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Opinion of the Farmers towards Different Methods of Paddy Cultivation During Covid-19

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Abstract

The study was conducted in five agro-climatic zones of Punjab in 2020–21 during COVID-19. From a sample of 150 respondents, about 45% had average opinion regarding the conventional transplanting, mechanical transplanting and direct seeded paddy methods of sowing. All the respondents were agreed that direct seeded paddy is more water saving technology. For good yield, rank first was given to mechanical transplanting and rank third was given to direct seeded paddy methods of sowing. The data revealed that majority of respondents agreed with the statement that intercultural operations was easy in mechanical transplanting. Majority of the respondent disagreed with the statement of better weed control in DSR. Greater majority of respondents agreed with the statement that in conventional transplanting, transplanting is easy. About eighty six per cent of respondents disagreed with statement that growing nursery was easy in mechanical transplanting. All the respondents disagreed with the statement of water saving in conventional transplanting. Greater majority of respondents disagreed that labour was easily available for conventional transplanting during Covid-19.

Keywords: Covid-19, sowing techniques, paddy, opinion

1. Introduction

The primary sector, Agriculture, is a key player in many developing countries like India. Punjab and Haryana are the two leading states among all the states in India regarding agricultural production with the expected yield concerning to certain crops such as paddy (Kaur and Vikram, 2013). It was grown in areas from 16° to 28° N latitude and 79° to 90° E longitude in India (Pathak et al., 2018). It is a kharif season crop that requires above 25°C high temperature and high humidity (Anonymous, 2021). In paddy, cultivation was done mainly in the field by transplanting 20–25 days old seedlings in a traditional way called conventional puddle transplanted paddy (Marasini et al., 2016). But the most recent SARS-CoV-2 virus outbreak, also known as COVID-19 or corona virus 2019, has turned into one of the most catastrophic pandemic in the last 100 years (Dhama et al., 2020). The lockdown in the north-western regions of Haryana and Punjab has caused a massive reverse migration, with estimates that almost 1 million labourers had returned to their home states (Chaba and Damodara, 2020). Due to labour shortage there was cries across all economic sectors (Mukhra et al., 2020). Delays in paddy transplanting would have a significant impact on its productivity as they would delay paddy output and the ensuing wheat crop's sowing, which would then suffer from heat stress (Singh et al., 2020). However, as the lockdown continued and labour became scarce and the farmers were

unable to pay this higher wage rate and labourers were reluctant to transplant paddy at lower wage rates (Kaur and Kaur, 2021). Mechanical Transplanting of Rice (MTR) requires the use of agricultural machinery (Bhatt, 2020). Bhatt and Singh (2022) revealed that mechanical transplanting of paddy had received high level of opinion from 17.9% of respondents but DSR received this level of understanding from only 3.8% of respondents. The respondents opinion on MTR were split evenly between low cost effectiveness (about 68.9%) and high cost effectiveness (about 4.7%), respectively. While roughly 10.4, 69.8 and 14.15% of DSR farmers felt the same. Approximately 14.1, 76.4 and 10.4% of MTR farmers said the profitability was low, medium, or high, respectively. Direct-seeding paddy production (DSR) may be the best option for a paddy production system that is water efficient (Pathak et al., 2014). Direct seeding eliminates the need to maintain water (4–5") at the base of transplanted seedlings, which reduces water usage by around 29% (0.9 mla⁻¹) (Kaur and Singh, 2017). The good news in the middle of the crisis was that these states had begun pushing non-paddy crops with smaller water footprints for the upcoming rainy season, such as maize and cotton. This should also assist avoid skilled labor-intensive farming tasks like paddy transplantation (Anonymous, 2020c). To lessen the need for labour, it is suggested that alternative planting techniques such as Direct-seeding and mechanical transplanting be used instead of conventional



transplantation (Kaur and Singh, 2017). Farmers found paddy transplanter as user-friendly and practical in terms of time, cost, and labour requirements (Murali et al., 2016) but in mechanical transplanting of paddy high skill and technical knowledge needed to raise mat-type nurseries, which is very time-consuming and labor-intensive. The growth of mat-type nurseries and ease of operation are two important aspects that affect MTR's performance (Kukal et al., 2018).

