



E-ISSN: 2278-4136

P-ISSN: 2349-8234

www.phytojournal.com

JPP 2020; 9(2): 1030-1032

Received: 17-01-2020

Accepted: 19-02-2020

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Entrepreneurship development through value addition of millets and Jaggery in Bagalkote district of Karnataka

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Abstract

This study aims to explore the opportunities which encourages people to become entrepreneurs using the existing resource with hand holding in terms of packaging and labeling. Due to price fluctuation and glut in the market, poor shelf life, low price farmers face problems in getting the sustained income from the farms. Hence in order to assure with sustained income and enhance the marketability of the produce, entrepreneurship development programmes were planned and approval was sought in the annual action plan of KVKs. The data presented in this paper is the results of two entrepreneurship Development programmes (EDP) sanctioned to KVK Bagalkote, one on value addition to millets and another on value addition to Jaggery during 2017-18 and 2018-19 respectively. First EDP was on millets where in twelve women from an SHG and an NGO by name Future Greens were trained by the KVK to prepare the pedha (a value added product from foxtail millet). This value added product from foxtail millet was released under the brand name Krishi Dhara Navane Peda. Apart from Krishi Dhara, a brand name issued by KVK, FSSAI certificate was also obtained and products were sold with this license number. The product was standardized, evaluated for its organoleptic characters and cost benefit analysis. This product is and is sold in an outlet by name Simply Satwik by the NGO. Another EDP on value addition to jaggery in terms of packing and labeling. Similar to Navane Pedha FSSAI number and Krishi Dhare label were also provided to an entrepreneur who is involved in solid and granular jaggery preparation. The economic analysis of both the products revealed that, technical guidance for the value addition with university brand (Krishi Dhare) enhanced the value of the product to the tune of 20% in jaggery and doubled the profit in millets. The quantity of sale after packaging and labelling increased to five times in jaggery and two times in millets.

Keywords: Millets, value addition, Jaggery, Entrepreneurship development programme

Introduction

This entrepreneurship is the act of self-motivation, originality, resourcefulness, imagination, ingenuity to setting up a new venture in a society with uncertainty Rahman and Habibur [1985] [5]. Entrepreneurship development is the process to integrate all the entrepreneurial qualities- confidence, commitment, hardworking, flexible, persistence, independence, determination, initiative, versatile, perceptive, leadership, innovativeness, profit oriented, foresightedness, creativity. Sharma [1979] [7] narrated this development process depending on multiple factors, by the integrated package programs, including (i) Stimulatory programs, (ii) Supportive programs and (iii) Sustaining programs. Due to price fluctuation and glut in the market, poor shelf life, low price, farmers face problems in getting the sustained income from the farms. Lack of employment opportunities among rural youth and women also make them go in search of the employment to the cities. As a small step to answer this problem and to encourage entrepreneurial characters among the farm women and rural youth, Entrepreneurship Development Programmes are designed and proposed during action planned of krishi vigyan Kendra, Bagalkote. Millets are highly nutritious and are known to have good nutritive value and therapeutic use. In developing countries like India with increasing urbanization, the demand for processed food is increasing popularly. There are large number of products which are made from millets, but people lacked awareness on value addition. The area under millets is increasing day by day due to incentives being provided by the govt. to enhance the area under millets. This necessitates the need for value addition to millets.

The major sugarcane growing districts in Karnataka are Belgaum (43%), Bagalkot (16%), Bijapur (10%), Mandya (5%) and Mysore (4%). Bagalkote district, being agriculturally potential district, has more than one lakh ha area under sugarcane and eleven active sugarcane factories in the district. Jaggery unit is an important cottage industry supply over 40 per cent

