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Protected Cultivation (Polyhouse) in Haryana: Problems &Prospects

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ABSTRACT *India is the largest producer of vegetables in the world next to China; its requirements of vegetables are rapidly increasing because of burgeoning population. The factors such as adverse climatic conditions, high potential of vegetables, fruits and flowers, agro inputs availability, small and fragmented land holdings and increased demand of quality vegetables necessitate the adoption of protected cultivation. Multiple cropping on the same piece of land, increased production and productivity per unit of land, water, energy and labour, high quality and clean products, high water and fertilizer use efficiency, subsidy provision for establishment of high cost infrastructure, round the year employment to the farmers were the major prospective aspects perceived by poly house farmers. While they facedthe problems like population explosion of minute insects like mites & white flies, especially the white fly menace, poor quality of cladding material, frequent occurrence of windstorms, hailstorms, lack of cold storage facilities in villages, high cost and problem of nematode infestation were the major serious constraints faced by the poly house growers.The field functionaries may also provide continued technical guidance and quality cladding material since technology being capital as well as care intensivewith special carefor control of white fly and nematode infestations, regarding proper marketing and valueaddition knowledge and skillto farmers for sustainability of poly house cultivation*

Though India is the largest producer of vegetables in the world next to China, its requirements of vegetables are rapidly increasing because of burgeoning population. India has a wide spectrum of diverse agro climatic conditions but vegetable cultivation practices in our country have been generally restricted to regional and seasonal needs with the technology and practices predominantly of traditional nature, which results into low yields and inconsistent quality & quantity, produce supply of the markets. The factors such as adverse climatic conditions, high potential of vegetables, fruits and flowers, agro inputs availability, small and fragmented land holdings and increased demand of quality vegetables necessitate the adoption of protected cultivation.

Protected conditions for vegetables, fruits and flowers are created by using different type of structures as per season and location specific among them most common and widely used are poly house. It is designed to modify the climatic conditions like temperature, humidity, wind velocity etc. along with high soil, water, fertilizer and other inputs use efficiency for growing horticultural crops. Sincere efforts are made by the government to promote protected cultivation to ensure sustainable food and nutritional security to every Indian citizen and enhancement of income of the farming community. Therefore, the study was undertaken to know the perception farmers of Haryana with the following specific objectives:

1. To find out suitable crops under protected cultivation (poly house)
2. To find out prospects of protected cultivation
3. To identify the constraints faced by the poly house growers

MATERIALS AND METHODS

The study was conducted in, Hisar and Rohtak districts of Haryana state which were selected randomly. Twenty five poly house farmers were selected randomly from the list supplied by the respective District Horticulture Office viz. Patan, Matarshayam, Mallapur, Juglan, Sulkhani, Bugana, Barwala, Ghirai, Singhwa, Chanaut, Khokha, Raipur, Dhani, Saharwa, and Hisar from Hisar district and Maham, Kheri Maham, Saman, Farmana, Farmana Khas, Deorar, Humayupur, Kansala, Ashan, Sunaria, Balambha, Madina from Rohtak district. The data were collected with the help of well-structured interview schedule. The data were analyzed and tabulated after applying the statistical techniques like frequency, percentage, weighted mean and rank orders.

RESULTS AND DISCUSSION

Suitable crops under protected cultivation (polyhouse)

The farmers of both the districts were growing the major vegetable crops such as cucumber, tomato, capsicum, chilies and gourd whereas among the flowers gerbera, lilium, rose and marigold while few farmers used to grow strawberry under poly house. The vast majority of farmers used to grow cucumber and tomato as their crops and among them cucumber was most preferred one.

Prospects of protected cultivation (Polyhouse)

Table 1. Prospects perceived by farmers regarding Polyhouse cultivation (n=50)

S. No.	Aspect	Yes	No	Total Weighted score	Weighted mean score	Rank order
1	Round the year production of vegetables.	43(86%)	7(14%)	93	1.86	V
2	Helps to overcome adverse climate conditions for production of vegetables	45(90%)	5(10)	95	1.90	IV

