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An analytical study on constraints in adoption of chickpea production technology by the farmers

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Abstract

The study was conducted in Rajnandgaon and Bemetara districts of Chhattisgarh during 2022-23 in the purposively selected villages. A total of 120 respondents participated in this study, 60 respondents from each of the districts. The findings of the study revealed that the majority (95.28%) of the respondents faced constraints such as, low production due to pest and disease infestations in input and production constraints, lack of knowledge about appropriate about 77.78 percent in technology technological constraints, higher charges of Labouré's about 78.89 percent in Economic constraints, less rate of chickpea produce in market at time of harvesting about 56.11 percent in marketing constraints, and lack of crop insurance policy for chickpea production about 65.56 percent in Institutional constraints. Majority 88.33 percent of the respondents suggested that the improved and resistant seeds should be timely available followed by there should be proper and solid solution for wilt and pod borer disease of chickpea, etc. were the most suggested.

Keywords: Chickpea, adoption, constraints, chickpea practices

Introduction

The chickpea (*Cicer arietinum*), often referred to as "Bengal gramme" in English and "Chana" in Hindi, is a member of the Leguminosae family. Because it is a good source of protein, it is widely cultivated in India. With 96% of its production occurring in poorer nations, chickpeas rank third in the world's major food legumes. In India, chickpeas account for around 35% of the total land used for pulse production, making it a major pulse crop. The protein content of the seed is 21.10%, the carbohydrate content is 61.50%, and the fat content is 4.50%. During 2021-22 (fourth estimate), Chickpea solely contributes nearly 50% of the Indian pulse production. States like Maharashtra (25.97% contribution to national production), Madhya Pradesh (18.59%), Rajasthan (20.65%), Gujarat (10.10%) and Uttar Pradesh (5.64%) are major chickpea producing states of India (<https://iipr.icar.gov.in/chickpea-crop/>). During 2021-22, India contributed 86% of total global Bengal gram production, with 137.50 lakh tonnes grown on 102.65 lakh hectares with a productivity of 1447 kg ha⁻¹ (agricoop.nic.in). Chickpeas are the second-most important crop grown in Chhattisgarh after rice. 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. (Sumit *et al.* 2022) [13]. In 2022, the area, production, and productivity of chickpea in Chhattisgarh were 385.99 thousand hectares, 277.40 thousand tones, and 719 kg ha⁻¹, respectively (Anonymous, 2022) [2].

Actually, growers of chickpeas faces a number of obstacles or limits that prevent them from implementing innovations. To enhance the degree of adoption of chickpea producers, it is imperative to recognize the significant factors which make them non-adopters or only partially users of enhanced production technology. Given the significance and severity of the issue, a study was conducted to determine the obstacles or issues that chickpea growers encountered when using the suggested technology for producing chickpeas.

Materials and Methods

The study was conducted during the year 2022-2023 in Rajnandgaon and Bemetara district of Chhattisgarh state. This study aims to understand the level of adoption of recommended chickpea production technology among the farmers and constraints faced in cultivation of chickpea by the farmers. Two districts namely Rajnandgaon and Bemetara were selected for the proposed study. Rajnandgaon and Bemetara district both consist of four blocks, Out of four blocks, two blocks i.e. Dongargarh and

Rajnandgaon from Rajnandgaon, and Nawagarh and Bemetara blocks from Bemetara district were considered, From each selected block two villages and from each village fifteen respondents as (15×8=120) farm families were considered as respondent for this study. The data were collected through personal interview of the respondents using properly structured interview schedule. The collected data were analysed with the means of suitable statistical procedure and tools.

A list of constraints was prepared and respondents were asked to speak out their responses against each constraint, whether it was very serious, serious and not so serious and no problem. Weightage given to their corresponding responses category were 3, 2, and 1, and 0 respectively. Aggregate total score were calculated for all constraint separately, based on calculated score, percentage was obtained and ranked according to the maximum percentage for assessing the seriousness of constraints. The maximum percentage so obtained were given the rank 1st and the next

subsequent one was given 2nd and so on the descending orders.

Methods of data collection

The data were collected with the help of well structured, pre-tested interview schedule through personal contact.

Results and Discussion

It is apparent from table 1. that among the input and production constraints the “Low production due to pest and disease infestations” was the main constraints faced by the farmers with 95.28 percent and ranked 1st, “lack of promising varieties” was also considered as a serious problem with 81.67 percent with 2nd rank followed by about 60 percent respondents considered “Lack of nutrients in soil and lack of sufficient soil testing facilities” as one of major constraints with rank 3rd. and about 60 percent respondents considered “Uncertain rain” as next main constraints with rank 4th.

Table 1: Distribution of respondents according to the input and production constraints

Sl. No.	Particulars	No problem (F)	Not so serious (F)	Serious (F)	Very serious (F)	Total score	%	Rank
1.	Lack of promising varieties	5	9	33	73	294	81.67	II
2.	Uncertain rain	0	85	35	0	155	43.06	IV
3.	Low production due to pest and disease infestations	0	1	15	104	343	95.28	I
4.	Lack of nutrients in soil and lack of sufficient soil testing facilities	11	15	81	13	216	60.00	III

*Based on multiple response

It is recorded from table 2, that among the technological constraints, the “Lack of knowledge about appropriate technology” was very serious constraints faced by the farmers with 77.78 percent with 1st rank. “Lack of demonstration and training” in chickpea is also main constraints faced by the farmers with 76.11 percent with 2nd

rank followed by “Lack of knowledge about insects-pests and their control measures” in chickpea with 72.78 percent with 3rd rank and 67.50 percent respondents considered “Lack of knowledge about seed treatment” as also a main constraints with 4th rank.

