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Constraints Faced by Respondents with the Adoption of Different Methods of Paddy Cultivation during Covid-19 in Punjab

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Abstract

Every sector had significant problems as a result of COVID-19, including the agriculture sector. Punjab had also witnessed some problems faced by farmers in adopting various methods of paddy cultivation during Covid-19. The study was conducted in five agro-climatic zones of Punjab and constituted a sample of 150 respondents for the study. It was found that weeds as regarded as one of the major constraints in direct seeded rice faced by the farmers. More than half of the respondents face problems of poor germination of seeds in direct seeded rice. The majority of the respondents considered that paddy transplanter were difficult to afford due to high cost and also faced constraints with a lack of skilled manpower in mechanical transplanting. In case of paddy sown with conventional transplanting technology, the majority of respondents (90 %) considered that manual labour cost was high during Covid-19 because paddy was cultivated through migrant labour in Punjab which was not available due to lockdown and strict govt. instructions.

Keywords: Constraints; Covid-19; Paddy Sowing Techniques

Introduction

The primary sector, Agriculture, is a key player in many developing countries like India Kaur B, et al. [1]. Punjab is the largest producer of wheat and paddy and a significant contributor to the national pool of food grains. This is due to the highest levels of crop yields, cropping intensity of 190% and almost the entire area under assured irrigation as compared to the rest of the country. The lockdown in the north-western regions of Haryana and Punjab has caused a massive reverse migration, causing a labour shortage that is pervasive across all economic sectors Gupta V [2], Mukhra R, et al. [3]. Delays in rice transplanting would have a significant impact on its productivity as they would delay rice output and the ensuing wheat crop's sowing, which would then suffer from heat stress Singh B, et al. [4]. Around 72% of farmers reported a labour shortage and 20% faced difficulties while obtaining inputs such as seeds and fertilizer Vatta K, et al. [5]. This results in a 7% to 18% reduction in the production of rice in Punjab. However, as the lockdown continued and migrant labour became scarce, there was an increase in wages of labour for paddy transplantation (Rs. 4000/acre for non-basmati rice field work). The landed households were unable to pay this higher wage rate and labourers were hesitant to transplant paddy at lower rates Kaur N, et al. [6]. To lessen the need for labour, there were an alternative planting techniques such as Direct-seeding and mechanical transplanting be used instead of conventional transplantation Mann RA, et al. [7].

In terms of time, cost and labour requirements, farmers found paddy transplanter to be user-friendly but it requires high skill and technical knowledge for raising mat-type nurseries for usage on well-leveled land. Additionally, paddy transplanter needs regular maintenance because some parts were worn out over time. The mat-type nursery needs to be regularly sprayed with water to prevent Fe deficiency. These must be taken into account to improve the effectiveness and appeal of this technology so that farmers will adopt it Bhatt R [8], Bhatt R [9]. Direct-seeding rice production (DSR) may be the best option for a rice production system that was water efficient Pathak H, et al. [10] but management of weeds in DSR regarded as one of the major constraints due of crop physiology. DSR had not been very successful in light-textured soils due to Iron deficiency and weed infestation Bhatt R [8], Bhatt R [9].

Methodology

The study was conducted in five agro-climatic zones of Punjab viz. western zone, western plain zone, central plain zone, undulating plain zone, and sub-mountain undulating zone. One district from each zone was selected randomly (Faridkot, Bathinda, Ludhiana, Hoshiarpur and Rupnagar). So, total five districts were selected for the study. A list of respondents who were using direct seeded rice, mechanical transplanting and conventional transplanting technologies during Covid-19 for sowing of paddy crop was obtained from the Chief Agriculture Office/ Krishi Vigyan Kendras of each district. From each district 10 farmers from the selected method of paddy cultivation during Covid-19 were selected. Thus, 30 respondents from each district constituted a sample of 150 respondents for the study.

It refers to the hindrances or obstacles faced by the farmers in adoption of alternative techniques during pandemic like non-availability of a machine, non- availability of a labour, high cost of machinery and seeds, difficulty in weed management etc. Statements/questions were prepared and responses were recorded in dichotomous i.e. Yes/No, along with open-ended questions. It was measured by using frequency and percentage.

Results and Discussion

Constraints Faced by Respondents in Adoption of Various Methods of Paddy Cultivation during Covid-19

After investigation it had been observed that there were some problems faced by respondents in adopting various methods of paddy cultivation during Covid-19 which was shown in the Table 1. During the discussion with farmers, about 76.00% faced difficulties in intercultural operation in direct seeded rice during Covid-19 and more than 70.00% of the respondents faced difficulties in high infestation of weeds. Similar results were reported by Singh B, et al. [4] that one of the severe constraints in DSR was stable growth of weeds. Fifty eight per cent of respondents faced problems of poor germination of seeds. Less than 50% of respondents faced uncertainty in return of paddy due to fear of yield in DSR. About 52.00% of respondents faced difficulties of non-availability of seed drill machines for direct seeding. Due to fear of Covid-19 about 40% of respondents faced lack of extension activities for better practices in DSR.

In case of paddy sown with mechanical transplanting technology, about 92.00% of the respondents faced difficulties in affordability of paddy transplanter due to its high cost. About 72.00% of respondents faced problems of skilled manpower and 70.00% of respondents faced difficulties in raising nursery because of less knowledge about mat type nursery. The finding is supported with the work of that due to failure of mat type nursery some farmers not being able to adopt mechanical transplanting. Due to less availability of machines (64.00%), there were problem of non- availability of subsidy (36.00%) which was felt by respondents. About 30.00 per cent of respondents feel that rent while custom hiring was high. The findings of the study support the study of Vatta K, et al. [5], McDonad AJ, et al. [11]. In case of paddy sown with conventional transplanting technology, majority (90.00%) of respondents faced problem of high cost of labour during Covid-19.

Sr. No	Aspects	Frequency*	%
	I. DSR	n=50	
1	Difficulties in intercultural operation	38	76
2	More weed infestation	36	72
3	Poor germination	28	58
4	Non- availability of Machines	26	52
5	More rodent attack	22	44
6	Lack of extension activities for adopting better practices during Covid-19	20	40

II. Mechanical Transplanting		n=50	
1	Difficult to afford paddy transplanter	46	92
2	Skilled manpower is inadequate	36	72
3	Difficulties in nursery raising	35	70
4	Less availability of Machines	32	64
5	Lack of guidance by agriculture staff about mechanical transplanting technology	24	48
6	Non- availability of subsidy	18	36
7	Rent while custom hiring is high	15	30
III. Conventional Transplanting		**n=50**	
1	High cost of labor required for transplanting of paddy	45	90
2	Non-availability of labor during Covid period	39	78
4	Difficult to maintain optimum spacing	28	56
5	More disease infestation	20	40

Table 1: Distribution of the respondents based on the constraints with the adoption of various methods of paddy cultivation during Covid-19.

Frequency

About 78% of the respondents faced problems of non-availability of labour due to lockdown and strict govt. instructions whereas 56% of the respondents observed that optimum spacing was not maintained by labour because of labour want to do more work on other farms. The findings are in lined with the findings of Dixit A, et al. [12], Singh B, et al [13].

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