

LIVELIHOOD SECURITY THROUGH ORGANIC FINGER MILLET PRODUCTION AND PROCESSING

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ABSTRACT

Farmers in the developing country like India are realizing the potential for organic produce and subsequent prices. Finger millet (*Eleusine coracana* L. Gaertn) is one of the important millets grown in India. In the year 2002-2003, the area under this crop in India was 14.22 lakh ha. whereas, the total production was 14.45 lakh tons. The Maharashtra State accounts for about 50 per cent area and more than 2/3rd production under this crop. The present study was undertaken with the specific objective to study the nutritive value of organic finger millet and efforts to enhance rural livelihood through organic finger millet production and processing. The study highlights the importance of finger millet, (locally called nagli or ragi) as a major food grain crop especially of the tribals with an excellent fodder for cattle. It contains important Vitamins viz. Thiamine, Riboflavin and Niacin. The Farm Science Centre, i.e. Krishi Vigyan Kendra (KVK) of the Mahatma Phule Agricultural University located at Dhule is making an all round effort to train the women on production and processing of different organic finger millet products. It is evident from the data that a total of 3019 women of Self Help Groups (SHGs) have been trained on processed products of finger millet through 110 training programmes during the last 3 years. Thus, through the intervention of KVK, the women SHGs have started the production of different finger millet products for income generation. This has contributed for their sustainable livelihood. It can be concluded that the organic finger millet has tremendous scope and potential as food in domestic and world market. It is essential to popularize and promote the organic products of finger millet among the society. Livelihood Security through organic finger millet production and processing is possible especially in remote tribal areas; hence our efforts need to be concentrated in this direction.

INTRODUCTION

The food habits of the world consumers are changing rapidly. Especially, in the developed countries, people have become more health conscious. Hence, the demand for organic food products is on the rise. These organic agricultural produce has good market in developed countries like USA, Germany, France, Italy, Britain and Japan. Farmers in the developing country like India are realizing the potential for organic produce and subsequent prices. Finger millet is widely produced in the cooler, higher altitude regions of Africa and Asia, both as a food crop and as a preferred input for traditional beer. However, statistical documentation of millet is generally poor and fragmentary.

In Asia, millet is restricted almost exclusively to two countries, India and China, although

Myanmar, Nepal and Pakistan also produce small quantities. India is the world's largest producer, harvesting about 11 million tons per year, i.e. nearly 40 per cent of the world's output. In India, millet is mainly grown in the states of Rajasthan, Maharashtra, Karnataka, Gujarat, Uttar Pradesh and Haryana. Dryland agriculture has a distinct place in Indian agriculture, occupying 67 % of the cultivated area, contributing to 44 % of food grains and supporting 40 % of human and 60 % of livestock population (Reddy, 2000). 91 % of the coarse cereals, 90 % pulses, 80 % oilseeds and 65 % cotton come from the drylands (Anonymous, 1999). Millets are better adapted to dry, infertile soils than most other crops and are therefore often cultivated under extremely harsh conditions.

Finger millet (*Eleusine coracana* L. Gaertn) is one of the important millets grown in India. In the year 2002-2003, the area under this crop in India

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was 14.22 lakh ha. whereas, the total production was 14.45 lakh tons. The area under finger millet (locally called *nagli* or *ragi*) in the state of Maharashtra was 1.44 lakh ha (2004-2005) while the production was 1.47 lakh tons. This accounts for about 50 per cent area and more than 2/3rd production. But, per hectare yield is quite low (851 kg/ha) as compared to India (1016 kg/ha). The present study was undertaken with the following objectives:

1. To study the nutritive value of organic finger millet.
2. To enhance livelihood security through organic finger millet production and processing.

RESEARCH METHODOLOGY

The present study was carried in the jurisdiction of Mahatma Phule Agricultural University (MPAU), established in 1968, which has been a centre of human resource development to meet the growing demands of the state as well as the nation for trained manpower specialized in agriculture. The university has made a spectacular progress in achieving its mandatory goals of education, research and extension over the last 38 years. This is one of the four agricultural universities in the state having jurisdiction of Western Maharashtra covering 10 districts. The unique feature of this university's jurisdiction is that it has extreme agro-climatic conditions of farming. The present study focuses on the issues of production and processing of finger millet crop in relation to prospects for organic marketing.

RESULTS AND DISCUSSION

Nutritive importance of finger millet

Finger millet is not only a major food grain crop but also an excellent fodder for cattle. Finger millet is considered as a poor man's food (Anonymous, 2000). It is nutritious and even superior to rice and wheat, in respect of crude fiber and mineral matter like calcium. Table 1 indicates the nutritive value of finger millet.

