International Journal of Farm Sciences **4(1)** :107-113, 2014

Technological deviations in scientific rice nursery raising: a study of Punjab

SHEIKH MUZAFFAR AHMAD and DD SHARMA*

Dept of Extension Education
Sher-e-Kashmir University of Agricultural Sciences and Technology-Kashmir, J&K
***Dept of Social Sciences**
Dr YS Parmar University of Horticulture and Forestry, Nauni, Solan 173230 HP
Email for correspondence: shkmuzaffar@yahoo.co.in

ABSTRACT

The study was conducted in the early rice transplantation pockets of Punjab to identify the main reason(s) for early transplantation of rice and to find out the technological deviations in the adoption of selected recommended rice cultivation practices in nursery raising. The data revealed that the major reasons for early rice transplantation were availability of uninterrupted supply of electricity at sowing time (87.41%) and less occurrence of insects and diseases (76.29%). A majority of the early rice growers (71.11%) used less than 6 kg of seed per acre. A significant majority of the respondents (who adopted seed treatment) had been using the recommended quantities of chemicals viz 10 g ceresan/Agallol and 1 g streptocycline per acre. A majority of the rice growers (71.11%) applied less than recommended dose of urea per acre in their rice nurseries. The early rice growers under study either used superphosphate or DAP; none of them used both.

Keywords: Rice growers; deviation; early plantation; recommended practices

INTRODUCTION

The rice crop has emerged as the most important food grain crop in Punjab. The area under the crop has increased by more than five times and production more than ten times during the period from 1970-71 to 1994-95 (Anon 1995). Although it is a paying crop for the farmers yet the declining water table in the state has posed a serious problem. In case the immediate steps to arrest the present trend of the declining ground water table in the state are not taken the agricultural productivity will be in great danger. Excessive use of ground water for rice crop by the early rice growers of the state is resulting in irreparable loss of ground water. Keeping this in view the present study was undertaken with the following specific objectives:

1. To identify the main reason(s) for early transplantation of rice
2. To find out the technological deviations in the adoption of selected recommended rice cultivation practices in nursery raising

METHODOLOGY

The study was conducted in the early rice transplantation pockets of Punjab viz Zira, Verka, Sultanpur Lodhi, Shahkot, Nadala and Samana falling in the districts of Firozpur, Moga, Amritsar, Kapurthala, Jalandhar, Hoshairpur, Gurdaspur, Patiala and Sangrur. A sample of 135 early rice growers for the present study was selected through stratified random sampling in such a way that the number of farmers selected from a particular pocket was proportional to the total number of early rice growers (population size in the selected villages of each pocket). Technological deviation for the present study was measured in terms of the deviations from the recommendations of Punjab Agricultural University, Ludhiana for the practices of rice crop followed by the farmers. The data were collected through personal interviews with the help of pre-tested interview schedule.

RESULTS AND DISCUSSION

Reasons for early transplantation of rice crop

The reasons for early transplantation of rice crop as expressed by the early rice growers have been presented in Table 1. The data reveal that the major reasons for early rice transplantation were availability of uninterrupted supply of electricity at sowing time (87.41%), less occurrence of insects and diseases (76.29%) and sufficient availability of water for irrigation (57.03%). About 50 per cent of the rice growers expressed that high intensity cropping pattern (taking more than two crops) and easy availability of labour at low wages were the reasons for early rice transplantation. Quite a good number of rice growers (37.04%) expressed that prevalence of early rice transplantation in the area was the reason for early rice transplantation. The other reasons for early transplantation were minimizing losses due to floods and the prolonged duration of Pusa-44. The facilitating marketing of produce and produce of the early sown rice fetching better price were the other reasons expressed by the rice growers for early transplantation. Chatha et al (1994) also reported that the easy availability of labour at cheaper rates and greater supply of electricity were the main reasons for early rice transplantation.

A look at the pocket-wise distribution shows that the major reason for early rice transplantation in the Zira, Shahkot and Samana pockets was due to less occurrence of insects and diseases. It needs to be critically examined through research trials that how far the farmers are rational in taking decision of early rice transplantation on the basis of this reason. Availability of uninterrupted supply of electricity during the month of May and following of high intensity cropping pattern were the major reasons for early transplantation in the Verka pocket. So far as Sultanpur Lodhi pocket was

