

A Study on Knowledge and Adoption of Farm Mechanization by Paddy Grower in Tungabhadra Project Area, Karnataka

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Abstract

The study was conducted to know the knowledge and Adoption level of paddy growers of Raichur district about farm mechanization practices. The study was conducted in Sindhanur and Manvi taluks of Raichur district comprising 120 respondents from six villages. The result showed that nearly half of the respondents (45.00%) belonged to medium level of overall knowledge category about farm mechanization practices. Majority of the respondents had complete knowledge i.e., mode of operation, frequency of use and specification of the implements such as mouldboard plough, harrow, cultivator, power tiller, cage wheel, puddler, sprayer, combine harvester and thresher. Further, less than half of the respondents (42.50%) belonged to medium level of adoption category. As in case of knowledge level, large majority of farmers used the implements viz, Mouldboard plough, harrow, puddler, cultivator, cage wheel, power tiller, sprayer, combine harvester and thresher. However, only (15.00%) of the paddy growers possessed skill in the use of paddy transplanter due to its recent introduction.

Keywords: Adoption, knowledge, Paddy, Mechanization.

1. Introduction

Farm mechanization implies the use of various power sources, improved farm tools and equipment, with a view to reduce the drudgery of the human beings and draught animals, thereby increasing crop production and productivity. About 65 per cent of the Indian population depends on agriculture for their livelihood. In recent years, non-availability of farm labourers and fragmentation of land holdings (smaller land holdings) are forcing many farmers to mechanize their farms and over the last few years, there has been considerable progress in agriculture mechanization. Past studies on efficiency of farm mechanization revealed that if the mechanization used properly a farmer can save seeds 15-20 per cent, fertilizer 20-30% per cent, time 20-30 per cent, labourers 5-20 per cent, and increase in cropping intensity 10-15 per cent, higher productivity 15-20 per cent Surendra Singh (2008). Verma (2008) reported that the increase in cropping intensity has been reported to be 165, 156 and 149 per cent for tractor-owning, tractor hiring and bullock operated farms, respectively. During 1960-61, the animate power contributed 92 per cent of the total farm power and mechanical and electrical together contributed 8 per cent. However, in 2004-05 the contribution from animate power reduced to 16 per cent and from mechanical and electrical power, it increased to 84 per cent. During the past few decades a large number of farm tools, implements and machines have been developed for different farm operations. In Karnataka, about 68 per cent of the rural population depends upon agriculture-based industries. Farm mechanization has played a significant role in developments of agriculture in Karnataka. The present study was conducted in Sindhanur and Manvi talukas of Raichur district by involving 120 paddy growers who come under the Tungabhadra Project Area. The specific objective of the study was to analyze the extent of knowledge possessed and adopted by the paddy growers about farm mechanization practices.

2. Results and Discussion

2.1 Overall knowledge level of farmers.

As per the Table-1, nearly half (45.00%) of the respondents had medium level of knowledge about the farm mechanization. This was due to the fact that the farm mechanization was slowly increasing in this region and farmers of this reason still were not exposed to improved agriculture implements used in the paddy cultivation.

Table 1: Overall knowledge level of the respondents about farm mechanization implements in paddy.

Category	Frequency	Percentage
Low (Mean - 0.425*SD)	38	31.67
Medium (Mean \pm 0.425*SD)	54	45.00
High (Mean + 0.425*SD)	28	23.33

Source: Primary data.

The knowledge levels of farmers about various farm mechanization practices in paddy cultivation were presented in Table 2. As we could see from the table 94.17 per cent and 90.83 per cent of respondents had knowledge about the cage wheel and puddler, respectively. On the other hand more than 80 percent of the respondents had the knowledge about the MB plough, thresher and combined harvester. While the least percent of the respondents had knowledge on the cono-weeder and paddy transplanter. Because cost of paddy transplanter is very high (> 4 lakhs) and hence farmers were not afford to use such type of implements. With respect to cono-weeder, most of them were not known. This was due to the fact that the transplantation of the paddy is done by manually and there is no scope for row spacing. Hence, the paddy growers were not aware of the cono-weeder. These findings are in confirmatory with the Swain *et.al* (2009) and Chowdhury (1991).

Table 2: Knowledge level of the respondents about specific farm mechanization implements.
(n=120)

Sl No.	Implements	knowledge level	
		Frequency*	Percentage
1	MB plough	104	86.67
2	Harrow	86	71.67
3	Cultivator	94	78.33
4	Rotavator	65	54.17
5	Power tiller	88	73.33
6	Puddler	109	90.83
7	Paddy transplanter	28	23.33
8	Cage wheel	113	94.17
9	Cono-weeder	28	23.33
10	Sprayer	91	75.83
11	Combine harvester	97	80.83
12	Thresher	101	84.17

Source: Primary data.

2.2 Adoption Level of Farmers

The overall adoption of farm mechanization practices by the farmers was presented in Table 3. Nearly 50 per cent of the respondents belonged to medium category of adoption. These findings are in line with the. Interestingly, majority of the paddy growers implemented the basic and most required implements viz., mouldboard plough, harrow, cultivator, puddler, combine harvester, sprayer and thresher.

