



Transfer of Paddy Cultivation Technology in College Development Block

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ABSTRACT

Rice is one of the staple foods, accounts for 20 per cent of world production. Maharashtra is located in the western part of India along the Arabian Sea. It lies between 15° 44' to 22° 6' N and 72° 36' to 80° 54' E. The total area of Maharashtra State is 307,000 square kilometres, which is 9.36 per cent of the country. Considering the area and population, Maharashtra state is the third largest state in India. The population of the state is 80 million which is 9.47 per cent of the country's total population. In Maharashtra rice is the second important crop of the people, which is grown over an area of 14.99 lakh hectares with an annual rough rice production of 32.37 lakh tones. The average productivity of the state is 2.01 t/ha. (Rice knowledge management portal). Technology transfer efforts at farmer's field helps in improving yield performance of paddy varieties. Present study was undertaken to demonstrate the improved paddy varieties and transfer paddy cultivation technology, to know the change in knowledge level and feedback of 90 paddy growers in College Development Block, Bhore.

Key words : Adoption, Knowledge, Transfer of Technology, Yield performance

Study revealed that the yield performance of improved paddy varieties *Indrayani*, *Phule Radha*, *Bhogawati* under university practice gave 21.84, 27.00, 41.20 Q ha⁻¹ more yield over expected yield respectively. As regards to knowledge there is significant change (87.15 %) in complete knowledge level of the respondents about technologies of paddy cultivation. Study concluded that action research projects needs to be organized on large scale for effective technology transfer. Rice is an important staple food for more than two-third of population of India. In Maharashtra, area under this crop is 676 million hectares (2004-05) whereas Bhore Tahsil is one of the predominant Tahsil having paddy as a major crop in Pune district. As far as technology transfer concerned it is estimated that only 30 to 35 per cent available technologies have reached to the end users, means technology generation is not keeping pace with technology utilization. Therefore, technology transfer efforts are necessary to bridge the gap. Considering this an action research project was undertaken in College Development Block, Bhore with the objectives

1. To demonstrate the improved varieties and transfer the technology of paddy cultivation among the farmers.
2. To know the change in knowledge level of the selected farmers.

3. To know feedback of paddy growers regarding improved varieties.

MATERIAL AND METHODS

1. Selection of Respondents

Taking into consideration the consent and readiness for conduct of demonstration on the farmers field purposively 90 paddy growers from College Development Block, Bhore were selected and classified into three groups as mentioned in table 1.

2. Technological Support

Group discussions (Nos.) on technological aspects of paddy cultivation, literature comprising varietal information, field visits of concerned scientists, also guidance and demonstrations on technological package of practices on farmers field were the major activities conducted for imparting technical knowledge to the selected group of farmers (Group- I).

3. On farm Demonstration

Group I: University seed + University technology

Farmers of I group, were provided with 10 kg seed of each improved variety. The selected farmers of three varieties were supported with technological package and also demonstrations on

Table 1. Distribution of farmers according to varieties and groups.

Variety	Groups			Total (Nos.)
	I Univ. Seed +Univ. Technology	II Univ. Seed +Farmers Practice	III Farmers Seed +Farmers Practice	
Indrayani	10	10	10 (other varieties)	30
Phule Radha	10	10	10 (other varieties)	30
Bhogawati	10	10	10 (other varieties)	30
Total	30	30	30	90

Total sample of selected farmers under the study represents 14 villages from Bhor and Velhe tahsil of Pune district.

technological aspects under guidance and supervision of university staff. The aspects of technology transfer were transplanting by *Charsutri* method, spacing, plant population, use of Urea briquettes, top dressing, interculturing practices, plant protection measures, etc.

Group II: University seed + Farmers practice

For group II, ten farmers for each variety were selected. The selected farmers were provided with 10 kg seed of each variety and they were not supported with university technology however they followed their own practice of paddy cultivation.

Group III: Farmers seed + Farmers practice

This group was considered as a check for the experiment. They were listed and considered for the experiment who had their own seed and follow their own practice of paddy cultivation.

4. Knowledge Test

Knowledge Index developed by Sagwal and Malik is used with modifications to test the knowledge level of the selected farmers of I group, pre and post knowledge tests were conducted. The special schedule was developed to conduct the knowledge test. Accordingly the respondent were categorised into three groups viz; having complete, partial and no knowledge.

5. Comparison of Technology

At every growth stage, comparison between three plots was made and strong points of the improved varieties were brought into notice of the farmers.

For Group II and III, timely observations were recorded and data was collected with the help of structured schedules developed under the study.