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3	Multiple cropping on the same piece of land	50(100%)		100	2.00	I
4	Growing off-season vegetables to get better returns	48(96%)	2(4%)	98	1.96	II
5	Raising healthy seedlings for transplanting in open field	48(96%)	2(4%)	98	1.96	II
6	Increased production and productivity per unit of land, water, energy and labour	50(100%)		100	2.00	I
7	High quality and clean products	50(100%)		100	2.00	I
8	Vertical cultivation of vegetables	48(96%)	2(4%)	98	1.96	II
9	Disease free production of seeds	14(28%)	36(72%)	64	1.28	XI
10	Early nurseries raised to grow early crops	41(82%)	9(18%)	91	1.82	VI
11	Maintaining stock plants, grafted plants and micro propagated plants	24(48%)	26(52%)	74	1.48	VIII
12	Opportunity to contract with food processing company	19(38%)	31(62%)	69	1.38	IX
13	Easy registration of any organic produce for direct marketing	15(30%)	35(70%)	65	1.30	X
14	Low cost of plant of plant protection measures	35(70%)	15(30%)	85	1.70	VII
15	High water and fertilizer use efficiency	50(100%)		100	2.00	I
16	Subsidy provision for establishment of this high cost infrastructure	50(100%)		100	2.00	I
17	Provide round the year employment to the farmers	50(100%)		100	2.00	I
18	Products are suitable for exports	47(94%)	3(6%)	94	1.94	III
19	High aesthetic value	41(82%)	9(18%)	91	1.82	VI

It is evident from the data pertaining to prospects of polyhouse cultivation presented in Table 1 that multiple cropping on the same piece of land, increased production and productivity per unit of land, water, energy and labour, high quality and clean products, high water and fertilizer use efficiency, subsidy provision for establishment of this high cost infrastructure, round the year employment to the farmers were top ranked prospective aspects of the poly house cultivation by farmers. The findings are in congruence with earlier studies of Singh and Sirohi (2004) and Nair and Barche (2014) which reported increased production and productivity, clean and quality products, high input efficiency, round the year production of vegetables etc. whereas disease free production of seeds, opportunity to contract with food processing company, easy registration of any organic produce for direct marketing, maintaining stock plants, grafted plants and micro propagated plants were lower ranked aspects by the growers. Since vast majority used to grow vegetable crops and were selling in the local market without value addition.

Constraints faced by the polyhouse growers

Table 2. Constraints faced by poly house growers (n=50)

S. No.	Constraints	Serious	Not Serious	Total Weighted score	Weighted mean score	Rank order
1	High initial fabrication cost of naturally ventilated poly house / insect proof nets etc.	44(88%)	6(12%)	94	1.88	V
2	Poor quality of cladding material	49(98%)	1 (2%)	99	1.98	II
3	Frequent occurrence of wind storms, hailstorms	49(98%)	1(2%)	99	1.98	II
4	High cost of hybrid seeds	36(72%)	14(28%)	86	1.72	VI
5	High cost of nursery raising material like coco pit, vermiculite, perlite etc.	6(12%)	44(88%)	56	1.12	XI
6	High labour wages	30(60%)	20(40%)	80	1.50	IX
7	Lack of cold storage facilities in villages	47(94%)	3(6%)	97	1.94	III
8	Lack of continued technical guidance by field functionaries	29(58%)	21(42%)	79	1.58	VIII
9	Lack of knowledge of value addition processes	34(68%)	16(32%)	84	1.68	VII
10	Lack of marketing knowledge/intelligence	34(68%)	16(32%)	84	1.68	VII
11	Problem of nematode infestation.	45(90%)	5(10%)	95	1.90	IV
12	Non feasibility in poor quality water and soil conditions	09(18%)	41(82%)	59	1.18	X
13	High cost and non availability of refrigerated vehicles for transportation	44(88%)	6(12%)	94	1.88	V
14	Solarisation in the month of May & June is essential for poly house	29(58%)	21(42%)	79	1.58	VIII
15	Population explosion of minute insects like mites & white flies	50(100%)		100	2.00	I

From the data presented in Table 2 it is clear that population explosion of minute insects like mites & white flies, especially the white fly menace, poor quality of cladding material, frequent occurrence of wind storms, hailstorms, lack of cold storage facilities in villages, high cost of hybrid seed and problem of nematode infestation were the major serious constraints faced by the poly house growers whereas high cost of nursery raising material like coco pit, vermiculite, perlite etc., high labour wages, Non feasibility in poor quality water and soil conditions were perceived as not serious constraints by them probably due to use of canal water for irrigation. White fly menace was due to the surveyed area predominated with cotton crop. The high cost of hybrid seed and running of foggers was complained due to their electricity connection being commercial or diesel set for operation. The quality of cladding material had also been issue of concern by past studies of Singh and Sirohi (2004) and Nair and Barche (2014)

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