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## Evaluation of skill development training on operation and maintenance of farm machines among rural youths of Durg District of Chhattisgarh

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### Abstract

There is no doubt that the mechanization in agriculture is essential in present scenario as it has enhances productivity through increased input use efficiency, timeliness of agricultural operations, reduced drudgery as well as the cost of cultivation. On other hand, adequate training is essential for farmers and rural youths to acquire the necessary knowledge and skills in operation of farm machineries. Keeping these in view, twenty days hands on training programme on “Skill development on operation and maintenance of farm machines” was organized for 30 rural youths of Durg district of Chhattisgarh. The present investigation was carried out among the participants of training programme during the year 2021. A well-designed schedule was prepared to evaluate the trainees and they were asked to fill up the schedule without prejudice preconceived notion. The schedule was filled twice, at the beginning and just after completion of training programme. More than 80.00 per cent of the participants said that training was useful for them, therefore, training utility rated as ‘Excellent’. Similarly, the training effectiveness worked out to be 71.67 per cent, which was found to be ‘Good’. The findings of the study indicates that majority of the trainees (60.00%) participated in training programme to develop skill in operation and maintenance of farm implements and machineries with Rank I. Majority of the rural youths had either no or partial knowledge, whereas, few of them had medium level of knowledge and very little number of rural youths belonged to complete knowledge category on various aspects considered for training course before training programme. About 16.67 to 56.67 and 23.33 to 46.67 per cent of the trainees attained complete to medium knowledge about various aspects of operation and maintenance of farm machineries and implements. In pre-training stage, majority of the trainees about 73.33, 66.67 and 56.67 per cent were having low level of knowledge regarding Implements used in agriculture, its working method and operation, Importance of tractor, implements and machineries in agriculture and initial repairing and maintenance of farm implements and machineries, respectively. However, the extent of knowledge among participants after receiving training was more satisfactory in all three aspects of training course. It reveals that majority of the trainees (63.33%) had low level of overall knowledge regarding operation and maintenance of farm machines before training programme, which was increased after training programme, as 46.67 per cent of the trainees were belonged to medium level of overall knowledge category in post-training face. The training facilitated to significant improvement on overall knowledge level, thus, it can be concluded that training programme was quite beneficial for skill development of rural youth on operation and maintenance of farm machineries.

**Keywords:** Skill development, knowledge level, farm machinery, farm implement

### Introduction

Since independence, an important role has been playing by agriculture and allied sectors for the development of Indian economy. It is primary source to earn livelihood for majority of Indian population. India holds the record as having second-largest agricultural land in the world generating employment for more than half of the country’s population and is the major players of economy as it contributes about 15 per cent to the total GDP. On the other hand agriculture sector has been facing several challenges, in which, increasing cost of production, decreasing size of farm holding, deceasing farm labour and rising labour wages are major problems among them. Hence, there is an urgent need for substituting of labour with farm mechanization. Furthermore, the factors that justify the strengthening of farm mechanization in the country can be numerous.

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The timeliness of agricultural operations has assumed greater significance in obtaining optimal yields from different crops in different seasons, which has been possible by way of mechanization.

Agricultural mechanization took place during the twentieth century led to major changes in how farmers plant, irrigate and harvest crops. Tractors, harvesters, threshers and other machinery have enabled farmers to increase their production while relying less upon an extended labour force. Mechanization in agriculture is the application of engineering principles and technologies in land preparation, production, storage and processing on the farm. Farm Mechanization is applicable to tillage operations, planting and sowing of crops, fertilizer application, weeding, irrigation, insect and disease control, crop harvesting, rearing, care and feeding of animals as well as processing and storage of farm produce by using appropriate farm machines. Farmers who have been using machineries in agriculture operations are gaining more profits and able to increase their productivity of yield.

The role of mechanization in agriculture has increased as it enhances productivity through increased input use efficiency, timeliness of agricultural operations, reduced drudgery as well as the cost of cultivation. Mechanization interventions have been reported to increase the productivity by 15 per cent and reduce the cost of production to the tune of 20 per cent. The mechanization facilitates conservation and sustainable agriculture, while improving the livelihood opportunities, income and environmental sustainability. On other hand, timely acquisition of knowledge in improved agricultural technologies, skill development and attitude formation towards these technologies are the most important factors, which affects the socio-economic attributes of human resources. Adequate training is essential for farmers and rural youths to acquire the necessary knowledge and skills in different aspects of agricultural technologies. This is more important for the rural youths interested in farm machinery with the self employment opportunities in state like Chhattisgarh. Time to time College of Agriculture and Research Station, Marra (Patan) organizes different training and demonstration programme to develop more skilled workforces. Keeping these in view, a training programme for skill development on farm mechanization was designed with following objectives:

1. To introduce the concept of mechanization for different unit operations of production agriculture *viz.* land preparation to threshing for major cropping systems.
2. To introduce and demonstrate appropriate technologies for production agriculture leading to conservation of natural resources for sustainable agriculture in different cropping systems.

