P-ISSN: 2618-0723
E-ISSN: 2618-0731

NAAS Rating: 5.04
www.extensionjournal.com

International Journal of Agriculture Extension and Social Development

Volume 7; SP-Issue 9; September 2024; Page No. 80-86

Received: 02-07-2024
Accepted: 03-08-2024

Indexed Journal
Peer Reviewed Journal

A study on knowledge and adoption of chickpea production technology among the farmers of Bemetara district in Chhattisgarh state

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DOI: https://doi.org/10.33545/26180723.2024.v7.i9Sb.1065

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Abstract

The present study was carried out during 2022-2023 in the Bemetara district of Chhattisgarh state. Bemetara district consists of 4 blocks, out of which 2 blocks were selected purposively because these blocks are having maximum area covered under chickpea crop. For this study eight villages were selected purposively from selected 2 blocks. 15 respondents were selected randomly from each selected village. Personal interview schedule was used to gather data and using various statistical measures like mean, standard deviation, frequency, percentage, correlation coefficient, multiple regression and ranking were used to arrive at specific inference. The findings of this study revealed that more than half of the respondents belonged to middle aged group educated up to middle school. Majority of the respondents had a medium family size. They had membership in one organization 43.33 per cent. Majority of respondents 47.5 per cent had small land holding i.e., 1.01 ha. to 2.00 ha. and majority of respondents 55.83 per cent operating in of up to 1.0 ha. of the said area under chickpea crop. Most of the respondents 50.83 per cent had their annual income in the range of Rs. 1.1 lakh to Rs. 2 lakhs. 75 per cent of respondents had acquired credit facility. Cooperative society was observed to be major source of credit for farmers. Main source of information was through Friends/ Neighbors/ Relatives and majority of chickpea growers had medium level of innovativeness. The overall knowledge index about knowledge and adoption of recommended chickpea production technology was found as 62.88 per cent among the respondents. tube well was revealed to be the major source of irrigation in the study area 62.5 per cent. Whereas overall adoption index about knowledge and adoption of recommended chickpea production technology was 61.94 per cent.

Keywords: Frequency, percentage, correlation coefficient, multiple regression, standard deviation

Introduction

Chickpea or chana is a very important pulse crop that grows as a seed of a plant named Cicer arietinum in the Leguminosae family. This light brown colored pulse is considered to be a good source of protein and is also called by the name of Garbanzo beans. Chana is used as an edible seed and is also used for making flour throughout the globe. Having a capacity to stand in drought conditions, this crop doesn't have the requirement of being fed with nitrogen fertilizers. Chickpea is a highly nutritious pulse and places third in the importance list of the food legumes that are cultivated throughout the world. It contains 25% proteins, which is the maximum provided by any pulse and 60% carbohydrates. There are mainly two types of chickpeas produced i.e. Desi and Kabuli. The world's total production of chickpeas hovers around 8.5 million metric tons annually and is grown over 10 million hectares of land approximately. The Desi type chickpea contribute to around 80% and the Kabuli type around 20% of the total production. India is the largest producer of this pulse contributing to around 70% of the world's total production. Desi type chickpeas largely dominate the ratio of production in India. Regarding the consumption pattern, all most all of the chickpea is consumed in the countries where it is produced.

India has made remarkable progress in enhancing production of pulses during the past 15 years. During 2005-06, the total production of pulses in India was 13.38 million MT, which increased to 25.58 million MT during 2020-21. This shows an impressive growth of 91% or a compound annual growth rate (CAGR) of 4.42% During 2020-21, Among remaining pulses, pigeonpea contributed 16.2% mungbean 10.3% urdbean 9.3%, lentil 4.9% and other pulses 9.9%. During the past 15 years the higher growth in production was observed for mungbean (178%) followed by chickpea (125%), urdbean (90%). pigeon pea (51%) and lentil (34%) (Gaur, P.,2021) India is the largest producer of chickpea in the world sharing 62.25 and 65.49 percent of the total area (11.97 m ha) and production (10.89 mt), respectively. Chickpea producing states in India are Madhya Pradesh (24.63%), Rajasthan (23.99%), Maharashtra (20.21%), Uttar Pradesh (7.69%), Karnataka (6.10%), Gujrat (5.07%) and Andhra Pradesh (5.05%), Jharkhand (2.49%), Telangana (1.80%) and Chhattisgarh (0.80%) in tenth position (Ministry of Agriculture 2019-20).

