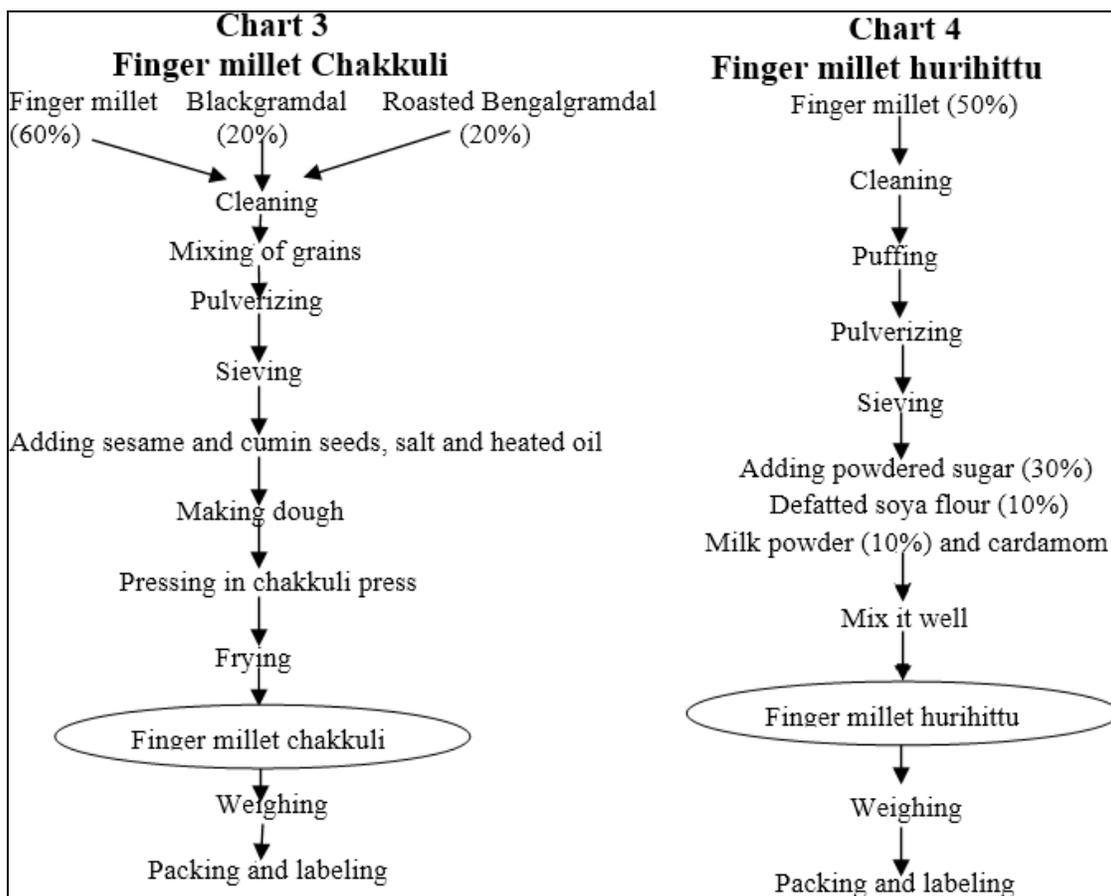
**2.1 Trainings and Demonstrations:** The trainings were concentrated on processing and value addition to finger millet. In total, 20 farm women were selected for detailed skill development training in processing and value addition. Secondly, intensive value added product trials were done by conducting 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, Financial management. Besides, these women were also sensitized for the linkage development and marketing skills.

**2.2 Processing and value addition:** The aim of processing and value addition of finger millet 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 one month. Accordingly four products namely finger millet *malt*, *Laddu*, *Chakkuli*, and *Hurihittu* were selected for preparation and marketing. The flow chart of the same has been given in chart 1, chart 2, chart 3 and chart 4. The selected products were assessed for nutrient composition by computation method using ‘Nutritive Value of Indian Foods’ (Gopalan *et al.*, 2004) [2].

**2.3 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 finger millet based products. Hence a plan was developed for establishment of processing unit with minimum necessary machineries.

**2.4 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.





**3. Results and discussion**

**3.1 Socio-demographic profile:** The socio-demographic profile of the farm women engaged in processing and value addition of finger millet is presented in Table 1. The age profile indicated that majority of farm women belonged to the age group of 26-35 years (55%) followed by 21-25 years (30%). With respect to literacy, 50 per cent of women were educated up to high school level followed by primary education level (25 %) and only 10 per cent were illiterates. The occupation pattern indicated that majority (80 %) of them were farm labours followed by housewives (20%). Majority of these women were having two children (55%) and the family size was 2-4 members (65%). The results also showed that 65 per cent of families were nuclear.

**Table 1:** Socio-demographic profile of farm women

Variables	Category	n=20	
		Number	Percentage
Age	21-25Years	06	30
	26-35 Years	11	55
	36-40 Years	03	15
Education	Illiterates	02	10
	Primary	05	25
	Secondary	03	15
	High School	10	50
Occupation	Housewife	04	20
	Labourer	16	80
Type of family	Nuclear	13	65
	Joint	07	35
Family size	2-4 members	13	65
	5-7 members	07	35
Number of children	One	02	10
	Two	11	55
	Three and above	07	35

**3.2 Nutrient composition of value added products:** The nutrient composition of finger millet value added products namely *malt*, *laddu*, *chakkuli* and *hurihittu* was calculated and given in table 2. The nutrient content of the products which were promoted through these interventions ranged from 343-436 kilo calorie of energy, 3.47-10.31g of protein, 1.5-14.13g of fat, 164-242 mg calcium and 1.85-5.65 mg iron. Nutritional values are on par with the study conducted by Yenagi *et al* (2010) [4] on nutrient composition of ethnic and novel foods from minor millets.

