European Journal of Business & Social Sciences
Available at https://ejbss.org/

ISSN: 2235-767X
Volume 07 Issue 05
May 2019

Adoption of Poly-House Farming Practices in Haryana

Sonia Hooda

Research Scholar, Department of Economics, M.D. University, Rohtak

E-mail:hoodasonia27@gmail.com

ABSTRACT:

India is a developing country. More than half of its population is engaged with agriculture and allied sectors. Indian farmer faces several challenges such as too much dependence on natural phenomena such as rainfall, small land holding, lack of knowledge of modern agricultural technologies and inefficient marketing of agriculture produce. Poly-house technology is the best alternate to overcome the problems of small land holdings and to reduce the dependency on nature. The objective of the study was to evaluate socio-economic characteristics to identify fundamental issues that led farmers to adopt poly-house and open field cultivation system. Information regarding poly-house farming got from Horticulture Department and review of literature. Primary data was collected by using purposive sampling technique from selected districts. Sample of 40 farmers (20 Poly-house farmers and 20 Open field farmers) was taken from each district on the basis of availability. The collected data was analyzed by using binary logistic model (BLM). The study revealed that age, income and landholding has significant impact on adoption of poly-house technology, which showed that farmers belongs to lower age group, high income and having large size of landholdings were more interested and adopts this new poly-house farming.

Key words: Poly-House, Open Field Farming, Socio-Economic and Binary Logistic Model (BLM).

1. **INTRODUCTION:**India is a rural country. In India agriculture and allied sector contributes 15.11 per cent in 2016-17 (on the basis of series base year 2011-2012) of the total GDP and provided employment to around 58.2 per cent of country's work force and is the single largest private sector occupation[1]. Population of India was increasing on the other hand the

[1] **http://www.kvkbsatara.org**

ISSN: 2235-767X
Volume 07 Issue 05
May 2019

productivity of agricultural land was decreasing day by day due to excess use of fertilizers. So, the demand of food grains was high as compare to its supply. There was a great need to achieve self-sufficiency in food grain production in India. For this purpose poly-house farming was adopted as an alternative new technique in agriculture. Now question is arise that what is poly-house/ protected farming? To answer this question we can say that "poly-house cultivation practice can be defined as a cropping technique where the micro climate surrounding the plant body is controlled partially or fully as per the requirement of the vegetable spices grown during their period of growth"[2]. Sharan, Jethava, Anand (2005) in their study analyzed greenhouse cultivation of capsicum in a hot and extremely arid area at Kothara (Kutch) in Gujarat and found that open field cultivation was risky and low yielding in hot arid area. Only greenhouse technology could improve productivity and income of scarce water. Greenhouse capsicum crop gave fruit for 9 months as compare to control bed only for 5 months. Income was 1.4 times high in greenhouse. Spehia R.S. (2015) in his study made an attempt to study the impact of protected cultivation in Himachal Pradesh in India and concluded that average productivity of seven selected vegetable crops was high in protected cultivation as compare to open field cultivation. Poly-house farming was also provides employment opportunities to unemployed young people. Sanjeev K. et al. (2015) in their study made an attempt to examine viability of cucumber cultivation under naturally ventilated poly-house. The study concluded that the subsidy given by government of Gujarat made a big difference in the components of fixed cost. Net returns were increased as there was an increment in the subsidy. Income was higher during the second year of cucumber experiment but selling rate goes down in that year. Dahiya P. and Karan Singh (2017) in their study made an attempt to see the present scenario of poly-house farming in Haryana state. The study revealed that in different types of poly-house maximum area was covered under naturally ventilated poly-house on the other hand minimum area was covered under Hi-tech poly-house. In the year 2010-11 to 2011-12 maximum increasing area under poly-house was observed in Hisar and Ambala district. As compare to total cultivated area in Haryana state there was only 0.49% area was under poly-house farming. Vemuri S., Rao S., et.al (2016) in

[2] http://www.scribd.com/doc/44970318/Protected-Cultivation

ISSN: 2235-767X
Volume 07 Issue 05
May 2019

their study examines pesticide usage pattern and knowledge of farmers on about pesticide usage and technology in both protected and open field conditions. The study found that education level of protected cultivars was high as compare to conventional cultivars. There were very few farmers who were aware about pesticide classification in both of the conditions. For recommendations both the farmers were contact with pesticide dealer. Poly-house cultivars were preferred to contact scientists whereas open field cultivars were preferred to contact agricultural officers.

