

## Suitability and adequacy of farm machineries and equipments kept in Krishi Yantradhare Centres and opinion of farmers towards Krishi Yantradhare Scheme

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**Abstract:** The present study was conducted in the University of Agricultural Sciences, Dharwad during 2018-19 to study the suitability and adequacy of farm machineries and equipments kept in Krishi Yantradhare Centres and to elicit the opinion of farmers towards Krishi Yantradhare Scheme. Ten extension personnel and 150 farmers formed sample for the study. The primary data about suitability and adequacy of farm machineries was collected from extension personnel and opinion towards Krishi Yantradhare Scheme from farmers by using the schedule developed for the study. The results indicated that cent per cent of the centres equipped with hydraulic MB plough, 6 ft rotavator, 5ft rotavator, 4 ft rotavator, five tyned seed cum fertilizer drill, sugarcane stubble shaver, sugarcane trash cutter, brush cutter, paddy reaper, 60 hp tractor, 55 hp tractor, 45 hp tractor, 35 hp tractor and power tiller were found not only suitable for hiring but also supplied in adequate quantity. Almost all the farmers opined that hiring of farm machineries lowered cost of cultivation (97.33 %) and reduced manual labour requirement (96.66 %). Large majority (92.66 %) of farmers were of the opinion that Krishi Yantradhare Scheme addressed the problem of high labour wages. With respect to overall opinion, 42.67 per cent of farmers had favorable opinion towards Krishi Yantradhare Scheme followed by more favorable (31.33 %) and less favorable (26.00 %) opinion.

**Key words:** Adequacy, Extension personnel, Farmers, Krishi yantradhare, Opinion, Suitability

### Introduction

Indian agriculture is undergoing a gradual shift from dependence on manual power and animal power to mechanical power. This shift is mainly because of increasing cost for upkeep of animals and scarcity of human labour. Further, the use of mechanical power has a direct influence on the productivity of crops, apart from decreasing the drudgery and facilitating timeliness of farm operations. Under intensive agriculture, use of mechanical power has become imperative for timely completion of farm operations.

The overall farm mechanization levels in India for rice, wheat, maize, sorghum and millets, pulses, oil seeds, cotton and sugarcane crops are 45.00, 63.00, 40.00, 26.00, 34.00, 34.00, 26.00 and 24.00 per cent, respectively (Mehta *et al.*, 2019). However, consumption of mechanical power is larger in big land holdings and is still beyond the reach of small/marginal holdings, which make up about 80.00 per cent of the total land holdings (Anon., 2016). This is because small / marginal farmers are unable to own farm machinery on their own or through institutional credit because of their poor economic condition. In order to make farm machinery available to small / marginal holdings, Government of Karnataka has initiated "Krishi Yantradhare Scheme".

Krishi Yantradhare Scheme was launched in 2014 for the benefit of small/marginal farmers. Under this scheme, the farm implements are rented to the farmers through Krishi Yantradhare Centers (KYCs) established at hobli level through public private partnership. Which are popularly called "Krishi Yantradhare Centers". These centers are established with an objective to

assist the small and marginal farmers to provide machineries at their door steps at affordable prices on rental basis. With respect to financial assistance. The Government of Karnataka contributes about 75.00 per cent of the total expenditure and remaining 25.00 per cent should be borne by the service providers. As on February 2018, 490 Krishi Yantradhare Centres are operating successfully throughout Karnataka.

With this background, the present study was undertaken to ascertain the suitability and adequacy of farm machineries and equipments kept in Krishi Yantradhare Centres and also to elicit the opinion of farmers towards Krishi Yantradhare Scheme.

### Material and methods

The study was an Ex-post facto research carried out purposively in Belagavi district of Karnataka as highest number of Krishi Yantradhare Centres are operating in this district among the districts of north Karnataka. All 10 taluks were selected for the study as Krishi Yantradhare Centres are functioning in all the taluks. There are 25 Krishi Yantradhare Centres operating in the district. Among them, 15 centres are operated by SKDRDP (Sri Kshetra Dharmasthala Rural Development Project), Dharmasthala and remaining 10 centres by VST tillers. One centre per taluk was selected at random. Thus constituting 10 centres for the study. The distance bias in selection of villages was overcome by selecting the villages at varied distances. Therefore, villages which were within 3 km, 3 to 6 km away and more than 6 km away from the Krishi Yantradhare Centre were listed. One village from each of these distances was selected for each centre. Thus, constituting

30 villages for the study. From each village 5 farmers were selected by using simple random sampling to form a sample of 150.

