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Comparsion Of Efficency Of Cucumber Production In Poly-House

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ABSTRACT:

The study has made an attempt on resource use and economic efficiency of cucumber production under poly-house farming and open field farming. Primary data collected by using purposive sampling technique from selected districts. Sample of 50 farmers (25 Poly-house farmers and 25 Open field farmers) was taken from each district on the basis of availability. Secondary data was collected from Horticulture Department. For data analysis statistical tools average, percentage and Linear Cobb-Douglas Production Function was used. The study found that the yield of cucumber was more under poly-house farming as compare to open field farming system. The reason behind this was long harvesting period and more number of fruits per plant under poly-house farming conditions. The data specifies higher net returns per acre of cucumber under poly-house farming over open field farming, which implicit poly-house farming not only highly profitable but also economically viable as compared to open field farming in study area.

KEY WORDS: poly-house, open field, farming and efficiency.

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 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. In India poly-house technology was started during 1980's but only for experimental purpose. On the other hand in 2010 under the National Horticultural Mission poly-house farming was started in Haryana state. . To promote poly-houses, the Haryana government is providing subsidy of 65 per cent on cost of poly-house, 90 per cent on irrigation system and 50

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

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per cent on planting material, respectively **(Roy, 2013)**. Total Area covered under protected cultivation in 2013 was 548 ha out of which under Poly-house are 136 ha and under Mulching & Plastic Low Tunnels are 412 ha. In Haryana, 1273 poly-houses have established and total area covered under poly-house farming is 3945591.2 sqm up to 2014-15 (Horticulture Department, Haryana). By adopting this new technique of cultivation, the difference in the demand and supply of off-season vegetables and fruits etc. can be minimized. This technique also facilitates in maintaining the quality of the product also. **Sreedhra D.S., Merutagi, Kunnal and Dodamani (2013)** in their study found that due to protected cultivation of Capsicum yield level was high. Capsicum has higher size, shining, good color and better quality when they grow under protected conditions. This type of product got high price in market so, farmers got high returns. Mostly farmers were facing the problem of high initial cost. **John M., Mshenga and Saidi (2014)** in their study concluded that tomato cultivation was a male dominant activity. Both type of cultivation was able to recover total production cost. Farmer of both systems (greenhouse and open-field) was showed little interest in credit use and mostly farmers were of middle aged (40-50). Net profit from greenhouse tomato cultivation was thirteen times greater than open-field tomato cultivation. The study recommended that greenhouse technology should be promoted because it played a crucial role in increase the production, farmer's income, and employment opportunities and alleviates poverty. **Mayanglambam Bilashini Devi and Nisha Thakur (2013)** the study concluded that through protected cultivation danger of destruction of nurseries eliminated and also offered many advantages to grow high value crops with better quality. We can make this technology more popular by reducing installation cost and rate of interest, increasing amount selection for greenhouse. **Parveen, Kumar, Amin, Mushtaq and Ahmad (2011)** revealed that in NEH region protected cultivation was in primary stage. In moderate areas, farmers can increase their yield by raising early crops in low cost greenhouse. There were two main limiting factors in adoption of greenhouse technology for commercial purpose that was high initial cost and non- availability of other components. **Nangare D.D. et al. (2015)** concluded that there was positive effect of shade net house on the income of tomato production. On the other hand quality of tomato produce was less affected by shade net house. In Punjab 35 per cent covered shade net house was suitable for tomato cultivation.

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OBJECTIVE:

The study has made an attempt on resource use and economic efficiency of cucumber production under poly-house farming and open field farming.

RESEARCH METHODOLOGY:

To fulfill the above said objective, 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. To analyze the data I have used Linear Cobb-Douglas Production Function for efficiency analysis

Mathematically, the Log-Linear regression model is represented as

In Yi = Inb0+b1In X1+ b2In X2+ b3In X3+ b4In X4+ b5In X5+ b6In X6+ b7In X7+ui

Where,

Yi = Value of production of cucumber (rupees/acre)

X1= Value of seed cost in rupees

X2= Value of fertilizer cost in rupees

X3= Value of pesticides cost in rupees

X4= Value of electricity cost in rupees

X5= Value of labor cost in rupees

X6= Crop duration in months

X7= Crop harvesting starts after sowing seeds (in days)

Ui= error term

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RESULT AND DISSCUTION:

Table 1
Resource use efficiency in Cucumber Production

N=25

Variables	Regression coefficients	Standard Error	t-values	Significance
Regression Constant	3.064	1.238	2.475	.021*
Seed	-.189	.119	1.584	.127
Fertilizer	-.020	.123	-.165	.871
Pesticide	.037	.032	1.168	.255
Electricity	.222	.089	2.510	.020*
Labor	.627	.085	7.342	.000**
Time (Month)	-.165	.610	-.270	.790
Time (Days)	1.235	.336	-3.671	.001**
Returns to Scale ($\sum b_i$)	1.747			
R^2	0.88			
F-ratio	22.21**			

