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Current Uses and Future Prospects of Ginger Processing and Entrepreneurship Development among Farm Families

Dashrath Bhati[1], Rita Singh Raghuvanshi[2] and Sudha Jukaria[3]

Department of Food and Nutrition, College of Home Science,
[3]Krishi Vigyan Kendra, Jeolikote, Nainital
GB Pant University of Agriculture and Technology (Uttarakhand)

ABSTRACT

Ginger processed products were developed in the Department of Foods and Nutrition, College of Home Science, GB Pant University of Agriculture and Technology, Pantnagar, Uttarakhand. The present study was conducted to assess the quantity of ginger used in production and final utilization of ginger. Need assessment for ginger processing skills and training was done to ensure livelihood security. An extensive survey was conducted in Bhimtal block, Nanital District, Uttarakhand. Total 50 farmers were selected and interviewed through structured questionnaire for data collection. The study revealed that 75.0 per cent of the farmers were growing ginger and 67.57 per cent of farmers using 2 to 25 kg as ginger seeds. During peak season, the selling price of ginger ranged between Rs. 30/kg to 80/kg. However, the price of ginger varies widely with production. Eighty four per cent of the farmers were ready to prepare these products, however 64 per cent wanted to sell ginger *sherbet* in market. Out of 43 farm women trained, only 4 female (with adoption rate 9.30 %) adopted this as a business. Hence, processing of ginger may help in increasing the farmers' income.

Key Words: Employment, Processing, Spices, Household Consumption, Entrepreneurship.

INTRODUCTION

Ginger (*Zingiber officinale* Rose.) is an important commercial spice crop in tropical and subtropical region (Ambia, 2006). The rhizome is used worldwide as spice for flavouring in a number of foods and food-products and also used in medicine. Ginger used in traditional medicine, has been found to possess antioxidant effect that can control the generation of free radicals (Ahmad *et al,* 2006). The main bioactive components of ginger possess antioxidant, anticancer, and anti-inflammatory attributes (Malu *et al,* 2009 and Ghasemzadeh, 2010). It is effective for the treatment of inflammation, rheumatism, cold, heat cramps, and diabetes (Al-Amin *et al,* 2006 and Afshari *et al,* 2007). Several studies suggest that ginger may work better than placebo in reducing some symptoms of motion sickness.

Uttarakhand, located at the foothills of the Himalayas, is characterized by diverse geographical features ranging from snow-capped mountain peaks in the North to tropical forests in the South. This complete region is divided in 4 agro climatic zones *i.e.* Zone A (lower hills up to 1000 m), Zone B (mid hills 1000-1500m), Zone C (high hills 1500-2400m), Zone D (very high hills > 2400 m). Major spices are ginger, garlic, turmeric and chilly. In India, Uttarakhand ranks 6th in production of ginger with productivity 9.66 MT/ha in the 2015-16. The major producing belts in the state are Almora and Tehri. In hilly regions, major wildlife agents responsible for crop damage are wild boar, bear, porcupine, monkey, musk deer and partridge. Monkey and wild boar alone accounted for about 50 to 60 per cent of total crop damage. Potential solutions needed to undertake suitable and appropriate protective measures to minimize the crop losses.

Corresponding Author's Email:bhati.dashrath.1@gmail.com
[1]Post Doctoral Fellow, [2]Dean and Professor

Fresh ginger is seasonal, perishable in nature and available in large quantities during the peak season in the local market. After harvesting it cannot be kept for longer period due to higher water activity and during storage it suffers from weight loss, shrinkage, rotting and sprouting. Due to lack of processing and value addition practice in ginger, during harvesting season, a huge quantity of fresh produce becomes unmarketable (Nath *et al*, 2013). Diversified use in the form of processed ginger products may help in efficient utilization of its production and ultimately reduces the post harvest losses. Ginger enters the market in six forms, which are used in different cuisines: these include fresh ginger, dried ginger, pickled ginger, preserved ginger, crystallized ginger and ground ginger (www.spice-trade.com, 2009). Fresh ginger comes in mature and immature forms. Both mature and immature rhizomes are consumed as fresh vegetable. Preserved ginger is made only from immature rhizomes. Fresh ginger is also available with garlic and most popularly known as ginger garlic paste. The most important commercial form is dried ginger followed by preserved ginger, while fresh ginger is of least commercial significance. However by processing of fresh ginger in various forms of processed products may enhance its commercial significance.

In hilly areas the size of farms is small and farmers grow ginger in small amount for household consumption. When the production is more than requirements then it gets wasted due to germination. Hence skills related to the processing of ginger especially in area of its production may be helpful in gainful employment for farmers. Keeping

Table1. General information, production and utilization of ginger by farmers of the studied area.

Sr. No.	Particular	Respondents General information	
		Frequency	Percentage
1	Gender		
	Male	13	26.0
	Female	37	74.0
2	Age		
	Young (up to 28 yr)	18	36.0
	Middle (29-38 yr)	15	30.0
	Late middle (39-48 yr)	7	14.0
	Old (49 yr and above)	10	20.0
3	Education		
	Primary	19	38.0
	High school/ intermediate	25	50.0
	Graduation	5	10.0
	Post Graduation or other	1	2.0
4	Occupation		
	Un employed	18	36.0
	Agriculture	22	44.0
	Employed (Gov./Privet sector)	6	12.0
	Student	6	12.0

Table 2. Ginger production and its utilization by the famers.

