

Knowledge and Obstacles of Kharif Pulse Growers in Eastern Uttar Pradesh, India

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ABSTRACT

Pulses are an integral part of Indian agricultural economy next to cereals and oilseeds in terms of acreage, production and economic value. Pulses are rich source of protein and energy. In India, pulses are generally produced in poor soils not suited to other crops, with a minimum use of resources and have a very low water footprint. Pulse production and productivity will be enhanced by adaptation of good agronomic practices and knowledge and skill up gradation of pulse growers. The present study was carried out in five villages of two blocks (Bhatani and Lar) of Deoria District, Uttar Pradesh as a sample of 25kharif pulse growers. 25 growers made up the overall sample size, and the information was obtained through a survey using the individual discussion approach and a scheduled interview schedule. The investigation was done on the basis of the experience and limitations involved in using kharif pulse-growing practices. The result revealed that the major obstacles faced by pulse growers were stray animals, small land holding size, and lack of knowledge about improved cultivation, improper weed management, proper seed treatment, community pressure on the pulse growers, and lack of funds for the purchase of inputs at the time of sowing.

Keywords: Knowledge, Obstacle, Respondents, Survey, Kharif Pulse, Growers

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INTRODUCTION

Kharif pulses (Pigeonpea, Blackgram, Greengram and Cowpea) are an essential constituent of the Indian diet because they are a cheap source of plant protein and can be cultivated in a range of agro-climatic regions across the country. India is the largest producer and consumer of the pulses in world. It serves a diversity of purposes and plays an important role in both the country's current farming practices and the vegetarian diet. The regularity of pulse utilization in India is far greater than that of any other source of protein, which indicates the value of dal in their daily food habits. In light of the abovementioned data, increasing pulse production is essential to the food security program's goal of giving the country's residents a balanced diet. It also plays an important role in the sustainable agriculture farming system by enriching the soil through biological nitrogen fixation along with the deep root system of these pulse crops, which makes it more suitable for its cultivation under rain-fed conditions (Srivastav *et al.*, 2013). India occupied 31.03 million hectares of land, produced 27.69 million tones with an average productivity of 892 kg/ha under irrigated condition of all pulse crops. Uttar Pradesh occupied 2.43 million hectares of land, produced 2.56 million tones with an average productivity of 1053 kg/ha under irrigated conditions

(Anonymous, 2022). Imperfect package and practices of cultivation, such as time of sowing, method of sowing, inappropriate crop geometry, escaping of weedicides use, imbalance use of fertilizers, lack of bio-fertilizer use and climatic variability, are major reasons for limiting pulses potential yield.

MATERIALS AND METHODS

The Deoria district in Uttar Pradesh is comprised of 16 blocks, and out of these, 2 blocks, i.e., Bhatni and Lar, were randomly selected for undertaking the agronomic and economic impact assessment of pulse crop sowing in the kharif season. Deoria district is located in the North-Eastern Plain Zone of Uttar Pradesh's. The average annual rainfall is approximately 1220 mm, and the climate ranges from damp to dry sub-humid. Nearly 72% of the land is used for agriculture, and the major irrigation source is shallow tube wells for nearly 60 percent of the cultivated land. All farmers were selected above 18 years old for the survey (n = 25) in 5 selected villages, namely Nonapar, ParasiKarakathi, Purnachhapar, Padrigajraj, and Bordiha. 88 percent male and 12 percent female respondents participated in the survey of kharif pulse growers (Fig.1).

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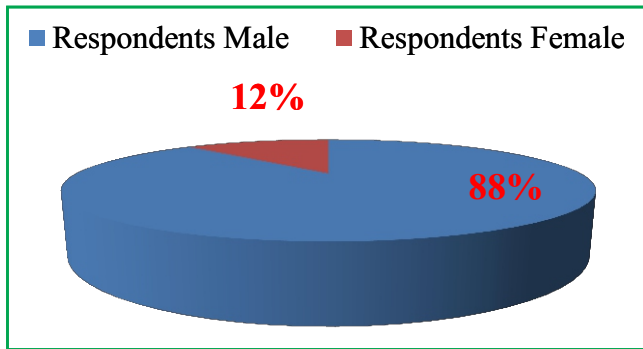


Fig. 1: Showed the gender percentae of respondents

The maximum 36 percent of respondents belonged to two age groups (36-50 and above 60), 20 percent belonged to the age group of 51 to 60, and the minimum 8 percent belonged to the age group of 18-35 (Fig. 2).

