



Entrepreneurship Development through Finger Millet Processing for Better Livelihood in Production Catchment

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Abstract: Finger millet (*Eleusine coracana* L. Gaertn) is one of the important millets grown extensively in various parts of India and Africa. It is nutritious and even superior to rice and wheat, in respect of crude fiber and minerals like calcium and phosphorus. It is a major source of dietary carbohydrates for a large section of society and forms at least one meal per day for the families residing in production catchments. Unfortunately it is termed as poor men's food and due to lack of awareness of its importance and properties its utilization is restricted in the regions where it is grown. Unavailability of processed products of finger millet is the major reason for its localized utilization. Efforts have been made to convert the millet grains into convenient forms such as Multi-grain Flour and Ragi Malt and deliver the products to the consumers through the establishment of enterprises on finger millet with the help of Self Help Groups in rural areas. Establishment of rural enterprises on finger millet has been found to be a successful profit making avenue for the farmers and processors (stakeholders). This has not only created additional employment and enhanced income of the group members but also playing significant role in increasing the demand of finger millet. This is directly related to the increased consumption of nutritious food thereby marching towards a better health of the society.

Key Words: Finger millet, Multi-grain Flour, Ragi Malt, Entrepreneurship development on finger millet, processing and value addition of millet

I. Introduction

Finger millet (*Eleusine coracana* L. Gaertn) also known as *ragi* in Hindi is important millet grown extensively in various regions of India and Africa, constitutes as a staple food for a large segment of the population in these countries. It ranks sixth in production after rice, wheat, maize, sorghum and pearl millet (*bajra*) in India. In the year 2011-2012, the area under this crop in India was 1.18 million hectare whereas, the total production was 1.92 million tonnes^[1]. It is a naked caryopsis with brick red-coloured seed coat and is generally used in the forms of the whole meal for preparation of traditional foods, such as *roti* (unleavened bread or pancake), *mudde* (dumpling) and *ambali* (thin porridge). Nutritionally, finger millet is good source of nutrients especially of calcium, other minerals and fibre and suitable for diabetic patients due to low glycemic index (GI)^[2]. Finger millet contains about 5-8% protein, 1-2% ether extractives, 65-75% carbohydrates, 15-20% dietary fiber and 2.5-3.5% minerals^[3]. Finger millet is comparable to rice with regard to protein and fat and is superior to rice and wheat with respect to mineral and micro-nutrients. The seed coat of the finger millet is an edible component of the kernel and is a rich source of phytochemicals, such as dietary fiber and polyphenols (0.2 to 3%)^[4]. It is prescribed to the mothers that wish to increase the quantity of milk produced for their baby. Nutritional well being is a sustainable force for health and development and maximization of human genetic potential.

At present, small millets including finger millet accounts for less than 1% of food grains produced in the world^[5]. Their cultivation dates back to nearly 5000 years, and in India, they contribute significantly to the regional food and nutritional security and diversity in the national food basket. Despite recognised as health food, the food uses of millets including finger millet have, however, been confined only to traditional consumers; limited especially to areas 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 method for preparation of value added and convenience products would certainly diversify their food uses. Their exploitation for preparation of ready-to-use or ready-to-cook products would help in increasing the consumption pattern of finger millet among non-millet consumers. The enhanced consumption of finger millet will not only open up an avenue for the generation of employment and additional income for the stakeholders in addition to nutritional security of the society. The establishment of finger millet processing enterprises was initiated in the year 2010-2011 following the cluster approach through Self Help Groups (SHGs). It is worth mentioning here that economic and social

empowerment of socially disadvantaged groups and marginalized sections of society is necessary for achieving faster and more inclusive development. The present paper describes the efforts made to establish village level enterprises on processing and value addition of finger millet with the objectives of additional employment and income generation for the tribal farmers.

II. Methodology and study area

The study was undertaken in the adopted villages of Jagdalpur district of Bastar plateau of Chhattisgarh, India. Three villages namely Bhataguda, Dharampura and Nayamunda adopted under National Agricultural Innovation Project (financed by World Bank) were considered and selected for the study owing to their merits. The villages were selected based on the biophysical diversities i.e. distance from (i) block headquarters (ii) market growth centres, and (iii) road to bus points. In addition to these, due weighted was given to the basic infrastructures such as electrification, all weather roads, and strength of live SHGs^[6]. The information relating to the selected villages are provided in the following table (Table 1).