During COVID-19 pandemic, the reverse migration of labourers from areas like Haryana and Punjab presents a rare chance for these governments to correct the historical error of promoting unsustainable agricultural systems that require a lot of water and labour. The good news in the middle of the crisis was that these states had assist avoid skilled labor-intensive farming tasks like paddy transplantation (Anonymous, 2020c). No technology or method is useful unless it offers certain advantages to farmers and helps them practice cost- and environmentally-conscious farming. Therefore, identifying which method (conventional transplanting, mechanical transplanting and direct seeded paddy) to use is crucial and considered best by famers. An opinion of farmers plays a crucial part in the achievement of production and the success of farming (Singhanian and Saini, 2020).

2. Materials and Methods

The study was conducted in five agro-climatic zones of Punjab during Covid period (2020–21) 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). Thus a total of five districts were selected for the study. A list of respondents (paddy farmers) who were using direct seeded paddy, mechanical transplanting and conventional transplanting technologies during Covid-19 was obtained from the chief agriculture office/ Krishi Vigyan Kendras of each district. From each selected district 30 respondents were selected by choosing 10 farmers from each selected method of paddy cultivation. Thus, a total of 150 respondents were constituted the sample for the study.

An opinion was a judgment, point of view or statement which is not conclusive, rather than facts which are true statements. It referred to the reactions of the farmers regarding various methods of sowing in paddy during Covid-19. Farmers' opinions about sowing methods was investigated, using a modified two level scale of measurement (disagree=0, to agree=1) and frequency and percentage were used. To classify respondents, the below formula was used (Feli et al., 2007).
Weak= $\bar{x}-\sigma$(1)

Average= $\bar{x}-\sigma$ to \bar{x}(2)

Good= \bar{x} to $\bar{x}+\sigma$(3)

Excellent= $\bar{x}+\sigma$(4)

Where,

\bar{x} =Mean

σ =Standard Deviation

3. Results and Discussion

3.1. Opinion of the respondents towards direct seeded paddy technology during Covid-19

The data revealed that all the respondents were agree with the statement that direct seeded paddy is more water saving technology. Greater majority (87.30%) of respondents agreed with the statement that DSR was easy to sow. Most of the respondents (84.00%) disagreed with the statement of better weed control in DSR and almost same no. of respondents disagreed with the statement that in DSR possibility to have high germination percentage. Slightly more than three-fourth (78.00%) of respondents opined that, intercultural operations in DSR are not easy. About three-fourth of respondents (75.30) agreed with opinion statement of machine is easy to afford.

Table 1: Distribution of respondents according to their opinion about direct seeded paddy technology during Covid-19, n=150*

Sl. No.	Opinion statements	Agree	Disagree
1.	Machine easy to afford / affordable	113 (75.30)	37 (24.70)
2.	Easy to Sow	131 (87.30)	19 (12.70)
3.	Machine easily available	95 (63.30)	55 (36.70)
4.	Higher germination percentage	25 (16.70)	125 (83.30)
5.	Better weed control/ management	24 (16.00)	126 (84.00)
6.	Less rodent problem	38 (25.30)	112 (74.70)
7.	Less insect pest damage	75 (50.00)	75 (50.00)
8.	Less disease infestation	105 (70.00)	45 (30.00)
9.	Ease of intercultural operations	33 (22.00)	117 (78.00)
10.	More water saving	150 (100.00)	-

Figures in parenthesis represent percentage

Half of the respondents were agreed with the statement that insect pest damage was less in DSR while same no. of respondents disagreed with the same statement these findings are in line with Vatta et al. (2020).

3.2. Opinion of respondents regarding mechanical transplanting technologies during Covid-19

The data revealed that greater majority of the respondents (90.50%) disagreed with the statement of water saving in mechanical transplanting and more than third-fourth of

respondents (86.70%) disagreed with statement that growing nursery was easy in mechanical transplanting. Majority (82%) of the respondents disagreed with the opinion statement of easy affordability of mechanical transplanter. Slightly more than three-fourth (77.30%) of respondents agreed with the statement that in mechanical transplanting intercultural operations was easy. Slightly less than third-fourth of respondents (73.30%) opined that disease infestation was less in mechanical transplanting.