Table 1. Reasons for early transplantation of rice crop

Reason	Pocket-wise number of respondents						
	Zira (n= 25)	Verka (n= 45)	Sultanpur Lodhi (n= 25)	Shahkot (n= 10)	Nadala (n= 10)	Samana (n= 20)	Overall (n= 135)
Availability of uninterrupted supply of electricity at sowing time	21 (84.00)	44 (97.78)	18 (72.00)	9 (90.00)	7 (70.00)	19 (95.00)	118 (87.41)
Less occurrence of insects and diseases	23 (92.00)	30 (66.67)	14 (56.00)	10 (100.00)	7 (70.00)	19 (95.00)	103 (76.29)
Sufficient availability of water for irrigation	19 (76.00)	22 (48.89)	1 (4.00)	10 (100.00)	8 (80.00)	17 (85.00)	77 (57.03)
High intensity cropping pattern followed	1 (4.00)	44 (97.78)	16 (64.00)	4 (40.00)	2 (20.00)	0 (0.00)	67 (49.63)
Availability of labour at cheaper rates	15 (60.00)	24 (53.33)	8 (32.00)	6 (60.00)	4 (40.00)	9 (45.00)	66 (48.89)
Early rice transplantation prevalent in the area	17 (68.00)	8 (17.78)	4 (16.00)	2 (20.00)	8 (80.00)	11 (55.00)	50 (37.04)
To minimize losses due to floods	0 (0.00)	0 (0.00)	22 (88.00)	0 (0.00)	0 (0.00)	0 (0.00)	22 (16.29)
Prolonged maturity of Pusa-44	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	16 (80.00)	16 (11.85)
Facilitates marketing of the produce	0 (0.00)	0 (0.00)	2 (8.00)	1 (10.00)	0 (0.00)	8 (40.00)	11 (8.15)
The produce fetches better prices	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	0 (0.00)	1 (5.00)	1 (0.74)

concerned the major reason for early rice transplantation was to minimize losses due to floods. The farmers were growing rice in low lying areas. The water was accumulating in their fields during monsoons. They were sowing early so that the rice plants attain sufficient height before the accumulation of water. Their perception was that by doing this yield losses are minimized. It needs to be looked into by agronomists that how far the farmers were rational on this account. The findings further revealed that the other major reason for the early rice transplantation in the Zira, Shahkot, Nadala and Samana pockets was the availability of sufficient irrigation water. So far as availability of labour at cheaper rates to the early rice growers is concerned the paddy transplanter should be designed by PAU as per the needs of the farmers and the same should be popularized for its use by university and extension agency of the State Department of Agriculture, Punjab through conducting demonstrations at the farmers fields and provision of subsidies for its purchase.

Technological deviations in the selected practices for rice nursery raising

Deviations with respect to seed rate

It is clear from the data in Table 2 that all the respondents had used much less seed than the recommended (8 kg/acre) to raise seedlings for one acre. A majority of the early rice growers (71.11%) used less than 6 kg of seed per acre. The mean seed rate per acre used by the respondents was found to be 5.07 kg. When it was compared with the recommended seed rate (8 kg/acre) there was a significant difference indicating that the early rice growers had used significantly less quantity than the recommended seed rate per acre. The use of lower quantity of seed leads to less plant population which may adversely affect the productivity of rice. Hence farmers need to be properly educated to use recommended quantity of seed in the rice crop. These findings are in conformity with the study of Sarda (1993) who reported that 23.81 per cent of small, 36.51 per cent of medium and 34.92 per cent of large farmers used less than recommended seed rate per acre for the rice crop in the Ludhiana district.

Deviation with respect to dose of chemicals used for seed treatment

The data presented in Table 3 indicate that a significant majority of the respondents (who adopted seed treatment) had been using the recommended quantities of chemicals viz 10 g ceresan/Agallol and 1 g streptocycline per acre. The remaining 29.17 per cent of them were found to be using partial dose of the recommended fungicides (6 to 8 g ceresin/Agallol and 1 g streptocycline) for seed treatment.

The data further revealed that still a substantial percentage of the respondents in Sultanpur Lodhi (60.87%), Shahkot (60%) and Nadala (50%) had used the

Table 2. Distribution of respondents on the basis of deviation from the recommended seed rate

Pocket	Seed rate being used by respondents (kg/acre)					
	3 to 4.5		4.5 to 6.0		6.0 to 7.5	
	Number	%	Number	%	Number	%
Zira (n= 25)	8	32	16	64	1	4
Verka (n= 45)	13	28.89	13	28.89	19	42.22
Sultanpur Lodhi (n= 25)	11	44	14	56	0	0
Shahkot (n= 10)	0	0	10	100	0	0
Nadala (n= 10)	0	0	0	0	10	100
Samana (n= 20)	0	0	11	55	9	45
Overall	32	23.7	64	47.41	39	28.89

partial dose of fungicides for seed treatment. The farmers need to be educated regarding the importance of seed treatment through mass media and result demonstration. Even those who follow seed treatment need to be educated regarding correct dose through different methods of extension education.