Table 1: General information of the villages selected for study

1.	Total villages selected for study	03
2.	Total SHGs selected for the study	03
3.	Proximity of villages from nearest road	0-3 km
4.	Proximity of villages from nearest road	0-5 km
5.	Nature of composition of villages	Multi-caste
6.	Total households in the study villages	354
7.	Total population of sample villages	1974
8.	Percentage of female literacy in sample villages	38.55
9.	Average of irrigated land (% of total cultivated area)	5.30

Source: Authour's own calculations based on field survey

The study was conducted in these three villages by selecting three targeted groups (SHGs) one in each village during the year 2010-2011. The groups were structured separately in each village, each of these groups had President and Secretary. It was made mandatory to have a bank account for each of these groups in the name of Self Hef Groups (SHGs). The name of SHGs are Gendaphool, Maa Danteshwari and Maa Hingalijin from villages Bhataguda, Dharampura and Nayamunda, respectively. The number of members in the groups varied from 12-15 members.

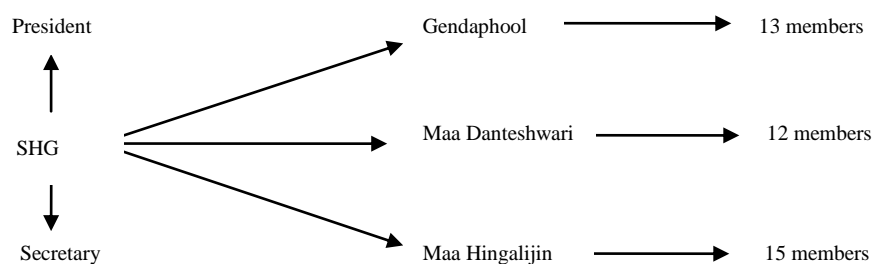


Fig. 1: Hierachy of Self Help Groups

III. Training and capacity building

In order to develop capacity or skill of the SHGs and empower them to undertake the specific work in the line of processing and value addition of finger millet, series of trainings were organised involving eminent scientists associated with the National Agricultural Innovation Project (NAIP) having the knowledge and skill in the area of millet processing, value addition, product development and quality control. The training programme also included the demonstration and training on hands beside lectures. In addition to these, SHGs were also trained for development of production plan, packaging, financial management, repair and maintenance and negotiation skill. Beside these, trainees were also sensitized for the linkage development art in general and marketing linkage in particular.

IV. Processing and value addition

The aim of processing and value addition of finger millet was kept to transform the grains into convenience form and develop semi-finished products which can be easily used for preparation of foods without putting extra efforts. While selecting the products, it was kept in mind that the product should be marketed easily and should

have capacity to generate potential profit for the stakeholders (cultivators and processors). Accordingly production of two popular products namely Multi-grain Flour and Ragi Malt emerged from the NAIP and have market potential were considered initially as the activity of the SHGs. The process flow-charts of these two products are presented below (Fig. 2).

