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A Study on Knowledge Level of Ginger Growers on Improved Cultivation Practices in Hassan District, India

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A B S T R A C T

The study was carried out in two taluks of Hassan district during 2017- 18 to study the knowledge and adoption of improved cultivation practices by ginger growers. A total of 80 ginger growers selected for the study as the respondents. Data was collected using a pre-tested interview schedule. The results revealed that majority of the ginger growers possessed high (60.00 %) level of knowledge about improved cultivation practices. Whereas, 21.25 and 18.75 per cent of the ginger growers belongs to medium and low knowledge categories, respectively. More than half (53.75 %) of the ginger growers belongs to high adoption category. Whereas, 25.00 and 21.25 per cent of the ginger growers belongs to medium and low adoption categories, respectively.

Introduction

The history of Indian spices dates back to the beginning of human civilization. There are over 50 species of spices cultivated in India and many of them are indigenous *viz*, Black Pepper, Cardamom, Ginger and Turmeric while Clove, Vanilla, Nutmeg and Chilli are introduced from other countries. Ginger (*Zingiber officinale* Rosc.) is fragrant spice made from the rhizome of a plant, which may be chopped or powdered for cooking, preserved in syrup, or candied and one of the important vegetable/ cash crops grown in India. It belongs to genus *Zingiber* under *Zingiberaceace* family. According to Food and Agricultural Organization, the total Ginger production in the world is 20, 23, 113tonnes (Anonymous, 2011). India is the largest producer of Ginger in the world contributing (34.60%) with a production of 702 thousand tonnes of the global production followed by China (19.10%) with a production of 426.03 thousand tonnes, respectively.

The top five ginger producing countries are India, China, Nepal, Nigeria and Thailand. The total Ginger produced in the country was 7, 02, 000 tonnes from an area of 1, 49, 199

ha with a productivity of 2,903 Kg per ha. Hassan, Mysore, Kodagu, Shimoga and Bidar contribute over 70 per cent of the total production in Karnataka. Hassan has the highest area and production of 14,176 ha and 86,598 Metric tonnes respectively with the productivity of 6.11 metric tonnes (Anonymous, 2017). Several studies have been conducted on food crops to know the knowledge and adoption, but very few research studies have been conducted on spice crops. Recent studies have shown that there is a tremendous scope to increase the ginger yield and the fact is that all farmers are not getting the potential yield.

With this background, the study was undertaken with the following objectives includes to know the socio-economic profile of the ginger growers. To assess the knowledge level of the ginger growers regarding the improved cultivation practices. And also to find out the association between knowledge of ginger growers with their socio-economic profile.

Materials and Methods

The study was conducted during 2017-2018 in Hassan district of Karnataka State. Hassan district was selected purposively, because it has more area under ginger in Karnataka. Hassan district has eight taluks, out of which Hassan and Arakalagud taluks were selected purposively considering the higher area and production.Four villages were randomly selected from each taluk and hence eight villages with high ginger area were selected.

The villages thus selected were Kudaluru, VosavadaHosahalli, Konapura and Chikkalli of Arakalagudtaluk; Somanahalli, Siddapura, Muthatthi and Konehalli from Hassan taluk.In the present investigation "Ex-post facto" research design was used. Expost-facto research design is defined as any systematic empirical inquiry in which the independent variables have not directly manipulated because they have already occurred or because they are inherently not manipable. The independent variables considered in the study have already occurred and are not directly manipulated by the type of variables under consideration, size of the respondents and the phenomenon to be studied. Hence, the selected design considered was appropriate.

Knowledge is operationally defined as "This refers to the body of information understood and retained by the ginger growers about the ginger cultivation as recommended in package of practices of University of Agricultural Sciences, Bengaluru".Improved cultivation practices are operationalized as the practices of ginger management are envisaged in the book of package of practices recommended by the University of Agricultural Sciences, Bengaluru.

The "Teacher made test'' suggested by Anastasi (1961) was employed to measure the knowledge level of respondents. All the important operations of ginger cultivation were listed in consultation with the experts. Total numbers of twenty-nine important recommended practices were selected. The questions and answers were carefully formed. The answers elicited from the farmers were quantified by giving scores.