During the training programme, the rural youths were provided with the Hands-on-Training-cum-Demonstrations of farm mechanization and necessary adjustments to be done during the operation. Vocational training programme was conducted by College with a goal that the trainees became aware and provided knowledge and skills on operation of farm machines. Furthermore, in present investigation training programme was evaluated in order to know the usefulness and effectiveness of training as well as to ascertain the enhancement of knowledge level among the participants. Evaluation helps to find out whether training programmes meet their goals and objectives and the results of training evaluation will further used to improve training programmes.

## Methodology

College of Agriculture and Research Station, Marra (Patan), Durg is one of the constituent colleges under IGKV, Raipur. Since its inception, college has been working for the socio-economic development of farmers through technology transfer and vocational training programmes on agriculture. Hence, college has organized three consecutive training programmes of 20 days each, which was funded by Chhattisgarh Beej Vikas Nigam Ltd., Raipur (C.G.). In this programme, training on "Skill development on operation and maintenance of farm machines" was imparted to 30 rural youths of Durg District of Chhattisgarh. The training programme was participatory in nature, included, lectures and group discussions as well as operation of machines & implements and field visits. Each participant was expected to contribute their ideas and take part in every activity like operation of farm implements and farm tractors. Video lecture were given by experts as per training schedule. In addition to this, experiential learning methodology was effectively incorporated in the programme for making the thoroughly skilled to the rural youths in operation and maintenance of farm machines. So that they may be capable for opening their own manufacturing, repair and maintenance workshops in nearby village. A learner-centred approach was followed to orient the participants on implementation of farm machineries in the small farms.

## Key focus areas of the training module

1. An exposure was provided to trainees for ergonomics and safety in agriculture machinery and manufacturing technology of simple agricultural implements, testing of agricultural equipment, entrepreneurship development through agribusiness and custom hiring of agricultural machineries for small farms.
2. About 40 per cent time was devoted in lecture cum interaction sessions, 60 per cent time on hands-on practices cum field demonstrations of selected tools and implements.

In order to evaluate the training programme, a well-designed schedule was prepared and explained among the trainees. They were asked to fill up the schedule without prejudice or preconceived notion. The schedule was filled twice during the training, *i.e.* at the beginning and after completion of training programme. Thirty three questions were framed covering training topics *viz.* need and importance of tractor and machineries in agriculture, implements used in agriculture, operation and maintenance of farm implements & machineries, initial repair and maintenance of tractor and machines and implements used for horticultural crop production. The responses of trainees were recorded on a four point continuum scale *i.e.* complete, medium, partial and nil giving weightage as 3, 2, 1 and 0, respectively. Further, an index was worked out to measure the extent of knowledge with the following equation:

$$KI = \frac{O}{S} \times 100$$

KI = Knowledge index of respondents (Trainees)

O = Total score obtained by respondents (Trainees)

S = Total obtainable score

The performance of training was worked out and presented in percentage on the basis of responses of trainees regarding utility and effectiveness of training programme. Further, the performance was categorized as Excellent (75% and above), Good (50.1 to 74.9%), Average (25.1 to 49.9) or Unsatisfactory (25% and below). The utility and effectiveness of training programme was worked out by using following formulae (Dhama and Bhatnagar, 1995) [3]:

**Training Utility**

$$TU = \frac{Te}{Ta} \times 100$$

TU= Training utility

Te = Number of trainees stated training was useful

Ta = Total number of trainees

**Training Effectiveness**

$$TE = \left\{ \left( \frac{Tx}{Ts} \times 100 \right) + \left( \frac{Te}{Ta} \times 100 \right) \right\} / 2$$

