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CONVERGENCE LED LIVELIHOOD SECURITY: A CASE STUDY IN CHITTOOR DISTRICT OF ANDHRA PRADESH

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ABSTRACT

Millets are small seeded grasses that are hardy and grow well in dry areas as rain-fed crops, under marginal conditions of soil fertility and moisture. Millets have certain intrinsic qualities suited for product development. A study was undertaken on value addition and market linkage to the various products of millets which have a commercial feasibility to enhance the income of the rural women. With this intention, the rural women of Kalikiri and Piler mandal, were extensively trained on processing, preparation of value added products, packing, branding and various possible avenues for market linkages. After acquainting with these aspects, rural women Mrs. M. Faridha, S. Thajwarsulthana and Najimunnisha with technical guidance of Krishi Vigyan Kendra (KVK), Kalikiri established two small scale processing and value addition units. Registration was done for marketing of millet value added products under Food Safety and Standards Authority of India – 2006. Presently these people are involved in preparation and marketing of value added millet products viz., millet biscuits, laddu, muruku, and mixtures under a brand name of "AROGYA MILLET FOODS & STAR HEALTHY SNACKS". The products are being marketed in Chittoor and Kurnool district of Andhra Pradesh.

KEYWORDS: Entrepreneurship, Processing, Value addition, Packing, Branding and Labeling

INTRODUCTION

Most of the operational area of Krishi Vigyan Kendra, Kalikiri is rainfed and the farming community depends mainly on rainfed agriculture for their livelihood. Due to uneven distribution of rain fall and occurrence of frequent drought conditions the farm families are unable to get minimum returns from agriculture. During the off-season, most of the women of this region are free from farm works. KVK, Kalikiri have made some interventions to engage these women in productive works and involve them in income generating activities that may help farm families to get sustainable income throughout the year.

The empowerment of women through self-help groups (SHGs), a non formal Cooperative organization would benefit not only the individual women but also the family and community as a whole through collective action for development (Holvoet, 2005; Tesoriero, 2006).

Millets are one of the oldest foods known to humans and possibly the first cereal grain to be used for domestic purpose. Millets are one of the most important drought-resistant crops and the sixth cereal crop in terms of world agriculture production. These crops also have inherent resistance to pests and diseases, short crop growth period and are suitable under drought conditions compared to major cereals (Devi *et al*., 2014). In addition, millets also have high nutritive value comparable to that of major cereals such as wheat and rice (Parameswaran and Sadasivam, 1994). Millets could also be accepted as functional food and nutraceuticals as they provide dietary fibers, proteins, energy, minerals, vitamins, and antioxidants required for human health. Millets also have several potential health benefits such as prevention of cancer and cardiovascular diseases, reduction of tumor incidence, lowering of blood pressure, risk of heart disease, cholesterol, rate of fat absorption and supply of gastrointestinal bulk (Truswell, 2002; Gupta *et al*., 2012). It has also been reported that millet proteins are good sources of essential amino acids except lysine and threonine but are relatively high in methionine. Millets are also rich sources of phytochemicals and micronutrients (Mal *et al*., 2010; Singh *et al*., 2012). Compared to rice especially polished rice, millets release lesser percentage of glucose over a longer period of time. This lowers the risk of diabetes.

Millets can be processed and value added into various products such as millet flours, multigrain atta, rawa, millet biscuits, ragi malt, millet based snacks etc,.

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It creates income generating opportunity to the rural women and increase the economic and social strength of women. Linking of farmers to the markets through efficient value chains would reduce the use of intermediaries in the chain and strengthen the value-adding activities by better technology and inputs, upgraded infrastructure and processing and exports. This process can raise the income of farmers and will provide incentive for improving their management practices towards higher farm productivity. The income of the farmers can be enhanced by increasing production, value addition, and better marketing options. The present paper describes the efforts made by Krishi Vigyan Kendra, Kalikiri to establish village level enterprise on processing and value addition to millets with an objective of self employment and income generation to the rural women.

MATERIAL AND METHODS

KrishiVigyan Kendra, Kalikiri, Chittoor district of Andhra Pradesh has conducted three skill development training programs to rural women, each of five days duration on Processing and value addition to millets at Kalikiri and Piler of Chittoor district during the year 2015-16. About 75 Self Help Group women mobilized by District Rural Development Agency (DRDA) participated in these three training programs from different villages of Kalikiri and Piler mandals of Chittoor District.

