Biological Forum – An International Journal **15(5): 669-673(2023)**

ISSN No. (Print): 0975-1130
ISSN No. (Online): 2249-3239

Constraints in the Expansion of Custom Hiring Services of Farm Machinery in Haryana

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(Received: 11 March 2023; Revised: 16 April 2023; Accepted: 21 April 2023; Published: 20 May 2023)
(Published by Research Trend)

ABSTRACT: Agriculture in India for a long time has faced a problem of low farm power availability. To increase the farm power availability to 2kw/ha Ministry of Agriculture and Farmers Welfare, Government of India started Sub Mission on Agricultural Mechanization (SMAM) in the year 2014. The study was conducted in the Kurukshetra district of Haryana during the agricultural year 2020-2021. Primary data from 80 farmers and 10 farm machinery owners were collected regarding the constraints faced by them. The severity of constraints was ascertained by using Garret's ranking method. Difficulty in the availability of farm machines at peak season was found to be the most common constraint of farmers hiring from private farm machinery providers. Whereas, non-availability of all the machines was found to be the most severe constraint faced by farmers in hiring machinery from Custom Hiring Centres (CHCs). For CHC's owners, the most severe problem was relatively lower demand for machines like turbo happy seeder, straw choppers etc. In the case of private farm machinery owners, the most severe constraint was the higher initial cost of investment. Hence, the study suggested that there is a need of increasing awareness among farmers regarding CHCs. Also, there is a need for improvement in the culture of using machines such as turbo happy seeder. Further, increasing the number of CHCs can also improve the accessibility to the machinery.

Keywords: Constraints, Custom Hiring Centres, Farm Machinery, Garret Ranking, Mechanization.

INTRODUCTION

Wheel the most important machine developed by man is the precursor of almost every machine in the world. Waterwheel the earliest known machine, made humans food surplus back in the 11th century but that was not enough to match the growing human needs so with time and especially with the advent of the Industrial revolution in mid- 18th century, new technologies started entering daily human life. New machines substituted harvesting by hand and conventional methods of threshing (beating on drums to separate grains). Of all the machines for agriculture, the real breakthrough came with the invention of the tractor in the late 19th century which was followed by the tractor-mounted machines. These were the ones which changed how humans were used to perform various agricultural activities. With them came a new era of agriculture by which not only the drudgery of humans was reduced but it also gave the solution of feeding a humongous human population.

Agriculture in India has been changing gradually in terms of the way the different functions are carried out in fields, there has been a shift from animal and human power to mechanical. One reason that may be stated behind this shift can be the increasing dearth of human labour and the maintenance of machines being easier and cheaper than raising animals. Also, machines lead to an increase in productivity through the timely completion of field operations and reducing human drudgery at the same time. So, farm mechanization is the need of the hour and the time has come to consider mechanization for changing the future of Indian agriculture. The availability of farm power and productivity were found to be directly correlated throughout the previous six decades (Mehta *et al.,* 2014). But one big obstacle in it is the uneven distribution of farm power across the country, where some states such as Bihar, Jharkhand and Orissa have farm power availability of less than 1kw/ha and on the other side of the spectrum lies states like Punjab and Haryana which have highest farm power availability *i.e.*, almost equal to 3.5 kW/ha (Nissa *et al.*, 2017).

The dearth of machinery and farm power especially with the farmers with the small size of land holdings is one the major roadblock in the development of agriculture and the increase in its productivity and production. Also, the adverse climatic conditions make it hard to perform manual labour which also affects productivity (Vamshi *et al*., 2022). Improving the reach of small and marginal farmers to high-end farm machinery can help meet the challenge of low

productivity. Custom Hiring Centres (CHCs) can enhance the inclusivity of these farmers by improving the availability of high-end farm machinery by reducing transaction costs (Keil *et al.,* 2016). But large machinery being costly by its nature become unaffordable even for large farmers at times (Chahal *et al.*, 2014). The only feasible option to introduce capital-intensive, high-quality mechanization to India's small farming systems is through custom hiring. By offering farmers the option to rent agricultural equipment at reasonable prices, CHC is a dependable source for making a significant improvement in the farming environment across the nation (Kisku *et al.*, 2022).

To fulfil the gap in the availability of farm power Ministry of Agriculture and Farmers Welfare, Government of India started Sub Mission on Agricultural Mechanization (SMAM) in the year 2014. The mission aimed to increase the farm power availability to 2kw/ha through government-sponsored CHCs. Although the mission has been a success but still there are many constraints which farmers have to face while hiring machinery for rent and identifying them can further improve the reach of machines to farmers. The same goes for the owners of CHCs. The following work is especially more important after the introduction of the Crop Residue Management (CRM) scheme in Punjab, Haryana, Uttar Pradesh and NCT of Delhi, where the establishment of CHCs is more focused on providing machinery for the management of paddy stubble. So, the current study was done to find out the major problems faced by the farmers hiring machinery from government-sponsored CHCs and private farm machinery providers. The study also involves the constraints faced by owners of both (government-sponsored CHCs and private farm machinery providers) sources of machinery.