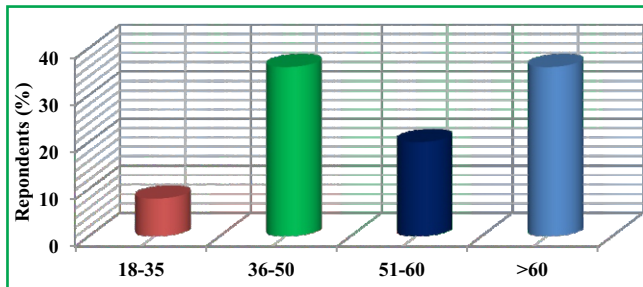


Fig. 2: Age groups of repondents participated in survey

As a result, 56 percent of growers have an education level lower than the 10th grade, 36 percent have an education level between the 10th and graduation, and the remaining 8 percent have an education level higher than graduation (Fig.3).

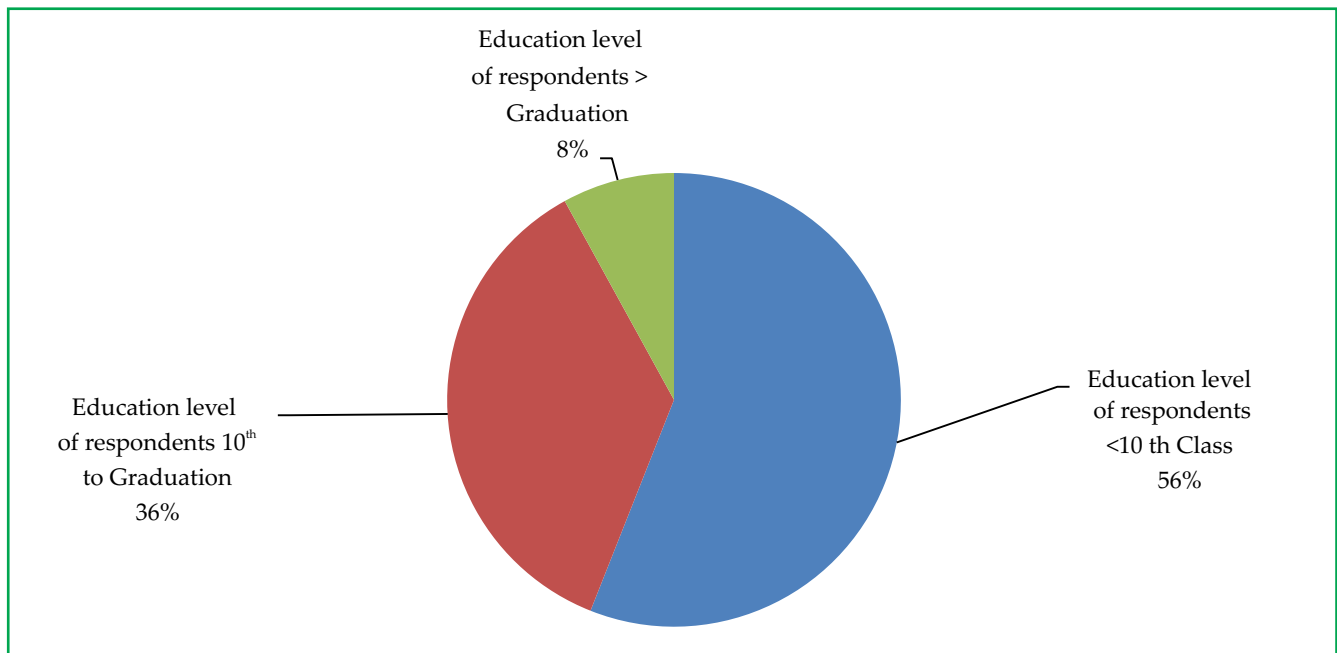


Fig. 3: Education levels (%) of respondents participated in survey

The maximum 44 percent of kharif pulse growers have a marginal class of land holding followed, while 32, 12, and 8 percent of kharif pulse growers have a small, landless, and medium class of land holding, respectively. A minimum of 4 percent of growers have a semi-medium class of land holding (Fig.4).