TE = Training effectiveness

Tx = Number of trainees stated training was effective

Te = Number of trainees stated training was useful

Ts = Number of rural youths called for training

Ta = Total number of trainees

**Result and Discussion**

**Training performance**

In this study, performance of the training programme was measured by operationalizing two indexes namely training utility and training effectiveness. The utility and effectiveness of training programme depends on knowledge,

communication skills and expression abilities of trainer along with learning attitude of trainees. A total of 40 rural youths from various villages of three blocks of Durg district were called for training, in which 30 rural youths were participated in training programme. Among the participants including all three training programmes, 25 trainees stated that training was useful for them, whereas, 24 trainees stated it was effective. In this way, 83.33 per cent of the participants said that training was useful for them, therefore, training utility rated as ‘Excellent’. Similarly, the training effectiveness worked out to be 71.67 per cent, which was found to be ‘Good’. Above findings are in line with the findings as reported by Ahire *et al.* (2020) [1].

**Purpose of trainees for participation in training programme**

The findings on various purposes mentioned by trainees for participation in training programme are presented in Table 1, which are based on multiple responses of the trainees. The results in Table 1 indicates that majority of the trainees (60.00%) participated in training programme to develop skill in operation and maintenance of farm implements and machineries with Rank I. Whereas, 53.33 per cent of the trainees wanted to learn about proper functioning of farm implements and machineries with Rank II followed by 50.00, 46.67, 40.00 and 16.67 per cent of them joined the training course to develop skill for proper operation of farm implements and machineries in own field, to work as tractor driver, farm implement and machineries operator in hired basis, to open repairing shop of farm implements and machineries as source of income generation and to establish agribusiness by opening custom hiring centre of farm implement and machineries with Rank III, IV, V and VI, respectively. Similar results were also reported by Kavitha (2019) [5]. It is evident from the findings that majority of the rural youths joined the training course to develop skill in operation and maintenance of farm implements and machineries followed by to learn about proper functioning of farm implements and machineries.

**Table 1:** Distribution of the respondents according to purpose mentioned by them for participation in training programme

Reasons for participation in training programme	Rural youths (n=30)		Rank
	Frequency	Percentage	
To develop skill in operation and maintenance of farm implements and machineries	18	60.00	I
Proper operation of farm implements and machineries in own field	15	50.00	III
To learn about proper functioning of farm implements and machineries	16	53.33	II
To open repairing shop of farm implements and machineries as source of income generation	12	40.00	V
To work as tractor driver, farm implement and machineries operator in hired basis	14	46.67	IV
To establish agribusiness by opening custom hiring centre of farm implement and machineries	05	16.67	VI

Based on multiple responses

**Knowledge about farm machineries & implements and its operation & maintenance**

Familiarity with objects or situation and awareness of facts or as practical skills may be referred as knowledge of an individual. The status of knowledge of rural youths on various aspects of operation & maintenance of farm machineries & implements during pre and post training phase is given in Table 2. Based on the pre-training evaluation, majority of the rural youths had either no or partial knowledge, whereas, few of them had medium level of knowledge and very little number of rural youths belonged to complete knowledge category on various aspects considered for training course before training programme. The findings presented in Table 2

indicates that majority of the trainees about 23.33 to 63.33 and 23.33 to 46.67 per cent had nil and partial knowledge regarding need and importance of tractor and machineries in agriculture, whereas, 26.67 to 53.33 and 20.00 to 76.67 per cent of the rural youths had no any knowledge regarding different implements used in agriculture and operation & maintenance of farm implements & machineries before training followed by 33.33 to 40.00 and 26.67 to 46.67 per cent of them were having partial knowledge regarding initial repair & maintenance of tractor and machines & implements used for horticultural crop production. However, 33.33 to 53.33, 23.33 to 56.67 and 16.67 to 53.33 per cent of the rural youths were having complete knowledge regarding need &

importance of tractor & machineries in agriculture, different implements used in agriculture and operation & maintenance of farm implements & machineries after receiving training. The data presented in Table 2 also indicates that 16.67 to 26.67 and 33.33 to 53.33 of the rural youths had no knowledge regarding initial repair & maintenance of tractor and machines & implements used for horticultural crop

production, which was converted as complete knowledge among 33.33 to 53.33 and 30.33 to 40.00 per cent of them as well as medium knowledge among 33.33 to 40.00 and 33.33 to 43.33 of the rural youths after receiving training. The similar findings were reported by Rachna *et al.* (2013)<sup>[7]</sup> and Nagaraj *et al.* (2017)<sup>[6]</sup>.

