Adoption Behaviour of Commercial Potato Growers in District Ghaziabad (Uttar Pradesh)

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ABSTRACT

India is the second largest producer of vegetable in world next only to China but India is lagging far behind with nearly one third less productivity than china. Currently per capita consumption of vegetable is 175g per capita per day, which is far below recommended dose of 300g. It is estimated that by 2010 country's vegetable demand would be around 135 million tonnes. There is an urgent need to increase the productivity of vegetable in order to provide nutritional security to increasing population of India. Potato along with brinjal, tomato, cabbage and cauliflower account for nearly 60 percent of vegetable production in India. Uttar Pradesh is second largest producer of vegetable after West Bengal. Ghaziabad is basically an industrial city of Uttar Pradesh. It has a great potential for commercial vegetable cultivation due to its proximity to National Capital Territory of Delhi, since it provides an international market for vegetables. Land holding in India is shrinking day by day due to fast urbanization, rapid industrialization and conversion of joint family into nuclear family. Commercial cultivation of vegetable is highly remunerative in such situation since it provides higher yield/unit area and high economic return in short time. Keeping the above scenario in mind, the study was carried out in eight blocks of district Ghaziabad. In this study adoption level refers to the level of adoption of recommended cultivation practices of potato by the respondents. Fifteen recommended practices included in the package of practices in vegetable cultivation were used for measuring this adoption. The study concluded that about 82 percent of the vegetable growers had low or medium adoption of commercial potato cultivation practices. It means medium adopters were more energetic, knowledgeable, dynamic and having more interest in adopting modern vegetable technologies.

Key words: *Nutritional security; Vegetable production; Urbanization; Industrialization; Commercial cultivation;*

*A*gricultural Development programme in India has been given prime consideration in the National Plans. In the recent past the introduction of hi-tech vegetable production technologies seems to have added new dimensions in Indian vegetable farming system particularly for rural vegetable growers who command limited land resource. Vegetable cultivation has great potentiality and scope for improving socio-economic condition of small and marginal farmers since it provides higher yield and high economic return in short time as compared to food grains. Also vegetable production programmes is reflected in the creation of additional man-days employment and remunerative source of income through vegetable cultivation. Commercial vegetable cultivation is not getting as popular as it should be among growers because of high input costs, lack of irrigation facilities and difficulties in their marketing and storage. It is estimated that 20-40 percent of nearly 100 million tonnes of fruits and vegetables produced annually and valued at Rs 4000-5000 crores is lost in India due to inadequate post harvest management (*Mani, 1998*).

India is the second largest producer of vegetable in world next only to China but India is lagging far behind with nearly one third less productivity than china. Currently per capita consumption of vegetable is 175g per capita per day, which is far below recommended dose of 300g (ICMR). It is estimated that by 2010 country's vegetable demand would be around 135 million tonnes. There is an urgent need to increase the productivity of vegetable in order to provide nutritional security to increasing population of India. Potato along with brinjal, tomato, cabbage and cauliflower account for nearly 60 per cent of vegetable production in India. Leading vegetable producing states are West Bengal,

UP, Bihar, Orissa and Maharashtra. Uttar Pradesh is second largest producer of vegetable after West Bengal. Ghaziabad is basically an industrial city of Uttar Pradesh. It has a great potential for commercial vegetable cultivation due to its proximity to National Capital Delhi, since it provides an international market for vegetables. Land holding in India is shrinking day by day due to fast urbanization, rapid industrialization and conversion of joint family into nuclear family. Commercial cultivation of vegetable is highly remunerative in such situation since it provides higher yield/unit area and high economic return in short time. Keeping the above scenario in mind, there is a strong need to study the adoption behaviour of potato growers in Ghaziabad district for commercial cultivation of potato.

METHODOLOGY

The study was carried out in eight blocks of district Ghaziabad namely, Bhojpur, Muradnagar, Razapur, Loni, Dhaulana, Hapur, Simbhawali and Garhmukteshwar. Out of these eight blocks only two blocks viz. Razapur and Hapur were selected purposively for the study as these blocks were having more than 60 per cent area under commercial vegetable cultivation and accounted for major amount of production of vegetables. Two villages namely, Shyampur and Simbhawali from Hapur block and two villages viz. Bhoorgarhi and Pipleda from Razapur blocks were selected randomly for the study. Thus, four villages formed the sample of the study. From each village 25 farmers, who were cultivating vegetables from last five years, were selected randomly. Thus, total sample size was 100 vegetable growing farmers

Ghaziabad district of Uttar Pradesh was selected purposively for the study as it is near to Delhi, and provides international market for commercial vegetable cultivation. Also it is one of the leading vegetables producing district of Uttar Pradesh. Considering the mentioned objective for the study, adoption of improved cultivation practices of potato was considered as dependent variable. Socio- personal-economic variables such as age, education, caste, family size, occupation, social participation, land holding, annual income; and communication variables like extension contact and mass media exposure; and psychological variables viz; risk orientation, attitude towards vegetable cultivation and knowledge level of vegetable production technology were as independent variables.