The knowledge test developed was administered to the respondents. Quantification of the knowledge item answers were made by giving two score (full knowledge), one score (partial knowledge) and zero score (no knowledge) for most appropriate, appropriate and less appropriate answers respectively. The scores of entire individual items were summed to get the knowledge score of respondents. The maximum score one could get was 58 and minimum was zero.

Results and Discussion

Profile of the farmers selected for the study

Slightly more than half (53.75 %) of the respondents belonged to middle aged category followed by old age (23.75%) and young age category (22.50 %).With regard to the literacy level, more than one-fourth (26.25 %) of the respondents had completed above graduation followed by illiterates (25.00 %) and primary schooling (25.00 %), high schooling (12.50 %) and only 6.25 per cent had completed middle school education. Surprisingly, small fraction (5.00 %) proportion of the respondents had PUC. Regarding land holding, 40.00 per cent respondents were small farmers, followed by marginal farmers (28.75 %), medium farmers (22.50 %) and very less (8.75 %) big farmers. It implies that small farmers had knowledge about improved cultivation of ginger and had adopted such practices in its cultivation. With respect to annual income, majority of the farmers belonged to medium level of income (51.25 %) followed by high level (33.75 %) and low (15.00 %) annual income groups. Half (50.00 %) of respondents belonged to high level of farming experience category followed by medium (37.50 %) and low (12.00 %) level of farming experience respectively. Nearly three fourth (73.75 %) of the respondents belonged to medium level of achievement motivation category followed by 16.25 per cent of farmers who had low and 10.00 per cent who had high level of achievement motivation. About 47.50 per cent of respondents belonged to high category of economic motivation, while 32.50 and 20.00 per cent of the respondents belonged to medium and low economic motivation category, respectively. Fifty per cent of the respondents belonged to high level of risk orientation category followed by each of 25 per cent of farmers with low and medium level of risk orientation. A greater proportion (61.25 %) of respondents belonged to high level of management orientation category followed by 20.00 per cent who belonged to medium and 18.75 per cent in low level management of orientation category, respectively. Nearly two third (62.50 %) of the respondents had medium level of cosmopoliteness followed by high level (30.00 %) and 07.50 per cent with low level of cosmopoliteness. Nearly half (48.75 %) of the respondents belonged to high level of social participation followed by medium (46.25 %) and low (05.00 %) level of social participation. As far as mass media exposure is concerned, fifty per cent of the farmers belonged to high mass media exposure category followed by high and low level of mass media exposure category 25.00 % each. Nearly half (46.25 %) of the respondents belonged to high extension contact category followed by 30.00 per cent in medium and 23.75 per cent in low level of extension contact category, respectively. More than one third (36.25 %) of the ginger growers belonged to medium category of extension participation followed by high (35.00%) and low (28.75 %) category. The results obtained may be due to interest of respondents in solving their problems with extension workers, also interest in extension activities to gather recent information and to learn about practical utility of the new technology from extension workers. The present study results are in line with the findings of Yashaswini (2013), Sahana (2002) and Nagesha (2005).

Practice-wise knowledge of ginger growers about improved cultivation practices in ginger

The Table 2 reveals the Cent per cent of ginger growers had full knowledge about practices like cultivation of recommended varieties and raised bed method of ginger cultivation. Majority of the ginger growers (60.00, 62.50, 62.50, 76.25, 77.50, 87.50,

87.50, 88.75, 90.00, 92.50, 95.00, 97.50, 97.50, 98.75 %) had full knowledge on application of recommended dose of phosphorous and potash top dressing of fifty per cent of nitrogen 30 days and 60 days after planting, control of shoot borer, application of N:P:K fertilizer, control of soft rot, weekly irrigation, control of leaf spot, optimum spacing, appropriate time of harvesting, planting time, curing, pre-ploughing and FYM application, respectively. Majority of ginger growers (66.25%) had partial knowledge on appropriate weight of rhizome used for planting and a majority (87.50, 73.75, 61.25 %) had no knowledge on storage of the produce, grading and certification and mancozeb usage for seed treatment respectively. All the ginger growers had full knowledge on cultivation of recommended varieties and raised bed method for ginger cultivation. The reason was most of the farmers were well educated and they had good extension agency contact. The ginger growers were also aware that good yield of the crop mainly depends on selection of varieties. Majority of the ginger growers had full knowledge on time of planting, usage of recommended quantity of rhizome for sowing, optimum spacing, number of pre-ploughings etc. The main reasons were most of the ginger growers start sowing the crop immediately monsoon starts and also another reason might be more exposure to various training programmes, awareness programmes, demonstration and Krishi mela. All these factors might have influenced the respondents to acquire more knowledge. Most of the ginger growers had partial knowledge on usage of recommended weight of single rhizome. The reason was farmers are in the persuasion that usage of big rhizome yields more. Majority of the ginger growers had full knowledge on application of recommended dose of manures and fertilizers, hand weeding, providing irrigation, mulching, earthing up, appropriate time of harvesting and potential yield of ginger. The main reason was, if the individual is having higher education, high extension contact, more farming experience with higher income naturally, one would like to have more knowledge about new technologies and would like to earn more profit.