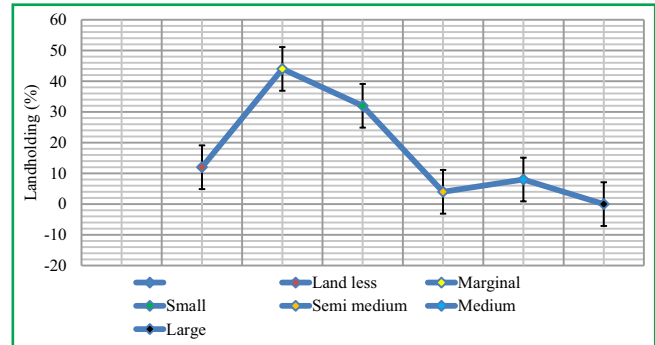


Fig. 3: Land holding classes of respondents participated in the survey

The data on irrigation water, human labour and cost of cultivation was collected in the survey. Cost of cultivation of kharif pulse crop was estimated, without taking into account the rental value of land. Gross returns were calculated by taking into account the minimum support price (MSP)/retail price for pulses by government agencies. Returns over variable costs were calculated for assessing the economic viability of kharif pulse production technologies.

RESULTS AND DISCUSSION

The experience-based survey of kharif pulse growers is outlined in Fig 5. Most (96 percent) of the growers agreed that the lower cost of cultivation of kharif pulse crops than those of

other season pulse crops as well as cereals and oilseed crops. 92.2 percent of kharif pulse growers agree with the high nutritional value of pulse crops compared to other crops. 88 percent of kharif pulse growers agreed with improving soil health through pulse crops. Therefore, 84 percent of growers agreed with the lower water requirement of kharif pulse crops than other crops. Hence, the best way to save water is by growing pulse crops in kharif season. The 73.4 kharif pulse growers agreed with the higher minimum support price (MSP) for pulse crops compared to other crops. 70.3 percent of kharif pulse growers agreed that there was a low requirement for fertilizers compared to other family crops. A low cost of cultivation is required for the cultivation of pulse crops in the kharif season. 68 percent of pulse growers agreed with the easy markets available in the local areas of Deoria district for pulse grain sales. 60.5 percent of kharif pulse growers agreed with the higher return on kharif pulse cultivation compared to other crops. 56 percent of growers agreed that the increased yield of subsequent crops was due to improved soil fertility through pulse crops. 48 percent of pulse growers agreed with the easy cultivation of kharif pulse crops compared to rice, maize, and other crops.

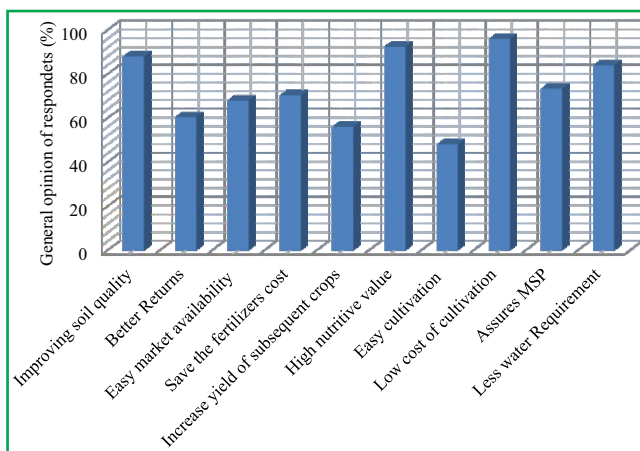


Fig. 5: General opinion of respondents based on knowledge with benefits of kharif pulse crops

The Major Obstacles Allied with the Adoption of Pulse Crops in Kharif Season.

Obstacles associated with kharif pulse crops faced by growers are classified into following categories viz. general constraints, educational and training constraints, scientific/technological constraints, economical constraints, Socio-Psychological constraints and extension constraints. The expected obstacles faced by the grower's during adopting in kharif pulses as major crop have been presented in Table 1 to 3 and Fig. 6.