demand of the sweetener in the state besides providing employment to the rural people. The jaggery industry has been considered as one of the small scale and cottage industry in India. It has undergone several changes over the years. The process of preparation of jaggery has also undergone considerable changes. As a result of these changes the jaggery industry is offering a stiff competition to sugar industry for sugarcane. The price elasticity of demand for and supply of jaggery being fairly low and demand for jaggery rising steadily, their price instability is largely attributed to the changes in their production labour, electricity and the consequent changes in the market arrivals. According to Suresh (2008), Production of jaggery found more profitable than sending cane to sugar factory with benefit cost ratio 1.83 and 1.08 respectively. Despite its vast magnitude, the jaggery industry has serious drawbacks in terms of poor quality production, lack of standardization in quality production, wasteful utilization of heat energy, excessive loss of product due to improper processing and poor hygienic conditions of the units, improper packing and storage (Jayamala *et al.* 2009) [3].

Production of jaggery is a seasonal and is stored over a fairly long period of 6-8 months. During storage jaggery undergoes various physical, chemical, biological and microbiological changes depending upon the type of storage and conditions under which it is stored. Physical changes include colour impairment such as darkening, loss of texture and change in taste caused by biochemical disintegration of some of the jaggery constituents and weight loss due to desiccation. Chemical deterioration includes biochemical changes in the jaggery composition, particularly those responsible for inversion of sucrose and discolourisation. Damage from insects and ants in particular, is the most and important form of biological spoilage. Fermentation and biochemical degradation caused by yeasts and moulds are the usual forms of microbial deterioration. All these changes in stored jaggery can be minimized through well designed storage structures and controlling storage conditions provided the jaggery meets the quality requirements before being stored.

Taking cognizance of these facts, Krishi Vigyan Kendra, Bagalkote conducted two EDPs and the results are analysed using simple statistical tools.

Material and Methods

For the entrepreneurship Development on millets, the foxtail millet was identified for value addition. The foxtail millet made into flour, sugar made into powder, ghee were purchased from local market. The recipe of the product Navane Pedha was standardized for one kilogram of the final product was foxtail millet flour - 400g, Sugar powder 400 g, ghee 200 g and few cashew to garnish. The foxtail millet flour was roasted by putting little ghee. After cooling the sugar powder and remaining amount of ghee was added and made into small balls. Then they were packed into state of art packaging boxes with brand label, FSSAI number, qty, price, nutritional facts. The nutritional composition of the product was calculated using the dietary guidelines provided by ICMR-National Institute of Nutrition (NIN), 2010. Hyderabad. Organoleptic Evaluation using 9 point hedonic scale was conducted. A panel of 20 staff members were invited for organoleptic evaluation. Sensory evaluation using 5 point scale i.e., appearance, odor, taste, texture and overall acceptability was carried out. Three trainings were conducted for the women members of self Help groups and local NGO-Future Greens. For EDP on jaggery, an entrepreneur who is

involved in the jaggery making was identified, packaging with Food wrap plastic film with 9-70 micron was used for packing one kg soild jaggery in bucket shape, labeling with Krishi Dhara, FSSAI number were introduced on packaging. Cost of production and economics were worked out to establish the profit and loss per kg of the product.

Results and discussion

Table 1: Type and cost of ingredients used for Navane Pedha

| Particulars | Qty (g) | Amount |
|--------------|---------|--------|
| Navane atta | 400 | 40 |
| Sugar powder | 400 | 30 |
| Ghee | 200 | 100 |
| Cashew | 10 | 10 |
| Label | one | 20 |
| Labour | 2hr | 50 |
| Total | 1010 | 260 |

Table 2: Nutrient composition per kg of Navane Pedha

| Nutrient | Qty |
|----------|------------|
| Protein | 10 g |
| Energy | 520 K. Cal |
| Fat | 20 g |
| Fibre | 3.2 g |
| Iron | 1 mg |
| Calcium | 12.4 mg |

The nutrient composition of the developed Navane Pedha was calculated using nutrient composition per kg of the product as per the guidelines of NIN handbook. It was found that, this product has about 10 g of protein, 520 K.Cal, 20 g fat and 3.2g fibre, rich in Calcium and Iron.