Table 2: Distribution of respondents on the basis of opinion regarding mechanical transplanting technology during Covid-19, n=150*

Sl. No.	Opinion statements	Agree	Disagree
1.	Machine easy to afford	26 (17.30)	124 (82.70)
2.	Easy to growing nursery	20 (13.30)	130 (86.70)
3.	Machines easily available	76 (50.70)	74 (49.30)
4.	Easy availability of labour	70(46.70)	80 (53.30)
5.	Better weed control	94 (62.70)	56 (37.30)
6.	Less insect pest damage	83 (55.30)	67 (44.70)
7.	Less disease infestation	110 (73.30)	40 (26.70)
8.	Ease of intercultural operations	116 (77.30)	34 (22.30)
9.	More water saving	8 (9.50)	142 (90.50)
10.	High optimum yield	100 (66.70)	50 (33.40)

Figures in parenthesis represent percentage

Majority (66.30%) of respondents agreed with the statement that mechanical transplanting gives more yields. Also, less than two third (62.70%) of respondents agreed with the statement that weed control was better in mechanical transplanting. Almost half of the respondents agreed and disagreed with the statement that mechanical transplanter was easily available for transplanting.

3.3. Opinion of respondents regarding conventional transplanting technologies during Covid-19

From the Table 3, the data revealed that majority (92.00%) of respondents agreed with the statement that in conventional transplanting, transplanting is easy. All the respondents disagreed with the statement of water saving in conventional transplanting and major majority of respondents (92%) disagreed with the statement that labour was easily available for conventional transplanting. Majority of respondents (73.30%) disagreed with statement that insect-pest damage was less in conventional transplanting.

Less than third-fourth of respondents (69.30) agreed with the statement that that conventional transplanting gave high yield. About two-third (66.70%) of respondents agreed with statement that conventional transplanting had better control weedsThe data also showed that less than two-third (62.00%)

Table 3: Distribution of respondents on the basis of opinion regarding conventional transplanting technologies during Covid-19, n=150*

Sl. No.	Opinion statements	Agree	Disagree
1.	Easy to sow/ transplant	138 (92.00)	12 (8.00)
2.	Easy availability of labour	11 (7.30)	139 (92.70)
3.	Better weed control	100 (66.70)	50 (33.40)
4.	Less insect pest damage	40 (26.70)	110 (73.30)
5.	Less disease infestation	102 (68.00)	48 (32.00)
6.	Ease of intercultural operations	93 (62.00)	57 (38.00)
7.	More water saving	-	150(100.00)
8.	High optimum yield	104 (69.30)	46 (30.70)

Figures in parenthesis represent percentage

of respondents agreed with statement that intercultural operations were easy in conventional transplanting.

3.4. Overall level of opinion of the respondents towards various methods of paddy cultivation during Covid-19

The overall level of opinion was calculated with the methodology of Felly et al. (2007) by calculating mean and S.D. (Formula was given under methodology). Data showed that 11.30%, 40.00%, 22.00% and 26.70% respondents have the weak, average, good and excellent level of opinion respectively towards direct seeded paddy.

Table 4: Distribution of respondents on the basis of overall opinion regarding direct seeded paddy technologies during Covid-19, n=150*

Sl. No.	Level of opinion	Direct seeded paddy	
		f	%
1.	Weak (<2.5)	30	20.00
2.	Average (2.5–5)	55	36.70
3.	Good (5–7.5)	42	28.00
4.	Excellent (>7.5)	23	15.30

For mechanical transplanting, 43.30% of the respondents were have average level of opinion followed by 27.30% of them have good opinion for the technology while 14.70% of the respondents have weak and excellent level of opinion respectively. These findings are contradicted with Bhatt and Singh (2022) where majority of respondents had high level of opinion for mechanical transplanting of paddy.

Data given in Table 5 showed that 44.70% of the respondents had average level of opinion followed by 22.70% of respondent were having of good level of opinion towards conventional transplanting of paddy. Whereas 21.30% and 11.30% of them had weak and excellent level of opinion respectively towards conventional transplanting.