OBJECTIVE:

To evaluate socio-economic characteristics to identify fundamental issues that led farmers to adopt poly-house and open field cultivation system.

2. MEHTODOLOGY:

2.1 Study area and sample selection:

In the present study, purposive sampling has been used. On the basis of secondary data I have select four district of Haryana state where highest no. of poly-house farmer doing cultivation. Name of selected districts are – Karnal, Panipat, Sonepat and Rohtak. Information regarding poly-house farming got from Horticulture Department and review of literature. I have selected 50 farmers (25 Poly-house farmers and 25 Open field farmers) from each district on the basis of availability. I have collected primary data with the help of pre-tested questionnaire by personal visits made to each sampled poly-house and open field farmer in the study area.

2.1 Data Analyses:

To meet out the objectives I have used the binary logistic model (BLM) in SPSS 20. BLM with 'i' categories of dependent variables can be expressed as:

$$P(Y = i/x) = \frac{\exp(x\beta i)}{1 + \sum_{\substack{n=1 \\ i=1,2}}^{i} \exp(x\beta n)}$$

Where, Y is a random variable based on values i=2 (namely poly-house and open field farming system) and x is a set of conditioning variables. Let x be the first element unity with 1×K vector and β_i a K×1 vector with i=1, 2. In our study, Y is a farming practice and x is various socio-economic characteristics of farmers. Since the response probabilities P(Y=i/x) must sum to unity,

ISSN: 2235-767X
Volume 07 Issue 05
May 2019

it can be determine only when the probabilities for i=1, 2 are identify. The empirical specification is as follows:

$$Y_{i=2} = \beta_0+\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5+\beta_6X_6+\beta_7X_7+ \mu$$

Where, μ is an error term.

Table 1
Measurement and Summary of Explanatory Variables

Sr. No.	Explanatory Variables	Definition and Measurement
1.	Age (X_1)	Age of farmers; Years (continuous)
2.	Caste (X_2)	Caste of farmers; General=1, otherwise=0
3.	Edu_sensec. (X3)	Education of farmers; sensec.=1, otherwise=0 (dummy)
3.	Edu_higher (X_4)	Education of farmers; higher=1, otherwise=0 (dummy)
4.	Occupation_agri. (X_5)	Occupation history of farmer's family; agriculture=1, otherwise=0 (dummy)
5.	Income_above10 Lakh (X_6)	Annual income of farmer's family; below 10 lakh annually-1, otherwise=0 (dummy)
7.	Size of Landholdings (X_7)	Size of Landholdings of farmers; Acres (continuous)

3. RESULTS AND DISCUSSION:

Table 2
Explanatory Socio-Economic variables related to Poly-house and Open Field Farming system

European Journal of Business & Social Sciences
Available at https://ejbss.org/
ISSN: 2235-767X
Volume 07 Issue 05
May 2019

Variables	Farming System		
	Poly-house (Percentage)	Open field (Percentage)	Total (Percentage)
Age of Farmers			
Up-to 30 years	10	14	24 (12)
30-45 years	35	21	56 (28)
45-60 years	42	31	73 (36.5)
Above 60 years	13	34	47 (23.5)
Caste of famers			
General	91	93	184 (92)
BC	9	7	16 (8)
SC	0	0	0 ()
Education of farmers			
Up-to Metric	16	22	38 (19)
Senior Secondary	34	28	62 (31)
Graduate	35	37	72 (36)
Post Graduate	15	13	28 (14)
Primary Occupation of farmers			
Agriculture	50	58	108 (54)
Govt. Job	18	13	31 (15.5)
Private Job	13	21	34 (17)
Business	19	8	27 (13.5)

