

International Journal of Statistics and Applied Mathematics

ISSN: 2456-1452
Maths 2023; SP-8(6): 662-665
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<https://www.mathsjournal.com>
Received: 05-09-2023
Accepted: 10-10-2023

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An analysis of the utilization pattern of custom hiring of agricultural machinery in paddy farm in Bilaspur district of Chhattisgarh state in India

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Abstract

In this research paper “An Analysis of the Utilization Pattern of Custom Hiring of Agricultural Machinery in Paddy Farms in Bilaspur District of Chhattisgarh State in India” a total of 80 farmers were selected, which 60 farmers used machinery for the cultivation of paddy crops and 20 farmers’ in the Chhattisgarh state and still using the traditional method for it. 14 numbers of farmers have their own tractors and 46 numbers of farmers hired tractors from other tractor owners at the village level. About 64.28 percent of tractor owners were large farmers and 35.71 percent of tractor owners belonged to small and medium categories. Seed drill used by 2 farmers for sowing the paddy in the field in line sowing method. About 23 farmers have their own sprayers and 57 farmers used sprayers as a custom hiring. Reaper was used by 30 farmers for harvesting paddy crops; about 93.33 percent of farmers hired reaper from other farmers. The cost of a tractor for various operations like ploughing, sowing etc. was Rs. 600 per hour, and for land preparation of 1 hectare required 3 hours’ time costing Rs.1800 per hectare, and for sowing Rs. 2236.50 per hectare. The cost of the tractor in the government custom hiring centre was (Rs.450/hour) low as compared to the cost of hiring a tractor prevailing in the study area (Rs.600/hour). The cost of land preparation by the traditional method was more (Rs. 350) as compared to the machinery method (Rs. 2400 per hectare).

Keywords: Harvesting, rotavator, seed-drill, utilization pattern and custom hiring

Introduction

The recent structural changes in economic environment, liberalization policy and the signing of general agreement on tariff and trade has laid down new challenges in which, India has to compete in the international trade including agricultural trade. The basic requirement of this competition is to reduce the unit cost of production, and improve quality of agricultural produce so as to meet the international standards. The cost of production can be reduced only if the cost of every single factor contributing towards the total cost is minimized and resource productivity maximized. Also, various decisions regarding long term investments such as land, building and farm machines are taken with utmost care. Therefore, the agricultural strategies need to be based on the time-tested principles of business management and entrepreneurship so that agriculture can be made a profitable venture. The increase in the use of human and bullock labour and rising wage rates and cost of up-keep of bullock made the farm mechanization still stronger.

Custom hiring of farm machines was first introduced in Indian agriculture early decades of 19th century when a 30-inch (diameter) steam thresher was used for custom hiring. The machines were taken to about 10 different places working for 2 or 3 days at each place. Organized custom hiring to promote multi-farm use of agricultural machinery was made in mid-1960 when Agro-Industries Corporation (AIC) was established in the states. AICs in 1970s to 1990s concentrated mainly on land development and tillage operation aspects and had not spread to other important field operations. Custom hiring of farm implements got further boost when Government of India, in 1971, launched a scheme to set up agro-services centres all over the country. Custom hiring services, in a limited way was started in 1990s under National Schemes spread over India, under NATP and NAIP in a limited way. Accordingly, it had limited success because they were tried in limited spaces with extremely less number of

staff i.e. concentrated to small pockets of India. Custom hiring is an emerging concept in farming to facilitate adopting improved resource management among the like-minded farmers with commonality in the fanning practices. This system of resource sharing at a reduced cost to individual farmers are in vogue in some regions of the country with respect to farm machinery and implements, tube well water, marketing of the produce etc. (Ranade *et al.* 2006) [6].

Status of farm machination and custom hiring in Chhattisgarh

In Chhattisgarh farm power availability is 0.60 kW/ha against national average of 1.53 kW/ha. The total geographical area of the state is 137.36 lakh ha, which is 4.15% of the geographical area of the country. The cultivable area is 47.79 lakh ha, which is 34.80% of the geographical area of the state. Uncultivable land is about 6.87 lakh ha (5%) and the area under forest is 63.03 lakh ha (45.89%). More than 80 per cent population depends on agriculture. Main crops are paddy, wheat, maize, groundnut, pulses and oilseeds. Rice and wheat are the major crops of the state with yield of 1455 and 1024 kg/ha. The percentage of marginal farmers is highest (45.47%). The medium and large land holding constitutes 11.2% and 10.22% respectively of total holdings.