**Table 2:** Distribution of the respondents according to their knowledge about farm machineries & implements and its operation & maintenance

Particulars	Pre Training (n=30)				Post- Training (n=30)			
	Complete	Medium	Partial	Nil	Complete	Medium	Partial	Nil
	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
<b>Regarding need &amp; importance of tractor &amp; machineries in agriculture</b>								
Requirement of tractor for improved agriculture	02 (6.67)	11 (36.67)	10 (33.33)	07 (23.33)	16 (53.33)	09 (30.00)	05 (16.67)	00 (0.00)
Use of tractor for soil preparation	03 (10.00)	09 (30.00)	08 (26.67)	10 (33.33)	14 (46.67)	10 (33.33)	06 (20.00)	00 (0.00)
Use of tractor for various cultural operations	00 (0.00)	04 (13.33)	07 (23.33)	19 (63.33)	13 (43.33)	12 (40.00)	04 (13.33)	01 (3.33)
Information about farm machineries used in agriculture	00 (0.00)	05 (16.67)	13 (43.33)	12 (40.00)	11 (36.67)	12 (40.00)	07 (23.33)	00 (0.00)
Information about farm implements used in agriculture	01 (3.33)	06 (20.00)	12 (40.00)	11 (36.67)	10 (33.33)	14 (46.67)	06 (20.00)	00 (0.00)
Availability of farm implements and machineries in hired basis	02 (6.67)	07 (23.33)	11 (36.67)	10 (33.33)	15 (50.00)	08 (26.67)	07 (23.33)	00 (0.00)
Setting up of custom hiring centres as an enterprise	00 (0.00)	03 (10.00)	14 (46.67)	13 (43.33)	11 (36.67)	09 (30.00)	08 (26.67)	02 (6.67)
<b>Regarding different implements used in agriculture</b>								
Tractor drawn cultivator	08 (26.67)	07 (23.33)	05 (16.67)	10 (33.33)	17 (56.67)	10 (33.33)	03 (10.00)	00 (0.00)
Tractor drawn mould board plough	07 (23.33)	08 (26.67)	07 (23.33)	08 (26.67)	15 (50.00)	11 (36.67)	04 (13.33)	00 (0.00)
Information about combine harvester	00 (0.00)	06 (20.00)	08 (26.67)	16 (53.33)	08 (26.67)	12 (40.00)	07 (23.33)	03 (10.00)
Machines used for levelling and bunding	00 (0.00)	05 (16.67)	10 (33.33)	15 (50.00)	12 (40.00)	07 (23.33)	06 (20.00)	05 (16.67)
Various seed sowing implements	00 (0.00)	07 (23.33)	09 (30.00)	14 (46.67)	09 (30.00)	13 (43.33)	08 (26.67)	00 (0.00)
Various rice planting implements and machines	00 (0.00)	06 (20.00)	11 (36.67)	13 (43.33)	10 (33.33)	12 (40.00)	06 (20.00)	02 (6.67)
Various weed management implements	00 (0.00)	05 (16.67)	10 (33.33)	15 (50.00)	08 (26.67)	12 (40.00)	10 (33.33)	00 (0.00)
Implements used for plant protection	01 (3.33)	06 (20.00)	09 (30.00)	14 (46.67)	07 (23.33)	11 (36.67)	12 (40.00)	00 (0.00)
<b>Regarding operation &amp; maintenance of farm implements &amp; machineries</b>								
Working methods, operation and maintenance of thresher	02 (6.67)	06 (20.00)	08 (26.67)	14 (46.67)	15 (50.00)	10 (33.33)	04 (13.33)	01 (3.33)
Working methods, operation and maintenance of tractor dozer	00 (0.00)	04 (13.33)	08 (26.67)	18 (60.00)	13 (43.33)	11 (36.67)	06 (20.00)	00 (0.00)
Operation of laser guided land leveller	00 (0.00)	02 (6.67)	05 (16.67)	23 (76.67)	05 (16.67)	09 (30.00)	12 (40.00)	04 (13.33)
Operation and maintenance of post hole digger	01 (3.33)	05 (16.67)	11 (36.67)	13 (43.33)	10 (33.33)	12 (40.00)	08 (26.67)	00 (0.00)
Working method and operation of power tiller	03 (10.00)	11 (36.67)	10 (33.33)	06 (20.00)	16 (53.33)	08 (26.67)	06 (20.00)	00 (0.00)
Working method and operation of power weeder	01 (3.33)	06 (20.00)	12 (40.00)	11 (36.67)	10 (33.33)	14 (46.67)	06 (20.00)	00 (0.00)
Working method and operation of disc plough	00 (0.00)	03 (10.00)	14 (46.67)	13 (43.33)	11 (36.67)	09 (30.00)	08 (26.67)	02 (6.67)
Operation and maintenance of seed cum fertilizer drill	02 (6.67)	08 (26.67)	09 (30.00)	11 (36.67)	14 (46.67)	11 (36.67)	05 (16.67)	00 (0.00)
Operation and maintenance of irrigation machines/equipment's	00 (0.00)	05 (16.67)	07 (23.33)	18 (60.00)	12 (40.00)	10 (33.33)	06 (20.00)	02 (6.67)
Treatment machines their operation and maintenance	00 (0.00)	04 (13.33)	07 (23.33)	19 (63.33)	09 (30.00)	12 (40.00)	08 (26.67)	01 (3.33)
<b>Regarding initial repair &amp; maintenance of tractor</b>								
Maintenance of tractor on daily, weekly and time to time basis	04 (13.33)	10 (33.33)	11 (36.67)	05 (16.67)	16 (53.33)	10 (33.33)	04 (13.33)	00 (0.00)
Maintenance of tractor oil filter, diesel filter	03	07	12	08	10	12	06	02

