

Prospects of Hybrid Seed Production of Vegetables in Punjab

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Abstract- The study was undertaken to assess the prospects of vegetable hybrid seed production and various socio-personal factors affecting the same. Eighty respondents were randomly selected from the Punjab state for the purpose of this study. The data were collected with the help of interview schedule by personally interviewing the respondents. Findings revealed that most of the respondents were in the age group of 39-50 years, educated upto graduation, had medium operational land holding (10-25 acres), produced vegetable hybrid seed on an area of 0.5-2 acres. Majority of the respondents belonged to medium mass media exposure and extension contacts, had high innovativeness and scientific orientation, medium risk bearing capacity and high economic motivation. Scientific orientation, innovativeness, extension contacts and economic motivation were found to be significantly associated with prospects of vegetable hybrid seed production while mass media exposure and risk bearing capacity were non-significantly associated with prospects of vegetable hybrid seed production.

I. INTRODUCTION

Sustained increase in agriculture production and productivity is dependent to a large extent on the development of new and improved varieties of crops and an efficient system for timely supply of quality seeds to farmers. To achieve higher production levels, productivity has to be increased through the adoption of hybrid varieties and improved production technology. Presently, the commercial vegetable growers are quite aware about the importance of hybrid varieties as they are high yielding. At present, more than 100 hybrid varieties of 15 vegetables have been developed by the ICAR system (Sharma, 2008). The private seed companies have done commendable work in popularizing the hybrid varieties in India. Hybrid seeds are of good quality and are in greater demand thus their production is required to be raised.

In India although stress is given on production of all vegetable seeds for domestic requirements but hybrid vegetable seeds like tomato, watermelon, hot pepper etc. are given major importance keeping in mind the international market demand. The popularity of hybrid cultivars is due to their vigor, uniformity, disease resistance, stress tolerance and good horticultural traits including earliness, long shelf-life expressed and therefore giving consistence stable high yield.

The area under hybrid cultivars is now increasing and thus hybrid seed production is growing at a rapid rate. The trend

of hybrid seed usage in vegetables is increasing in terms of species, cultivars and volume of seeds used. The production of hybrid seeds of vegetable crops is of great importance to their producers as it is a profitable activity but it involves certain technical operations which the farmers might face problems.

II. METHODOLOGY

A list of farmers who were producing hybrid seed of vegetables in the whole state of Punjab on their farms was prepared with the help of Scientists of Department of Vegetable Crops, PAU, Ludhiana and Officers of State Department of Horticulture. From this list, 80 vegetable hybrid seed producers were selected randomly from the different Distt. for the purpose of this study. Data were collected by personally interviewing the farmers. Frequency, Percentage and Chi-square test were used for the analysis of data.

III. RESULTS AND DISCUSSION

Results of the study have been discussed under the following headings

Profile of the farmers producing hybrid seed of vegetables on their farms

The information regarding socio-personal characteristics of selected farmers which included age, education, operational land holdings, area under hybrid seed production of vegetables, mass media exposure, extension contacts, innovativeness, scientific orientation, risk bearing capacity and economic motivation was collected. The information pertaining to the profile of the farmers has been given in table

Age

Data in Table 1 indicates that age of the respondents varied from 28-61 years. Most of the respondents (38.75%) belonged to the age group of 39-50 years while 35.00 per cent of them were in the age group of 28-39 years and rest (26.25%) were in the age group of 50-61 years. It can be concluded that maximum number of the farmers were of the middle age group i.e. 39-50 years.

Education

The data presented in Table 1 pertaining to education of the respondents showed that 6.25 per cent of them were educated up to primary, 13.75 per cent had gained education up to middle level, 17.50 per cent were matriculates, 22.50 per cent were having senior secondary level of education, 32.50 per cent were graduate while 7.50 per cent were post-graduates. These findings are in consonance to Kaur (2002).

Operational land holdings

The respondents were asked about their operational land holding i.e. land owned + land leased in – land leased out and were categorized into four groups as shown in the Table 1. It can be observed from the data given in Table 1 that 35.00 per cent of the respondents had medium (10-25 acres) operational land holdings, more than 31 per cent of them had semi-medium operational land holdings between 5-10 acres, about 24 per cent of the respondents had large (>25 acres) operational land holdings and only 10.00 per cent of the respondents had small operational land holdings between 2.5-5 acres. The most of the farmers fell in the category of medium land holdings (10-25) acres. These findings are in line with the findings of Kumar (2005).