Chhattisgarh state has good agro-ecological situation for chickpea production. In state it is grown over an area of 3.01 lakh hectares with an annual production of 2.67 lakh tonnes

and an average productivity of 887 kg ha-1 (Anonymous, 2021). In Chhattisgarh chickpea is main crop growing after rice. A wide gap exists between the available techniques and its actual application by the farmers which is reflected through poor yield in the farmer's field. There is a tremendous opportunity for increasing the production of chickpea crop by adopting the improved technology. Only a fraction of the knowledge generated percolates to the farmer's field so a wide gap has been observed between knowledge production and its utilization in farmer's field. This gap is one of the major problems in increasing the productivity of the chickpea crop. Major chickpea growing districts in Chhattisgarh are Rajnandgaon, Bemetara, Mungeli, Balod, Janjgir-champa, Raipur, Durg, Kawardha, Korba, Bilaspur, Balod, Dhamtari, Baloda Bazar and Raigarh are the major chickpea growing districts in Chhattisgarh.

Literature Review

Suman (2011) [1] revealed that the majority of the respondents (55.00%) had possessing medium level of knowledge, followed by 27.00 and 18.00 per cent of the respondents who had low and high level of knowledge about vegetable production technology, respectively.

Pandya *et al*. (2013) [2] found that majority of the farmers (71.00%) were found to have a medium level of knowledge about okra production technology, followed by (14.50%) farmers had a low knowledge level and (15.00%) farmers had a high level of knowledge about okra production technology.

Pandey *et al*. (2017) [3] showed that majority of the potato growers (74.00%) were observed in the medium knowledge level category, followed by (21.00%) under the low knowledge level category and (5.00%) had high knowledge category respectively. So that majority of the potato growers were found to have the medium category of the knowledge level.

Dayaram *et al*. (2012) [3] indicated that, 60 per cent respondents had medium level of adoption of IPM practices while equal per cent of respondents (20%) had highand low level of adoption, respectively.

Rai (2014) [4] concluded that maximum number of the respondents 66.67 per cent showed medium level of adoption regarding management practices of key insect-pests of brinjal and tomato crops. Whereas 10.00 per cent of the respondents reported high level of adoption. Medium to high adoption may be due to the fact that the respondents were educated, belonged to higher income group and better utilization of information sources and better orientation towards scientific technologies etc.

Methods and Materials

Research methodology refers to a comprehensive and specific strategy for investigating. In this chapter, the techniques and steps employed throughout the study are described. These are organized and presented in the subsequent sections:

1. **Location of the study area** The study was conducted in the Bemetara district of Chhattisgarh state during the year 2022-2023. Bemetara district is situated in Central part of the Chhattisgarh state and comes under the Chhattisgarh Plain Agro Climatic Zone. It is located at 21.70N latitude and 81.53E longitude with an altitude of 277 meter above the mean sea level Bemetara has a tropical wet and dry climate The city receives about 1300 milimeters of rain, mostly in the monsoon season from late June to early October.

2. **Sample and sampling procedure**

- **Selection of district:** The present study was carried out in Bemetara district of Chhattisgarh Out of 33 districts in Chhattisgarh, Bemetara district was selected purposively for the study, because this district has the maximum area covered under chickpea crops.
- **Selection of blocks:** There are total four blocks in Bemetara district namely, Beetara, Nawagarh, साजा Saja, and Berla, out of which only two blocks i.e., Bemetara and Nawagarh were selected purposively on the basis of the maximum area covered under chickpea crops.
- **Selection of villages**: From cach selected blocks four village were selected randomly, in this way (2×4=8) village were considered for the study.
- **Selection of respondents:** From the total chickpea growers of each selected village, 15 farmers were selected randomly as respondents for the study. Thus, in this way, a total of 120 farmers (8×15=120) were considered as respondents for collection of data.
- **Collection of data:** The data will be collected personally with the help of pretested structured interview schedule.