General constraints: The general opinion of respondents on major constraints with the adoption of pulse crops in the kharif season mentioned in Table 1. The 96 percent of respondents agreed that stray animals are a major obstacle to the adoption of pulse crops in the Kharif season, and this is in the first place. Further, 92 percent of respondents agreed that the small land holding size is a major obstacle to the adoption of pulse crops in the kharif season, and it is in second place. 88

percent of respondents agreed that water logging is another major constraint in the adoption of pulse crops in the Kharif season, and it ranks third. Moreover, 76 percent of respondents agreed that insects, pests, and diseases are another major hindrance to the adoption of pulse crops in the Kharif season, and they are in fourth place. This was also supported by [Sharma *et al.*, \(2018\)](#), [Singh *et al.*, \(2015\)](#), [Singh *et al.*, \(2020\)](#) and [Sood *et al.*, \(2013\)](#). Therefore, 72 percent of respondents agreed labor scarcity is the next major obstacle to the adoption of pulse crops in the Kharif season, and they are in fifth place. Further, 64 percent of respondents agreed that the weed problem is another major obstacle to the adoption of pulse crops in the Kharif season, and it is in sixth position. The 60 percent of respondents agreed that the lack of mechanization is another major obstacle to the adoption of pulse crops in the Kharif season, and it is in seventh place. Moreover, 56 percent of respondents agreed that the lack of high yielding varieties of pulse crops is again big obstacle to the adoption of pulse crops in the Kharif season, and it is in eighth place. Similar results have also been reported by [Sharma *et al.*, \(2018\)](#). The 52 percent of respondents agreed that the higher pulse crop failure chances are a bigger obstacle to the adoption of pulse crops in the Kharif season, and it is in ninth place. Further, percent respondents agreed that the availability of better irrigation facilities is the next major obstacle to the adoption of pulse crops in the Kharif season, and it is in tenth place (Table 1).

Table 1: Common major obstacles in kharif pulse production perceived by growers

S. No	Particulars	Frequency	%	Rank
1	Lack of HYV varieties	14	56	VIII
2	Better Irrigation Facility	12	48	X
3	Weed problems	16	64	VI
4	Insect-Pest and Diseases	19	76	IV
5	Water logging	22	88	III
6	Stray cattle	24	96	I
7	Low mechanization	15	60	VII
8	Risk of crop failure	13	52	IX
9	Labour Scarcity	18	72	V
10	Land holding size	23	92	II

Educational and training obstacle: As indicated in table 2, the educational and training obstacles associated with the kharif pulse crops. During the survey, 92 percent of respondents said they lack knowledge about improved cultivation of kharif pulses, and it was mentioned as the first place in education and training obstacles. Similar results have also been reported by [Meena *et al.*, \(2022\)](#). Further, 88 percent of respondents expressed a lack of awareness about the benefits of kharif pulse crops, and it ranked second, 76 percent of respondents talked about a lack of communication between the farming community and electronic mass media agencies, which was observed as the third most serious obstacle under educational and training obstacles. Therefore, 64 percent of respondents are said deficit in training programs at the village level and got the fourth position in this category (Table 2).

Table 2: Educational and training obstacles in kharif pulse production perceived by growers

S. No	Education and training obstacles	Frequency	%	Rank
1	Deficit of training programmes at village level	16	64	IV
2	Lack of awareness about benefit of pulse crops	22	88	II
3	Lack of knowledge about scientific cultivation of pulses	23	92	I
4	Lack of coverage through electronic media	19	76	III

Technical obstacles: The data pertaining to the technical obstacles faced by kharif pulse growers is mentioned in Figure 6. Most of the respondents (92 percent) said that improper weed management practice is major obstacle in the technical category and it first ranked. Further 87 percent respondents agreed with that lack of knowledge about proper seed treatment in kharif pulse crops and it second position under technical category. 84 percent of respondents said that difficulty in managing the proper soil moisture at sowing time in rainy season is a major problem under technical obstacles and it ranked in the third position. Similar findings were also made by Choudhary *et al.*, (2013), Pooniya *et al.*, (2015) and Kumari *et al.*, (2017), Therefore, 72 percent of respondents said that difficulty in running the sowing tools in the rainy season and 60 percent of respondents said that difficulty in judging the proper moisture level at sowing time are both serious technical obstacles and rank fourth and fifth, respectively (Roy *et al.*, 2023).

Social-psychological obstacles: The data indicated in table 3 reveals that the most serious obstacles are lack of cooperation among the kharif pulse grower's to share their experience (92 percent), community pressure on the pulse growers (80 percent), and it ranked second in the social-psychological obstacles of kharif pulse. Further, 68 percent of respondents said that the step-motherly treatment with pulse crops as compared to other crops ranked third. However, 64 percent of respondents showed hearsay and rumours about pulse crop growers, and it got a fourth rank in this category (Table 3).



