

Farmers' Perceptions towards Applications of Modern Farming Tools used in Vegetable Production at Solan District, Himachal Pradesh-India

Pankaj Thakur*, Piyush Mehta, Krishan Kumar and Gaurav

Department of Business Management, Dr. Y. S. Parmar University of Horticulture and Forestry,
Nauni-Solan, Himachal Pradesh (173230), India

*Corresponding Author E-mail: pankajthakur.js@gmail.com

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ABSTRACT

Increase in vegetable productivity has been achieved in several parts of the country mainly by modernizing agriculture. In this context application of modern farming tools play significant role. The concerned study has analyzed the perception of farmers' towards application of modern farming tools used in vegetable production and study the effect of modern farming tools on farmers' income. The scientific orientation inclined by farming community that new methods of farming give better results to a farmer than old tools. The key economic motivation that enforced the farming community were that farmer should work towards higher yield and economic profits. The key constraints and problems emerged during the study mainly circumvented around the lack of sufficient incentives provided by the government and the imparting of adequate training for the use of farm tools.

Key words: Perception, Modern farming tools, Vegetable Production.

INTRODUCTION

Agriculture has an important role in economic development of an agrarian economy like that of India. It is the backbone of Indian economy. In the last four decades, progress in agriculture sector is due to modernization which includes the use of improved high yielding variety of seeds, better techniques including modern farming tools involves through agricultural research⁶. Vegetables play a major role in Indian agriculture by providing food, nutritional and economic security and more importantly, producing higher returns per unit area and time³. Increase in vegetable productivity has been achieved in several parts

of the country mainly by modernizing agriculture¹. In this context application of modern farming tools play significant role. Modern farming tools such as tractor, power tillers, power sprayer, micro-irrigation system and poly house enable a farmers' to save time and hence grow an extra crop or to devote more area to existing crops⁵. Farmers with small holdings utilize many improved farm equipment through custom hiring to ensure timeliness of farming operations. The present trend in agricultural modernization is for high capacity machines through custom hiring and for contractual field operations².

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The use of modern agriculture and techniques facilitates in saving labour, time and cost. It also enhances the agriculture production. Commercial farming is practised in most of the districts of Himachal Pradesh. Cash crops are increasingly adopted by the farming community supported by market infrastructure and other commercial activities. This has led to increased demand for labour which in fact is met from outside labour from adjoining states and country. This labour supply is not sufficient and reliable so the farmers have the need for farming tools. Keeping in view the investigation was carried out on Farmers' Perceptions towards Applications of Modern Farming Tools used in Vegetable Production at Solan District, Himachal Pradesh-India.

MATERIAL AND METHODS

The descriptive research design was adopted for the concerned research study. A Multi Stage Random Sampling design technique was used for the present study. The selection of the research area in the Solan District of Himachal Pradesh was made purposively. In the present study the total number of respondents for the collection of primary data in Solan district was 140 reported from 7 panchayats. The primary data for the present study was collected with the help of questionnaire. The secondary data for the present study was collected from journals, magazines, research articles, newspapers, and website. Simple mathematical and statistical tools, including Arithmetic mean, Standard Deviation, Coefficient of Variation and Total Weightage Score method were used for satisfying the objectives with a view of keeping the analysis simple and easy

to understand. The arithmetic mean has been applied to study the opinion of the sample respondents on 5-point scale for different statements. Total weightage score method in which we have to provide different Weights according to their importance and multiply the values of the items (X) by the weights (W) as provided. Then add all the values to obtain the total weights of all the items and the one which get highest score will get the first rank and the one which get the lowest score will get the lowest rank⁷. Likert scaling (bipolar scaling method), measuring dual inclined responses in terms of positive or negative response to a statement⁸. The concerned research paper was initiated with the key objectives to study the awareness and satisfaction levels of farmers towards applications of modern farming tools used in vegetable production and to study the effect of applications of modern farming tools on farmers' income.

RESULTS AND DISCUSSION

3.1: Age status of the respondents

Table 3.1 reflects the age wise classification of the respondents. It was found from the data that majority of the respondents i.e. 44.3 per cent belong to the category of 31-50 years, whereas 29.3 per cent were from the age group of above 50 years while 21.4 per cent were under the age group of 20-30 years and only 5 per cent were under the age group of less than 19 years. Thus, it can be inferred that maximum number of respondents were from age group 31-50 years involve in vegetable production.