Deviation with respect to duration for seed treatment

The recommendation of Punjab Agricultural University is to soak 8 kg rice seed in 10 litres of water containing 10 g ceresan wet/Agallol and 1 g streptocycline for 8 to 10 h before sowing. But it can be observed from the data in Table 4 that only 7.29 per cent of the respondents had been following this recommendation. A majority of the respondents (67.71%) soaked the seed for 11 to 24 h while the rest of the rice growers followed less than the recommended period (less than 8 h).

Deviation with respect to the recommended dose of urea application in nursery

It is inferred from the data in Table 5 that a majority of the rice growers (71.11%) applied less than recommended dose of urea per acre in their rice nurseries. Only 25 per cent of them were found to use the recommended dose (52 kg/acre). The mean per acre dose of urea applied was 40.90 kg which differs significantly from the recommended dose of 52 kg/acre (Z= 2.75). It may not be out of place to mention here that none of the selected rice growers in the state had got the soil tested before sowing rice. It is thus recommended that field level extension workers should motivate the farmers to follow recommendations.

Table 3. Deviation with respect to chemical dose used for seed treatment

Pocket	Respondents using recommended doses (10 g Ceresan/Agallol + 1 g Streptocycline)		partial doses	
	No	%	No	%
Zira (n= 6)	6	100	0	0
Verka (n= 32)	32	100	0	0
Sultanpur Lodhi (n= 23)	9	39.13	14	60.87
Shahkot (n= 10)	4	40	6	60
Nadala (n= 10)	5	50	5	50
Samana (n= 15)	12	80	3	20
Overall (n= 96)	68	70.83	28	29.17

Table 4. Deviation with respect to time used for seed treatment

Pocket	Respondents following varying time intervals (h) for seed treatment							
	8-10		< 8		11-18		18-24	
	No	%	No	%	No	%	No	%
Zira (n= 6)	6	100	0	0	0	0	0	0
Verka (n= 32)	1	3.13	21	65.62	10	31.25	0	0
Sultanpur Lodhi (n= 23)	0	0	3	13.04	0	0	20	86.96
Shahkot (n= 10)	0	0	0	0	2	20	8	80
Nadala (n= 10)	0	0	0	0	1	10	9	90
Samana (n= 15)	0	0	0	0	0	0	15	100
Overall (n= 96)	7	7.29	24	25	13	13.54	52	54.17

Deviations with respect to the recommended dose of phosphatic fertilizers

The early rice growers under study either used superphosphate or DAP; none of them used both. It is clear from the Table 6 that majority of the respondents (60%) applied less than recommended quantity (60 kg/acre) of superphosphate in rice nurseries. About 51 per cent had applied 10 to 30 kg whereas 8 per cent applied 30 to 50 kg superphosphate per acre. On the other hand only 8 per cent farmers applied the recommended dose (21kg/acre)

Table 5. Distribution of respondents on the basis of deviation from the recommended dose of urea application in nursery

Pocket	Respondents using different doses (kg/acre) of urea									
	20-30		30-40		40-50		50-54		55 & above	
	No	%	No	%	No	%	No	%	No	%
Zira (n= 25)	5	20	16	64	4	16	0	0	0	0
Verka (n= 45)	0	0	16	15.56	25	55.55	12	26.67	1	2.22
Sultanpur Lodhi (n= 25)	0	0	5	20	8	32	10	40	2	8
Shahkot (n= 10)	0	0	5	50	4	40	1	10	0	0
Nadala (n= 10)	0	0	3	30	4	40	3	30	0	0
Samana (n= 20)	0	0	5	25	5	25	8	40	2	10
Overall (n= 135)	5	3.70	41	30.37	50	37.04	34	25.19	5	3.70

Mean dose of urea applied (kg/acre) = 40.90, SD = 9.38, Z value = 2.75

whereas 30.31 per cent applied even 25 to 50 kg of DAP per acre ie higher than the recommended dose. The mean per acre doses of superphosphate and DAP applied by them were 24.68 kg and 24.09 kg respectively indicating a significant deviation from the recommended doses of superphosphate and DAP.

REFERENCES

Anonymous 1995. Statistical abstract of Punjab. Economic advisor to Govt of Punjab, Chandigarh, pp 152-164.

Chatha IS, Singh Joginder and Grewal SS 1994. A study on adoption of rice technology in Punjab. Dept of Economics and Sociology, PAU, Ludhiana, Punjab.

Sarda MK and Khurana GS 1993. Adoption gap and its model class in recommended rice technology. Indian Journal of Extension Education **29(1-2)**: 108-111.

Received: 15.10.2013 ***Accepted: 8.12.2013***