Table 2: Distribution of respondents according to the technological constraints

Sl. No.	Particulars	No problem (F)	Not so serious (F)	Serious (F)	Very serious (F)	Total score	%	Rank
1.	Lack of knowledge about seed treatment	9	13	64	34	243	67.50	IV
2.	Lack of knowledge about insects-pests and their control measures	7	12	53	48	262	72.78	III
3.	Lack of knowledge about appropriate technology	4	10	48	58	280	77.78	I
4.	Lack of demonstration and training	6	14	40	60	274	76.11	II

*Based on multiple responses

The data contained in table 3, among economic constraints indicated that, “Higher charges of Laboure’s ranked at top with 8.89 percent followed by “Higher cost of inputs like

seeds, fertilizers and bio-fertilizers etc. and “Lack of funds to purchase agricultural inputs” ranked at 2nd and 3rd with 72.50 percent and 71.67 percent respectively.

Table 3: Distribution of respondents according to the Economic constraints

Sl. No.	Particulars	No problem (F)	Not so Serious (F)	Serious (F)	Very Serious (F)	Total score	%	Rank
1.	Lack of funds to purchase agricultural inputs	5	16	55	44	258	71.67	III
2.	Higher charges of Laboure’s	7	10	35	68	284	78.89	I
3.	Higher cost of inputs like seeds, fertilizers and bio-fertilizers etc.	4	11	35	40	261	72.50	II

*Based on multiple response

It is evident from the table 4, Marketing constraints indicated that “Less rate of chickpea in market at time of

harvesting” was the major constraint among marketing constraints ranked 1st with 56.11 percent.

Table 4: Distribution of respondents according to the Marketing constraints

Sl. No.	Particulars	No problem (1)	Not so Serious (2)	Serious (3)	Very Serious (4)	Total score	%	Rank
1.	Higher transportation cost	16	69	31	4	143	39.72	III
2.	No regular market in nearest area	16	69	31	4	201	55.83	II
3.	Less rate of chickpea produce in market at time of harvesting	13	29	61	17	202	56.11	I

Followed by “No regular market in nearest area ranked” 2nd with 55.83 percent, and “Higher transportation cost” ranked 3rd with 39.72 percent.

The data given in table 5, among institutional constraints “lack of crop insurance policy for chickpea production” was the main constraints among institutional constraints, ranked

1st with 65.56 percent respondents followed by “lack of credit facility for chickpea cultivation” and “lack of co-operative societies in the village” ranked 2nd and 3rd with 58.61 percent and 38.08 percent respondents respectively.

Table 5: Distribution of respondents according to the Institutional constraints

Sl. No.	Particulars	No problem (F)	Not so Serious (F)	Serious (F)	Very Serious (F)	Total score	%	Rank
1.	Lack of co-operative societies in the village	35	42	34	9	137	38.08	III
2.	Lack of credit facility for chickpea cultivation	12	22	69	17	211	58.61	II
3.	Lack of crop insurance policy for Chickpea production	11	27	37	45	236	65.56	I

*Based on multiple responses

Suggestions given by the respondents to overcome the problems faced by them in the adoption of chickpea production technology

Various suggestions were also given by the respondents to enhance the productivity and adoption of recommended chickpea production technology which are tabulated and explained in table 6.

The majority of the respondents about (88.33%) were suggested that “Improved and resistant seeds should be timely available” which ranked 1st followed by the suggestion that the “There should be proper and solid solution for wilt and pod borer disease of chickpea” by 81.67 percent respondents which ranked 2nd.

Table 6: Distribution of respondents according to their suggestions

Sl. No.	Particular	Frequency	Percentage	Rank
1.	Technical chickpea production training should be given from time to time	93	77.50	III
2.	Rate of agricultural inputs should be less	76	63.33	V
3.	Improved and resistant seeds should be timely available	106	88.33	I
4.	Training should be given to implement new techniques	71	59.16	VI
5.	Lack of constant availability of electricity at the time of irrigating crops	54	45	IX
6.	There should proper and solid solution for wilt and pod borer of chickpea	98	81.67	II
7.	Proper knowledge about insecticides and pesticides must be provided by experts	79	65.83	IV
8.	Demonstrations on various sowing pattern should be conducted on farmers field.	68	56.67	VII
9.	Selection of best policy for crop insurance to overcome weather uncertainty	65	54.17	VIII

*Based on multiple response

Further the respondents suggested that “Technical chickpea production training should be given from time to time” by 77.50% percent respondents which ranked 3rd. There was a suggestion by the respondent that the “Proper knowledge about insecticides and pesticides must be provided by experts” suggested by 65.83 percent respondents which ranked 4th as per the priority basis. 5th suggestion as per the ranking was “Rate of agricultural inputs should be less” as suggested by 63.33 percent farmers and “Training should be given to implement new techniques” was suggested by 59.16 percent respondents ranked 6th. The respondents also suggested “Demonstrations on various sowing pattern should be conducted on farmers field” by 56.67 percent respondents with rank 7th and “Selection of best policy for crop insurance to overcome weather uncertainty” was also an important suggestion as suggested by 54.17 percent respondents, ranked 8th. These are the suggestions which

were given by the respondents to enhance the productivity and adoption of chickpea practices.

Conclusion

- Majority of the respondents faced constraints such as, Low production due to pest and disease infestations, Lack of knowledge about appropriate technology, Higher charges of Labourers, Less rate of chickpea produce in market at time of harvesting, Lack of crop insurance policy for Chickpea production.
- Majority of the respondents suggested that improved and resistant seeds should be timely available followed by there should be proper and solid solution for wilt and pod borer disease of chickpea, Technical chickpea production training should be given from time to time etc. were the most suggested.

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