Trainings and Demonstrations

Interactive lectures coupled with hands on experience on preparation of millet biscuits, savouries, muruku and laddu etc., were given to the selected trainees and also were sensitized on nutrition value of millets, importance of value addition in food products, handling of processing and value addition unit, maintenance of hygiene while handling food products, labeling, packing, licensing and financial management.

Processing and value addition

The aim of processing and value addition of millets was to convert the grains into convenient food and to make the product nutritionally superior, to market easily and to have a shelf life of minimum one month. Accordingly four products viz., biscuits, savouries, muruku and laddu with finger millet, sorghum, bajra and korra (foxtail millet) 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

Chat – 1

Bajra Biscuits

Bajra flour (25%), wheat flour (25%), sugar power (25%) and butter (25%)

▼

Sieving of all flours

▼

Sugar power and butter were creamed together

▼

Add remaining flours and prepare soft dough

▼

Dough spread in to a sheet and into suitable shapes and sizes

▼

Cut pieces were gently placed on baking tray

▼

Tray was placed on oven for approx. 15 minutes at 170°C

▼

Baked biscuits remove from oven and cooled

▼

Weighing

▼

Packing and labelling

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Chat – 2

Finger millet muruku

Fingner millet flour (60%), black gramdal flour (20%), Bengal gram dal flour (20%)

▼

Sieve all flours

▼

Add sesame and cumin seeds, salt and heated oil

▼

Add water and prepare dough

▼

Dough put into muruku presser and press muruku

▼

Fry in oil

▼

Finger millet muruku

▼

Weighing

▼

Packing and labelling

Chat – 3

Sorghum mixture

Sorghum flour (50%), Bengal gram flour (50%)

▼

Sieve flours

▼

Add salt red chilli powder and water

▼

Prepare dough and press jowar sev with muruku presser

▼

Fry in oil

▼

Roasted Bengal gram dal, groundnut and rice flakes fry in oil

▼

Fried ingredients mixed to jowarsev

▼

Jowar mixture

▼

Weighing

▼

Packing and labelling

were assessed for nutrient composition by computation method using 'Nutritive Value of Indian Foods' (Gopalan *et al*., 2004).

Establishment of processing unit

To bring systemization and regular production, there was a need for establishment of t own processing unit for preparation of millet based products. Hence a plan was developed for establishment of processing unit with minimum necessary machineries

Chat – 4

Foxtail millet laddu

Foxtail millet flour (53%) roasted Bengal gram flour (10.5%)

▼

Roast with ghee (10.5%)

▼

Cool it

▼

Add sugar powder (26%) and cardamom

▼

Mill it well

▼

Press laddu

▼

Foxtail millet laddu

▼

Weighing

▼

Packing and labelling

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profile indicated that majority of farm women belonged to the age group of 26-35 years (52%) followed by 21-25 years (32%). With respect to literacy, 57.3 per cent of women were educated up to high school level followed by primary education level (32 %) and only 10.7 per cent were illiterates. The occupation pattern indicated that majority (65.3%) of them were farm labor followed by housewives (34.7%). Majority of these women were having two children (53.3%) and the family size was 2-4 members (62.7%). The results also showed that 76 per cent of families were nuclear.

Nutrient composition of value added products

The nutrient composition of millets value added products viz., bajra biscuits, finger millet muruku, sorghum mixture and foxtail millet laddu was calculated and given in table 2. The nutrient content of the products which were promoted through these interventions ranged from 60.1- 67.08g of carbohydrates, 5.52-15.6g of protein, 2.18-21.6g of fat, 19.25-248.4 mg calcium and 1.85-5.65 mg iron. Nutritional values are on par with the study conducted by Yenagi *et al*. (2010) on nutrient composition of ethnic and novel foods from minor millets.

Establishment of processing and value addition unit:

After acquainting with processing, preparation of value added products and packing, two trainees Mrs. Thajwarsulthana and Najimunnisha from Piler mandal and one trainee Mrs. M. Frida from Kalikiri mandal came forward to take up processing and value addition of millets as an entrepreneurial activity. Under technical guidance of KVK, Kalikiri and with the financial support of Development Of Women And Children In Rural Areas (DWCRA), they have established two small scale processing and value addition units in their locality. Rooms were rented for establishment of the units necessary equipment's viz., bakery oven, weighing scale and sealing machine were purchased. KVK, Kalikiri have assisted them in procuring of equipments, installation and handling. Scientists from KVK, Kalikiri have regularly supervised and monitored the quality of the end products ensuring use of good quality raw material, oils etc. KVK, Kalikiri also have assisted the entrepreneurs for registration of their unit with Food Safety and Standards Authority of India 2006. The units were registered with brand names "AROGYA MILLET FOODS" (FSSAI Reg. No. 20116020000285) and "STAR HEALTHY SNACKS" by the three entrepreneurs.