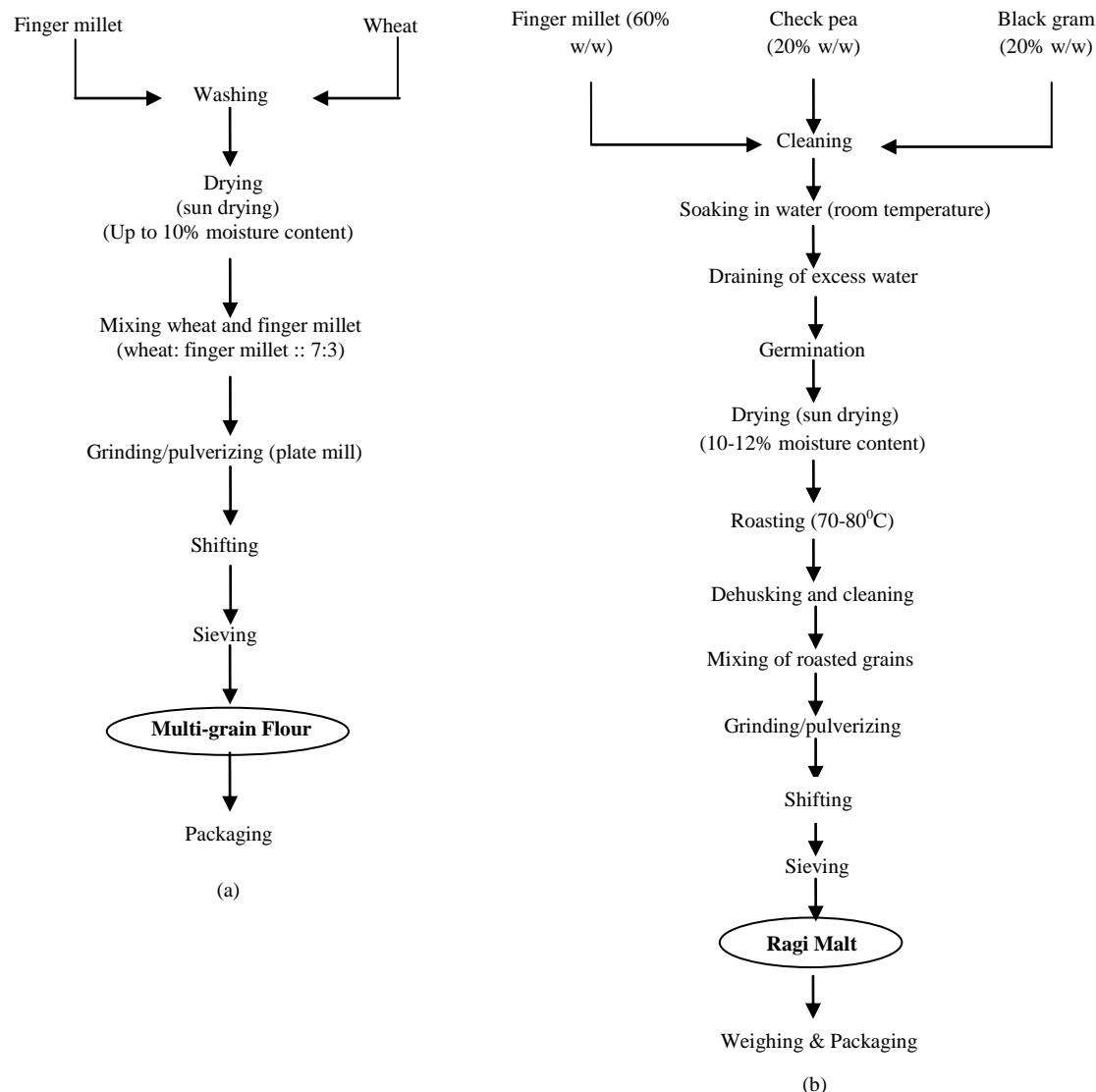


Fig. 2: Process flow charts for the production of (a) Multi-grain Flour and (b) Ragi Malt

Majority of the SHG members/beneficiaries are middle aged with lower education (primary level), having medium land holdings (mostly marginal farmers) and fall under the medium income group. Their livelihood mostly depends on agricultural activities coupled with collection and marketing of non-timber forest products (NTFP) from the adjoining forests/areas. As the region of Bastar comes under dry land and the entire agricultural activities depends on rain. Hence, after harvest of the crop the farm families remain without work and depend on forest produce and/or run after different projects/schemes operated by various agencies for the want of temporary engagement to earn livelihood.

V. Results and discussion

On the basis of one year data, the average results of the present activity are presented in the following table (Table 2). Table gives the economic analysis of the two targeted products (Multi-grain Flour and Ragi Malt). It can be depicted from the table that groups made a profit of Rs. 1205.00 and Rs. 893.00 per 100 kg of the product sold for Ragi Malt and Multi-grain Flour, respectively. It is worth mentioning here that the members rendered services to the group as and when required. The general working mode of the SHGs is presented in Fig. 3. They also followed the job chart prepared by the president and secretary of the group. In addition, they were also tuned with the adjustment or the exchange of duties with mutual understanding. This eventually reinforced the pace of the value chain in one hand and support to the group member on the other hand. The seed

money required to meet the initial investment for procurement of raw materials and other essential requirements was arranged by the group members. The activity required some essential processing machinery like flour mill which was managed by the groups from their own sources. It was observed closely that the groups are preparing quality products and selling in the market without any difficulty. However, initial efforts in establishing the linkage with the consumers was difficult like participation in meetings, farmers' fair, exhibitions, display of products on special occasions etc. The promotional help for marketing of the products was extended by the project NAIP in addition to linking up the SHGs with the Chhattisgarh State Minor Forest Produce (Trading & Development) Federation Limited, a sister organisation of the Forest Department of Chhattisgarh Government.