**** Significant at 1 percent level**

*** Significant at 5 percent level**

Table 1 revealed estimated resource use efficiency in Cucumber production under Poly-house cultivation. The table showed that the adjusted coefficient of multiple determinations (R^2) was 0.88 revealing that the production function model was a good fit and about 88 percent of the variation in Cucumber production was influenced by the explanatory variables included in the model. On the other hand elasticity co-efficient of seed cost was negative (-0.189) and found to be not significant. This showed that there was need to reduce the expenditure on seeds would be contributing significantly towards gross returns. Elasticity co-efficient of fertilizer was -0.020, it was negative and insignificant, showed that there was need to decrease the expenditure on

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fertilizers would be contributed significantly to increase gross returns from cucumber production under poly-house. The results showed that elasticity co-efficient for pesticide was 0.037 which was positive and statistical insignificant. Thus it showed that there was need to increase the expenditure on pesticides would be contributed significant to increase gross returns. Elasticity co-efficient for expenditure on labor was 0.627 and elasticity co-efficient for electricity was 0.222 respectively, which was positive and statistical significant at 0.01 level and 0.05 level respectively. It showed that there was need to increase expenditure on labor and electricity for more output from poly-house production of cucumber. Elasticity co-efficient for time (Month) was -0.165, which was negative and not significant in production. Thus it showed that there was need to decrease the time (Month) would be contributed significant to increase gross returns from cucumber in study area. Elasticity co-efficient for time (Days) was 1.235. Thus it showed that there was need to reduce the time (Days) would be contributed significant to increase gross returns from cucumber in study area. The sum of elasticity co-efficient with 1.747 showed increasing returns to scale. The increasing returns to scale indicated that doubling the all the factors of production will more than doubling the gross returns from the production of cucumber under poly-house. The results revealed that the production of cucumber under poly-houses was profitable with increased expenses on some factors of production in the study area.

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Table 2
Economics of Cucumber cultivation in Poly-house

N=25

Variables	Poly-house	Open field	Open Field =100
Seed cost	**58467**	**7217**	**810**
Fertilizer cost	**30450**	**6463**	**471**
Pesticide cost	**20567**	**9887**	**208**
Electricity cost	**2657**	**1547**	**172**
Labor cost	**75200**	**24933**	**301**
Time (Month)	**3.94**	**3.69**	**107**
Time (Days)	**44.17**	**51.97**	**85**
Total cost of cultivation	**187340**	**50047**	**374**
Yield (qtl.)	**331**	**185**	**179**
Total revenue	**534833**	**159567**	**335**
Net returns	**347493**	**109520**	**317**

Source: Field Survey

Table 2 revealed the comparison of crop economics of cucumber production in poly-house and open field farming systems in Haryana. Under poly-house farming the yield per acre was 331 quintal. But, the same in case of open field farming was 185 quintal. For cucumber the yield was more than (79 percent) in poly-house farming as compare to open field farming system. The reason behind this was long harvesting period and more number of fruits per plant under poly-house farming as compare to open field cultivation. There were two types of time showed in the table first one in months which showed crop duration under poly-house was high (7 percent) as compare to open field farming. On the other hand second time in days showed under poly-house

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farming plucking of fruits started early (15 percent) as compare to open field farming. Both times combined and extend harvesting period under poly-house farming. The overall per acre average production cost was high (174 per cent) in poly-house as compare to open field farming. It was due to high cost of seeds, fertilizers and other inputs. Under poly-house farming labor cost was Rs. 75200 per acre and same in the case of open field cultivation was Rs. 24933 per acre. It showed that labor cost was (101 per cent) higher under poly-house cultivation. The reason behind this was most of the sampled poly-house farmers were following manual work with the help of hired labor, long harvesting period and extra care needed in poly-house practices. The net returns per acre of cucumber cultivation in Haryana were Rs. 347493 and Rs. 109520 respectively for poly-house and open field farming. The data specifies 117 per cent higher net returns per acre of cucumber under poly-house farming over open field farming, which implicit poly-house farming not only highly profitable but also economically viable.

CONCLUSION:

The study concluded that there was need to increase the expenditure on pesticides, labor and electricity for more output from poly-house production of cucumber. On the other hand there was need to decrease the expenditure on fertilizers would be contributed significantly to increase gross returns from cucumber production under poly-house. The increasing returns to scale indicated that doubling the all the factors of production will more than doubling the gross returns from the production of cucumber under poly-house. The results revealed that the production of cucumber under poly-houses was profitable with increased expenses on some factors of production. Economic analysis of cucumber concluded that the yield was more than (79 percent) in poly-house farming as compare to open field farming system. The reason behind this was long harvesting period and more number of fruits per plant under poly-house farming as compare to open field cultivation. Both times combined and extend harvesting period under poly-house farming. The overall per acre average production cost was high (174 per cent) in poly-house as compared to open field farming. It was due to high cost of seeds, fertilizers and other inputs. The data specifies higher net returns per acre of cucumber under poly-house farming over open field farming, which implicit poly-house farming not only highly profitable but also economically viable.

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