Overall knowledge of Ginger growers on improved cultivation practices

The data in Table 3reveals little less than two third (60.00 %) of the respondents belonged to higher category group of knowledge in improved cultivation practices of ginger followed by medium category (21.25 %) and low category (18.75 %) of knowledge level, respectively. The gain in higher knowledge might be due to majority of the ginger growers were educated and they were able to gain information regarding improved ginger cultivation practices with the support from agricultural related institutions. The probable reasons for this may be that the farmers practicing ginger cultivation who had medium achievement motivation and cosmopoliteness as well as high level of management orientation and mass media exposure also had high farming experience. The findings are in conformity with the findings of Kanavi (2000)**.**

Association between independent variables and knowledge of ginger growers

The data in Table 4reveals that education, achievement motivation, risk orientation, cosmopoliteness, economic motivation and mass media participation were significantly and positively associated to their extent of knowledge of ginger growers at 5 per cent level and management orientation, extension contact and extension participation were significant at 1 per cent level. The findings are in conformity with the findings of Kanavi (2000)**.**

Table.1 Profile of the farmers selected for the study

Sl. No	Characteristics	Category	Ginger growers	
			Frequency	%
1	Age	Young (<35 years)	18	22.50
		Middle (35-50 years)	43	53.75
		Old (>50 years)	19	23.75
2	Education	Illiterate	20	25.00
		Primary	21	25.00
		Middle school	05	06.25
		High school	10	12.50
		PUC	04	05.00
		Graduation and above	20	26.25
3	Land holding	Marginal farmers (up to 2.5 acres)	23	28.75
		Small farmers (2.51 to 5.00 acres)	32	40.00
		Medium farmers (5.01 TO 10.00 acres)	18	22.50
		Big farmers (>10.01 acres)	07	08.75
4	Annual income	Low (< Rs.1 lakh)	12	15.00
		Medium (1 to 3 lakh)	41	51.25
		High (>3 lakh)	27	33.75
5	Extension contact Mean=14.40 S.D=2.40	Low	19	23.75
		Medium	24	30.00
		High	37	46.25
6	Extension participation Mean=20.20 S.D=1.90	Low	23	28.75
		Medium	29	36.25
		High	28	35.00
7	Risk orientation Mean=22.40 S.D=2.44	Low	20	25.00
		Medium	20	25.00
		High	40	50.00
8	Achievement motivation Mean=21.60 S.D=2.40	Low	13	16.25
		Medium	59	73.75
		High	8	10.00
9	Farming experience	Less (< 10 years)	10	12.50
		Moderate(10-20 years)	30	37.50
		More(>20 years)	40	50.00
10	Social participation Mean=16.96 S.D=1.77	Low	37	46.25
		Medium	4	05.00
		High	39	48.75
11	Economic motivation Mean=20.04 S.D=2.45	Low	16	20.00
		Medium	26	32.50
		High	38	47.50
12	Cosmopoliteness Mean=22.10 S.D=2.44	Low	06	07.50
		Medium	50	62.50
		High	24	30.00
13	Mass media participation Mean=9.20 S.D=1.56	Low	20	25.00
		Medium	20	25.00
		High	40	50.00
14	Management orientation Mean=24.40 S.D=2.40	Low	15	18.75
		Medium	16	20.00
		High	49	61.25

Table.2 Practice-wise knowledge of ginger growers about improved cultivation practices in ginger