ISSN: 2235-767X
Volume 07 Issue 05
May 2019

Annual income of farmer			
Up to 5 Lakh	**28**	**31**	**59 (29.5)**
5-10 Lakh	**43**	**46**	**89 (44.5)**
10-15 Lakh	**17**	**14**	**31 (15.5)**
Above 15 Lakh	**12**	**9**	**21 (10.5)**
Ownership of land of farmers			
Below 2.5 Acre	**13**	**17**	**30 (15)**
2.5-5 Acre	**23**	**28**	**51 (25.5)**
5-10 Acre	**40**	**45**	**85 (42.5)**
Above 10 acre	**24**	**10**	**34 (17)**

Source: Field survey

Table 2 is the descriptive analysis of socio-economic variables of poly-house and open field farmers. It was found that there were maximum 42 poly-house farmer and 34 open field farmer belongs to the age group 45-60 years and above 60 years respectively. Majority of total 73 (36.5) farmer belongs to 45-60 years age group. The table shows that majority of 91 poly-house farmer, 93 open field farmer and 184 (92) total farmer belongs to general category while few farmers were belongs to BC category. In case of education there were maximum 35 poly-house farmer, 37 open field farmer and 72 (36) total farmer got graduate degree respectively. Minimum 15 poly-house farmer, 13 open field farmer and 28 (14) total farmer got post graduate degree respectively.

On the other hand there were minimum 19 poly-house farmer, 8 open field farmer and 27 (13.5) total farmers' main occupation was business. While maximum 50 poly-house farmer, 58 open field farmer and 108 (54) total farmers still recognize agriculture as their primary occupation. In case of annual income, there were maximum 43 poly-house farmer, 46

ISSN: 2235-767X
Volume 07 Issue 05
May 2019

open field farmer and 89 (44.5) total farmers' annual income was 5 to 10 lakh. While minimum 12 poly-house farmer, 9 open field farmer and 21 (10.5) total farmers' annual income was above 15 lakh. On the other hand there were maximum 40 poly-house farmer, 45 open field farmer and 85 (42.5) total farmer having 5 acre to 10 acre landholdings.

Table 3
Logit Regression Model for the prediction of Adoption of Poly-house Farming on the basis of Socio-Economic Variables

Variables	Coefficients (β)	Std. Error	Wald	Significance	Exp (β)
Constant	**2.543**	**.990**	**6.593**	**.010****	**12.720**
Age	**-.052**	**.016**	**10.048**	**.002****	**.949**
Caste	**-.631**	**.576**	**1.199**	**.273**	**.532**
Education_sen.sec.	**-.045**	**.462**	**.010**	**.922**	**.956**
Education _higher	**-1.065**	**.582**	**3.344**	**.067**	**.345**
Occupation _agriculture	**-.323**	**.375**	**.743**	**.389**	**.724**
Income _above 10 lakh	**-1.152**	**.465**	**6.130**	**.013***	**.316**
Size of Landholdings	**.103**	**.045**	**5.285**	**.022***	**1.109**

** Significant at 1% level
* Significant at 5% level
NS- Not significant
LR chi-square= 20.84**
Hosmer and Lemeshow test = 8.33(NS)
Log likelihood= 256.41
Pseudo R^2= 0.14

To predict the contribution of the socio-economic variables on the adoption of poly-house farming, the data were subjected to binary logistic regression analysis. The results were presented in the table 3 Age and landholdings were taken as quantitative variables; whereas, rest all other variables namely, caste (general / BC / SC), education (middle / sen.sec. / higher), occupation (agriculture / non agriculture) and income (above 10 lakh) are taken as categorical

