Journal of Pharmacognosy and Phytochemistry

Available online at www.phytojournal.com

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Benefits and constraints faced by the farmers while growing flowers in polyhouses

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Abstract
India is an agricultural country and its history goes back to thousands of years. Floriculture or farming of flowers is a discipline of horticulture which is basically concerned about the cultivation of flowers, foliage plants and their marketing. Demand for cut flowers is increasing day by day in India and protected cultivation in the polyhouses is emerging as the best alternative because it helps in using the land and other valuable resources more effectively. Government of India has taken many initiatives to promote the polyhouses for Floriculture. So, a study was conducted on 100 farmers in Haryana state doing Floriculture in polyhouses with the objective to find out the benefits and constraints faced by farmers while using polyhouses for growing flowers. The results show that 31 per cent of farmers were educated up to high school and 29 per cent were educated up to senior secondary school; 67 per cent farmers owned 4-6 acres of land. Environmental benefits got first rank with WMS of 1.67, followed by economical benefits (WMS 1.64) and technical benefits (WMS 1.58). Economical constraints were the highly perceived constraints and scored WMS 1.61 (rank I), followed by miscellaneous constraints which scored WMS 1.55 (rank II) and technical constraints which scored WMS 1.32 (rank III). Thus, to overcome the constraints faced by the farmers, government needs to provide more knowledge through trainings on the use of polyhouses.

Keywords: Farmers, floriculture, polyhouses, benefits, constraints

Introduction
Floriculture is a discipline of horticulture which is concerned about the cultivation of flowers, foliage plants and their marketing. Floriculture also deals with production of planting materials through seeds cutting, budding and grafting. The importance and potential of floriculture is unlimited and rising. Since India is still an agricultural country and importance of floriculture is growing more and more as it can generate employment for small and marginal farmers (Vahoniya *et al.* 2018) [8]. Worldwide area under floriculture was 6,20,000 hectares and India occupies 2,31,030 hectares *i.e.* 37 per cent of total area. Floriculture trade is developing at the rate of 15 per cent, crossed worth of $17 billion (Nazir 2015) [4]. India is blessed with all kinds of agro-climatic and ecological conditions. These conditions help our farmers to grow different types of flowers which are commercially important and can be found in different parts of India. These factors provide India all the potential to emerge as a leader of world floriculture trade. According to APEDA (2018) [1], production during 2015-16 was estimated to be 16,59,000 tonnes of loose flowers and 4,84,000 tonnes of cut flowers. India has transported 20703.46 MT of flowers to all over the world for the values of Rs. 507.31 crores in the year of 2017-18. Since the demand for cut flowers is increasing, protected cultivation in the polyhouse is emerging as the best alternative because it helps in using the land and other valuable resources more effectively. Polyhouse creates favorable ecological climatic conditions for the production of plants and their growth. Government of India takes initiatives at the international level also to promote the imports/exports of products of floriculture. Cold storage has been allowed at the airports for storage of products for exports. Direct subsidy up-to 50% on the pre-cooling and cold storage units is available for improving the packaging material. Eleven model floriculture centres, two large floriculture centres and 20 tissue culture centres have been established by the ministry of Agriculture. Keeping the above facts in mind, the study was planned with the objective to find out the benefits and constraints faced by the farmers while growing the flowers in polyhouses.

Review of Literature
Bhegade (2002) [2] reported that the floriculture in Hi-tech cultivation is seven to ten times more profitable than the open farming. Floriculture in open farming was much more beneficial than other cereal crops in the smaller area.

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Singh *et al.* (2012) [6] conducted a study in the open field conditions and reported that 3.5 ºC more temperature was recorded inside the net houses. But among the net houses, no significant variation in temperature was found. Comparatively significant reduction of solar radiation was recorded inside net houses *i.e.* less solar radiation was found inside the net-houses as compared to open field conditions Toppo (2018) [7] reported that outer environment cannot affect the production of crops under the polyhouses. Some types of polyhouse *i.e.* low cost polyhouse/greenhouse have only ventilation and fogging system to protect the crops from the unsuitable temperature. It was also reported that polyhouses in controlled conditions gave 4-8 times more production than the open cultivation. Hence, farmers should adopt the controlled structure for increasing the production because polyhouses are structured to increase the production of crops or off season production by providing the suitable environmental conditions *viz;* light, temperature, humidity, air circulation etc. Pandit and Patil (2009) [5] studied the cultivation of carnation in polyhouse with organic farming in Pune district. It was found that the cultivation of carnation in polyhouse was more beneficial. It was also concluded that the profit of the cultivation of carnation in 2300 sq.ft. was Rs. 3 to 5 lakh per year. Mathivanan (2013) [3] conducted a study on cultivation and marketing pattern of rose in Hosur Taluk. It was concluded that 100 per cent of the respondents reported high profit in the cultivation of rose cut flower.