3. **Variables of the study**

1. **Independent variables:** Age, Education, Family size, social participation, size of land holding, annual income, area under chickpea crops, credit acquisition, source of irrigation, source of information, innovativeness.
2. **Dependent variables:** Extend of knowledge and adoption of recommended chickpea production technology.
4. **Statistical tools:** Appropriate tools and techniques have been used depending on the quantity and quality of data to meet the objectives of the study.

Results and Discussion

The results chapter is a place where author objectively reports the data collected during their investigation and the discussion interprets the meaning of those results. In this way, this chapter focuses on the analysis and interpretation of data acquired from a sample of 120 chickpea growers using a pre-tested structured interview schedule to determine the adoption of recommended practices in chickpea cultivation. Statistical measures *viz*. percentage, mean, standard deviation, rank order, correlation coefficient and regression were used for further analysis. The data collected during the study was analyzed in keeping with the study's variables.

Independent Variables

Independent variables are the variables which manipulated, controlled, or varied in an experimental study to explore their effects. They are called "independent" because they are not influenced by any other variables in the study.

Age

The data presented in Table 4.1 and fig 4.1 shows that the majority (55%) of the respondents belonged to the middle age group 36 to 55 years, followed by 30.83 per cent of the respondents were of young age group (Up to35 years) and 14.17 per cent respondents were of old age group (Above 55 years), respectively thus, it can be inferred that the majority of the chickpea growers belonged to middle age group. This result shows that middle age group is more dominant towards farming practices. The finding was supported by Rajbhar (2020), Sharma (2019) and Singh (2020) who were reported that a maximum number of respondents belong to the middle age group.

Table 1: Distribution of respondents according to their age (n=120)

S No.	Category	Frequency	Percentage
1.	Young age (up to 35 years)	37	30.83
2.	Middle age (36to 55 years)	66	55
3.	Old age (above 55 years	17	14.17

Education

Education has been considered as one of the most important variables, with the help of which social change can be achieved. The findings on education of the chickpea growers are presented in Table 4.2, the data represented that the majority (38.34%) of selected chickpea growers had middle school level of education followed by 20 per cent of the respondents were educated up to primary school level and 15 per cent had passed high school. Moreover, 8.33 per cent had passed higher secondary school, and 7.5 per cent respondents were found educated graduate and above. Meanwhile, 10.83 per cent of the maximum number of concluded the be that respondent's illiterate. It can be respondents had education up to primary or middle school level. While only graduation level and above.

Table 2: Distribution of respondents according to their education (n=120)

S. No.	Categories	Frequency	Percentage
1.	Illiterate	13	10.83
2.	Primary school (Up to 5th class)	24	20
3.	Middle school (6th to 8th class)	46	38.34
4.	High school (9th to 10th class)	18	15
5.	Higher secondary 12th class)	10	8.33
6.	Graduate & above	9	7.5

Family size

It is clear from table 4.3 and fig 4.3 most (50.00%) of the respondents had a medium size of family (6 to 10 members), followed by 37.5 per cent respondents with a small size of family (Up to 5 members) and 12.5 percent of the respondents belonged to the large size of family (above11 members). Similar findings were also supported by Vasudeo (2013) reported that the majority of the respondents belonged to medium size of the family.

Social participation

Social participation of the respondents gives an idea about his participation in social activities. The distribution of respondents according to their social participation is presented in Table 4.4. It indicates that majority of the chickpea growers (43.33%) had membership of one organization followed by 35.83 per cent of them had no participation in any of the social organization. While, 14.16 per cent of the chickpea growers had membership of two organizations and only 6.68 per cent of them were holding the executive position or they were office bearers. The findings revealed that most of the chickpea growers had membership of one organization. The findings are relevant to Kerketta (2015) and Bunkar (2015).

