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RESEARCH ARTICLE :

An analysis of perceived attributes of farm machinery and equipments by farmers in selected crops in Karnataka

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SUMMARY : The study was aimed to reveal the farmers' perception towards different attributes of various farm machinery *viz.*, relative advantage, compatibility, complexity, and trialability. Data were gathered from a sample of total 240 farmers through a well-structured interview schedule. Each implement was analyzed in terms of its perceived attributes by the farmers by taking the frequency and percentage for each attribute. The level of perception of different attributes for each implement by the farmers as noticed in the study needs to be analyzed in depth, so as to refine the existing implements or reorient the extension activities for effective dissemination of farm machinery.

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KEY WORDS :
Farm mechanization,
Relative advantage,
Compatibility,
Complexity,
Trialability

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BACKGROUND AND OBJECTIVES

Agricultural mechanization helps in increasing production, productivity and profitability in agriculture by achieving timeliness in farm operations, bringing precision in metering and placement of inputs, reducing input losses, increasing utilization efficiency of costly inputs (seed, chemical, fertilizer, irrigation water etc.), reducing unit cost of produce, enhancing profitability and competitiveness in the cost of operation. It also helps in the conservation of the produce and byproducts from qualitative and quantitative damages; enables value addition and establishment of agro processing enterprises for additional income and employment generation from farm produce. It is one of the important inputs to usher in all round development in the rural India. One of the major constraints of increasing agricultural production and productivity is the inadequacy of farm power and machinery with the farmers. With the increase in the irrigation facilities and modernization of the cropping practices, the demand for agricultural machinery has shown an increasing trend in the country.

RESOURCES AND METHODS

Ex-post-facto research design was followed for carrying out the study. The present study was conducted in Uttar

Kannada, Belagavi and Vijaypur districts of Karnataka to analyze the perceived attributes of farm machinery and equipments of paddy, maize and pigen pea farmers. From each district two taluks, from each taluk two villages and from each village 20 farmers were selected by simple random sampling procedure to form a sample of 240. To explore the scope of importance of farm mechanization the perceived attributes of farm machinery and equipments by the farmers were analyzed. Relative advantage, compatability, complexity, trialability and observability were the perceived attributes taken into consideration.

OBSERVATIONS AND ANALYSIS

Perception of each farm machinery and equipment by farmers was analyzed in terms of relative advantage, compatability, complexity and trialability (Table 1).

Relative advantage :

Almost ninety per cent of the farmers perceived seed cum fertilizer drill, power sprayer and combine harvester better than traditional. Majority of the farmers perceived that seed cum fertilizer drill was better than traditional as it avoids wastage of fertilizer, reduces drudgery and time. It also reduces the cost of operation as both sowing and fertilizer application performed simultaneously. Compared to other sprayers, farmers perceived that power sprayer was better than traditional as it reduces drudgery and saves time.

Cent per cent of the farmers perceived knapsack sprayer as easy to operate. Eighty five per cent of the farmers perceived M B plough and thresher as easy to operate. Cent per cent of the farmers perceived knapsack sprayer as easy to operate. Knapsack sprayer is a small machine that requires less effort by the farmers to operate. Majority of the farmers perceived M B plough and thresher as easy to operate. M B plough is the tractor drawn tillage implement which doesn't require much skill to operate by the farmers. Usage of threshers by the farmers has an increasing trend. Farmers are more experienced in operating this machine.

Compatability :

About eighty four per cent of the farmers perceived seed cum fertilizer drill suited to all soils. Seventy two per cent of the farmers perceived combine harvester suited to all soils. About eighty four per cent of the farmers perceived seed cum fertilizer drill was compatable to all soils. Usually, farm machinery and equipments are designed to be compatable to all soils. It depends mainly on whether the soil is in wet or dry condition. For

Table 1 : Perceived attributes of farm machinery and equipments by farmers **(n=240)**