**Table 2:** Nutrient composition of value added Finger millet products

Products	Protein (g)	Energy (k. cal)	Fat (g)	Calcium (mg)	Iron (mg)
Malt	09.00	360	01.50	193	5.20
Laddu	03.47	436	14.90	164	1.85
Chakkuli	10.31	407	14.13	242	4.10
Hurihittu	06.60	343	01.68	181	5.65

**3.3 Establishment of processing and value addition unit:** After acquainting with processing, preparation of value added products and packing, five farm women of Talagawara village, with the leadership of Mrs. Roopa Rajendra came forward to take up processing and value addition to finger millet as an entrepreneur activity. Under technical guidance of Krishi Vigyan Kendra through Front Line Demonstration on “Entrepreneurship development through branding and market linkage to value added finger millet products” with financial support of Kalpatharu Grameen Bank, Talagawara village, Chintamai taluk, 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 value added finger millet products under Food Safety and Standards Authority of India 2006 (FSSAI Reg. No. 21214048000654) with a brand name CHIRAYUSH. The trade activity is also registered under the provision of CST Act

-1956 for sale of products (TIN No. is 29041128100).To get better market linkage, Krishi Vigyan Kendra supported the members by providing suitable packaging with nutrition label (Fig-1). After necessary preparation during the month of August 2013 initiated the production of value added products on small scale



Fig 1: Value added finger millet products with packing and labels

**3.4 Marketing of the value added products:** The value added products were first commercialized by marketing through Krishi Vigyan Kendra market outlet and canteen, sericulture college, Chintamani then 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 they were also linked with AWAKE (Association of Women Entrepreneurs of Karnataka) institute, Bangalore. presently, they are involved in preparation and marketing of finger millet *Malt, Laddu, Chakkuli and Hurihittu* under the registered brand name of “CHIRAYUSH” food products and selling them through their own provision store, Krishi Vigyan Kendra outlet, Bakery, Sweet marts, Provision stores and Medical Shops 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 550 kgs with a net profit of Rs. 60,000-70,000/-.

**3.5 Economics of value addition to finger millet:** On the basis of two years data, the average results of the present

activity are presented in the table 3 and table 4. Table 3 gives the economic analysis of the four products viz., *finger millet malt, laddu, chakkuli and hurihittu*. It is depicted from the table that the monthly sales are around 200-225kg *malt*, 250-275kg *laddu*, 40-50kg *chakkuli* and 20-25 kg *hurihittu* and earning monthly net profit of Rs.26600-29925 from *malt*, Rs.29500-32450 from *laddu* Rs.4720-5900 from *chakkuli* and Rs.1760–2200 from *hurihittu*. Profit analysis of finger millet value added products over unprocessed raw finger millet (table-4) revealed that they are getting Rs.103.60, Rs.98.20, Rs.98.60, and Rs.66.94 per kg from *malt, laddu, chakkuli* and *hurihittu* respectively as net profit over unprocessed finger millet (Rs.18/kg). The results are in conformity with the studies of Patel *et al* (2014) [3] who analyzed the economics of *ragi malt* and *multi grain flour* prepared and sold by SHGs of Jagadpur District of Chattisgarh, India, where the groups made a profit of Rs.1205.00 and Rs.895.00 per 100 kg of the product sold from *ragi malt* and *multi grain flour* respectively. Nirmala *et al* (2010) opined that small millets proved to have a good scope for enhancing nutrition security, marketing and income generation of community members, particularly rural women.

Table 3: Income generated from production and marketing of value added finger millet products

Products	Production cost (Rs./kg)	Selling price (Rs./kg)	Net profit (Rs./kg)	Sales/month (Kg)	Profit/month (Rs.)
Malt	77	200	133	200-225kg	26600-29925
Laddu	132	250	118	250-275kg	29500-32450
Chakkuli	82	200	118	40-50kg	4720-5900
Hurihittu	62	150	88	20-25kg	1760-2200
Total Earnings/month (Rs.)					62580-70450

**Table 4:** Profit analysis of value added products over unprocessed raw finger millet

Finer millet products	Price of Finger millet (Rs./kg)	Quantity of Finger millet required to produce one kg of the products	Cost of Finger millet required to produce one kg of the product	Cost of production of the product (Rs./kg)	Price of one kg product	Net profit for one kg product (Rs./kg)	Net profit over unprocessed Finger millet(Rs./kg)
<i>Malt</i>	18	1.08	19.40	77	200	123	103.60
<i>Laddu</i>	18	1.10	19.80	132	250	118	98.20
<i>Chakkuli</i>	18	1.08	19.40	82	200	118	98.60
<i>Hurihittu</i>	18	1.17	21.06	62	150	88	66.94

In a short span of time farm women were able to establish successful livelihood source by converting farm produce into products and earning a net annual income of around Rs.7.2lakhs. Department of Marginal, Small & Medium scale Enterprise (MSME), Chikkaballapura has identified Mrs. Roopa Rajendra and her group as best entrepreneurs of the district for the year 2014-15 and honored best women entrepreneurs award. Looking into the success of these members many farmers and farm women approached KVK to take up similar kind of enterprise.

#### 4. Conclusion

The interventions of Krishi Vigyan Kendra played a strategic role in increasing self-confidence among farm women in undertaking small scale food processing and value addition unit at their village level and reaching the market in urban area. The consolidated initiation of farm women on processing and preparation of value addition to finger millet is a new way of self-reliance practice. The entrepreneurship activity focusing the millet products has not only generated the additional employment and enhanced income of the families but also saved the farm families from hunting of work to earn livelihood. Further availability of finger millet products help in enhancing its consumption which in turn improve the nutritional intake of the consumers.

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