Table 3: Distribution of respondents according to their family size (n=120)

S. No.	Categories	Frequency	Percentage
1	Small family (Up members)	45	37.5
2	Medium family (6 to 10 members)	60	50
3	Large family (above 50% members)	15	12.5

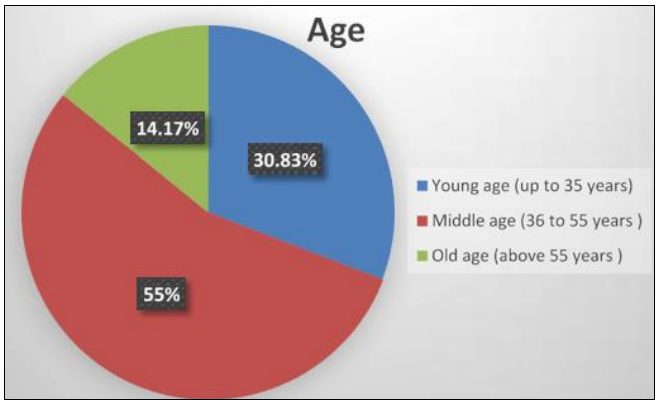

Fig 1: Distribution of respondents according to their family size

Table 4: Distribution of respondents according to their social participation (n=120)

S. No.	Categories	Frequency	Percentage
1.	No member in any organization	43	35.83
2.	Member of one organization	52	43.33
3.	Member of more than one organization	17	14.16
4.	Member cum office bearer	8	6.68

Size of land holding

It can observe from the Table 4.5 that 47.5 per cent of the chickpea growers were possessing 1 ha to 2 ha of land and belonged to small farmers' category, while, 25 and 21.66 per cent of the chickpea growers belonged to marginal farmers' category possessing up to 1 ha and medium farmers category possessing up to 2 to 4 ha of land, respectively. Only 5.84 per cent of them were having more than 4 ha of land and belonged to large farmers' category. Thus, it can be concluded that maximum number of chickpea growers belonged to the category of small farmers' occupying 1 to 2 ha of land.

Annual income

Annual income is the sum total earnings from all the sources i.c., total amount of money earns over the year presented in Table 4.6 reveals the majority 50 per cent of the respondents had their annual income between Rs. 1 lakh to 2 lakh followed by 35 per cent of the respondents who had annual income Rs. 2 to 3 lakh and the lowest 13 per cent of the

respondents had above Rs. 3 lakh annual income.

Table 5: Distribution of respondents according to their land holding (n=120)

S. No.	Categories	Frequency	Percentage
1.	Marginal farmer (up to 1 ha)	30	25
2.	Small farmer (1 ha to 2 ha)	57	47.5
3.	Medium farmer (2 to 4 ha)	26	21.66
4.	Large farmer (above 4 ha)	7	5.84

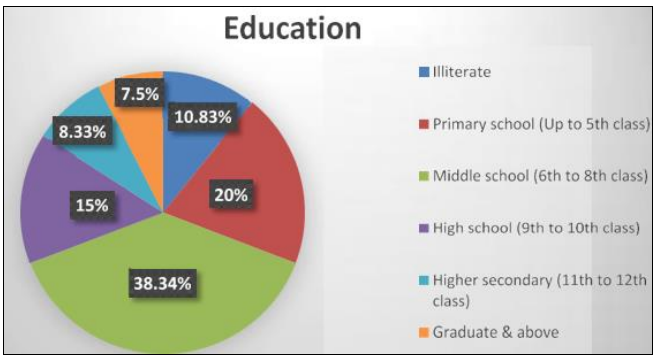

Fig 2: Distribution of respondents according to their land holding

Table 6: Distribution of respondents according to their annual income (n=120)

S. No.	Categories	Frequency	Percentage
1.	Rs.1.1 lakh to Rs. 2 lakh	61	50.83
2.	Rs. 2.1 lakh to Rs.3 lakh	43	35.83
3.	Above Rs. 3 lakh	16	13.34

Average annual income of the respondents = 1,88280 Rs.

Area under chickpea crop

It can be seen from Table 4.7 that majority of the respondents 55.83 per cent had a land area of up to 1.0 ha. area under chickpea cultivation followed by 30.83 per cent of the respondents had between 1.1 to 2.0 ha. Meanwhile, 9.17 per cent of respondents had a land area of 2.1 to 3.0 ha. area and only 4.17 per cent of the respondents had land holding above 3 ha. area under chickpea cultivation.

Source of irrigation

Table 4.8 represents the results of respondents according to the source of irrigation used by them. It was found that majority 62.5 per cent of the respondents had irrigated through tube well followed by 19.17 per cent uses canal for irrigation. Meanwhile, 10.00 per cent of the respondents uses others (Dabri, Rivers) for irrigation and only 8.33 per cent of of the respondents uses pond for irrigation.