In this study adoption level refers to the level of adoption of recommended cultivation practices of Potato by the respondents. The scale developed by Sengupta (1967) was used to measure adoption behaviour of the vegetable growers in respect of the recommended cultivation practices for potato. Fifteen recommended practices included in the package of practices in vegetable cultivation were used for measuring this adoption. Against each of the practice, there were two columns representing adoption and not adoption with weightage of 1 and 0 respectively. The minimum and maximum score a respondent could get on this scale were 15 and 0 respectively.

RESULTS AND DISCUSSION

Adoption behaviour of the vegetable growers about Potato cultivation: The distribution of the vegetable growers according to their overall adoption behavior of recommended Potato cultivation practices is given in Table 1.

Table 1. Distribution of the potato growers according to their adoption behaviour in respect of improved potato cultivation practices (N = 100)

Adoption behavior	%
Low (< 26.34 percent)	24
Medium (26.34 to56.06 percent)	58
High (> 56.06 percent)	18
Total	100

The results show that 58 per cent of respondents had medium adoption behavior about scientific potato cultivation practices followed by low adoption behavior (24 %) and only 18 per cent of them had high level of adoption behavior. So it reveals that a majority of the respondents (82 %) were found to possess low to medium adoption behavior.

Package of practices wise adoption : Practice wise adoption of improved potato cultivation practices is presented in the Table 2. Total fifteen practices were taken for the present study and adoption was seen for each practices.

It was found that majority of the respondents were adopting appropriate harvesting method (76 %) and proper time of sowing (72 %). A medium level of

adoption was seen for land preparation (55 %), irrigation (49 %), method of sowing (48 %), proper time of harvesting (47 %), improved varieties (46 %) and seed rate (42 %). The practices like quantity of fertilizer application (27 %), time of application (23 %), pest management (27 %), disease management (17 %) and seed treatment (17%) were having lower level of adoption compared to other practices. The results of the study are in line with the findings given by *Rabishankar and Katteppa (1997), Kubde et. al (2000), Wadhwani & Bhogal (2001) and Tomar et.al (2003).*

Table 2. Recommended package and practice wise adoption of improved vegetable production technology of potato (N =100)

S. No.	Practices	Adopt\ion %	Non adoption %
1.	Land Preparation	55	45
2.	Improved varieties	43	57
3.	Time of Sowing	72	28
4.	Method of sowing	48	52
5.	Seed Treatment	17	83
6.	Seed rate	42	58
7.	Spacing	34	66
8.	Quantity of Fertilizer	27	73
9.	Time of fertilizer application	23	77
10.	Irrigation	49	51
11.	Intercultural operation	41	59
12.	Disease management	17	83
13.	Pest management	27	73
14.	Time of Harvesting	47	53
15.	Proper method of harvesting	76	24

Correlation between adoption of improved potato cultivation practices and selected variables of the potato growers: Correlation of adoption behaviour with socio-personal-economic, psychological and communication characteristics of vegetable growers was studied using multiple correlation co-efficient. The results indicated in Table 3 show that the adoption of commercial vegetable cultivation technology was found to be positively and significantly correlated with their education, knowledge about improved vegetable cultivation practices, income from vegetables and attitude towards vegetable growing. Age of vegetable growers was however, having negative and significant correlation with adoption at one percent level of significance. Some of the variables like caste, family size, occupation, social participation, land holding, risk orientation, extension contact, mass-media exposure were having positive correlation but were found to be non-significant.

Table 3. Correlation between adoption of commercial Potato cultivation practices and selected independent variables.