Material and Methods

Selection of Study area and respondents

Chhattisgarh state consist 27 districts, out of which Bilaspur district was selected purposively for the present study. The Pendra and Marwahi block has 52 and 100 number of villages. Out of these, two villages were considered from each of the selected blocks. Patgawa and Bandhi villages from Pendra, Maladad and Karhani from Marwahi block was selected randomly. In all, four villages in both block is selected for the study purpose.

Method of enquiry and data collection

Primary data from the farmers was collected through well prepared schedule and questionnaire. All the primary data belong to kharif 2015-16. The secondary data related to Chhattisgarh state is collected from the Directorate of Agriculture; Annual Agriculture Statistics, Bilaspur; Department of Agriculture, Raipur and District Planning and statistics Department, Raipur, Chhattisgarh.

Analytical Framework

The collected data were compiled and tabular analysis is made to work out the different parameters, such as, utilization pattern of custom hiring of Agricultural Machinery, cost concept, cost of production of paddy, comparative economics of custom hiring and traditional methods in different operation, per hectare gross return, net return and B:C ratio.

Result and Discussion

Utilization pattern of custom hiring of Agricultural Machinery in paddy farm

Selected machinery user farmers

Out of 80 selected farmers, 60 farmers used machinery for cultivation of paddy crop. 14 numbers of farmers have their own tractor and 46 numbers of farmers hired tractor form other tractor owner at village level. About 64.28 per cent of tractor owner were large farmers and 35.71 per cent tractor owner’s belonged to small and medium category. Marginal category farmers dependent on others machinery owner farmers, due to this many operation like land preparation, sowing etc. were not performed at proper time and many problem were faced by marginal and small farmer due to lack of government custom hiring centre and non-availability of co-operative custom hiring centres.

Table 1: Distribution of selected machinery user farmer according to size group

Farmer Category	No. of Farmer’s Having own tractor	No. of Farmer’s using Custom hiring tractor	Percentage of Farmer’s using custom hiring tractor	Farmer’s Using machinery
Marginal	0	15	100.00	15
Small	4	19	82.6	23
Medium	1	12	92.3	13
Large	9	0	0.00	9
Total	14	46	76.7	60