The primary data was collected from each Krishi Yantradhare Centre regarding various farm machineries and equipments kept for hiring. The respective local extension personnel were interviewed to inquire about suitability and adequacy of each farm machinery or equipment kept for hiring. Their responses were expressed in frequency and percentage.

Opinion of farmers regarding Krishi Yantradhare Scheme was elicited by preparing a set of statements referring relevant literature regarding Krishi Yantradhare Scheme. Among them, 15 statements were finalized after consultation with experts and careful modifications. Respondents were asked to give their responses on 3 point continuum - agree, undecided, disagree with scores of 3, 2 and 1 respectively. Similar procedure was

followed by Mavinakatti (2013). Subsequently, based on the responses obtained from the beneficiaries, frequencies and percentages were calculated and opinion was presented. Based on the total score of opinion, the respondents were classified into three categories such as less favourable, favourable and more favourable by considering mean and standard deviation as measure of check.

| Sl. No. | Category        | Score range                   |
|---------|-----------------|-------------------------------|
| 1       | Less favourable | Below (Mean - 0.425 SD)       |
| 2       | Favourable      | Between (Mean $\pm$ 0.425 SD) |
| 3       | More favourable | Above (Mean + 0.425 SD)       |

### Results and discussion

The data in Table 1 depicted the suitability and adequacy of farm machineries and equipments kept for hiring in Krishi Yantradhare Centres.

Table 1. Suitability and adequacy of farm machineries and equipments kept in Krishi Yantradhare Centres

| Sl. No.  | Farm machineries / equipments        | Number of KYCs equipped with machineries |        | Number of KYCs in which equipped machineries were suitable |        | KYCs equipped with adequate number of machineries |        | n=10 |
|--|--------------------------------------|--|--------|--|--------|---|--------|------|
|  |                                      | f  | %      | f  | %      | f   | %      |      |
| <b>A) Land preparation equipments</b>              |                                      |  |        |  |        |   |        |      |
| 1.   | Single MB plough                     | 6  | 60.00  | 6  | 100.00 | 4   | 66.67  |      |
| 2.   | Double MB plough                     | 10                                       | 100.00 | 10   | 100.00 | 7   | 70.00  |      |
| 3.   | Hydraulic MB plough                  | 2  | 20.00  | 2  | 100.00 | 2   | 100.00 |      |
| 4.   | Cultivator                           | 8  | 80.00  | 8  | 100.00 | 5   | 62.50  |      |
| 5.   | Rotavator (6ft)                      | 7  | 70.00  | 7  | 100.00 | 7   | 100.00 |      |
| 6.   | Rotavator (5ft)                      | 6  | 60.00  | 6  | 100.00 | 6   | 100.00 |      |
| 7.   | Rotavator (4ft)                      | 4  | 40.00  | 4  | 100.00 | 4   | 100.00 |      |
| 8.   | Rotavator (3ft)                      | 6  | 60.00  | 6  | 100.00 | 5   | 83.33  |      |
| 9.   | Blade harrow                         | 7  | 70.00  | 7  | 100.00 | 3   | 42.85  |      |
| 10.  | Leveller                             | 2  | 20.00  | 1  | 50.00  | 2   | 100.00 |      |
| <b>B) Sowing and planting equipments</b>           |                                      |  |        |  |        |   |        |      |
| 11.  | Furrow opener                        | 5  | 50.00  | 5  | 100.00 | 4   | 80.00  |      |
| 12.  | Nine tyned Seed cum fertilizer drill | 10                                       | 100.00 | 10   | 100.00 | 8   | 80.00  |      |
| 13.  | Five tyned Seed cum fertilizer drill | 5  | 50.00  | 5  | 100.00 | 5   | 100.00 |      |
| <b>C) Intercultivation and spraying equipments</b> |                                      |  |        |  |        |   |        |      |
| 14.  | Sugarcane stubble shaver             | 1  | 10.00  | 1  | 100.00 | 1   | 100.00 |      |
| 15.  | Sugarcane trash cutter               | 5  | 50.00  | 5  | 100.00 | 5   | 100.00 |      |
| 16.  | Brush cutter                         | 1  | 10.00  | 1  | 100.00 | 1   | 100.00 |      |
| 17.  | Power weeder                         | 4  | 40.00  | 4  | 100.00 | 4   | 100.00 |      |
| 18.  | 4 Stroke sprayer                     | 2  | 20.00  | 0  | 0.00   | 2   | 100.00 |      |
| 19.  | HDP sprayer                          | 1  | 10.00  | 0  | 0.00   | 1   | 100.00 |      |
| <b>A) Harvesting and threshing equipments</b>      |                                      |  |        |  |        |   |        |      |
| 20.  | Multi Crop Thresher                  | 10                                       | 100.00 | 9  | 90.00  | 7   | 70.00  |      |
| 21.  | Paddy reaper                         | 1  | 10.00  | 1  | 100.00 | 1   | 100.00 |      |
| <b>B) Power sources</b>                            |                                      |  |        |  |        |   |        |      |
| 22.  | Tractor (60 hp)                      | 1  | 10.00  | 1  | 100.00 | 1   | 100.00 |      |
| 23.  | Tractor (55 hp)                      | 3  | 30.00  | 3  | 100.00 | 3   | 100.00 |      |
| 24.  | Tractor (50 hp)                      | 8  | 80.00  | 8  | 100.00 | 5   | 62.50  |      |
| 25.  | Tractor (45 hp)                      | 2  | 20.00  | 2  | 100.00 | 2   | 100.00 |      |
| 26.  | Tractor (35 hp)                      | 1  | 10.00  | 1  | 100.00 | 1   | 100.00 |      |
| 27.  | Minitractor (22 hp)                  | 9  | 90.00  | 8  | 88.88  | 9   | 100.00 |      |
| 28.  | Power tiller                         | 9  | 90.00  | 9  | 100.00 | 9   | 100.00 |      |
| <b>C) Other equipments</b>                         |                                      |  |        |  |        |   |        |      |
| 29.  | Diesel pump sets                     | 1  | 10.00  | 1  | 100.00 | 1   | 100.00 |      |
| 30.  | Trailer                              | 2  | 20.00  | 2  | 100.00 | 2   | 100.00 |      |
| 31.  | Tanker                               | 1  | 10.00  | 1  | 100.00 | 1   | 100.00 |      |