Identification of insect in Pigeonpea field



Intercultural operation in green gram field for controlling weeds

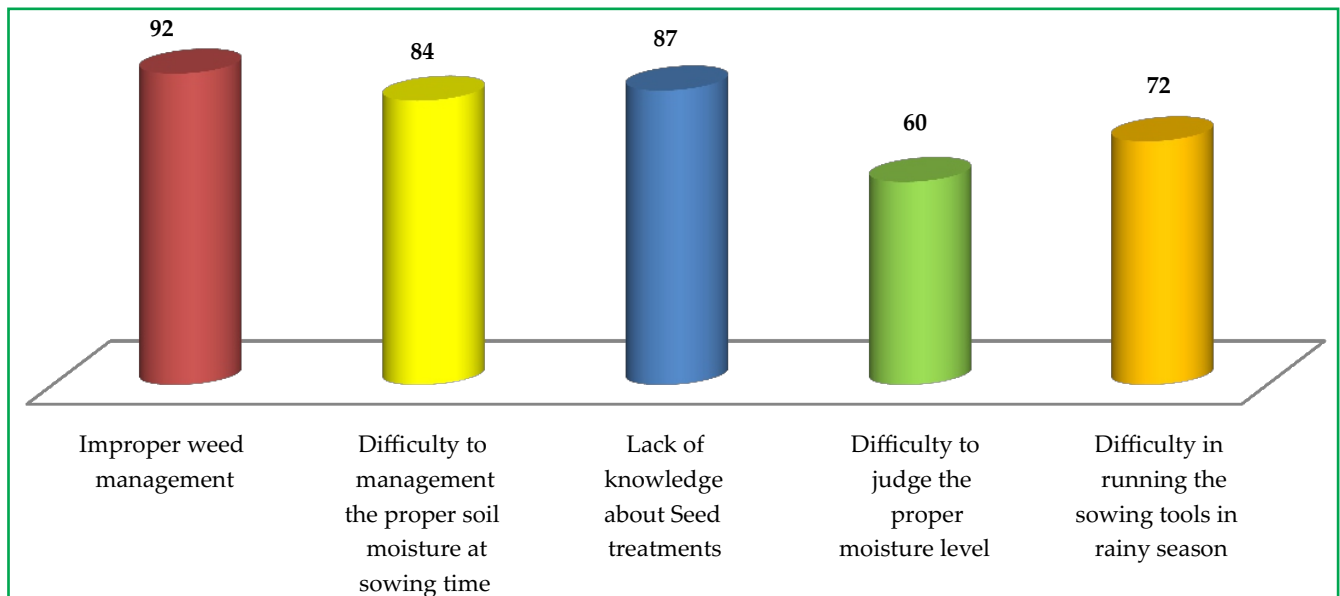


Fig. 6: Major technical obstacles in kharif pulses cultivation perceived by pulse growers

Table 3: Social-psychological obstacles in kharif pulse production perceived by growers

S. No	Obstacle	Frequency	%	Rank
Social-psychological				
1	Hearsays and rumours about pulse crops	16	64	IV
2	Step-motherly treatment	17	68	III
3	Community pressure on the pulse grower's	20	80	II
4	Lack of cooperation among the pulse grower's	23	92	I
Financial/Economical				
5	Lack of fund for purchase of inputs	24	94	I
6	Poor knowledge about insurance policies and other incentives	19	76	II



Identification of weeds in pulses



Planting of Pigeonpea in raised bed

Economical or Financial impediments: The data presented in table 3 reveals that two economic obstacles are major: one is a lack of funds for the purchase of inputs at the time of sowing (94 percent), and the second is poor knowledge about insurance policies and other incentives to the growers (76 percent) in this category (Table 3).

CONCLUSION

On the basis of aforementioned study, it can be concluded that growers of kharif pulse crops have a number of challenges. The most important obstacles were stray animals, small land holding size, lack knowledge about improved cultivation, improper weed management practice, lack of knowledge about proper seed treatment, lack of cooperation among the kharif pulse growers to share their experience, community

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pressure on the pulse growers and lack of funds for the purchase of inputs. The current study's findings offer empirical feedback to KrishiVigyan Kendra's, Central/state agricultural universities, agricultural development departments, and other non-governmental organizations that working in agricultural and related departments. This feedback is intended to strengthen the link between growers and research-extension farmers by giving the farming society timely and reliable information.

CONFLICT OF INTEREST

All the author both individually and collectively, affirms that they do not possess any conflicts of interest either directly or indirectly related to the research being reported in the publication.

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