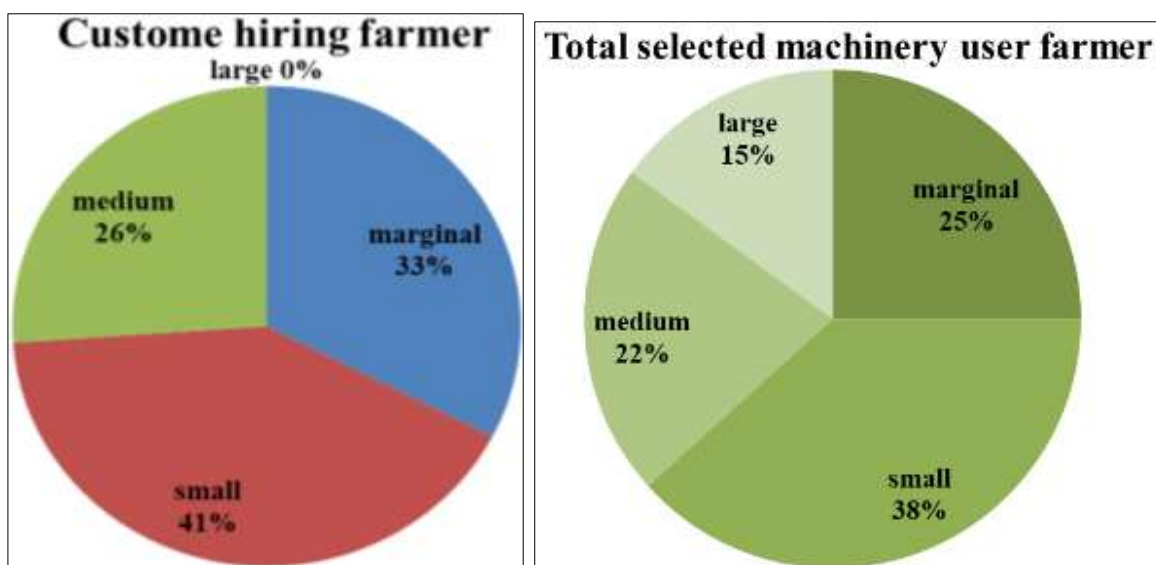


Fig 1: Total selected machinery user farmers and Custom hiring farmers

Utilization pattern of custom hiring of agricultural machinery in paddy farm

Out of 80 selected farmers, 76.70 per cent of farmers used machinery in custom hiring basis for land preparation, transportation, threshing operation which required for paddy production. No any farmers used rotavator for puddling the field which required in paddy transplanting method of sowing. Seed drill used by 2 farmers for sowing the paddy in

field in line sowing method. About 23 farmers have their own sprayers and 57 farmers used sprayer as a custom hiring. Reaper was used by 30 farmers for harvesting of paddy crops; about 93.33 percent of farmers hired reaper from other farmers and about 77 farmers used electric fans for winnowing operation and 23 farmers have their own electric fan. The custom hiring farmers reported the problems of costly, inadequate and lack of timely availability of custom hiring services.

Table 2: Utilization pattern of custom hiring of Agricultural Machinery in paddy farm

S. No.	Particulars	No. of Farmer's Having own	No. of Farmer's using Custom hiring	Percentage of Farmer's using custom hiring	Total Farmer's Using machinery
1	Tractor + cultivator	14	46	76.7	60
2	Rotavator	0	0	0	0
3	Seed drill	0	2	100	2
4	Sprayer	23	57	71.25	80
5	Reaper	2	28	93.33	30
6	Electric Fan	23	54	70.12	77

Custom hires rates of machinery prevailing in the study area

Custom hiring rates of tractor prevailing in the study area is presented in Table 3. Cost of tractor for various operations like ploughing, sowing etc. was Rs. 600 per hour and for land preparation of 1 hectare required 4 hours' time costing Rs.2400 per hectare. On average plant protection equipment's costing Rs.150 for a hectare and average cost of combine

harvester was Rs. 4250 per hectare. Cost of tractor in government custom hiring centre was low as compared to cost of hiring tractor prevailing in the study area, so if the farmers will use the custom hiring tractor from government custom hiring centres their cost of cultivation will decrease and marginal & small farmers would be able to afford tractor in time and proper way.

Table 3: Average Custom hires rates of machinery prevailing in the study area

S. No	Particulars	Rs. / h., Rs. /Day	Rs. /Ha.	Government Hiring rates (Rs. /h)
1	Ploughing by Tractor	600.00	2400.00 (4h)	450.00
2	Plant protection (Sprayers)	50.00	150.00	
3	Combine Harvester	1700.00	4250.00	
4	Transportation by Tractor (per trolley)	500.00	2000.00	
5	Threshing by Tractor	600.00	1200.00	
6	Winnowing by Electric fan (per day)	75.00	225.00	

Conclusion

The out of 80 selected farmers, 76.70 per cent of farmers used machinery in custom hired and about 93.33 percent of farmers hired reaper from other farmers and about 77 farmers used electric fans for winnowing operation and 23 farmers have their own electric fan. Seed drill used by only 2 farmers for sowing the paddy in field in line sowing method.

Suggestion

The small farmers having operational holding of less than 4 hectares need to be discouraged to own the tractors unless they have substantial grounds to make economical use of it. However, to solve the problems of mechanization of smaller holdings, the possibilities can be: (a) Cooperative management of farm machinery; (b) Financing of second hand tractors for small farmers; (c) Extension services to advise the suitability of various makes, models and horse powers for different size of operational holdings; (d) Devising smaller machinery suitable for small farms which constitute the vast majority of farmers but the machinery has to be effective and less costly.

A government custom hiring centre should require in blocks level, so the price of custom hiring of agricultural machinery is fixed and low as compared to offers by private owner of machinery.

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