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Adoption behaviour of farmers in chickpea production technology

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ABSTRACT

Chickpea, also known as Bengal gram (*Cicer arietinum*) the important pulse crop of our country. KVK, Nashik implemented Front Line Demonstration on chickpea in Khadak Malegaon village successively for 3 years. To find out the impact of the Front Line Demonstration on adoption behaviour of the farmers, the present study was planned and conducted. Looking to this fact, the present study was undertaken on a purposive sampling of 112 chickpea growers of Khadak malegaon Village of Niphad tahsil of Nashik District of Maharashtra with the objectives to study the personal and socio-economic profile and to ascertain the level of adoption chickpea growers. The study reveals that most of the respondents were from middle age group *i.e.* between 26 to 45 years, received education up to Higher Secondary, size of land holding between 4.01 to 7.00 acres. Majority (54.46 per cent) of chickpea growers were having farming experience between 9 years to 17 years, having medium social participation and annual income between Rs. 75,551 to Rs. 1,50,765. Most of the respondents (60.72 per cent) were having their land at 2-3 places. The study on adoption indicated that, the majority of chickpea growers (70.54 per cent) had medium level of adoption. It can be stated that the level of adoption of the chickpea cultivation practices by majority of the chickpea gram growers was satisfactory.

Key words : Adoption behaviour; Chickpea, Front line demonstration, Socio-economic profile

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INTRODUCTION

India ranks first in respect of total production of pulses in the world. But in case of productivity India ranks 112. This shows that India is far behind as compared to world productivity. It also indicates the potential in increasing the productivity. However, the major pulse crops grown in Maharashtra are Chickpea, pigeopea, black gram, etc. Among these pulse crops, chickpea is the most important crop grown in *rabi* season. Chickpea (*Cicer arietinum*) is also known as gram, Bengal gram and *Chana*.

Front Line Demonstrations on chickpea were implemented in Khadak Malegaon village since last 3 years by KVK, Nashik. All the farmers do not adopt the recommended crop production technologies at the same time and at the same rate. With this background the present investigation was undertaken to assess the adoption behaviour of chickpea growers about chickpea production technology.

METHODOLOGY

The reason attributed to the purposive selection of Khadak Malegaon village was that every scientific study brings its implications, which may prove very useful for planners and implementers. Krishi Vigyan Kendra, Nashik has adopted the village for its different programme implementation. Front line demonstration on oilseed and pulses is one of the mandates of the KVKs. Every developmental activity is measured in terms of its extent of impact on the intended group. Therefore, Khadak Malegaon village from Nashik district of Maharashtra was purposively selected for the study. Among the total 112 chickpea growing farmers, all the farmers were selected for the present study.

RESULTS AND DISCUSSION

The findings obtained from the present study are presented below:

Personal profile:

The data on personal profile were sought, computed presented in Table 1 and discussed accordingly.

Majority (77.67 per cent) of the chickpea growers belonged to the middle age group *i.e.* between 26 to 45 years. Maximum (51.79 per cent) chickpea growers were found literate having formal education level up to Higher Secondary and Diploma. Majority (50.00 per cent) of the chickpea growers had medium size of land holding. Majority (54.46 per cent) of the chickpea growers were having medium farming experience. A few per cent (18.75 per cent) of the chickpea growers were found in

Table 1: Distribution of chickpea growers according to their personal profile (N=112)