Table 7: Distribution of respondents according to their area under chickpea crop (n=120)

S. No.	Categories	Frequency	Percentage
1.	Up to 1.0 ha.	67	55.83
2.	1.1 to 2.0 ha.	37	30.83
3.	2.1 to 3.0 ha.	11	9.17
4.	Above 3.0 ha.	05	4.17

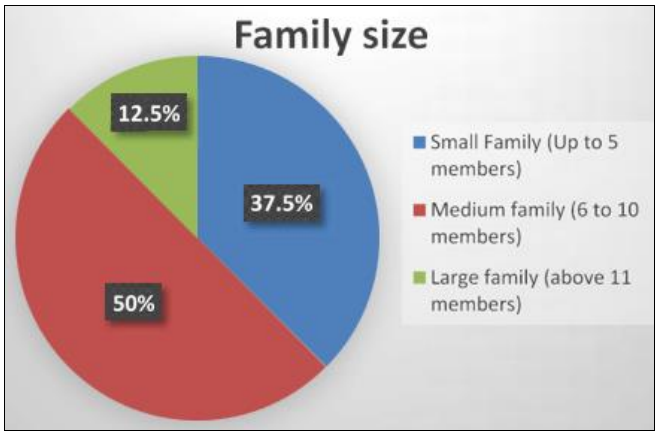

Fig 3: Distribution of respondents according to their area under chickpea crop

Table 8: Distribution of respondents according to Source of irrigation (n=120)

S. No.	Categories	Frequency	Percentage
1.	Tube well	75	62.5
2.	Canal	23	19.17
3.	Pond	10	8.33
4.	Others (Dabri, rivers)	12	10

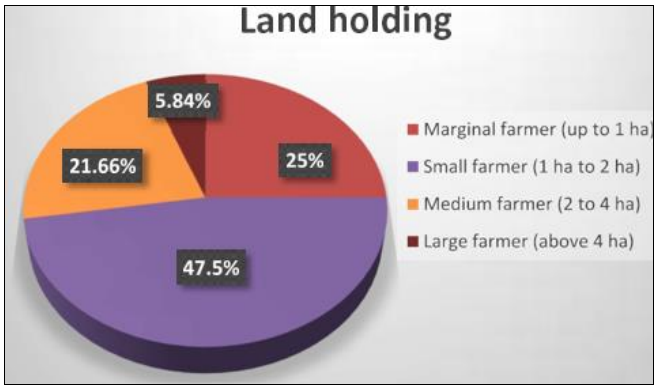

Fig 4: Distribution of respondents according to Source of irrigation

Source of Information

Source of information are supposed to directly associate with the chickpea cultivation practices. These information sources provide different information to the respondents regarding cultivation practices of chickpea cultivation. For assessing this variable, 9 different sources of information were identified. To determine the extent of utilization of each information source, the responses of the farmers were recorded and presented in frequency and percentage It has been reported from Table 4.9 that, Majority (63.33%) of the chickpea growers had regular contact with Friends/Neighbors/Relatives, followed by Progressive farmers (54.17%), Mobile/Internet (41.67%), RAEO (33.33%), Television (29.17%), Krishi mela (19.17%), KVKs (12.5%), Training (11.67%), Kisan call centre KCC) (6.67%)

Table 9: Distribution of respondents according to their source of information.

S. No.	Categories	Regular		Often		Never	
		F	%	F	%	F	%
1.	Friends/Neighbors/Relatives	76	63.33	38	31.67	6	5
2.	Progressive farmers	65	54.17	45	37.5	10	8.33
3.	RAEO	40	33.33	53	44.17	27	22.5
4.	Television	35	29.17	46	38.33	39	32.5
5.	Training	14	11.67	18	15	88	73.33
6.	Krishi Mela	23	19.17	41	34.17	56	46.66
7.	Kisan call centre (KCC)	8	6.67	37	30.83	75	62.5
8.	KVKS	15	12.5	32	26.67	73	60.83
9.	Mobile/ Internet	50	41.67	40	33.33	30	25

*Data are based on multiple respondents

While in case of often use of sources of information it has been seen that maximum (44.17%) of the respondents had often contact with RAEO, followed by Television (38.33%), Progressive farmers (37.5%), Krishi mela (34.17%), Mobile/Internet (33.33%), Friends/Neighbors/Relatives (31.67), Kisan call centre (KCC) (30.83%), KVKs (26.67%), Training (15%). It means all the sources of information are used often for getting information about chickpea cultivation.