ISSN: 2235-767X
Volume 07 Issue 05
May 2019

(qualitative / dummy) variables. Results (given in box above) revealed that the probability of model chi-square was 20.84 which were highly significant at 1 percent. This showed that the model was good fit. The coefficient of determination (R^2) suggested that 14 percent variation in dependent variable was due to independent variables. The Hosmer and Lemeshow test was 8.33, which was not significant (p value=0.431) suggested that the model was good of fit. The data revealed that the age was statistical significant at 0.01 percent level and negative coefficient of regression was -0.052, which showed that the lower age group farmers were more interested and adopt the poly-house farming. Exponential of the coefficient of age was 0.949, which showed that adoption of poly-house farming rate was less among the aged farmers. The study concluded that primary occupation has negative and statistical insignificant influence on adoption of poly-house farming which is difficult to justify. Income is a most important factors for adoption any new techniques among the peoples. The study also revealed that the income group (above 10 lakh) was statistical significant at 0.05 percent level and coefficient of regression was -1.152 and exponential of the coefficient of higher income was 0.316, which elaborated that higher income group farmers were more interested to adopt poly-house farming. It concluded that higher income could have acted as a financial security for farmers, if they are faced yield losses in poly-house farming's starting period.

In this study, size of landholdings showed lesser chance of adopting poly-house farming practices. It was positive and significant coefficient of regression 0.103 and exponential of coefficient was 1.109, which showed that large size of landholdings increase the probability of adaptation rate among the farmers. The reason behind that poly-house farming is labor-intensive as well as capital intensive technology. It is evident that owner of large size of landholdings would prefer practicing poly-house farming in the study area.

4. CONCLUSION AND RECOMMENDATIONS:

The study concluded that age has negative but significant impact on adoption which showed that the lower age group farmers were more interested and adopts the poly-house farming. Higher income group and large size of landholdings of farmers has negative and positive influence respectively but both have statistical significant coefficient, which showed that farmers belongs to higher income group and having large size landholdings were more interested in adoption of

ISSN: 2235-767X
Volume 07 Issue 05
May 2019

poly-house farming system then other income group farmers. So age, income and size of landholdings have played an important role to adopt poly-house farming practices. The study revealed that majority of both types of farmer were young age, educated up to graduate level, having annual income up to 10 lakh and ownership of up to 10 acre landholdings. On the other hand mostly farmer were belong to general category and recognize cultivation as their primary occupation.

The study recommended that there was need to intensify efforts to make agriculture extension services more functional so that farmers can get useful information to enhance adoption of poly-house farming practices. Farmers should be encouraged for adopting poly-house farming practices by govt.

REFERENCES:

1. Spehia R. S. (2015). Status and impact of protected cultivation in Himachal Pradesh, India. *Current Science*, 108 (12), 2254-2257.
2. Sanjeev, K., Patel N. B., Saravaiya, S. N. & Desai, K. D. (2015). Economic Viability of Cucumber Cultivation Under NVPH. *African Journal of Agricultural Research*, 10(8), 742-747.
3. Dahiya, P., & Singh, K., (2017). Present scenario of polyhouse farming in Haryana. *Advance Research Journal of Crop Improvement*, 8(1), 109-116.
4. Vemuri, S., Rao, S., Swarupa, S. and Kavitha, K. (2016). Studies on Pesticide Usage Pattern and Farmers Knowledge On pesticide Usage and Technologies in Open Field and Poly House Conditions. *Journal of Research in Agriculture and Animal Science*, 4(3), 01-08.
5. Sharan, G., Jethava, K., & Shamante, A. (2005). Greenhouse cultivation in a hot arid area. 01-11.

ISSN: 2235-767X
Volume 07 Issue 05
May 2019

6. Dr. B.B. (2013). Upliftment of rural economy through protected cultivation. *Global research analysis*, 2(2), 42-43.
7. Sengar, S.H., & Kothari, S. (2008). Economic evaluation of greenhouse for cultivation of rose nursery. *African Journal of Agricultural Research*, 3(6), 435-439.
8. Ramakkrushnan, S., & Vijayan, A. (2013). Economic assessment of green house for cultivation of float based seedling production in India. *World Academy of Science, Engineering and Technology*, 7(5), 357-360.
9. http://www.kvkbsatara.org
10. http://www.scribd.com/doc/44970318/Protected-Cultivation