Table 3.1 Age wise distribution of the respondents

Age status (Years)	No. of respondents	Percentage
Less than 19 years	07	5
20-30 years	41	29.3
31-50 years	62	44.3
Above 50 years	30	21.4
Total	140	100

3.2 Educational qualification wise distribution of the respondents

It is clearly indicated from the tabulated illustration 3.2 that largely sample respondents were study up to matric level 45.7 per cent

followed by 20 per cent senior secondary level, graduate comprised of 24.3 per cent whereas Post graduate and above were 10 per cent, Which shows that most of the farmers now a days are educated.

Table 3.2 Educational qualification wise distribution of the respondents

Educational qualification	No. of respondents	Percentage
Matriculation	64	45.7
Senior secondary	28	20.0
Graduate	34	24.3
Post Graduate	14	10.0
Total	140	100

3.3 Income wise distribution of respondents

It can be drawn from the tabulated illustration 3.3 since largely the sample respondents had the income distribution (Rs.lakhs) from Rs. 2 lakh-3lakh was 61.4 per cent, followed by Rs.1

lakh was 24.3 percent and More than Rs. 5 lakh was 8.6 percent whereas income status of Rs. 4 lakh-5lakh was 5.7 per cent, it has been noted that sample respondents have a moderate per annum income from Vegetable production.

Table 3.3 Income wise distribution of respondents

Income (Rs. Lakhs/annum)	No. of respondents	Percentage
Rs.1 lakh	34	24.3
Rs.2 lakh – Rs.3 lakh	86	61.4
Rs.4 lakh – Rs.5 lakh	8	5.7
More than Rs.5 lakh	12	8.6
Total	140	100

3.4 Total Land status of respondents

It is observed from the table 3.4 that largely sample respondents farmable land holding status (hectare) from 0.41-1 hectare was 56.4 per cent followed by 1-2 hectare land holding was 21.2 per cent, whereas land holding less than 0.41 hectare was 17.1 percent and the

least per cent is 5 per cent with land holding more than 2 hectare. It has been noted that that most of the respondents were 0.41-1 hectare of land holding. The data above clearly shows that most of the respondents are marginal farmers in the study area.

Table 3.4 Total Land status of respondents

Land status	No. of respondents	Percentage
Less than 0.41 hectare	24	17.1
0.41-1 hectare	79	56.4
1-2 hectare	30	21.5
More than 2 hectares	7	5
Total	140	100

3.5 Ploughing method in the field

It can be concluded from the table 3.5 that largely sample respondents were used power tiller for ploughing comprised of 77.1 per cent, whereas 10 per cent of respondents were used plough followed by 10 per cent of respondents

were used tractor and only 2.9 per cent respondents used rotary tractor. The data above clearly shows that largely respondents involve in vegetable farming used tractor for ploughing.

Table 3.5 Ploughing method in the field

Ploughing method	No. of respondents	Percentage
Plough	14	10.0
Power Tiller	108	77.1
Rotary Tilller	4	2.9
Tractor	14	10.0
Total	140	100

3.6 Application status of Modern Farm Tools used in Vegetable production

It is indicated from the table 3.6 that largely respondents know about modern farm tools that is 55.7 per cent whereas 44.3 per cent respondents says they do not apply modern farm tools. Therefore, it may have been stated that there has been a higher degree of

awareness among the vegetable cultivators for modern farm tool in general. It implies that respondents have knowledge about how to keep the agriculture fields and produce healthy. The awareness level could further be enhanced through awareness campaigns, farmer trainings and introduction of modern farm tools manuals.

Table 3.6 Applications status of Modern Farm Tools used in Vegetable production

Modern Farm tools usage	No. of respondents	Percentage
Yes	78	55.7
No	62	44.3
Total	140	100

3.7 Source of information about Modern Farm Tools

It is clearly indicated from the tabulated illustration 3.7 that largely sample respondents 41.4 per cent were get the modern farm tools information from fellow farmers, followed by 32.9 per cent respondents were get modern farm tools information from extension

functionaries of state government whereas 15.7 per cent respondents were get information from agricultural-input shops followed by 5.1 per cent respondents were get the information from workshop/seminars/training and the 4 per cent respondents were get the modern farm tools information from relative and friends.