and silencer	(10.00)	(23.33)	(40.00)	(26.67)	(33.33)	(40.00)	(20.00)	(6.67)
Timely servicing of tractor	05 (16.67)	08 (26.67)	10 (33.33)	07 (23.33)	14 (46.67)	11 (36.67)	05 (16.67)	00 (0.00)
<b>Regarding machines &amp; implements used for horticultural crop production</b>								
Machines used for fruit and vegetable production	01 (3.33)	05 (16.67)	08 (26.67)	16 (53.33)	09 (30.00)	13 (43.33)	07 (23.33)	01 (3.33)
Types of threshers used for horticultural crops	00 (0.00)	07 (23.33)	10 (33.33)	13 (43.33)	12 (40.00)	10 (33.33)	06 (20.00)	02 (6.67)
Harvesting implements for horticultural crops	00 (0.00)	06 (20.00)	09 (30.00)	15 (50.00)	11 (36.67)	12 (40.00)	07 (23.33)	00 (0.00)
Weeding implements used in horticultural crops	01 (3.33)	05 (16.67)	14 (46.67)	10 (33.33)	10 (33.33)	11 (36.67)	08 (26.67)	01 (3.33)
Insecticide, fungicide and fertilizer application machines	01 (3.33)	06 (20.00)	09 (30.00)	14 (46.67)	12 (40.00)	12 (40.00)	06 (20.00)	00 (0.00)

**Extent of knowledge regarding farm implements and machineries**

The extent of knowledge among the rural youths before training and after training were computed by dividing whole training course in three sub-components viz. 1. Importance of tractor, implements and machineries in agriculture, 2. Implements used in agriculture, its working method and operation and 3. Initial repairing and maintenance of farm implements and machineries, which is presented in Table 3. In pre-training stage, majority of the trainees about 73.33, 66.67 and 56.67 per cent were having low level of knowledge regarding Implements used in agriculture, its working method and operation, Importance of tractor, implements and machineries in agriculture and initial repairing and maintenance of farm implements and machineries,

respectively. However, the extent of knowledge among participants after receiving training was more satisfactory in all three aspects of training course. Sufficient gain in knowledge was recorded among rural youths for all the sub-components of training course regarding farm implements and machineries. In post-training stage, it was recorded that 53.34, 43.33 and 40.00 per cent of the participants had high level of knowledge regarding Importance of tractor, implements and machineries in agriculture, Initial repairing and maintenance of farm implements and machineries and Implements used in agriculture, its working method and operation, respectively. Thus, it can be inferred that imparting training to the rural youths had increased the knowledge regarding all the sub-components of training course.