Methodology: A total of 100 farmers growing flowers were selected randomly from the four districts *i.e.* Hisar, Gurugram, Panipat and Sonepat of Haryana state of India. From the 100 farmers, 50 farmers growing flowers in polyhouses were selected to find out the benefits and constraints faced by them while growing flowers in polyhouses. Data were collected through pre-tested interview schedule. Percentage and WMS were calculated and ranks were assigned to draw the meaningful inferences.

Results

Table 1: General information of the farmers

(n=100)

Sr. No.	Variables	Percentage
1	**Age (years)**	
	30-40	19
	41-50	56
	51-60	25
2	**Gender**	
	Male	97
	Female	3
3	**Education of farmers**	
	Illiterate	10
	High school	31
	Senior secondary	29
	Graduate	25
	Post graduate	05
4	**Area of land (acres)**	
	2-4	18
	4-6	67
	6-8	15

* Multiple responses

General information of farmers: Table 1 shows that majority of farmers (56%) belonged to age group of 41-50 years, a vast majority of farmers (97%) were male and only three per cent farmers were female and 31per cent of farmers were educated up to high school and 29 per cent farmers were educated up to senior secondary whereas only five per cent farmers were post-graduate; majority of the farmers (67%) were owning 4-6 acres of land.

Table 2: Source of general information of farmers

(n=100)

Sr. No.	Mass Media *	WMS	Rank
1	TV	2.65	I
2	Internet	2.46	II
3	Newspaper	2.11	III
4	Radio	2.09	IV
5	Magazine	1.28	V

*Multiple responses

Source of general information of farmers

Table 2 depicts that the source of information used by the farmers were TV, internet, newspaper, radio and magazine. Major source of information used by farmers was TV as it got highest WMS 2.65 and ranked I, followed by internet which got II rank with WMS 2.46 and newspaper got III rank with WMS 2.11. Radio was the second least used source of information which scored 2.09 and magazines were the least used source of information which scored 1.28 and ranked V.

Table 3: District wise distribution of farmers growing flowers

(n=100)

Sr. No	Districts	Farmers having open cultivation (n=50)		Farmers having polyhouses (n=50)		Total (n=100)
		Frequency	Percentage	Frequency	Percentage	
1	Gurugram	19	38	06	12	25
2	Sonepat	12	24	13	26	25
3	Hisar	11	22	14	28	25
4	Panipat	08	16	17	34	25

District wise distribution of farmers

Table 3 shows that in case of open cultivation, majority of farmers (38%) belonged to Gurugram district, followed by farmers who belonged to the Sonepat (24%) and Hisar district (22%). In case of polyhouse cultivation, 34 per cent farmers belonged to Panipat district, followed by Hisar (28%) and Sonepat district (26%) and only 12 per cent farmers belonged to Gurugram district. Overall, equal number of farmers (25%) were selected from all four districts *i.e.* Gurugram, Sonepat, Panipat and Hisar.

Table 4: Flowers grown by the farmers

(n=100)

Sr. No.	Flower *	Percentage
1	Lilium	31
2	English Rose	11
3	Chrysanthemum	03
4	Marigold	40
5	Gerbera	10
6	Tuberose	01
7	*Desi* Rose	45

*multiple responses

Flowers grown by the farmers at floriculture units
Table 4 shows the flowers grown by the farmers. It covered lilium, English rose, chrysanthemum (*Guldaudi*), marigold (*Genda*), gerbera, tuberose (*Rajnigandha*) and *desi* rose. Major flowers grown by the farmers were d*esi* rose (45%), marigold (40%), lilium (31%) and English rose (11%).