Particulars	No. of respondents	Per cent
Age (years)		
Younger (up to 25 years)	14	12.50
Middle (26 to 45 years)	87	77.67
Old (46 years and above)	11	09.83
Total	112	100.00
Education		
Illiterate (having no formal education)	07	06.25
Primary education (up to 4th Std.)	12	10.71
Secondary education (5th to 10th Std.)	18	16.07
Higher secondary and Diploma (11th to 12th Std. and Diploma)	58	51.79
Higher education (up to graduation and above)	17	15.18
Total	112	100.00
Size of land holding (Acre)		
Small holding (up to 4.00 acres)	31	27.68
Medium holding (4.01 to 7.00 acres)	56	50.00
Large holding (7.01 to above acres)	25	22.32
Total	112	100.00
Farmer experience (years)		
Low (up to 8 years)	12	10.71
Medium (9 years to 17 years)	61	54.46
High (18 years and above)	39	34.83
Total	112	100.00
Social participation category		
Low (score up to 2)	38	33.93
Medium (score between 3 to 4)	53	47.32
High (score 5 and above)	21	18.75
Total	112	100.00
Annual income (Rs.)		
Low (up to Rs.75,550/-)	22	19.64
Medium (Rs. 75,551 to Rs.1,50,765 /-)	76	67.86
High (Above Rs. 1,50,765/-)	14	12.50
Total	112	100.00
Land fragmentation (Index)		
Low (up to 1.05)	27	24.10
Medium (1.06 to 1.16)	68	60.72
High (1.16 and above)	17	15.18
Total	112	100.00

the high social participation category while, maximum per cent (47.32 per cent) of the chickpea growers constituted in medium social participation category. Majority of chickpea growers (67.86 per cent) fell in the medium annual income group. Most of the responents (60.72 per cent) had fragmentation of land holding to 'medium' extent.

Overall adoption level of chickpea growers:

The data pertaining the overall adoption level of the respondents are given in Table 2.

The data of Table 2 show that, the highest percentage (70.54 per cent) of chickpea growers had medium level of adoption of various recommended practices while, 12.50 per cent respondents has low level of adoption. However, 16.96 per cent chickpea growers had high level of adoption.

Table 2: Distribution of chickpea growers according to their adoption level of chickpea production technology (N=112)

Level of adoption	No. of respondents	Per cent
Low	14	12.50
Medium	79	70.54
High	19	16.96
Total	112	100.00

Practice wise adoption of chickpea growers:

The data pertaining to the practice wise adoption of chickpea grower cultivation practices by the chickpea growers is presented in Table 3.

The data in Table 3 reveal that the practices which were adopted by all the respondents farmers were ploughing (100 per cent), sowing by drilling method (100 per cent), first weeding (100 per cent), control of pod borer by chemical means (100 per cent), harvesting at proper maturity and threshing (100 per cent).

The practices which were adopted by majority of farmers were cultivating chickpea on proper soil type (64.28 per cent), 2-3 harrowing (51.78 per cent) sowing improved varieties *viz.*, Vishal (60.71 per cent), maintaining the proper seed rate to maintain appropriate plant population (77.67 per cent), recommended spacing (87.50 and 73.22 per cent for row to row and plant to plant), depth of sowing (83.93 per cent), seed treatment with Thirum (50.89 per cent), seed treatment with *Rhizobium* (75.00 per cent), sowing at proper time *i.e.* during 15th October to 15th November (90.17 per cent), application of nitrogen (77.67 per cent), application of phosphorus (51.78 per cent), hoeing (86.60 per cent). Thinning (50.00 per cent), providing irrigation to the crop (85.71 and 92.85 per cent at 50% flowering stage and pod filling stage, respectively) and average yield (55.35 and 66.07 per cent for irrigated condition and late sowing, respectively). The practice, which was partially adopted by the respondent farmer, was FYM application (81.25 per cent).

However, majority of chickpea growers have not adopted some of the important chickpea cultivation practices. These were particularly dibbling method of

Table 3: Distribution of checkpea growers by their adoption of improved cultivation practices of Chickpea (n=112)