Whereas in case of never use of the sources of information it has-been reported that majority (73.33%) of the respondents have never contacted with Training, followed by Kisan call centre (KCC) (62.5%), KVKs (60.83%), Krishi mela (46.66%), Television (32.5%), Mobile/Internet (25%), RAEO (22.5%), Progressive farmers (8.33%), and (5%) of the respondents stated that they never contacted with Friends/Neighbors/Relatives.

It could be concluded that majority (63.33%) of the respondents made regular contact with Friends/Neighbors/Relatives for seeking information about chickpea cultivation, whereas a maximum (44.17%) of the respondents had often contacted with RAEO, and (73.33%) per cent of the respondents never made contact with Training for seeking information about chickpea.

Table 10: Distribution of the respondents according to their credit acquisition: (n=120)

S. No.	Categories	Frequency	Percentage
1	Credit availability (n=120) • Acquired • Not acquired	 90 30	 75 25
2	Source of credit (n=90) • Nationalized bank • Co-operative society • Relative • Friends/Neighbors	 7 75 5 3	 5.84 62.5 4016 2.50
3	Duration of credit (n=90) • Short term credit • Medium term credit • Long term eredit	 71 12 7	 59.16 10 5.84
4	Availability of credit (n-90) • Easy • Difficult	 70 20	 58.33 16.67

Credit acquisition

The findings toward credit acquisitions are presented as availability of credit in Table 4.10. It is cleared that, majority of the respondents 25.00 per cent had not acquired the credit for chickpea production whereas, 75.00 per cent of the respondents had acquired credit.

In case of source of credit majority of the respondents were taking credit from cooperative society and 5.84 per cent of the respondents obtained credit from nationalized bank.

Whereas,4.16 per cent respondents were taking from relatives and only 2.50 per cent of the respondents obtained credit from friends or neighbours. It was further noted that 59.16 per cent respondents preferred to take short-term credit, followed by 10 per cent of respondents took medium term credit (6 to 18 months) and only 5.84 per cent of the respondents took long term credit for 18 to 5 years.

The credit facilities was available easily to 58.33 per cent respondents, while 16.67 per cent of respondents faced some difficulty to obtain credit. This finding was supported by Kerketta (2015) and Bunkar (2015).

Innovativeness

Innovativeness is the psychological characteristics of an individual which defines an individual's inner quality to do something new. Innovativeness of a farmer plays an important role in adoption of new agricultural technologies at a faster rate than others. Hence, greater and quicker adoption of recommended practices in chickpea cultivation requires the innovative nature of the chickpea growers. It can be inferred from the Table 4.11 that 69.17 per cent of chickpea growers were in the medium innovativeness category, while 18.33 and 12.5 per cent of them were in high and low innovativeness category respectively. Thus, it can be concluded that majority of the chickpea growers were in medium category regarding innovativeness followed by high and low.

Table 11: Distribution of respondents according to their innovativeness (n=120)

S. No.	Categories	Frequency	Percentage
1.	Low (Up to 12 score)	15	12.5
2.	Medium (12 to 17 score)	83	69.17
3.	High (Above 17 score)	22	18.33
Mean = 14.83, S.D.= 2.80			

Dependent Variables

Extent of knowledge and adoption of recommended chickpea production technology

Distribution of the respondents according to their practice wise extent of knowledge about the recommended chickpea production technology

Knowledge of the farmers is the result of their own curiosity, creativity and efforts. Level of agricultural knowledge may strengthen farmers' professional identity, confidence in farming and their crop productivity. Development in agriculture requires a new knowledge base in terms of both new content of knowledge and new processes of learning among the farmers. Various studies indicated that integrated agricultural production knowledge significantly increases farmers' willingness to adopt new agricultural technologies.