Marketing of the value added products:

Initially the products produced by these women were sold under the brand name of KVK, Kalikiri during agricultural exhibitions organized by Acharya N.G. Ranga Agricultural University, Guntur and the department of agriculture, Andhra Pradesh in different locations. After creating a platform for these products, the products were placed in the local stores in Kalikiri, Piler, Super markets in Tirupati and wholesale shops in Nandyal of Kurnool district. An exclusive outlet for sale of these products was also opened in the vicinity of KVK, Kalikiru for

Table 1. Socio-demographic profile of farm women

Variables	Category	N=75	
		Number	Percentage
Age	21-25 Years	24	32
	26-35 Years	39	52
	36-40 Years	12	16
Education	Illiterates	08	10.7
	Primary	24	32
	High school/above	43	57.3
Occupation	Housewife	26	34.7
	Labour	49	65.3
Type of Family	Nuclear	57	76
	Joint	18	24
Family size	2-4 members	47	62.7
	5-7 members	28	37.3
Number of Children	One	07	9.3
	Two	40	53.3
	Three and above	28	37.4

meeting the local demand. In addition to the regular market avenues, the value added products were also being supplied to KVK, Kalikiri and Regional Agricultural Research Station (RARS), Tirupati and other institutions for distributing the same as snacks to the participants during various training programs and other official meetings. On an average, about 350 kg of various millet based products were being produced and sold per month with a net profit of ₹ 40,000-45,000/-.

Economics of value addition to millets:

On the basis of one year data, the economic analysis of the four products viz., bajra biscuits, finger millet muruku, sorghum mixture and foxtail millet laddu are presented in the Table-3. The monthly sales were around 95-100kg bajra biscuits, 115-120kg finger millet muruku (Chakli), 110-115kg sorghum mixture and 90-95kg foxtail millet laddu earning monthly net profit of ₹ 10,545-11,100 from bajra biscuits; ₹ 11,845-12,360 from finger millet muruku (Chakli); ₹ 10,670-11,155 from sorghum mixture and ₹ 11,970-12,635from foxtail millet laddu.

Thus, a small intervention made by KVK, Kalikiri in convergence with DRDA resulted in a sustainable income generation for poor rural women and enhanced their livelihood standards. Incidentally, the annual consumption of raw material by these value added units annually was around 1000 kg of finger millet, 800 kg of foxtail millet, 900 kg of jowar and 400 kg of bajra thereby creating market for rainfed farmers of the region. This process can raise the income of farmers and could provide incentive for improving their management practices towards higher farm productivity. The income of the farmers can be enhanced by increasing production, value addition and better marketing options. An efficient value chain by linking small and marginal farmers to these value added units will enhance the net returns for both the parties mutually.

CONCLUSION

The interventions of KrishiVigyan Kendra played a strategic role in increasing self-confidence among farm women in undertaking small scale food processing and value addition units at their village level and to reach the market in urban area. The consolidated initiation of farm women on processing and preparation of value addition to millets 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 millet products will help in enhancing its consumption which in turn improve the nutritional intake of the consumers.

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Table 2. Nutrient composition of value added millet products

Products	Protein (g)	Carbohydrates (g)	Fat (g)	Calcium(mg)	Iron (mg)
Bajra biscuits	5.52	60.1	21.6	19.25	2.7
Finger millet muruku	13.34	67.08	2.18	248.4	4.16
sorghum mixture	15.6	66.2	3.75	40.5	4.7
Foxtail millet laddu	8.32	65.4	13.1	25.5	2.54

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

Products	Production cost (₹ kg^{-1})	Selling price (₹ kg^{-1})	Net profit (₹ kg^{-1})	Sales/ month (kg)	Profit/month (₹)
Bajra biscuits	89	200	111	95 – 100 kg	10,545 – 11,100
Finger millet muruku (Chakli)	97	200	103	115 – 120 kg	11,845 – 12,360
Sorghum mixture	103	200	97	110 – 115 kg	10,670 – 11,155
Foxtail millet laddu	107	240	133	90 – 95 kg	11,970 – 12,635
				Total Earnings / month (₹)	**45,030 – 47,250**

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