Table 3: Extension activities conducted to promote EDP on millets

| Name of the NGO trained | Future greens, Bagalkote |
|------------------------------|---|
| Name of the outlet | Simple Satwik market outlet, Vidyagiri, Bagalkote |
| Average sweets sold /week | 4 kg |
| Qty of the product sold | 160 kg |
| No of women trained | 12 from NGO and one SHGs. |
| Cost of the produce /kg (Rs) | 400 |
| Net profit(Rs/kg) | 140 |

Table 4: Impact of value addition on economics of jaggery

| Criteria | Before | After |
|--|--------|---------------|
| Cost of jaggery production /ton (excluding cost of cane) | 1500 | 1500 |
| Cost of per kg jaggery | 50 | 55 |
| Cost of powder (granular) jaggery (Rs/kg) | 70 | 80 |
| Cost of packing jaggery(Rs/kg) | Rs.2 | Rs.3 |
| Sale/year(ton/yr) | One | Five |
| Brand value | No | Yes |
| Net income earned(Rs) | 50000 | 150000-200000 |

Results presented in table 4 explain that, the cost of jaggery production was around Rs. 1500 excluding cane and, similar results were obtained by Chandrashekar *et al* (2014), who analysed the economics of jaggery making and revealed that, the cost of production accounts to Rs. 3734/ton of sugarcane comprising cost of sugarcane (@ Rs. 2250/t), harvesting (Rs. 300), transportation (Rs. 250/t), labor for jaggery preparation (Rs. 657/t), chemicals (Rs.55/t), packing material (Rs.22.5/t)

and marketing and transportation cost (Rs. 200/t). The gross and net return was found to be Rs. 4138 and Rs. 404/ton.

Food wrap plastic film with 9-70 micron was used for packing soild Jaggery in bucket shape. This wrapping acts as food preservation, branding of the product, carrying the product from one place to another place as well as informing of the product. Shinde *et al.* (1983) ^[8] reported that by using the polythene film of any colour, moisture absorption and liquefaction of jaggery can be avoided. Low density polyethylene film (LDPE) absorbs the water less than 0.01% in 24 h. Jaggery irradiated at 7.0 kGy stored in low density polyethylene (LDPE) pouches was found to be best till the end of the storage period when compared to 3 and 5 kGy treated samples (Sankhla *et al.*, 2011) ^[6].

Baboo and Solomon ^[8] suggested improved practices for safe storage of jaggery: (i) Moisture content of jaggery should be less than 6 per cent before storage, (ii) Fresh jaggery should not be covered with polythene sheet or air tight material and sufficient ventilation should be provided, (iii) Storage of jaggery in polythene lined gunny bags found to be safe and (iv) Use of chemical clarificants, inferior, premature or over mature cane makes the jaggery unfit for storage particularly during monsoon. Under the prevailing temperature conditions in the country, loss of jaggery colour and flavor is natural and cannot be prevented even under proper storage conditions. Experiments conducted at various institutions in the country indicate that cold storage is most suited as compared to ordinary storage of jaggery. However, for minimizing deterioration in quality during cold storage, wrapping of jaggery (palm leaves mat or alkathene + hessian cloth) is necessary. In cold storage jaggery can be stored as fresh for a year or so. (Jayamala *et al.* 2009) ^[3].

An enquiry into the marketing of this product revealed that, the jaggery is sold through Contract marketing, marketing through FPOs, Open market, Friends KVK, Mela etc. The Entrepreneur opined that, technical guidance & training from KVK helped to produce value added product and Brand value has enhanced the demand for jaggery. The constraints faced by the entrepreneur in the process of jaggery packaging revealed that, there is need for thorough training in the process of making granular jaggery.

Conclusion

Farm diversification and secondary agriculture are talk of the day. This may inferred that, the product is energy rich and may be included in the school menus/Anganawadis as supplementary food. Considering the amount of jaggery production and its ever-increasing demand within the country and export market, there is a need to develop and expand cold storage technology and warehouse network for long term storage of jaggery.

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