Table 3.7 Source of information about Modern Farm Tools

Source of information	No. of respondents	Percentage
Agricultural-input shops	22	15.7
Extension Functionaries of state department	46	32.9
Fellow Farmers	58	41.4
Relatives and Friends	6	4.3
Workshop/Seminars/Training	8	5.7
Total	140	100

3.8 Farmers' Preference of modern tool equipment's used in Vegetable production

In reference to evaluate the implements that are mostly used, it was analysed in the following illustration 3.8 , it indicated largely the sample respondents were using power tillers- for the purpose of crop cultivation (Mean 1.66) closely followed by poly house (Mean 1.60), and also micro irrigation system (Mean 1.59) since it indicates that largely power tillers is commonly used vis-à-vis poly house are also being used substantially, but on the contrary standard deviation being analysed

in table 3.8 indicates that the common uniformity of responses were noted in tractor Deviation 0.233). It was also indicated by the coefficient of variation (cov) analysis that Tractors (Coefficient of variation 21.98 per cent) are being commonly preferred modern tool among the sample group farmers in the given research area. This finding was found to be similar with the study of Bihari and Singh⁴. Thus, it may have been stated that largely tractor for the purpose of land preparation and crop cultivation are being largely used by the farming respondents.

Table 3.8 Farmers' Preference of modern tool equipment's used in Vegetable production

Tools	Mean	Standard Deviation	Coefficient of Variation %
Tractor- (for the purpose of land preparation)	1.06	0.233	21.98
Power Tillers- (for the purpose of crop cultivation)	1.66	0.476	28.67
Power Sprayer- (for the purpose of irrigation)	1.27	0.446	35.11
Micro Irrigation System- (for the purpose of specific irrigation)	1.59	0.494	31.06
Poly House- (for the purpose of specific cultivation)	1.60	0.492	30.75

3.9 Satisfaction with the applications of modern tools used in vegetable production

It can be drawn from the above tabulated illustration 3.9 that the respondents satisfaction level with the use of modern farm tools is 84.3 per cent, whereas the respondents who are not

satisfied with the use of modern farm tools is 15.7 per cent hence the data based on response of the farming community is that most of the farmers are satisfied with the application of modern farming tools used in vegetable production.

Table 3.9 Satisfaction with the applications of modern tools used in vegetable production

Satisfaction Status	No. of respondents	Percentage
Yes	118	84.3
No	22	15.7
Total	140	100

3.10 Farmers' responses showing the perception on application of modern farming tools used in vegetable production

In order to understand the farmers' perception on application of modern farming tools used in vegetable production, Table 3.10 has demonstrated an analytical view of farmers'

perspectives. Further a total weightage score analysis have been taken up followed by rank, mean and standard deviation. It can be observed that the respondents were agreed with the aspect of increase in farming annual income placed at Ist rank with the highest total weightage score 596 (mean 1.74, standard

deviation 0.650) followed by improvement in crop productivity IInd rank with the application of modern farming tools used in vegetable production. Moreover, it was noted that all the respondents hold a moderate satisfaction level among all the various key components of opinion on the perception. On the contrary the respondents were not satisfied with the cost of modern farm tools placed at XIth rank with lowest total weightage score 376 (mean 3.31, standard deviation 1.264) followed by Incentives provided by the govt. like subsidies, loan at low rate of interest Xth rank and Training provided IXth rank. These results are in conformity with the findings of Rasouli *et*

*al.*¹⁰, and Mada and Mahai⁹. However, standard deviation being analysed on the table indicates that the common uniformity of responses were noted in increase in the farming income (Standard Deviation 0.650) It was also indicated by the coefficient of variation analysis that Information regarding availability of modern tools (coefficient of variation 23.59 per cent) are being commonly preferred opinion regarding the agriculture modern tool application among the sample group farmers in the given research area. Thus, it may have been state that largely increases in the farming annual income satisfied by the activities extended by farm tools.