Area under hybrid seed production of vegetables

A perusal of data in Table 1 revealed that area under vegetable hybrid seed production varied between 0.5-6.5 acres. A little more than half of the respondents (52.50 %) had 0.5-2 acres of area under hybrid seed production of vegetables. Whereas 31.25 per cent of the respondents had 2-3 acres under vegetable hybrid seed production and 16.25 per cent of the respondents were having 3-6.5 acres of land under vegetable hybrid seed production. It is clear from the data in Table 1 that most of the vegetable hybrid seed producers had less area (0.5-2 acres) under vegetable hybrid seed production

Mass media exposure

Mass media exposure was studied in terms of reading farm literature, viewing television programme and listening to radio. The respondents were placed into three categories by using range method. The data so collected has been placed in Table 1. Majority of the respondents had medium (63.75%) mass media exposure and 28.75 per cent of them had high mass media exposure. While 7.50 per cent of them had low mass media exposure. These findings are in consonance to Kaur (2002).

Extension contacts

The data presented in Table 1 indicate that more than 42 per cent of the respondents had medium level of extension contacts, whereas, about 29 per cent had low level and 17.50 per cent of them had high level of extension contacts. These findings are in line with the findings of Chandergowda and Jayaramain (1990), Roy *et al* (1992) and Ranganatha *et al* (1993).

Innovativeness

The figures given in Table 1 further show that majority of the respondents (58.25%) had high level of innovativeness (13-17 scores) whereas 26.25 and 15.00 per cent of the respondents had medium (9-13 scores) and low (5-9 scores) level of innovativeness respectively. Similar findings were reported by Kumar (2008).

Scientific orientation

A perusal of data given in Table 1 further indicate that majority of the respondents (62.50%) had high level scientific orientation whereas, 23.75 per cent of the respondents had medium scientific orientation. Only 13.75 per cent of the respondents had low scientific orientation. These findings are in line with the findings of Kumar (2008).

Prospects of hybrid seed production of vegetables

It referred to willingness of the farmers to increase/decrease/discontinuance/keep the area constant under hybrid seed production of vegetable crops in the coming years. It is clear from the Table 2 that more than 43 per cent of the respondents were willing to keep the area constant under vegetable hybrid seed production. This was due to the reason that though vegetable hybrid seed production is a profitable enterprise, it involves too much hard work and care.

The data further points out that 22.50 per cent of the respondents wanted to increase the area under vegetable hybrid seed production because they felt it a profitable enterprise which is more in demand nowadays. It can further be observed from the data in the Table 2 that 20.00 per cent of the vegetable hybrid seed producers were going to decrease the area under vegetable hybrid seed production while 13.75 per cent were going to discontinue it due to the various reasons such as lack of trained labour, uncertainty of weather, difficulty in controlling insect pest and diseases, difficulty in maintaining isolation etc. similar findings were reported by Yasmin (2009).

Percentage increase in the number of vegetable hybrid seed producers during last five years

The results in the Table 3 reveals that out of the total sampled respondents who were producing vegetable hybrid seeds 83.75 per cent of the respondents adopted this enterprise upto the year 2007. The data further shows that per cent addition of the number of new farmers adopting this enterprise during 2008, 2009 and 2010 was 2.50, 8.75 and 5.00 per cent respectively. During the year 2011 no increase in the number of adopters occurred. It indicates that there is no uniform increase in the number of adopters. The number of increased in the no. of vegetable hybrid seed producer was based on the available secondary data.

Percentage increase in area under vegetable hybrid seed production during the last five years

The data presented in Table 4 show that out of the total sampled area i.e. 1277.5 acres the vegetable hybrid seed production was adopted in 10.45 per cent of the area during 2007. The data further indicate that 0.67 per cent of the area was increased during 2008. The percentage increase in the area during the year 2009, 2010 and 2011 was 1.48, 1.06 and 0.12 per cent respectively. It indicates that there is no uniform increase in the area under vegetable hybrid seed production. The increase in area under hybrid seed production was based on the response of the respondent i.e. area in the beginning area at present and increase in area.

Association of socio-personal characteristics with prospects of vegetable hybrid seed production

In order to determine the relationship among the independent variables and the dependent variables, chi-squares test was applied to the data. The results have been discussed under the following heads.

Extension Contacts and Prospects

A perusal of the data given in Table 5 indicates that there is significant association between extension contacts and prospects of vegetable hybrid seed production. It may be due to the reason that the respondents who do have high degree of extension contacts are regularly motivated by various extension agencies to adopt new ideas on large scales. The data further show that 15.62 per cent of the respondents falling in the category of low extension contacts were willing to increase the area under vegetable hybrid seed production while in case of the respondents falling in the respective categories of medium and high extension contacts 20.59 and 42.86 per cent of the respondents were willing to increase the area under vegetable hybrid seed production. It is very much clear that more the person having extension contact more he will be aware of the new technology and more he will adopt those technologies and increase the area under those technology.

