Short Communication

Impact of Transfer of Technology Program on Knowledge, Adoption and Productivity of Pearl millet in Arid Zone of Rajasthan

Bhagwan Singh and Raj Singh
Central Arid Zone Research Institute, Jodhpur 342 003, India

Pearl millet (*Pennisetum glaucum*) is an important cereal crop of rainfed areas of Rajasthan grown during kharif season. It occupies 51.30 lakh hectare area with production of 38.19 lakh tonnes. However, the average productivity of the crop in the state is very low (7.45 q ha^{-1}) as compared to other pearl millet growing states. Besides many biotic and abiotic factors, low level of knowledge and adoption are also important factors responsible for low productivity of the crop. Improving farmers knowledge, may help in adoption of improved technology as well as boosting the crop productivity. Considering these facts, impact of TOT program on knowledge, adoption and productivity of pearl millet in arid zone of Rajasthan was studied.

The study was carried out in Satheen village of Bhopalgarh Panchayat Samiti, located on Pipad-Khanwata Road about 75 km from Jodhpur. Selection of the village was made under TOT program during 1996 by the Central Arid Zone Research Institute, Jodhpur. Improved technologies of pearl millet cultivation were disseminated through demonstration, field days, training, literature and interaction with farmers. Requisite information from the fifty farmers were collected randomly on a structured schedule before (1996-97) and after (2001-02) introduction of the TOT program.

The knowledge level of the respondents was assessed through knowledge index as developed by Bhaskaran and Praveena (1982). The formula used was:

$$KI = \frac{K}{P} \times 100$$

where, KI = Knowledge Index

K = Knowledge score secured by the respondents

P = Maximum possible score

Based on the knowledge index, the respondents were classified into low, medium and high knowledge category.

The extent of adoption was calculated by the adoption index (AI) developed by Karthikeyan (1994) adopting following formula:

$$AI = \frac{\text{Respondents total score}}{\text{Maximum score possible}} \times 100$$

Based on the adoption index, the respondents were classified into low, medium and high adoption category.

Before introduction of the TOT program, majority of the farmers (52.0%) were in low knowledge category followed by medium (38.0%) and high knowledge

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Table 1. *Farmer's level of knowledge and adoption of improved cultivation practices of pearl millet before and after TOT program*

Category	Knowledge				Adoption			
	Before TOT Program		After TOT Program		Before TOT Program		After TOT Program	
	Frequency	Per cent	Frequency	Per cent	Frequency	Per cent	Frequency	Per cent
Low*	26	52.0	13	26.0	27	54.0	18	36.0
Medium	19	38.0	25	50.0	22	44.0	24	48.0
High	5	10.0	12	24.0	1	2.0	8	16.0

* Low: below 33%, Medium: 33-66%, high above 66%.

(10.0%) category regarding improved cultivation practices of pearl millet crop. The knowledge level of the farmers about improved cultivation practices for pearl millet improved appreciably after TOT program. After TOT program, maximum farmers possessed medium (50.0%) knowledge followed by low (26.0%) and high (24.0%) knowledge category. Prabhu and Kandan (1990) also reported the improvement in the farmers knowledge due to TOT program.

Before introduction of TOT program, farmers had maximum knowledge on time of sowing followed by interculture and weeding, recommended seed rate and fertilizer application (Table 2). The corresponding figures increased up to 70.0, 73.3, 60.0 and 53.3% after TOT program. The knowledge regarding improved varieties, seed treatment and plant protection measures ranged from 30 to 40% before TOT program, whereas it increased by 51 to 75% in all these practices after TOT program. Significantly higher knowledge level in these practices after TOT program, shows its positive impact.

It was observed that, majority of the farmers (54.0%) belonged to low adoption category (Table 1) followed by medium

Table 2. *Farmer's knowledge and adoption of improved cultivation practices of pearl millet before and after TOT program*

Practices	Mean knowledge (%)			Mean adoption (%)		
	Before TOT program	After TOT program	Calculated 't' value	Before TOT program	After TOT program	Calculated 't' value
Improved varieties	40.0	75.0	12.1*	21.0	55.0	5.7*
Seed treatment	30.0	55.0	8.1*	11.0	26.0	3.0*
Seed rate	50.0	60.0	2.3*	42.0	60.0	1.9
Sowing time	55.0	70.0	4.4*	45.0	52.0	1.7
Interculture and weeding	52.0	73.3	3.6*	60.0	70.7	3.6*
Fertilizer application	46.7	53.3	5.9*	8.3	13.3	1.3
Plant protection measures	33.3	51.7	6.2*	3.3	10.0	3.6*

* - Significant at 1% level

Table 3. Distribution of farmers according to pearl millet crop grain yield

Grain yield (q ha^{-1})	Before TOT program		After TOT program	
	Frequency	Percentage	Frequency	Percentage
Below 5	24	48.0	12	24.0
5 to 10	21	42.0	23	46.0
Above 10	5	10.0	15	30.0

(44.0%) and high adoption categories (2.0%) before introduction of TOT program, while due to the impact of TOT program, maximum (48.0%) farmers shifted to medium followed by low (36.0%) and high adoption categories (16.0%). The contribution of TOT was found remarkable as evident by14.0% increase in higher adoption category. The above findings are in conformity with the findings of Sanoria *et al.* (1983), Sharma (1983), Mishra and Jha (1985), Singh and Sharma (1990), and Patel and Patel (1993).

Data presented in Table 2 revealed that before introduction of TOT program, maximum adoption (60.0%) was found in interculture and weeding followed by time of sowing (45.0%), recommended seed rate (42.0%) and improved varieties (21.0%). After adoption of the village under TOT program, the adoption in interculture and weeding operation increased up to 70.7% followed by 60.0% in recommended seed rate, 55.0% in improved varieties and 52.0% in time of sowing. The extent of adoption also increased in other cultivation practices viz., seed treatment, fertilizer application and plant protection measures. The adoption level in these practices, which was 3.3 to 11.0% before adoption, increased up to 10 to 26% after introduction of TOT program.

The adoption was significantly higher in respect of improved varieties, seed treatment, interculture and weeding and plant protection measures after TOT program.

Before implementation of TOT program, the average grain yield of pearl millet was below 5 q ha^{-1} on 48.0% of the farmer's fields, whereas, it was 5 to 10 q ha^{-1} on 42.0% and above 10 q ha^{-1} on 10% of the farmer's fields (Table 3). But, due to impact of TOT program, maximum farmers (46.0%) obtained 5 to 10 q ha^{-1} grain yield followed by 30 farmers with above 10 q ha^{-1} and 24% farmers with below 5 q ha^{-1} grain yield level. The average grain yield of pearl millet was also increased from 5.84 q ha^{-1} to 8.60 q ha^{-1} after TOT program. The increase in the average grain yield (28.81%) exhibits the impact of TOT program.

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