Table 3.10 Farmers' responses showing the perception on application of modern farming tools used in vegetable production

Statements	HS	MS	NSND	M	HD	Total Weighted Score	Rank	Mean	Standard Deviation	Coefficient of Variation %
	5	4	3	2	1					
Information regarding availability of modern implements, seeds, fertilizer and tools in your area	0	42	86	8	4	446	VIII	2.81	0.663	23.59
Incentives provided by the govt. like subsidies, loan at low rate of interest etc.	20	28	28	40	24	400	X	3.14	1.317	41.94
Reduction in human efforts	18	40	70	4	8	516	VII	2.60	0.951	36.57
Saving time	46	64	30	0	0	576	IV	1.89	0.730	38.62
Saving labour	46	64	30	0	0	576	V	1.89	0.730	38.62
Reduction in overall cost of cultivation	46	26	60	8	0	530	VI	2.21	0.973	44.02
Cost of modern implements and tools	10	34	30	34	32	376	XI	3.31	1.264	38.18
Training provided for the use of modern farm tools	26	34	12	40	28	410	IX	3.07	1.443	47.00
Improvement in crop productivity	58	58	24	0	0	594	II	1.76	0.728	41.36
Increase in the farming annual income	52	72	16	0	0	596	I	1.74	0.650	37.35
Increase in the social status	56	58	26	0	0	590	III	1.79	0.737	41.17

$$\text{Total Weighted Score: } 596 = 52*5 + 72*4 + 16*3 + 0*2 + 0*1$$

Suggestions

Government should start programs for increased adoption of modern farm tools by farming community in vegetable production. Certain incentive based schemes may be started along with provision of training

programme for the potential users. Awareness camps must be arranged for various uses of modern farming tools and its potential benefits. Subsidies may also be provided for increased adoption by the farmers.

CONCLUSION

Findings revealed that the level of awareness towards application of Modern Farming Tools used in Vegetable Production was moderate. The scientific orientation inclined by farming community that new methods of farming give better results to a farmer than old tools. The key economic motivation that enforced the farming community were that farmer should work towards higher yield and economic profits. The key constraints and problems emerged during the study mainly circumvented around the lack of sufficient incentives provided by the government and the imparting of adequate training for the use of farm tools.

REFERENCES

1. Atkociuniene, V. and Zemeckis, R., Characteristics of Modern Farm. *Research for Rural Development* **2**: 230-236 (2015).
2. Alam, A. and Singh, G., *Status and Future Needs of Farm Mechanization Agro-Processing in India*. Central Institute of Agricultural Engineering Bhopal. Pp:70-78 (2004).
3. Anonymous. Statistical Abstract of Himachal Pradesh 2016-17, Department of Economics and Statistics (Government of Himachal Pradesh). www.admis.hp.nic.in (12:20 PM. 15th February 2018). (2018).
4. Bihari, B. and Singh, U., Adoption of Improved Agriculture Technology among Tribal Farmers Meghalaya's. *Indian Journal of Extension Education* **41**: 76-69 (2015).
5. Sekhar. and Bhatt., Effect of Farm Mechanisation on Agriculture Growth and Comparative Economics of Labour and Machine in India. *Journal of Agriculture Science and Technology*. **4(4)**: 78-79 (2014).
6. Thakur, P., Mehta, P., Agarwal, V., and Solanki, S. P. S., Assessment of the Market Potential of Granular Insecticide on Paddy Crop in Ambala Region of India. Book of Abstracts. International Conference on Agribusiness in Developing and Emerging Economies. TERI School of Advanced Studies, New Delhi India. Pp: 36-37 (2018).
7. Kumar, R., Research Methodology. British Library Publications, New Delhi, India. Pp: 37-45 (2014).
8. Kumar, R. C., Research Methodology. APH Publishing Corporation, New Delhi, India. Pp: 23-29 (2008).
9. Mada, D.A. and Sunday, M., The role of agriculture Mechanisation in Economic Development for Small Scale Farms in Adamawa state. *The International Journal of Engineering and Science*. **2(1)**: 91-96 (2013).
10. Rasouli, F., Sadighi, H. and Minaei, S., Factors affecting Agriculture Mechanisation- A case study on Sunflower Seed Farm in Iran. *Journal of Agriculture science and technology*. **11(1)**: 39-48 (2009).