Mass media exposure and prospects

As evident from the Table 6 it can be concluded that there was non-significant association between mass media exposure and prospects of vegetable hybrid seed production. It shows that mass media exposure does not have any effect on prospects of vegetable hybrid seed production. The data further reveals that 16.67 per cent of the respondents falling in the low mass media exposure category were willing to increase the area under vegetable hybrid seed production whereas 25.49 per cent and 17.39 per cent of the respondents falling in the respective categories of medium and high mass media exposure were willing to increase the area under vegetable hybrid seed production.

Innovativeness and prospects

The association between Innovativeness and prospects of vegetable hybrid seed production was found to be significant as clear from Table 7. An innovative person is always keen to try new ventures on his farm to increase his income. It may be due to the reason that innovative people are always willing to try and adopt the new ventures on large scales in order to enhance their income. It can also be seen from the Table 4 that out of total 47 respondents falling in the category of high innovativeness 25.53 per cent wanted to increase the area under vegetable hybrid seed production while only 4.26 per cent wanted to discontinue it. Further it shows that 23.81 per cent and 8.33 per cent of the respondents falling in the respective categories of medium and low innovativeness were willing to increase the area under vegetable hybrid seed production. Thus it can be pointed out that more percentage of the respondents having high innovativeness wanted to increase the area under vegetable hybrid seed production than those having low innovativeness.

Scientific Orientation and prospects

A close look at Table 8 indicates that there is significant association between scientific orientation and prospects of vegetable hybrid seed production. It may be due the reason that vegetable hybrid seed production is highly technical and specialized kind of farming which requires the scientific knowledge. Thus the farmers with high scientific orientation would like to increase the area under vegetable hybrid seed production. It is also evident from the Table 8 that 26.00 per cent of the respondents having high scientific orientation were willing to increase the area under vegetable hybrid seed production while from the category of low scientific orientation only 9.09 per cent of the respondents wanted to increase the area under vegetable hybrid seed production.

Economic Motivation and prospects

A perusal of the data given in the Table 9 indicates that there is significant association between economic motivation and prospects of vegetable hybrid seed production. This may be due to the reason that vegetable hybrid seed production is a profitable enterprise which generates good amount of income even from small piece of land and the farmers who have the desire to earn more money will definitely go for vegetable hybrid seed production. This is why there is significant association between economic motivation and prospects of vegetable hybrid seed production. The data in the Table 9 further reveals that out of total 11 respondents falling in the category of low extension contacts only 9.09 per cent were willing to increase the area under vegetable hybrid seed production while 14.29 per cent and 29.26 per cent of the respondents having medium and high economic motivation respectively were willing to increase area under vegetable hybrid seed production. Thus it is clear from the table that the more percentage of respondents from the category of high economic motivation were willing to increase the area

under vegetable hybrid seed production than those having low economic motivation.

CONCLUSION

It was concluded that more than 43 per cent of the respondents willing to keep area constant under vegetable hybrid seed production. About 23 per cent of the respondents wanted to increase the area under hybrid seed production because they feel it a profitable enterprise which is more in demand now-a-days.

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Table 1: Distribution of respondents according to their socio-personal characteristics (n=80)

S. No.	Socio-personal characters	Category/range	Frequency (f)	Percentage (%)
1.	Age	28-39	28	35.00
		39-50	31	38.75
		50-61	21	26.25
2.	Education	Primary	5	6.25
		Middle	11	13.75
		Matric	14	17.50
		Senior Secondary	18	22.50
		Graduate	26	32.50
		Post Graduate	6	7.50
3.	Operational Land Holding (acres)	Marginal (< 2.5)	-	-
		Small (2.5-5.0)	8	10.00
		Semi-Medium (5-10)	25	31.25
		Medium (10-25)	28	35.00
		Large (> 25)	19	23.75
4.	Area under vegetable hybrid seed production	0.5-2.0	42	52.50
		2-3	25	31.25
		3.0-6.5	13	16.25
5.	Mass Media Exposure	Low (0-5)	6	7.50
		Medium (5-10)	51	63.75
		High (10-15)	23	28.75
6.	Extension Contacts	Low (0-2)	32	40.00
		Medium (2-4)	34	42.50
		High(4-6)	14	17.50
7.	Innovativeness	Low (5-9)	12	15.00
		Medium(9-13)	21	26.25
		High(13-17)	47	58.75
8.	Scientific Orientation	Low (3-6)	11	13.75
		Medium (6-9)	19	23.75
		High (9-12)	50	62.50
9.	Risk Bearing Capacity	Low (4-8)	20	25.00
		Medium(8-12)	34	42.50
		High(12-16)	26	32.50
10.	Economic Motivation	Low (4-8)	11	13.75
		Medium(8-12)	21	26.25
		High(12-16)	48	60.00