RESULTS AND DISCUSSION

1. Transfer of Paddy cultivation technology and improved varieties on farmer's field

Technological package of practices of paddy cultivation was demonstrated to the selected individual farmers on their field. The skill and technique of paddy transplanting by *Chatusutri* (SIRA) method was also demonstrated. In plots of group I, the entire technological package was demonstrated to the farmers. However, in group II, only the improved variety seed was supplied and the paddy crop was grown as per their own practice and in group III, the farmers had their own varietal seed with their own practice. The variety wise detailed technological package of practices followed for paddy cultivation has been presented in table 2 - 4 viz; variety *Indrayani*, *Phule Radha* and *Bhogawati*. Variety wise and group wise package of practices viz: date of sowing till its harvesting and yield have been presented in these tables, so as to know the comparative difference in crop growth at field level and thereby yield of these varieties.

As a result of imparting guidance, demonstrating technological package of practices and providing literature and improved varietal seed of paddy to these farmers viz; *Indrayani*, *Phule Radha* and *Bhogawati*, accordingly the yield differences have been recorded and presented in Group I as compared to farmers own practice (Group II) and control plot (Group III). The data

Table 2 (a). Yield performance of paddy variety *Indrayani* under university practice .

Sl. No.	Recommended Yield (Q ha ⁻¹)	Practices	Yield performance under university practice (G-I)		
			Actual yield	% increase in yield G-I over G-II	% increase in yield G-I over G-III
1	45.00	G - I	66.84		
2		G - II	61.79	7.55 (5.05 Qt/ha)	12.61 (8.43 Qt/ha)
3		G - III	58.41		

Note: G - I = University seed + University practice G - III = Farmers seed + Farmers practice
G - II = University seed + Farmers practice G = Group

Table 3 (a): Yield performance of paddy variety *Phule Radha* under university practice

Sl. No.	Recommended Yield (Q ha ⁻¹)	Practices	Yield performance under university practice (G-I)		
			Actual yield	% increase in yield G-I over G-II	% increase in yield G-I over G-III
1	45.00	G - I	61.57		
2		G - II	57.54	6.54 (4.03 Q ha ⁻¹)	17.62 (10.85 Q ha ⁻¹)
3		G - III	50.72		

Table 4 (a): Yield performance of paddy variety *Bhogawati* under university practice.

Sl. No.	Recommended Yield (Q ha ⁻¹)	Practices	Yield performance under university practice (G-I)		
			Actual yield	% increase in yield G-I over G-II	% increase in yield G-I over G-III
1	50.00	G - I	70.60		
2		G - II	60.80	13.88 (9.80 Q ha ⁻¹)	22.03 (15.56 Q ha ⁻¹)
3		G - III	55.04		

regarding variety wise yield performance is presented in table 2 (a) - 4 (a).

Yield performance of Variety *Indrayani*

The expected yield of paddy variety *Indrayani* is 45.0 Q ha⁻¹. However, the research plots of university practice (Group - I) gave higher yield (66.84 Q ha⁻¹.) as compared to farmers practice.

Therefore, it is observed that due to university practice *Indrayani* variety of paddy gave 48.53 % more yield (21.84 Qt/ha.) over the

expected yield while 8.00 and 13.00 per cent more yield than variety under farmers practice and control plot respectively. Similar findings were reported by Vasanthakumar and Tamil Selvi (1999).

Yield performance of Variety *Phule Radha* (Radhanagari 99-1)

Expected yield of paddy variety *Phule Radha* is 45.00 Q ha⁻¹. However, research plots under university practice (G-I) gave more yield (61.57 Q ha⁻¹.) as compared to expected yield and farmers practice.

Table 5. Change in knowledge level of farmers about technology of paddy cultivation.