Sr. No.	Farm machinery and equipment	Relative advantage		Compatability	Complexity	Trialability
		Better than traditional	Easy to operate	Suits to all soils	Difficult to operate	Can be tried on small area
		F (%)	F (%)	F (%)	F (%)	F (%)
1.	M. B. plough	210 (87.50)	204 (85.00)	190 (79.16)	36(15.00)	220 (91.66)
2.	Cultivator	204 (85.00)	198 (82.50)	188 (78.33)	42 (17.50)	223 (92.91)
3.	Disc plough	180 (77.91)	192 (80.00)	179 (74.58)	48 (20.00)	205 (85.41)
4.	Rotovator	191 (79.58)	184 (76.66)	182 (75.83)	56 (23.33)	199 (82.91)
5.	Leveler	182 (75.83)	202 (84.16)	196 (81.66)	38 (15.83)	194 (80.83)
6.	Disc harrow	178 (74.16)	186 (77.50)	175 (72.91)	54 (22.50)	182 (75.83)
7.	Cage wheel (n=80)	60 (75.00)	62 (77.50)	54 (67.50)	18 (22.50)	70 (87.50)
8.	Seed cum fertilizer drill	215 (89.58)	194 (80.83)	202 (84.16)	46 (19.16)	221 (92.08)
9.	Paddy transplanter (n=80)	61 (76.25)	18 (22.50)	63 (78.75)	62 (77.50)	68 (85.00)
10.	Tractor drawn intercultivation implement	198 (82.50)	203 (84.58)	189 (78.75)	37 (15.41)	195 (81.25)
11.	Power tiller	207 (86.25)	192 (80.00)	198 (82.50)	48 (20.00)	240 (100.00)
12.	Knapsack sprayer	201 (83.75)	240 (100.00)	0 (0.00)	0 (0.00)	240 (100.00)
13.	Motorized knapsack sprayer	209 (87.08)	183 (76.25)	0 (0.00)	57 (23.75)	240 (100.00)
14.	Power sprayer	215 (89.58)	189 (78.75)	0 (0.00)	51 (21.25)	240 (100.00)
15.	Combine Harvester	212 (88.33)	43 (17.91)	173 (72.08)	197 (82.08)	144 (60.00)
16.	Thresher	203 (84.58)	204 (85.00)	0 (0.00)	36 (15.00)	240 (100.00)

F=Frequency; %=Percentage

example, when black soil is in dry condition, it becomes difficult to operate tillage related equipments.

Complexity :

Eighty two per cent of the farmers perceived combine harvester was difficult to operate followed by paddy transplanter (77.50 %). Nearly one fourth number of farmers perceived motorized knapsack sprayer and rotovator as difficult to operate. None of the farmers perceived knapsack sprayer as difficult to operate. Majority of the farmers perceived combine harvester and paddy transplanter as difficult to operate. Combine harvester is big machine and has different structure than the tractor drawn equipments used by farmers. Hence, they perceived it difficult to operate. Similarly, transplanting in paddy was done manually since many years. Transplanting is not a common operation found in other crops. Hands-on trainings can be arranged or given to operate such machinery to farmers. Nearly one fourth number of farmers perceived motorized knapsack sprayer as difficult to operate. Farmers perceived that weight of motor while using the sprayer on their back makes them difficult to carry for longer period of time.

Trialability :

Cent per cent of the farmers perceived that sprayers can be tried in small area. Almost ninety three per cent of the farmers' perceived cultivator can be tried in small area. Sixty per cent of the farmers perceived combine harvester can be tried in small area. As the sprayers are small in size and easy to carry, cent per cent of the farmers perceived that they can be tried in small area. Trialability of combine harvester was found less. Due to its large size, most of the farmers perceived that its movement in small area was difficult. Similar work related to the present investigation was also carried out by Parvathy *et al*. (2016) and Ranjan *et al*. (2014).

Conclusion :

The findings pertaining to the perceived attributes *viz.*, Relative advantage, compatibility, complexity, trialability of farmers towards different farm machinery should be the pointers for future growth and development of farm mechanization. The level of perception of different attributes for each implement by the groundnut farmers as noticed in the study needs to be analyzed in depth, so as to refine the existing implements or reorient the extension activities for effective popularization of farm machinery.

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