Sr. No.	Independent Variables	Correlation coefficient
1.	Age	- 0.810**
2.	Education	0.755**
3.	Caste	0.039
4.	Family size	0.023
5.	Occupation	0.144
6.	Social participation	0.190
7.	Land holding	0.180
8.	Annual income from vegetables Psychological variables	0.216*
9.	Risk orientation	0.088
10.	Knowledge about improved vegetable cultivation practices	0.743**
11.	Attitude towards vegetable growing Communication Variables	0.447**
12.	Extension contact	0.082
13.	Mass media contact	0.023

** Significant at 0.01 level of probability.
* Significant at 0.05 level of probability.

Age: The adoption of vegetable cultivation technology by the vegetable growers was negatively and significantly associated with their age. This means younger the vegetable growers, better was their adoption of vegetable technology.

Education: Education level of farmers was found to have positive and significant contribution with adoption at one percent level of significance (r = 0.755, p> .01). This implies that higher the education level more will be the adoption of improved vegetable cultivation technology.

Annual income from vegetables: It was found that annual income from vegetables was significantly correlated with adoption (r =0.216, p>.05). This clearly indicates that the vegetables growers having greater income from vegetable cultivation earned more profit

from per unit area under vegetable. In other words, those who earned more are better adopters of modern production technology and are able to harvest higher yields and better quality produce. Conversely, those who earned less from vegetable cultivation are less skilled and unequipped to use modern production technology. Consequently, they grew relatively poor crops of vegetables. This appears quite logical since vegetable is highly input intensive needing higher investment in cultivation, which higher earners can easily afford and lower earners may be unable to fully afford the expenses.

Knowledge of vegetable production technology: Knowledge of vegetable cultivation technology is certainly a variable, which could influence the profit earning from vegetable cultivation, but in the present study the knowledge level of vegetable growers included in the sample were found to be positive and significantly correlated with adoption. It is therefore, understandable that the higher the knowledge greater the adoption of vegetable cultivation technology.

Attitude towards vegetable growing : It can be observed from Table 3 that the adoption of vegetable cultivation technology of the vegetable growers was positively and highly significantly correlated with the attitude towards vegetable growing. This implies that more the favorable attitude towards vegetable growing greater will be the adoption of vegetable cultivation technology.

Multiple regression of the socio-personal-economic, psychological and communication variables on the dependent variable : The multiple regression analysis was performed to find out the extent of contribution of each variable towards adoption behavior. The results are presented in Table 4. It can be seen from the given Table that the variable, education, Knowledge and Attitude towards vegetable growing were positive and had significant contribution to the adoption behaviour of respondents at five per cent level of probability. While the variable Age was negative and had significant contribution to the adoption behavior of respondents at one per cent level of probability.

As found in Table 4, 'F' value was significant at one per cent level of probability. The R^2 value was 0.734 that revealed that 73.4 per cent variation in the adoption

behavior of potato was explained by the 13 independent variables selected for the study. The strength of contribution of these variables could be explained as one unit increase in educational status, knowledge about improved vegetable cultivation practices and attitude towards vegetable growing would bring an increase of 0.226, 0.233 and 0.131 units in adoption behavior respectively. Also one unit decrease in age would bring an increase of 0.369 in adoption behavior of the vegetable growers. The results of this study are inline with the observations carried out by *Singh (2000), Wadhwani et al (2001) and Venkataramulu (2003).*

Table 4: Multiple regression analysis of selected independent variables of potato growers with the dependent variable.

Sr. No.	Independent Variables	Coefficients of multiple regression	
		'b' Values	't' values
1.	Age	- 0.369	-3.099**
2.	Education	0.226	2.215*
3.	Caste	0.069	1.182
4.	Family size	-0.057	-0.907
5.	Occupation	0.039	0.641
6.	Social participation	0.068	0.902
7.	Land holding	0.137	1.372
8.	Annual income from vegetables	0.005	0.056
9.	Risk orientation	-0.083	-1.054
10.	Knowledge about improved vegetable cultivation practices	0.233	2.262*
11.	Attitude towards vegetable growing	0.131	2.015*
12.	Extension contact	-0.015	-0.734
13.	Mass media contact	-0.369	-0.199

**Significant at 0.01 level of probability. $r^2 = 0.734$
 * Significant at 0.05 level of probability.   F value = 18.05**

CONCLUSION

About eighty two percent of the vegetable growers had low or medium adoption of commercial potato cultivation practices. It means medium adopters were more energetic, knowledgeable, dynamic and having more interest in adopting modern vegetable technologies. Middle-aged respondents preferred vegetable cultivation. Higher the education, greater the adoption of commercial vegetable cultivation practices. Those vegetable growers

who earned more were better adopters of modern production technology and the farmers who had favourable attitude towards vegetable cultivation were better adopters. Regression coefficient of age was found to be negative and significant for the total sample under study.

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