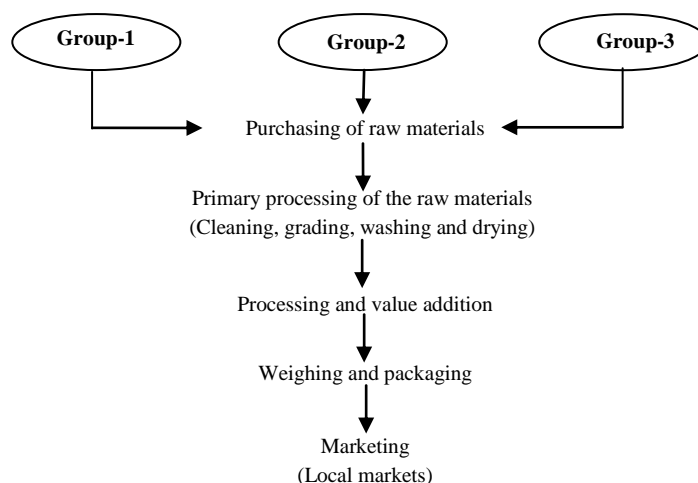


Fig. 3: Working mode of SHGs

Table 2: Economic analysis of Ragi Malt and Multi-grain Flour (Per 100 kg)

S. No.	Ragi Malt				S. No.	Multi-grain Flour			
	Particulars	Quantity	Unit Rate (Rs.)	Total Amount (Rs.)		Particulars	Quantity	Unit Rate (Rs.)	Total Amount (Rs.)
1.	Chick Pea	20 kg	30/kg	600.00	1.	Wheat	70 kg	23/kg	1610.00
2.	Black Gram	20 kg	70/kg	1400.00	2.	Finger millet	30 kg	20/kg	600.00
3.	Finger millet	60 kg	20/kg	1200.00	3.	Polyethylene bags	100 Nos.	1/piece	110.00
4.	Polyethylene bags	200 Nos.	1/piece	200.00	4.	Electricity charges	-	-	50.00
5.	Electricity Charges	-	-	50.00	5.	Losses	@10%	-	273.00
6.	Losses	@10%	-	345.00	6.	Total cost	-	-	2607.00
7.	Total cost	-	-	3795.00	7.	Sale price	100 kg	35/kg	3500.00
8.	Sale price	100 kg	50/kg	5000.00	8.	Total profit	100 kg	8.93/kg	893.00
9.	Total profit	100 kg	12.05/kg	1205.00					

Source: Authors own calculations based on market value.

Note: The labour cost has not been taken into consideration as no labourer other SHG members was used.

The consolidated initiation of SHGs on processing and preparation of value addition like Ragi Malt and Multi-grain Flour is a new ways 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 SHG members from hunting of work to earn livelihood. Further, availability of finger millet products in semi-finished form will help in enhancing its consumption which in turn will improve the nutritional intake of the consumers.

VI. Conclusion

Rural entrepreneurs, rural youths, women and farmers because of their inherent nature, lack of self confidence - which is essentially a motivating factor in running an enterprise successfully need support. They have to strive hard to strike a balance between earning livelihood and managing family. Recent past has witnessed empowerment of rural women through formation of SHGs and NGOs, and by providing technical backstopping and liberal credits. Processing and value addition of finger millet into convenient form provides an opportunity to the consumers to include this important commodity into their daily diets to make their food into healthy food.

Enhanced consumption of finger millet ensures nutritional security. The establishment of enterprise on finger millet processing will definitely enhance the livelihood of the stakeholders and uplift their living standard. The activity need to be strengthened by government initiatives in the form of training and capacity building of the farmers, women, youths, and linking the programme with the financial and marketing institutions.

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