Sr. No.	Particular	Ginger production and its utilization by the respondent	
		Frequency	Percentage
1	Grows ginger	37	74.0
2	Production of ginger		
	Below 50 kg	9	24.3
	50kg – 100kg	9	24.3
	100kg - 150kg	4	10.8
	150kg -200kg	4	10.8
	Above 200kg	11	29.7
3	Use of ginger		
	Self consumption	37	100.0
	For seed	33	89.1
	For sale	24	64.8
	Sent to relatives	19	51.3
4	Form of ginger consumption		
	Tea	50	100.0
	Vegetable	36	72.0
	Dried/*Sherbet*/Candy	0	00.0

this in view survey was conducted to know the consumption and utilization pattern of ginger by the farmers and need assessment for the processing of ginger was undertaken in Uttarakhand.

MATERIALS AND NMETHODS

Three ginger products *viz., sherbet*, candy and toffee were developed. Ginger powder was the by-product while processing of ginger for *sherbet*. All the products were standardized at Department of Foods and Nutrition, College of Home Science GB Pant University of Agriculture and Technology. A survey was conducted among the farmers in Bhimtal, Nanital District of Uttarakhand. The area for study was selected on the basis of ginger production data and feasibility for follow-up of these farmers. The respondents were selected randomly from Lamjal, Bhurjala and Suryajal villages from Bhimtal. Structured questioner was prepared and all the respondents were interviewed for reliable data. The questionnaire was divided into three parts viz. General information of the respondents, ginger production, it's utilization and perception on ginger processed products and skills. On the basis on farmers' interest in processed products of ginger one day training programme was conducted at Lamjala and Gathiya village of Bhimtal. Impact of the training was recorded in terms of gainful self employment.

RESULT AND DISCUSSION

General information

The data on general information (Table 1) revealed that 74 per cent of the respondents were female, young followed by middle and old aged. The average age of the respondent was 36.12 yr which was in range of the studies focus on entrepreneurs 35 to 45 yr (Bruhn and Zia, 2012; Premand *et al,*

Table3. Perception of respondent on the processed ginger *sherbet.*

Sr. No.	Particular	Perception of respondent on the processed ginger *sherbet*	
		Frequency	Percentage
1	Liking of the products		
	Extremely	13	26.0
	Too much	33	66.0
	Like Moderately	4	08.0
2	Want to get training for ginger processing	42	84.0
3	Willingness to adopt as business	32	64.0
4	Knowledge of the regulatory bodies working for food products		
	Yes	11	22.0
	No	13	26.0
	No response	27	54.0

2012). The education data showed that 50.0 per cent of the respondent was high school passed and 38 per cent was primary educated.

Ginger production and utilization

It was observed that currently 74 per cent of the farmers were growing ginger (Table 2) and 24.32 per cent were growing below 50kg. In terms of ginger consumption it was noted that all the respondent were consuming ginger in tea followed by curry preparation (72.0%). During peak season, the selling prices of ginger ranged between Rs. 20/kg to 80/kg. All the prepared ginger products were liked very much by the farmer. The farmers were ready to prepare the products and sell them in market. Hence both products may help in increasing the farmers' income.

Perception on ginger processed products

It was noticed that ginger products were liked extremely and too much by 26.0 per cent and 66.0 per cent of the respondent, respectively (Table 3) 84.0 per cent became interested to acquire training for ginger *sherbet* making.

Training and its impact

On the demand of farmers, one day method demonstration was given to the 43 farm women. Impact of the training was recorded in terms of adoption rate of ginger processing technology in the form of product preparation and selling by these trained farmers in local market. After training four farm women were inspired to make ginger candy and *sherbet* and adopted the technology for income generation. Two days intensive training was given to these farm women. Initially 6 kg ginger was processed per day for *sherbet* making. The products were sold with the profit of more than 50 per cent. For ginger candy 6 kg ginger was processed twice a week. This was also sold with the profit of 50 per cent (table 4). By products such as ginger pulp and peel was dried by these adopters and consumed as a "*masala*" for tea.

CONCLUSION

Entrepreneurship related to food processing has been named as one of the key driver for economic growth of farmers and rural youth. Entrepreneurship has been linked to amplified growth, increased aggressiveness of countries, increased creation of wealth and increased quality of life. In developing countries like India training programmes related to food processing skills are essential for especially

Table 4. Cost production of ginger *sherbet* and candy:

Parameters	Details for candy	Details for *sherbet*
Assumption	25 working days in a month and one shift of 8 hr/day.	25 working days in a month and one shift of 8 hr/day.
Cost of raw material	Rs. 6,000/- (6 kg ginger/ week)	Rs. 64,500/- (6 kg ginger/working day)
Wages of worker per month	Rs. 5,000/-	Rs. 10,000/-
Total Production	800 (packed in 30gm/ Packet)	875 litters (packed in 200ml/bottle)
Total Cost	Rs. 11,000/-	Rs. 74,500/-
Total turnover/ month	Rs. 22,000/-	Rs. 1,49,000/-
Net Profit per month	Rs. 11,000/-	Rs. 74,500/-

for small farmers because of their over-dependence on agriculture for employment. Such farmers has less produce to handle hence food processing related skills would be highly beneficial in terms of economic growth and develop livelihood security specially among the small farmers. Thus entrepreneurship development in rural industries appears to be the best potential alternative to find employment avenues for the rural population.

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