Table 5: Distribution of respondents on the basis of overall opinion regarding mechanical and conventional transplanting technologies during Covid-19, n=150*

Sl. No.	Level of opinion	Mechanical transplanting		Conventional transplanting	
		F	%	F	%
1.	Weak (<2.5)	22	21.30	32	14.70
2.	Average (2.5–4)	68	44.70	67	45.30
3.	Good (4–6.5)	38	22.70	34	25.30
4.	Excellent (>6.5)	22	11.30	17	14.70

4. Conclusion

In direct seeded paddy, farmers disagreed with the opinion statement of better weed control. In mechanical transplanting of paddy, farmers disagreed with the opinion statement of easy growing of nursery and in case of paddy sown with conventional transplanting technology, farmers disagreed with the opinion statement of easy availability of labour. So, more no. of demonstrations cum training regarding use of modern techniques of paddy cultivation like growing of mat type nursery etc.

5. Acknowledgement

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6. References

- Anonymous, 2020c. Lessons from a pandemic to repurpose India's agricultural policy. *Nature India*. Available from <https://www.nature.com/articles/nindia.2020.83>. Accessed on 12th May 2020.
- Anonymous, 2021. Package and practices for *kharif* crops. Punjab Agricultural University, Ludhiana, 3–5.
- Bhatt R., 2020. Tensiometers for paddy water footprints. *Current Journal of Applied Science and Technology* 39(30), 11–27.
- Bhatt, R., Singh, P., 2022. Farmer's field evaluation of direct seeded rice vis-a-vis puddled transplanted rice in Kapurthala, Punjab. *Indian Journal of Extension Education* 58(2), 42–46.
- Chaba, A.A., Damodara, H., 2020. The Covid nudge: Labour shortage makes Punjab and Haryana farmers switch from paddy to cotton. *The Indian Express*. Available from <https://indianexpress.com/article/india/Covid-19-punjab-haryana-farmers-paddy-cotton6385600/>. Accessed on 27th Aug 2021.

- Dhama, K., Sharun, K., Tiwari, R., Sircar, S., Bhat, S., Malik, Y.S., Singh, K.P., Chaicumpa, W., Aldana, D.K., Morales, A.J., 2020. Coronavirus Disease 2019–COVID-19. *Clinical Microbiology Reviews* 33(4), e00028–20.
- Kaur, J., Singh, A., 2017. Direct seeded rice: Prospects, problems/constraints and researchable issues in India. *Current Agriculture Research* 5(1), 13–32.
- Kaur, N., Kaur, A., 2021. Capitalist agriculture, COVID-19 and agrarian labour relations in Punjab, India. *Journal of Agrarian Change* 21(3), 638–650.
- Kaur, S., Vikram, A., 2013. Economic impact of trade openness and exchange rate regimes: Evidence from developing Asia. *International Journal of Business Emerging and Marketing* 5(4), 341–370.
- Kukal, S.S., Jat, M.L., Sidhu, H.S., 2014. Improving water productivity of wheat-based cropping systems in South Asia for sustained productivity. *Advanced Agronomy* 127, 157–258.
- Marasini, S., Joshi, T.N., Amgain, L.P., 2016. Direct seeded rice cultivation method: a new technology for climate change and food security. *Journal of Agriculture and Environment* 17(1), 45–56.
- Mukhra, R., Krishan, K., Kanchan, T., 2020. COVID-19 sets off mass migration in India. *Archives Medical Research* 51(7), 736–738.
- Murali, M., Anantachar, M., Prakash, K.V., Shirwal, S., Satishkumar, U., 2016. Performance and evaluation of six row self-propelled paddy transplanter under different puddling methods. *Indian Journal of Science and Technology* 9(1), 47.
- Pathak, H., Tewari, A.N., Sankhyani, S., Dubey, D.S., Mina, U., Singh, V.K., Jain, N., 2014. Direct-seeded rice: Potential, performance and problems-A review. *Current Advances of Agricultural Science* 3, 77–88.
- Singh, B., Shirsath, B., Jat, M.L., McDonald, A.J., Craufurd, P., Srivastava, A.K., Rana, D.S., Singh, A.K., Chaudhari, S.K., Sharma, P.C., Singh, R., Jat, H.S., Sidhu, H.S., Gerard, B., Braun, H., 2020. Agricultural labor, COVID-19, and potential implications for food security and air quality in the breadbasket of India. *Agricultural System* 185, 102954.
- Vatta, K., Bhogal, S., Petrie, A.C., Greens, S.A., Dixit, S., 2020. Impact of COVID-19- lockdown on Punjab agriculture. In: Singh, S., Singh, L., Vatta, K. (Eds.), *Covid-19 Pandemic and Economic Development*. Springer Books, 33–47.