MATERIAL AND METHODS

The current study was done in the agricultural year 2020-21 in the Kurukshetra district which lies in the northern part of Haryana. The district was purposively selected because of the highest per cent change in farm power availability (Ministry of Agriculture & Farmers Welfare, India, 2018) since the inception of SMAM in 2014. From the Kurukshetra district, two blocks (Shahbad and Pipli) were selected randomly and further two villages from each block were also selected randomly. From each village, a sample of 20 farmers (10 hiring machinery from government-sponsored CHCs and 10 from private farm machinery providers) were interviewed. Further, a sample of 10 farm machinery owners (5 CHCs and 5 private farm machinery owners) were randomly interviewed as well. Thus, a sample of 80 farmers and 10 farm machinery owners were interviewed for the study.

To analyse the severity of constraints faced by farmers hiring farm machinery and by owners of machinery (both CHC and private owners) Garret's ranking technique was used. During the data collection respondents were asked to rank the constraints in order of severity after which rank was converted into Mean Garret score (MGS) by referring to Garret's table.

The following formula was used to convert the order of merit into ranks using Garret's table.

$$\text{Percent Proportion} = 100(R_{ij} - 0.5)/N_j$$

Where,

R_{ij} = Rank given for ith item by j^{th} individual

N_j = Number of items ranked by j^{th} individual

Tables given by Garret and Woodworth (1969) were used to convert the per cent position of each rank to scores. Followed by which individual respondent's scores were summed and further the total was divided by the total number of respondents. Garret mean scores for all the factors were ranked based on decision criteria that constraint with the higher score is more important to the farmer.

RESULTS AND DISCUSSION

Constraints in further improving the reach of farm machinery were collected separately from each category of the respondent and arranged accordingly to find out the major ones.

Constraints Faced by Farmers in Hiring of Machinery from CHCs. Constraints faced by farmers hiring farm machinery from CHCs are shown in Table 1. The most serious constraint experienced by farmers with a Mean Garret Score (MGS) of 76.63 was the non-availability of all the machines with the CHCs, leading to the tedious task of arrangement of some machines from other sources. The second and third most serious concerns of farmers were the low number of custom hiring centres and favouritism by machine owners with an MGS of 73.58 and 70.05 respectively. Other than these some of the constraints faced by farmers in decreasing order were overlapping of farm operations, difficulty in availability of machines at peak seasons, improper operations, issues of independence, high charges of custom hiring services which can be solved by providing fuel subsidies to owners (Singh *et al.*, 2013), small and scattered land holdings, the tedious procedure of getting CHC's services, field location especially the distance from an all-weather road. The constraint with the least concern to farmers was quality and quantity losses during harvesting and threshing with an MGS of 21.33. Similar results were observed by Singh *et al.* (2013); Parashunath *et al.* (2016); Kisku *et al.* (2022) in their respective studies.

Constraints Faced by Farmers in Hiring Machinery from Private Farm Machinery Providers. Constraints faced by farmers in the hiring of machinery from private farm machinery providers are presented in Table 2. The results of the table stated that the most severe constraint faced by farmers was difficulty in the availability of machines at the peak of the season, especially at the time of harvesting and sowing operations. Second, in the order was a lack of awareness about government-sponsored Custom Hiring Centres with an MGS of 74.63, followed by overlapping of farm operations, particularly during the peak of sowing season and favouritism by machine owners with an MGS of

71.80 and 59.10, respectively. Other constraints faced by farmers with decreasing order of concern include improper operations, high charges of hiring machinery, condition of machinery, inadequate availability of farm machinery, small and scattered land holdings, issues of independence, quality and quantity losses during the harvesting and threshing. The constraint with the least concern to the farmers was field location. Most of these constraints were in line with the findings of Parashunath *et al.* (2016).

Constraints Faced by Owners of CHCs. Table 3 shows the constraints faced by owners of CHCs. It was found that the constraint which was of most concern to owners was the problem of unused/not in frequent demand machines like turbo happy seeder, straw choppers etc. with an MGS of 77.20. The second most important concern with an MGS of 76.40 to the owners was of lack of awareness about custom hiring services among farmers, the same was also reported by farmers hiring from private sources. A small window of working hours especially during sowing season was the third most important constraint with an MGS of 63.40. Other than these, some other constraints felt by owners in decreasing order of severity include difficulty in the availability of well-trained technical manpower particularly in villages, delay in payments, higher charges of technical manpower, inadequate service/repair/maintenance centres, high cost of investments, higher costs of maintenance of machinery and non-profitable business. The constraint which was of least concern to owners was the lack of operational knowledge. The constraints were in line with the findings of Singh *et al.* (2013); United Nations Economic and Social Commission for Asia and the Pacific (2017); Paman *et al.* (2018); Devkota *et al.* (2020).