### *Suitability and adequacy of farm machineries and.....*

Among land preparation equipments, single MB plough, double MB plough, hydraulic MB plough, cultivator, 6 ft rotavator, 5 ft rotavator, 4 ft rotavator, 3 ft rotavator and blade harrow were considered as suitable in all the equipped centres because, all of them were required to carry out land preparation irrespective of the locality. Among them, hydraulic MB plough, 6 ft rotavator, 5 ft rotavator and 4 ft rotavator were considered adequate in cent per cent of the equipped centres as they were required in sufficient quantity to carryout farm operations like ploughing and soil pulverization. Three feet rotavator, double MB plough, single MB plough and cultivator were considered adequate in 83.33 per cent, 70.00 per cent, 66.67 per cent, and 42.85 per cent of the equipped centres respectively. However, leveler was suitable for hiring in 50.00 per cent of the equipped centres and it was adequate in number in cent per cent of the equipped centres.

Krishi Yantradhare Centres equipped with all the sowing and planting equipments like furrow opener, nine tyned seed cum fertilizer drill and five tyned seed cum fertilizer drill were perceived suitable in all the equipped centres and they were adequately supplied in all the centres, 80.00 per cent and 80.00 per cent of the equipped centres respectively. Because, seed cum fertilizer drill was necessary for sowing field crops and furrow opener was suitable for planting sugarcane setts as well as wide spacing crops like redgram and cotton. Hence, they were adequately supplied in almost all the centres.

All the intercultivation equipments like sugarcane stubble shaver, sugarcane trash cutter, brush cutter and power weeder were perceived suitable as well as adequate for hiring in all the equipped centres. As majority of farmers were sugarcane growers, sugarcane trash cutter was used by them to chop the trash remained after harvesting of the crop which helps for fast decomposition of the trash and adds organic matter to the soil.

With regard to harvesting and threshing equipments, paddy reaper was suitable as well as adequately supplied for hiring in

cent per cent of the equipped centres. Multi Crop Thresher was suitable in 90.00 per cent of the equipped centres and it was adequately supplied in 70.00 per cent of the equipped centres. Harvesting of crops is an essential operation to obtain the economical produce. Hence, majority of centres were equipped with multi crop thresher.

As far as power sources are concerned, tractor with 60 hp, 55 hp, 40 hp, 35 hp and power tiller were found suitable as well as adequate for hiring in cent per cent of the equipped centres. Because, these machineries were major power sources used for ploughing, rotovating, harrowing, cultivating and sowing operations.

A cursory look at Table 2 tells about opinion of farmers on various aspects of Krishi Yantradhare Scheme.

Almost all the farmers (97.33 % and 96.66 %) opined that hiring of farm machineries lowered cost of cultivation and reduced manual labour requirement, respectively. Small and semi medium farmers by virtue of their poor economic condition couldn't buy farm machineries and equipments. Hence, the hiring of farm machineries from Krishi Yantradhare Centres not only helped them to save the cost but also reduced the manual labour requirement.