Sr. No.	Chickpea cultivation practices	Complete adoption		Partial adoption		No adoption	
		F	P	F	P	F	P
1	2	3	4	5	6	7	8
1.	**Soil type** (Heavy to medium, well drained)	72	64.28	21	18.75	19	16.97
2.	**Primary tillage**						
	One ploughing	112	100	00	00	00	00
	2-3 harrowing	58	51.78	54	48.22	00	00
	10 tons F.Y.M. /ha.	00	00	91	81.25	21	18.75
3.	**Sowing**						
	Drilling	112	100	00	00	00	00
	Dibbling	00	00	00	00	112	100
4.	**Improved varieties**						
	Phule G-12	22	19.64	00	00	90	80.36
	Vijay	16	14.28	00	00	96	85.72
	Vishal	68	60.71	00	00	44	39.29
	Virat	06	05.35	00	00	106	94.65
	Digvijay	00	00	00	00	112	100
	Other	00	00	00	00	112	100
5.	**Seed rate** (60-100 kg/ha.)	87	77.67	25	22.33	00	00
6.	**Spacing**						
	Between two row (30 cm)	98	87.50	14	12.50	00	00
	Between two plants (10 cm)	82	73.22	30	26.78	00	00
7.	**Depth of sowing** (4-6 cm)	94	83.93	18	16.07	00	00
8.	**Seed treatment**						
	Thiram 4 g/ 1 kg seed	57	50.89	00	00	55	49.11
	Rhizobium 250 g/ 10 kg of seed	84	75.00	00	00	28	25.00
	Trichoderma 5 g/ 1 kg of seed	38	33.92	00	00	74	66.08
9.	**Time of sowing** (15 Oct. to 15 Nov.)	101	90.17	00	00	11	09.83
10.	**Inorganic fertilizers**						
	Nitrogen (25 kg/ha)	87	77.67	25	22.33	00	00
	Phosphorus (50 Kg/ha)	58	51.78	41	36.60	13	11.62
11.	**Intercultural operation**						
	Hoeing – 2	97	86.60	15	13.40	00	00
	Weeding -1	112	100	00	00	00	00
	Weeding -2	32	28.57	00	00	80	71.43
	Thinning	56	50.00	00	00	56	50.00
12.	**Irrigation**						
	50 per cent flowering stage	96	85.71	00	00	16	14.29
	Pod filling stage	104	92.85	00	00	08	07.15
13.	**Plant protection**						
	Pod borer						
	Malathion, Endosulphan	89	79.47	00	00	23	20.53
	HNPV, Bt	40	35.72	00	00	72	64.28
	Pheromone traps, Bird stakes	81	72.33	00	00	31	27.67
14.	**Harvesting** (90 to 110 DAS)	112	100	00	00	00	00
15.	**Threshing** (Sun drying, threshing, winnowing, seed should contain moisture less than 10-12%)	112	100	00	00	00	00
16.	**Average yield**						
	25-30 qt/ha	62	55.35	00	00	50	44.65
	14-16 qt/ha (for late sowing)	74	66.07	00	00	38	33.93

F: frequency, P: Per cent

sowing (100 per cent), Virat variety (94.65 per cent), Digvijay variety (100 per cent), use of *Trichoderma* for wilt control (66.08 per cent) and 2nd weeding (71.43 per cent). Shinde *et al*. (1997) and Kulhal (2004) have also contributed some information on cotton and guava cultivation practices, respectively.

Conclusion:

Majority of the respondents (77.67 per cent) belonged to middle age group *i.e.* between 26 to 45 years. Majority of respondents (51.79 per cent) had undergone some formal education. Majority of the respondents (50.00 per cent) had land holding in between 4.01 to 7.00 acre. Majority of the respondents (54.46 per cent) had farming experience in between 9 years to 17 years. Majority of respondents (47.32 per cent) were found in medium social participation category. Majority of the respondents (67.86 per cent) were having the annual income in between Rs. 75,551/- to Rs.1,50,765/-. Majority of the farmers (60.72 per cent) were having their land at 2-3 places. Majority of the farmers (70.54 per cent) were found in medium adoption level category.

Thus, it is recommended that the chickpea grower had partial adoption regarding FYM application, appropriate seed rate, phosphorus application. The extension agencies and different developmental departments should organize trainings and demonstration on vermicompost production, also train the farmers about the advances of proper seed rate and phosphorus role in increasing the yield. The farmers are not adopting the practices like dibbling, *Trichoderma* seed treatment and weeding. The extension agencies should concentrate on method demonstrations.

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