Constraints Faced by Private Farm Machinery Owners. The high cost of initial investment which leads to delay in recovering fixed costs by providing machinery for hire was the most severe constraint with an MGS of 78.60 as reported by private machine owners (Table 4). Second, in the order of severity was of delay in payments by farmers availing services from private sources. Other than that higher cost of maintenance of machinery, loose handling of machines by customers, less window of working hours especially at harvesting, difficult availability of well-trained technical manpower and late returns of machinery by customers were also reported by private farm machinery owners. Almost all the constraints faced by private farm machinery owners were similar in type and severity to the ones faced by CHC's owners, but the high cost of initial investment for the purchase of farm machinery was the one with much difference in terms of severity because of CHCs being heavily subsidised by the government have lower initial investment cost. Similar results were also obtained by Paman *et al.* (2018) in their respective study.

Table 1: Constraints faced by farmers in hiring of machinery from CHCs.

Sr. No.	Constraints	Mean Garret Score	Rank
1.	Small and scattered land holdings	42.10	IX
2.	Tedious procedure of getting CHCs services	32.90	X
3.	Field location	27.18	XI
4.	Favouritism by the machine owner	70.05	III
5.	Less number of custom hiring centres	73.58	II
6.	Non-availability of all the machines	76.63	I
7.	Improper operations	52.65	VI
8.	High charges for custom hiring services	42.88	VIII
9.	Issue of Independence	47.98	VII
10.	Quality and quantity losses during the harvesting and threshing	21.33	XII
11.	Non-availability of machines at peak seasons	57.00	V
12.	Overlapping of farm operations	61.75	IV

Table 2: Constraints faced by farmers in hiring of machinery from private farm machinery providers.

Sr. No.	Constraints	Mean Garret Score	Rank
1.	Condition of machinery	46.40	VII
2.	High charges for hiring machinery	51.75	VI
3.	Quality and quantity losses during the harvesting and threshing	26.10	XI
4.	Overlapping of farm operations	71.80	III
5.	Lack of awareness about custom hiring centres	74.63	II
6.	Field location	25.93	XII
7.	Favouritism by the machine owner	59.10	IV
8.	Issue of independence	26.98	X
9.	Improper operations	58.00	V
10.	Inadequate availability of machinery	45.05	VIII
11.	Difficulty in the availability of machines at peak seasons	77.58	I
12.	Small and scattered land holdings	42.70	IX

Table 3: Constraints Faced by Owners of CHCs.

Sr. No.	Constraints	Mean Garret Score	Rank
1.	Delay in payments	53.00	V
2.	High cost of investments	43.00	VIII
3.	Less window of working hours	63.40	III
4.	Inadequate service/repair/maintenance centres	44.00	VII
5.	Non-availability of well-trained technical manpower	63.00	IV
6.	Higher charges for technical manpower	52.00	VI
7.	Higher costs of maintenance of machinery	31.00	IX
8.	Non-profitable business	28.20	X
9.	Problem of unused/not in frequent demand machinery	77.20	I
10.	Lack of awareness about Custom Hiring Services among farmers	76.40	II
11.	Lack of operational knowledge	23.80	XI

Table 4: Constraints Faced by Private Farm Machinery Owners.

Sr. No.	Constraints	Mean Garret Score	Rank
1.	Delay in payments	76.40	II
2.	High cost of investments	78.60	I
3.	Less window of working hours	52.20	V
4.	Inadequate service/repair/maintenance centres	48.40	VII
5.	Non-availability of well-trained technical manpower	50.40	VI
6.	Higher charges for technical manpower	38.60	VIII
7.	Higher costs of maintenance of machinery	63.00	III
8.	Non-profitable business	30.60	X
9.	Loose handling of machines by customers	62.00	IV
10.	Late return of machines by customers	32.40	IX
11.	Lack of operational knowledge	22.40	XI

CONCLUSIONS

The study was conducted to identify and understand the severity of constraints faced by farmers in hiring farm machinery and owners in providing machines. It concluded that on as well as less availability of farm machinery at peak hours of farm operations was a common constraint faced by farmers. Whereas, delays in payments, fewer hours of working window, and higher initial investments were some major constraints in the case of both CHCs as well as private farm machinery service providers. Keeping in view of the above findings, the study concluded that there is a need to increase the awareness among farmers regarding custom hiring services so that objectives of crop residue management can be achieved successfully by efficient utilization of machines like turbo happy seeder, straw choppers etc. in the study area.

FUTURE SCOPE

The study reflects the problems faced by both the farming community in hiring as well as owners of farm machinery. The perspective of both beneficiaries and non-beneficiaries of CHCs was captured. It can be used by policymakers to further improve the extension services so that the full potential of CHCs can be harvested.

Acknowledgement. The authors would like to acknowledge the farmers and the owners of farm machinery who provided the data for the current study.

Conflict of Interest. None.

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How to cite this article: Sagar Rawal, Ashok Dhillon, Dalip Kumar Bishnoi, Raj Ratan Panday and Parminder Singh (2023). Constraints in the Expansion of Custom Hiring Services of Farm Machinery in Haryana. *Biological Forum – An International Journal, 15*(5): 669-673.