Large majority of farmers (92.66 %) were of the opinion that Krishi Yantradhare Scheme addressed the problem of high labour wages. Scarcity of labours was overcome by hiring the machineries as farmer pays the rent of the machinery only for the number of hours used in carrying out agricultural operations.

Majority of farmers (86.00 % each) opined that procedure to hire the farm machinery was easy and hiring charges were lesser than private hiring. Photocopies of Pahani (land record) and ID proof are enough to hire the machineries and only 20.00 per cent of the hiring charge is to be paid while booking

Table 2. Opinion of the farmers regarding Krishi Yantradhare Scheme

| Sl. No. | Statements   | n=150       |            |            |
|---------|--|-------------|------------|------------|
|         |  | Agree       | Undecided  | Dis agree  |
| A)      | Services   |             |            |            |
| 1.      | Farm machineries kept for hiring at Krishi Yantradhare Centre are crop specific  | 91 (60.66)  | 42 (28.00) | 17 (11.33) |
| 2.      | Farm machineries kept at Krishi Yantradhare Centre are adequate                  | 96 (64.00)  | 37 (24.66) | 17 (11.33) |
| 3.      | Farm machineries kept at Krishi Yantradhare Centre are modern                    | 109 (72.66) | 35 (23.33) | 6 (4.00)   |
| 4.      | Method of charging (hourly basis) for hiring the farm machineries is appropriate | 119 (79.33) | 28 (18.66) | 3 (2.00)   |
| 5.      | Pre-booking and pre-booking cancellation services are helpful to the farmer      | 125 (83.33) | 16 (10.66) | 9 (6.00)   |
| B)      | Costs  |             |            |            |
| 6.      | Rental charges of farm machineries are reasonable                                | 118 (78.66) | 14 (9.33)  | 18 (12.00) |
| 7.      | Hiring of farm machineries reduces manual labour requirement                     | 145 (96.66) | 5 (3.33)   | 0 (0.00)   |
| 8.      | Krishi Yantradhare Scheme addresses the problem of high labour wages             | 139 (92.66) | 11 (7.33)  | 0 (0.00)   |
| C)      | Accessibility  |             |            |            |
| 9.      | Procedure to hire the farm machinery is easy                                     | 129 (86.00) | 13 (8.66)  | 8 (5.33)   |
| 10.     | Location of the Krishi Yantradhare Centre is accessible to the farmers           | 101 (67.33) | 5 (3.33)   | 44 (29.33) |
| D)      | Benefits   |             |            |            |
| 11.     | Hiring charges are lesser than private hiring                                    | 129 (86.00) | 8 (5.33)   | 13 (8.66)  |
| 12.     | Helps for timeliness of farm operation   | 114 (76.00) | 10 (6.66)  | 26 (17.33) |
| 13.     | Hiring of farm machineries lowers the cost of cultivation                        | 146 (97.33) | 4 (2.66)   | 0 (0.00)   |
| 14.     | Hiring of farm machineries is very much beneficial to small and marginal farmers | 119 (79.33) | 29 (19.33) | 2 (1.33)   |
| 15.     | Krishi Yantradhare Scheme helps to attract rural youth towards agriculture       | 79 (52.66)  | 66 (44.00) | 5 (3.33)   |

the machinery and remaining 80.00 per cent after completion of the work. However, hiring charges of almost all machineries kept in the centres were 20.00 per cent lesser than private hiring.

Majority of farmers (83.33 %) stated that pre-booking and pre-booking cancellation services were helpful as it helped the farmers to take up farm operation in time. Equal per cent of farmers (79.33 % each) opined that method of charging for hiring the farm machineries on hourly basis was appropriate one and hiring of farm machineries was very much beneficial to small and marginal farmers because, charging the rental charges on acre basis is an unscientific method and it also leads to unproductive and poor quality work.

Table 3. Distribution of farmers based on overall opinion about Krishi Yantradhare Scheme n=150

| Sl. No. | Category                   | f  | %     |
|---------|----------------------------|----|-------|
| 1       | Less favourable (< 39.62)  | 39 | 26.00 |
| 2       | Favourable (39.62 - 41.58) | 64 | 42.67 |
| 3       | More favourable (>41.58)   | 47 | 31.33 |

Mean: 40.60 SD: 2.29

The results with regard to overall opinion of farmers about Krishi Yantradhare Scheme are presented in Table 3. The results revealed that 31.33 per cent of farmers had more favorable and 42.67 per cent of farmers had favorable opinion towards Krishi Yantradhare Scheme. Because they were benefitted with decreased cost of cultivation, timely farm operations and better quality of work.

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