More than 90 per cent (Table 4) of the respondents were using the combined harvester, MB plough, Harrow and puddler in the paddy cultivation. About 89 per cent and 67 per cent of respondents were using of cultivator and sprayer, respectively. Whereas, least numbers of the farmers were using paddy transplanter and cono weeder.

The paddy growers were not using the cheapest and oldest implement i.e., cono-weeder. It was due to the fact that now-a- days, the spacing between rows is not maintaining in the paddy field. These findings are in line with the Sahay *et.al* (2002).

Table 3: Overall adoption level of the respondents about farm mechanization implements by paddy growers. (n=120)

Category	Frequency	Percentage
Low (Mean - 0.425*SD)	39	32.50
Medium (Mean \pm 0.425*SD)	51	42.50
High (Mean + 0.425*SD)	30	25.00

Source: Primary data.

Table 4: Extent of adoption of farm mechanization implements by paddy growers. (n=120)

Sl No.	Implements	Adoption level	
		Frequency*	Percentage
1	MB plough	116	96.67
2	Harrow	112	93.33
3	Cultivator	107	89.17
4	Rotavator	58	48.33
5	Power tiller	73	60.83
6	Puddler	113	94.17
7	Paddy transplanter	18	15.00
8	Cage wheel	84	70.00
9	Cono-weeder	24	20.00
10	Sprayer	81	67.50
11	Combine harvester	120	100.00
12	Thresher	73	60.83

Source: Primary data.

2.3 Reason for non adoption of farm mechanization implements by paddy growers

Information pertinent to the reason for non adoption of farm mechanization implements by paddy growers were presented in the Table 5. Significant proportion of the respondents stated the hisgher cost as the reason for the non adoption of the rotavator and paddy transplanter (> 4 lakh). While more than 80 per cent of the respondents opined that the non availability as the mani cause for the non adoption of the cono weeder.

Multiple regression analysis revealed that 52.00 per cent of variation in the knowledge and 53.90 per cent of variation in adoption of farm mechanization practices was explained by the variables selected for the study. The relationship between knowledge and adoption of farm mechanization practices was found significant. Majority of the respondents faced the problems like in adequate subsidy/loan (95.00%) to purchase farm implement, followed by high cost of equipment (93.00%) including repair and maintenance charges, lack of skilled laboures for handling of combine harvester and thresher (87.50%), in adequate guidance and co-operation from dealer (86.67%) and poor economic condition (85.83%) in adopting farm machineries.

Table 5: Reason for non adoption of farm mechanization implements by paddy growers.

(n=120)

Sl. No	Reasons	Frequency*	Percentage
A	Rotavator		
	Cost of Rotavator is high (>80,000)	65	54.17
	Maintenance cost is high (Non availability of blades)	50	41.67
	Special skill is required for operation	58	48.33
B	Power tiller		
	Requirement of Specialized man power	51	42.50
C	Paddy transplanter		
	Special skill is required for operation	54	45.00
	Cost of equipment is high (>4 lakh)	95	79.17
	Raising of uniform seedlings is not possible easily	65	54.17
	In adequate subsidy/loan	73	60.83
D	Cage wheel		
	Difficulties in attaching and detaching with tractor	88	73.33
E	Con- weeder		
	Operation is possible only in row planting/machine transplanting	77	64.17
	Lack of awareness	68	56.67
	Non availability of the equipment in the local area	98	81.67

Source: Primary data.

3. Conclusion

It can be concluded from above findings that, majority of the respondents belonged to medium level of knowledge regarding farm mechanization practices in paddy cultivation. This implies a vast scope for the Developmental Departments to intervene and improve the knowledge level of farmers about farm mechanization practices. The study indicated that though the paddy is cultivated by all the farmers in the study area, but their scientific knowledge about the farm mechanization in paddy crop and scientific adoption of the farm implements was not up to the mark in certain implements. So, one of the best ways to overcome this is to vigorously utilize the scientific expertise of Krishi Vigyan Kendras for organising Field and Farmers' Day and agriculture machine exhibitions which help and encourage the farmers to know about the advantages of mechanization.

References

- [1] A U Chowdhury (1991), Agricultural Mechanisation in Bangladesh: Performance, Problems and Prospects, U.P.L. Dhaka.
- [2] Surendra sing (2008), Farm mechanization Scenario in India, *First machinery manufactures meet Karnataka* pp.25-28.
- [3] C.S., Sahay, K.K Satapathy, Agarwal and A.K Mishra (2002), Evaluation of self-propelled rice transplanter in valley and terraced lands of north eastern hilly region, *Agricultural Engineering Today*, **26**, 5, pp 1-10.
- [4] S Swain (2009), Effect of seedlings age on performance of rice transplanter, *Agriculture mechanization in Asia, Africa, Latin America*, **40**, 3.
- [5] S R Verma, (2008), Impact of Agricultural Mechanization on production, productivity, cropping intensity income generation and employment of labour, *College of Agril. Engg. Punjab Agric. Univ., Ludhiana*.