Table 2: Distribution of the respondents according to prospects of hybrid seed production of vegetables (n=80)

S. No.	Category	Frequency	Percentage	Reasons
1.	Constant	35	43.75	a) More profitable but involves too much hard work and care
2.	Increase	18	22.50	a) Profitable b) More demand of hybrid seed
3.	Decrease	16	20.00	a) Hard to manage b) Lack of trained labour c) Uncertainty of weather d) Too much technical e) Insect pests and diseases f) Difficulty in maintaining isolation
4.	Discontinue	11	13.75	

Table 3: Percentage increase in the number of vegetable hybrid seed producers during the last five years (n=80)

S. No	Year	Cumulative frequency	% addition per year
1	2007	67 (83.75)	
2	2008	69 (86.25)	2.50
3	2009	76 (95.00)	8.75
4	2010	80 (100)	5.00
5	2011	80 (100)	0.00

Figures in parentheses indicate percentages

Table 4: Percentage increase in area under vegetable hybrid seed production during the last five years

S. No.	Year	Cum. F	% addition per year
1	2007	133.5 (10.45)	
2	2008	142 (11.12)	0.67
3	2009	161 (12.60)	1.48
4	2010	174.5 (13.66)	1.06
5	2011	176 (13.78)	0.12 Total sampled area=1277.50acres

Figures in parentheses indicate percentages

Table 5: Association of extension contacts with prospects of vegetable hybrid seed production

Extension Contacts	Prospects			
	Discontinue	Decrease	Constant	Increase
Low (0-2)	8(25.00)	8(25.00)	11(34.38)	5(15.62)
Medium (2-4)	2(5.88)	6(17.65)	19(55.88)	7(20.59)
High (4-6)	1(7.14)	2(14.29)	5(35.71)	6(42.86)

$\chi^2 = 6.318^*$

* - Significant at 5 per cent level

Table 6: Association of mass media exposure with prospects of vegetable hybrid seed production

Mass Media Exposure	Prospects			
	Discontinue	Decrease	Constant	Increase
Low (0-5)	1(16.67)	2(33.33)	2(33.33)	1(16.67)
Medium (5-10)	6(11.76)	7(13.73)	25(49.02)	13(25.49)
High (10-15)	4(17.39)	7(30.43)	8(34.78)	4(17.39)

$\chi^2 = 2.863^{NS}$

Non-Significant

Table 7: Association of innovativeness with prospects of vegetable hybrid seed production

Innovativeness	Prospects			
	Discontinue	Decrease	Constant	Increase
Low (5-9)	5(41.67)	3(25.00)	3(25.00)	1(8.33)
Medium (9-13)	4(19.05)	6(28.57)	6(28.57)	5(23.81)
High (13-17)	2(4.26)	7(14.89)	26(55.32)	12(25.53)

$\chi^2 = 12.907^{**}$

** - Significant at 1 per cent level

Table 8: Association of scientific orientation with prospects of vegetable hybrid seed production

Scientific Orientation	Prospects			
	Discontinue	Decrease	Constant	Increase
Low (3-6)	5 (45.45)	3 (27.27)	2 (18.18)	1 (9.09)
Medium (6-9)	4 (21.05)	5 (26.32)	6 (31.58)	4 (21.05)
High (9-12)	2 (4.00)	8 (16.00)	27 (54.00)	13 (26.00)

$\chi^2 = 14.213^{**}$

** - Significant at 1 per cent level

Table 9: Association of economic motivation with prospects of vegetable hybrid seed production

Economic Motivation	Prospects			
	Discontinue	Decrease	Constant	Increase
Low (4-8)	4(36.36)	4(36.36)	2(18.18)	1(9.09)
Medium (8-12)	5(23.81)	7(33.33)	6(28.57)	3(14.29)
High (12-16)	2(4.17)	5(10.42)	27(56.25)	14(29.16)

$\chi^2 = 20.182^{**}$
1 per cent level

d.f. = 3

** - Significance at