Sl. No.	Improved Practice	Pre knowledge level (n=30)			Post knowledge level (n=30)		
		Complete	Partial	Not know.	Complete	Partial	Not know.
1	Season	11.00 (36.67)	11.00 (36.67)	8.00 (26.67)	30.00 (100.00)	0.00 (0.00)	0.00 (0.00)
2	Time	5.00 (16.67)	16.00 (53.33)	9.00 (30.00)	30.00 (100.00)	0.00 (0.00)	0.00 (0.00)
3	Soil	2.00 (6.67)	18.00 (60.00)	10.00 (33.00)	26.00 (86.67)	3.00 (10.00)	1.00 (3.33)
4	Seed rate	4.00 (13.33)	21.00 (70.00)	5.00 (16.67)	25.00 (83.33)	5.00 (16.67)	0.00 (0.00)
5	Seed treatment	6.00 (20.00)	5.00 (16.67)	19.00 (63.33)	30.00 (100.00)	0.00 (0.00)	0.00 (0.00)
6	Transplanting	5.00 (16.67)	13.00 (43.33)	12.00 (40.00)	29.00 (96.67)	0.00 (0.00)	1.00 (3.33)
7	Chatusutri	5.00 (16.67)	13.00 (43.33)	12.00 (40.00)	22.00 (73.33)	8.00 (26.67)	0.00 (0.00)
8	Seed rate / ha.	0.00 (0.00)	11.00 (36.67)	19.00 (63.33)	14.00 (46.67)	10.00 (33.33)	6.00 (20.00)
9	Fertilizer dose	1.00 (3.33)	9.00 (30.00)	20.00 (66.67)	19.00 (63.33)	1.00 (3.33)	10.00 (33.33)
10	Spacing	0.00 (0.00)	8.00 (26.67)	22.00 (73.33)	17.00 (56.67)	12.00 (40.00)	1.00 (3.33)
	1. Dibbling	0.00	5.00	25.00	0.00	1.00	29.00
	2. Drilling	0.00	5.00	25.00	0.00	1.00	29.00
11	Time for fertilizer application	0.00 (0.00)	16.67 (16.67)	83.33 (83.33)	0.00 (0.00)	3.33 (3.33)	96.67 (96.67)
12	Varieties	1.00 (3.33)	10.00 (33.33)	19.00 (63.33)	15.00 (50.00)	10.00 (33.33)	5.00 (16.67)
13	Interculturing Operations	7.00 (23.33)	10.00 (33.33)	13.00 (43.33)	28.00 (93.33)	2.00 (6.67)	0.00 (0.00)
i	Thinning/ Gap Filling	0.00 (0.00)	9.00 (30.00)	21.00 (70.00)	29.00 (96.67)	1.00 (3.33)	0.00 (0.00)
ii	Weeding	0.00 (0.00)	5.00 (16.67)	25.00 (83.33)	20.00 (66.67)	9.00 (30.00)	1.00 (3.33)
iii	Plant Protection	0.00 (0.00)	6.00 (20.00)	24.00 (80.00)	26.00 (86.67)	4.00 (13.33)	0.00 (0.00)
14	Signs of maturity	3.00 (10.00)	12.00 (40.00)	15.00 (50.00)	29.00 (96.67)	1.00 (3.33)	0.00 (0.00)

Table 6 (a): Overall change in knowledge level of the paddy growers.

% knowledge Pre knowledge (n=30)			% change in knowledge Post knowledge (n=30)		
Complete	Partial	No know.	Complete	Partial	No know.
9.80(2.94)	35.67(10.70)	54.53(16.35)	+ 87.15(22.88)	- 36.82(3.94)	- 80.55(3.18)

(Figures in parentheses indicate number of respondent).

Therefore, it is stated that *Phule Radha* variety of paddy gave 27.00 per cent more yield as compared to expected yield and 7.00 per cent and 18.00 per cent more than variety under farmers practice and control plots respectively.

Yield performance of Variety *Bhogawati*

Expected yield of paddy variety *Bhogawati* is 50.00 Q ha⁻¹. However, research plots under university practice (G-I) gave higher yield (70.60 Q ha⁻¹.) as compared to expected yield and farmers practice.

On the basis of data under the study it is stated that due to university practice, *Bhogawati* variety of paddy gave 41.20 per cent more yield as compared to expected yield and 14.00 and 22.00 per cent more yield than variety under farmers practice and control plots respectively.

2. Knowledge Test

Farmer's level of knowledge about improved practices of rice production technology is essential to increase the production of rice. Knowledge regarding technologies of paddy cultivation was imparted to the selected farmers under the study by conducting group discussions, providing literature, conducting on farm demonstration and field visits of the experts and dignitaries to change their knowledge level.

A pre and post knowledge test of those farmers regarding various technologies of paddy cultivation was conducted.

Change in knowledge level of farmers about technology of paddy cultivation

The knowledge test includes complete, partial and no knowledge. However, 2, 1 and 0 score was assigned to decide the knowledge level and accordingly the per cent change in knowledge of the respondents was calculated. The results on technology wise change in knowledge level of the respondents are presented in table 5.

The data presented in table 5 revealed that significant change in knowledge level of respondent is observed with respect to major technological package of practices of paddy cultivation. However, it has been also observed that there is subsequent decrease in ignorance and partial knowledge of the respondents.

The data presented in table 6 (a) indicates that there is significant change (87.15 %) in

complete knowledge level of the respondents regarding technological package of practices of paddy cultivation. Farmers expressed that *Bhogawati* is more preferable as scented and elongated grains, good tillering habit results into high productivity and good cooking quality fetches high market value. Farmers in the block are interested to adopt this variety. As concerned to variety *Indrayani* farmers stated that more market demand due to scent also high productivity and fetches high price in the market. Whereas regards to *Phule Radha*, paddy growers expressed that it has small grain size but there is no grain shedding even delay in harvesting. However, there is subsequent decrease in partial knowledge level (36.82 %) and ignorance (80.55 %) of the respondents about technologies of paddy cultivation. Similar findings were reported by Duben and Swarkar 1992.

CONCLUSION

For effective transfer of technology on related to crop production, improved varieties and its alike, action research projects combined with on farm demonstration and imparting guidance through various extension activities needs to be organized on large scale in the state of Maharashtra. Also *Charsutri* method of paddy cultivation combined with on farm demonstration, technological package of practices needs to be conducted on large scale so as to increase the yield levels of improved varieties of paddy.

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