**Table 3:** Distribution of respondents according to their extent of knowledge regarding farm implements and machineries (n=30)

Extent of Knowledge	Importance of tractor, implements and machineries in agriculture				Implements used in agriculture, its working method and operation				Initial repairing and maintenance of farm implements and machineries			
	Pre-Training		Post-Training		Pre-Training		Post-Training		Pre-Training		Post-Training	
	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%	Freq.	%
Low	20	66.67	01	3.33	22	73.33	02	6.67	17	56.67	03	10.00
Medium	07	23.33	13	43.33	06	20.00	16	53.33	09	30.00	14	46.67
High	03	10.00	16	53.34	02	6.67	12	40.00	04	13.33	13	43.33

**Impact of training programme**

The impact of training on knowledge level of rural youths regarding operation and maintenance of farm machines was computed by combining the knowledge scores of trainees on all three sub-components of training course viz. 1. Importance of tractor, implements and machineries in agriculture, 2. Implements used in agriculture, its working method and operation and 3. Initial repairing and maintenance of farm implements and machineries. The findings on overall extent of knowledge on operation and maintenance of farm machines among rural youths are presented in Table 4. It reveals that

majority of the trainees (63.33%) had low level of overall knowledge regarding operation and maintenance of farm machines before training programme followed by 26.67 and 10.00 per cent of them were having medium and low level of overall knowledge, respectively. However, it was increased after training programme, as 46.67 per cent of the trainees were belonged to medium level of overall knowledge category in post-training face, whereas, 40.00 and 13.33 per cent of them had high and low level of overall knowledge after training programme. The findings were similar as reported by Kaur (2016)<sup>[4]</sup> and Ahire *et al.* (2020)<sup>[1]</sup>.

**Table 4:** Distribution of respondents according to their overall extent of knowledge regarding farm implements and machineries

Extent of knowledge	Pre-Training (n=30)		Post-Training (n=30)	
Low (Up to 33%)	19	63.33	04	13.33
Medium (33.1 to 66%)	08	26.67	14	46.67
High (Above 66%)	03	10.00	12	40.00

**Conclusion**

The agricultural land size has been decreasing, but the food demand is increasing day by day as population rapidly increasing in our country. Natural and man-made factors have further hit food productivity. Hence, mechanization is a panacea to most of the adversity that afflict agriculture. Herein, the role of mechanization to carry out agriculture operations to maximize efficiency and yield comes into play.

Agriculture production cannot be increased without the optimal use of machines and farm implements. The developing countries like India lag behind in farm productivity owing to improper use of machines and implements in various agricultural operations. Therefore, farmers must be encouraged to use machines in the field to increase efficiency in agricultural operation to produce of their products. The use of farm machinery, unfortunately, is

still under consideration in most parts of our country, including in state like Chhattisgarh. It is the right time that both the government and the private sectors should put their hand together to push the country towards mechanized farming.

### References

1. Ahire LM, Venkatesan P, Sontakki BS, Vijender Reddy P. Training utility and training effectiveness of theme specific training programmes. *International Journal of Current Research*. 2020;12(06):12136-12141.
2. Ahire LM. Profile of Trainers and their Training Management Abilities. *Indian Journal of Social Research*. 2011;52(2):131-138.
3. Dhama OP, Bhatnagar OP. A text book of education and communication for development. Second edition, Oxford & IBH Publication Co. Pvt. Ltd., New Delhi; c1995.
4. Kaur K. Impact of training course on knowledge gain of mushroom trainees. *J Krishi Vigyan*. 2016;4(2):54-57.
5. Kavitha K, Latha R, Nazreen HS, Thirukumaran K. Impact of Skill Development Training on Mushroom Cultivation in Kanyakumari District of Tamil Nadu. *J Krishi Vigyan*. 2019;7(2):144-148.
6. Nagaraj R, Arun KP, Hanumanthaswamy BC, Jyoti MR. Mushroom Production for Self Employment-An Impact Study. *Int. J Curr. Microbiol. App. Sci*. 2017;6(9):2991-2997.
7. Rachna S, Goel R, Sodhi GPS. Evaluation of vocational training programmes organized on mushroom farming by KrishiVigyan Kendra Patiala. *J Krishi Vigyan*. 2013;2(1):26-29.
8. Rakhra M, Sanober S, Quadri NN, Verma N, Ray S. Implementing machine learning for smart farming to forecast farmers' interest in hiring equipment. *Journal of Food Quality*, 2022.
9. Rasanjali WMC, Wimalachandra RDMKK, Sivashankar P, Malkanthi P. Impact of agricultural training on farmers' technological knowledge and crop production in Bandarawela Agricultural Zone. *Applied Economics and Business*. 2021;5(1):37-50.
10. Venkattakumar R, Sontakki BS. Training Transfer in Agricultural Research Organizations. *Indian Research Journal of Extension Education*. 2014;14(1):56-63.