From Table 1, it is observed that finger millet is highly nutritious and rich in important Vitamins viz., Thiamine, Riboflavin and Niacin. Pilane (1995)

Table 1. Nutritive value of finger millet per 100 gm

S. No.	Contents	Quantity
1.	Protein	7.3 gm
2.	Fat	1.3 gm
3.	Calories	328 Cal.
4.	Calcium	344 gm
5.	Iron	6.4 mg
6.	Carotene	42 micro-gram
7.	Thiamine	0.42 mg
8.	Riboflavin	0.19 mg
9.	Niacin	1.1 mg

(Ref.: Anonymous, 1991)

reported the significant influence of the grain protein content in different varieties of finger millet. It is interesting to note that the lower incidence of cardiovascular diseases, duodenal ulcer and hyperglycemia (diabetes) are reported among finger millet consumer. Finger millet contains high calcium and iron values. Therefore, it is used in calcium deficiency and iron deficiency anemia. Tribal people use it for *chapati*. Pregnant and lactating women use this finger millet in the form of *lapasi* for increasing milk secretion and to improve the deficiency of haemoglobin, which had been lost in delivery. Usually, rural women add roasted *papad* in diet of growing children. Finger millet is used in the form of *roti*, malt, *ragi* mudde, *nagli papad*, *idali*, *shankar pali* (khara and sweet), *pakoda*, *halwa*, *ragi* chilly biscuits, *ragi* salad, *ragi koshimbiri*, *ragi dhokala*, *ragi* sweet, soft drink etc.

Efforts for Livelihood security through finger millet

The state of Maharashtra has the image of a developed agro-industrial state. It has a per capita income of Rs. 28,204, well above the nation's per capita income of Rs. 20,989. It has over 28,000 working factories accounting for 11.9% of the country's total, contributes 13 % of the nations GDP and has a 76.88 % literacy rate. The state capital, Mumbai, is the country's financial capital. Yet, Maharashtra has some under-developed regions. According to the 2001 census, 89 % of women in rural Maharashtra work on farms. Efforts are been made by the Government and State Agricultural Universities to increase agricultural production and eliminate poverty.

The Mahatma Phule Agricultural University has identified the reasons for low productivity of finger millet crop, such as cultivation of this crop on light soils and especially on hill slopes, use of local and low yielding varieties and non-adoption of improved crop management. The finger millet is a major food grain crop of the tribals living in remote areas. The MPAU, Rahuri has concentrated the finger millet research at the Zonal Agricultural Research Stations at Igatpuri (District: Nasik) and Kolhapur. The All India Co-ordinated Small Millet Improvement Project has been stated with the objectives especially to develop integrated nutrient management (INM) system, to maintain and distribute genetically pure seed of improved new varieties for farmers and to collect, maintain, screening of indigenous and exogenous germplasm

of small millets for different attributes like drought, pest and diseases resistance. Important technologies from these centers are been generated and transferred to the farmers.

Finger millet has some unique qualities, which makes it a potentially valuable product. It has excellent malting qualities (Anonymous, 2000). The University's Farm Science Centre i.e. *Krishi Vigyan Kendra* (KVK) located at Dhule is making an all round effort to train the women on production of different finger millet products. These women are trained on production of finger millet-soybean biscuits, finger millet-soybean *laddu*, finger millet malt and finger millet *papad*. Table 2 shows the training programmes-cum-demonstrations organized by the KVK on finger millet products for women Self Help Groups (SHGs) members.

Table 2. Training programmes conducted by KVK on finger millet products for women

Year	Finger millet <i>papad</i>		Finger millet-soya biscuits		Finger millet-soya <i>laddu</i>	
	No. of programmes	No. of Trainees	No. of programmes	No. of Trainees	No. of programmes	No. of Trainees
2005-06	12	328	--	--	--	--
2006-07	18	442	26	774	24	750
2007-08	10	225	10	250	10	250
Total	40	995	36	1024	34	1000

Hence, it is evident from Table 2 that a total of 3019 women of Self Help Groups have been trained on processed products of finger millet through 110 training programmes during the last 3 years. Thus, through the intervention of *Krishi Vigyan Kendra*, the women SHGs have stated the production of different finger millet for income generation. The data is in conformity with the findings of Dhingra and Hasiji, 2002, that intensive training programmes

for manpower employed in industry and educating the farmers can accelerate the processing industry.

The capacity building of farm-women in respect of preparation of finger millet value added products is done by the KVK by "Learning by doing" method. The Table 3 highlights the product wise quantity of products and the amount received by the women of SHGs trained by KVK.

Table 3. Income generation by women through marketing of finger millet products

Sr. No.	Product	Quantity of raw material (Kilograms)	Prepared product (Kilograms)	Amount (Rupees)
1.	Finger Millet <i>papad</i>	2450.0	1592.50	95,550
2.	Finger Millet-soya biscuits	600.0	450.0	27000
3.	Finger Millet-soya <i>laddu</i>	175.0	175.0	8000
	Total	3225.0	2217.50	1,30,550

The data in Table 3 indicates a part of income generation by the women of SHGs through marketing of processed products of organic finger millet. The nutritive value of these products has been enhanced through the addition of soybean. This has contributed for their sustainable livelihood.

CONCLUSIONS

The organic finger millet has tremendous scope and potential as food in domestic and world market. The city population in particular has enhanced their dependence on ready-to-cook and ready-to-eat food. Considering the total production of raw material, India has tremendous potential for development of organic food processing industry. Since the finger millet crop is grown mostly in the tribal belt of the country, it is imperative that the research generated by the Agricultural Universities and Research Institutes need to be transferred through Extension Services. The tribals since age are practising the organic production of finger millet. This aspect of organic agriculture can be further strengthened through adoption of integrated nutrient management. The integration of technologies on organic agriculture is needed. There is an utmost need to train the producers on

processing of organic farm produce to attain value addition to their products. Sustainable livelihood security through organic finger millet production and processing is possible especially in remote tribal areas; hence our efforts need to be concentrated in this direction.

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