The data presented in Table 4.12 reveals that, the respondents had knowledge regarding selected practices of recommended chickpea production technology included

land preparation (59.16%), varieties (56.67%), seed rate (51.66%), seed treatment (53.33%), irrigation management (50.83%), sowing method (50%), nutrient management (50.83%), weed management (52.5%), insect management (58.34%) and disease management (49.17%).
In case of no knowledge regarding selected practices of recommended chickpea production technology i.e. land preparation (40.84%), varieties (43.33%), seed rate (48.34%), seed treatment (46.67%), irrigation management (49.17%), sowing method (50%), nutrient management (49.16%), weed management (47.5%), insect management (41.66%) and disease management (50.83%).

Table 12: Distribution of the respondents according to their practice wise extent of knowledge about the recommended chickpea production technology

S. No.	Name of practices	Yes	No
		F (%)	F (%)
1.	Land preparation	71 (59.16)	49(40.84)
2.	Varieties	68(56.67)	52(43.33)
3.	Seed rate	62(51.66)	58(48.34)
4.	Seed treatment	64(53.33)	5(46.67)
5.	Irrigation management	61(50.83)	59(49.17)
6.	Sowing method	60(50)	60(60)
7.	Nutrient management	61(50.83)	59(49.16)
8.	Weed management	63(52.5)	57(47.5)
9.	Insect management	70(58.34)	50(41.66)
10.	Disease management	59(49.17)	61(50.83)

Table 13: Distribution of the respondents according to their overall knowledge about the recommended chickpea production technology

S. No.	Categories	Frequency	Percentage
1	Low (<16 score)	35	29.16
2	Medium (17 to 20 score)	55	45.84
3	High (>21 score)	30	25.00
Mean=18.28, S.D. 2.59			

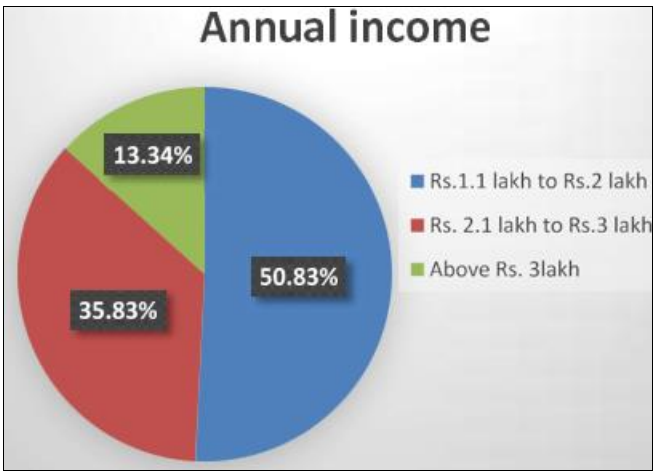

Fig 5: Distribution of the respondents according to their overall knowledge about the recommended chickpea production technology

The data regarding overall knowledge about the recommended chickpea production technology area presented in Table 4.12.1 which indicates that the majority of the respondents (45.84%) had medium level of knowledge regarding recommended chickpea production technology, whereas, 29.16 and 25.00 per cent of respondents were having low and high level of knowledge respectively. Thus it can be concluded that, most of the respondents (45.84%) had medium level of knowledge regarding recommended chickpea production technology.

Distribution of the respondents according to their practice wise extent of adoption about the recommended chickpea production technology

Adoption of any technology is the ultimate output which a researcher should get. Any research work is incomplete without the complete adoption of the technology which is evolved through that research. Extent of adoption were also categoized into two categories namely, yes and no.
The data presented in Table 4.13 reveals that, the respondents had adoption level regarding selected practices of recommended chickpea production technology included land preparation (61.66%), varieties (46.66%), seed rate (50.83%), seed treatment (45.84%), irrigation management (55%), sowing method (40%), nutrient management (49.17%), weed management (44.16%), insect management (44.16%) and disease management (50.83%).
In categories of no adoption regarding selected cultural practices of recommended chickpea production technology i.e. land preparation (38.34%), varieties (53.34%), seed rate (49.17%), seed treatment (54.16%), irrigation management (45%), sowing method (60%), nutrient management (50.83%), weed management (55.83%), insect management (55.84%) and disease management (49.17%).