Sl. No.	Components of improved cultivation practices	Knowledge level					
		Full Knowledge		Partial Knowledge		No Knowledge	
		No.	%	No.	%	No.	%
1	Cultivation of recommended varieties	80	100.00	00	00.00	00	00.00
2	Time of planting (May- June)	76	95.00	00	00.00	04	05.00
3	Appropriate weight of seed material (Rhizome)	15	18.75	53	66.25	12	15.00
4	Use of Mancozeb and quinalphos for seed treatment	05	06.25	26	32.50	49	61.25
5	Usage of recommended quantity of rhizome per acre (600 kg)	45	56.25	26	32.50	09	11.25
6	Raised bed method for cultivation of Ginger	80	100.00	00	00.00	00	00.00
7	Optimum spacing (30 X 15 cm) for cultivation	72	90.00	08	10.00	00	00.00
8	Four pre-ploughings in land preparation	78	97.50	02	02.50	00	00.00
9	10 MT FYM application	79	98.75	01	01.25	00	00.00
10	Application of fertilizer NPK (40:20:20 Kg per acre) for cultivation	62	77.50	18	22.50	00	00.00
11	Application of recommended dose of fertilizers in 3 splits	46	57.50	25	31.25	09	11.25
12	Top dressing of 50 per cent nitrogen fertilizer after 30 days	50	62.50	00	00.00	30	37.50
13	Top dressing of remaining 50 per cent nitrogen fertilizer after 60 days	50	62.50	00	00.00	30	37.50
14	Application of recommended dose of phosphorous and potash at the time of planting	48	60.00	24	30.00	08	10.00
15	Providing irrigation weekly	70	87.50	10	12.50	00	00.00
16	Hand weeding	70	87.50	10	12.50	00	00.00
17	Crop rotation	41	51.25	00	00.00	39	48.75
18	Mulching three times	46	57.50	28	35.00	06	07.50
19	Earthing up at 45 and 90 days after planting	36	45.00	25	31.25	19	23.75
20	Appropriate time of harvesting	74	92.50	06	07.50	00	00.00
21	Plant protection measures						
	a) Pests						
	i. Quinalphos @ 0.075 % to control Rhizome Scale	41	51.25	32	40.00	07	08.75
	ii. Malathion @ 0.1 % to control shoot borer	61	76.25	13	16.25	06	07.50
	b) Diseases						
	i. Mancozeb @ 0.125 % to control soft rot	70	87.50	05	06.25	05	06.25
	ii. Carbendazim @ 0.2 % to control leaf spot	71	88.75	06	07.50	03	03.75
	iii. Streptomycin @ 200 ppm to control bacterial wilt	41	51.25	24	30.00	15	18.75
22	Potential yield of ginger crop (15-20 MT)	36	45.00	18	22.50	26	32.50
23	**Post-Harvest Management**						
	a.Curing of ginger after harvesting	80	100.00	00	00.00	00	00.00
	b.Storage of ginger	21	26.25	00	00.00	59	73.75
	c.Grading and certification	10	12.50	00	00.00	70	87.50

Table.3 Overall knowledge of Ginger growers on improved cultivation practices

Knowledge level	Number	Per cent
Low	15	18.75
Medium	17	21.25
High	48	60.00
Total	80	100.00

Mean= 36.41; Standard deviation = 5.452

Table.4 Association between independent variables and knowledge of ginger growers

Sl. No.	Characteristics	Chi-square value	Contingency Coefficient
1	Age	6.18NS	0.18
2	Education	12.23*	0.27
3	Land holding	5.91NS	0.16
4	Annual income	6.99NS	0.21
5	Farming experience	7.98NS	0.22
6	Achievement motivation	9.97*	0.27
7	Management orientation	12.10**	0.28
8	Risk orientation	11.61*	0.29
9	Cosmopoliteness	10.99*	0.27
10	Economic motivation	12.99*	0.31
11	Social participation	7.16NS	0.25
12	Mass media participation	9.26*	0.26
13	Extension contact	14.68**	0.32
14	Extension participation	15.99**	0.33

* Significant@5% level **Significant @1% level NS-Non significant

In conclusion the majority of the respondents lacked knowledge about storage, grading and certification and also not adopted these practices. Hence, it is crucial that the Developmental Departments, NGOs, State Agricultural universities and Spice Board to make integrated efforts in educating the farmers regarding modern and useful technologies to enrich their knowledge and make them to adopt post-harvest technologies. However, presently most of the farmers were not practicing any of the post-harvest technologies and they were selling the produce immediately after the harvesting.

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