Table 14: Distribution of the respondents according to their practice wise extent of adoption about the recommended chickpea production technology

S. No.	Name of practices	Yes	No
		F (%)	F (%)
1.	Land preparation	74 (61.66)	46 (38.34)
2.	Varieties	56 (46.66)	64 (53.34)
3.	Seed rate	61 (50.83)	59 (49.17)
4.	Seed treatment	55 (45.84)	65 (54.16)
5.	Irrigation management	66 (55)	54 (45)
6.	Sowing method	48 (40)	72 (60)
7.	Nutrient management	59 (49.17)	61 (50.83)
8.	Weed management	53 (44.16)	67 (55.83)
9.	Insect management	53 (44.16)	67 (55.83)
10.	Disease management	51 (50.83)	59 (49.17)

Overall adoption index=61.94%

Table 15: Distribution of the respondents according to their overall adoption about the recommended chickpea production technology (n=120)

S. No.	Categories	Frequency	Percentage
1.	Low (<16 score)	24	20.00
2.	Medium (17 to 20 score)	69	57.5
3.	High (>21 score)	27	22.5
Mean 18.09, S.D.-1.89			

The data presented in Table 4.13.1 reveals that maximum number 57.5 per cent of them had medium level of adoption of recommended chickpea production technology whereas, 20.00 per cent and 22.5 per cent of them had low and high level of adoption respectively.

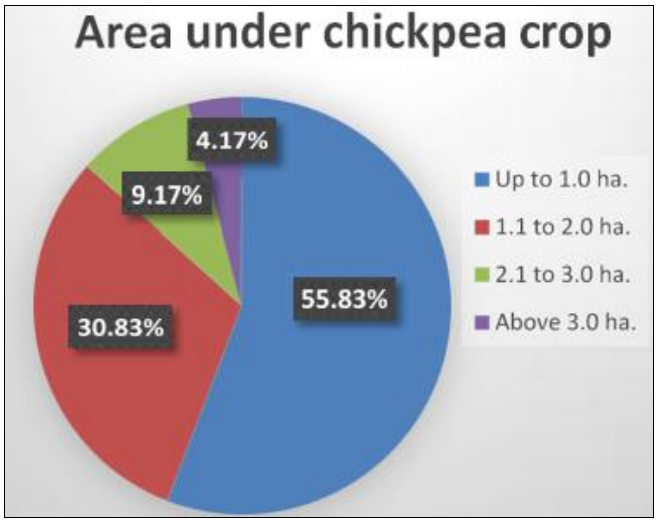

Fig 6: Distribution of the respondents according to their overall adoption about the recommended chickpea production technology

Conclusions

This chapter's major goal is to summarize the findings, present the conclusions drawn from the analysis presented previously, and highlight some practical consequences of those findings.

The present investigation entitled "A study on knowledge and adoption of chickpea production technology among the farmers of Bemetara district in Chhattisgarh state." was carried out during 2022-23 in the Indira Gandhi Krishi Vishwavidyalaya, Raipur, (C.G.).

Major finding in research

- In case of extent of knowledge, the overall knowledge index is 62.88 per cent, the respondents had complete knowledge regarding recommended chickpea production technology included land preparation (59.16%), varieties (56.67%), seed rate (51.66%), seed treatment (53.33%), irrigation management (50.83%). sowing method (50%), nutrient management (50.83%), weed management (52.5%), insect management (58.34%) and disease management (49.17%).
- The overall majority of the respondents (45.84%) had medium level of knowledge regarding recommended chickpea production technology, whereas, 29.16 and 25.00 per cent of respondents were having low and high level of knowledge, respectively.
- In case of extent of adoption, the overall adoption index is 61.94 per cent, the respondents had complete adoption regarding recommended chickpea production technology included land preparation (61.66%), varieties (46.66%), seed rate (50.83%), seed treatment (45.84%), irrigation management (55%). sowing method (40%), nutrient management (49.17%), weed management (44.16%), insect management (44.16%) and disease management (50.83%).
- The overall majority of the respondents 57.5 per cent of them had medium level of adoption of recommended chickpea production technology whereas, 20.00 per cent and 22.5 per cent of them had low and high level of adoption respectively.

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