Table 5: Benefits received by farmers while growing flowers in polyhouses

(n=50)

Sr. No.	Benefits *	Frequency	Percentage	WMS	RANK
1	**Economic benefits**				
	Subsidy provision	50	100	2.00	I
	Less damage of crop	43	86	1.86	II
	Better quality products	39	78	1.78	III
	Higher production	33	66	1.66	IV
	Off season production	17	34	1.34	V
	Durable asset	09	18	1.18	VI
	AWMS			**1.64**	**II**
2	**Technical benefits**				
	Easy usability	47	94	1.94	I
	Requires less labor	43	86	1.86	II
	Less care intensive	29	58	1.58	III
	Weed free cultivation	27	54	1.54	IV
	Availability of experts nearby	21	42	1.42	V
	Saves crops from diseases	19	38	1.38	VI
	Easy maintenance	17	34	1.34	VII
	AWMS			**1.58**	**III**
3	**Environmental benefits**				
	Protection from birds and animals	50	100	2.00	I
	Protection from rain	38	76	1.76	II
	Protection from winds	37	74	1.74	III
	No hazardous effects on environment	33	66	1.66	IV
	Protection from insect and pest	11	22	1.22	V
	AWMS			1.67	I

* Multiple responses

Benefits received by farmers while growing flowers in polyhouses
Data presented in table 5 show that under economical benefits, 'subsidy provision' for installation of polyhouses was the highly received benefit as it scored highest (WMS 2.00) and got rank I, followed by 'less damage of crop' which got II rank and scored WMS 1.86 and 'better quality production' which scored WMS 1.78 and got rank III. Under the technical benefits, 'easy usability' was the highly perceived benefit as it scored WMS 1.94 (rank I) followed by 'requires less labour' which scored WMS 1.86 (rank II) and 'less care intensive' scored WMS 1.58 (rank III). 'Easy maintenance' got least score *i.e.* WMS 1.34 and ranked VII. It was encouragable that environmental benefits were the highly perceived benefits. Protection from 'birds and animals' got the first rank with WMS of 2.00, followed by 'protection from rain' which got II rank with WMS of 1.76 and 'protection from wind' got III rank.

Table 6: Constraints faced by farmers while growing flowers in polyhouses

(n=50)

Sr. No.	Constraints*	Frequency	Percentage	WMS	RANK
1	**Economical constraints**				
	High initial cost of installation	50	100	2	I
	High repairing/maintenance cost	37	74	1.74	II
	Less durable	31	62	1.62	III
	Delay in receiving the subsidy	23	46	1.46	VII
	Poor availability of finance	26	52	1.52	IV
	Polyhouse provides limited production	17	34	1.34	V
	AWMS			**1.61**	**I**
2	**Technical constraints**				
	Requires repairing again and again	37	74	1.74	I
	Requires special skill	13	26	1.26	II
	Scarcity of skilled labor	11	22	1.22	III
	Difficult to use	03	06	1.06	IV
	AWMS			**1.32**	**III**
3	**Miscellaneous constraints**				
	Nematode problem	39	78	1.78	I
	Fungus problem	39	78	1.78	I
	Time consuming	35	70	1.70	II
	Weed problem	23	46	1.46	III
	More care intensive	21	42	1.42	IV
	Requires more labor	07	14	1.14	V
	AWMS			1.55	II

* Multiple responses

Constraints faced by farmers while growing flowers in polyhouses

Table 6 presents the constraints faced by farmers including economical, technical and miscellaneous constraints. It was found that in the economical constraints, 'high initial cost' was major constraint faced by farmers as it scored WMS 2.00 (rank I), followed by 'high repairing/maintenance cost' which scored WMS 1.74 (rank II) and 'less durable assets' which scored WMS 1.62 (rank III). In the technical constraints, 'requires repairing again and again' was the highly faced constraint got rank I (WMS 1.74), second constraint was 'require special skill' which scored WMS 1.26 and 'difficult to use' was the least constraint faced and scored WMS 1.06. In the miscellaneous constraints, 'nematode and fungus problems' were the highly faced constraints and got equal score i.e. WMS 1.78, followed by constraints of 'time consuming' which scored WMS 1.70 and 'weed problem' which scored WMS 1.46 (rank III).

Table 7: Other constraints faced by the farmers during flower cultivation

(n=50)

Sr. No.	Other constraints *	Frequency	Percentage
1	Non availability of good quality planting material	37	74
2	Fluctuation in market demand and prices	38	72
3	No/less market avenues	43	86
4	Shortage of cold storage	32	64
5	Transportation problem	40	80

*Multiple responses

Others constrains faced by farmers during flower cultivation

It was noticeable that 'no/less market avenues' was major constraint faced by majority of farmers (86%), followed by 'transportation constraint' (80%), 'non availability of good quality of planting material' (74%), 'fluctuations in market demand and prices' (72%) and 'shortage of cold storage' (64%).

Conclusion

It is concluded that majority of the farmers were male (97%), educated upto high school (31%) and major source of general information was TV. Majority of the farmers were growing *desi* roses (45%) and marigold flowers (40%). Environmental benefits got first rank with the WMS of 1.67, followed by economical benefits (WMS 1.64) and technical benefits (WMS 1.58). Economical constraints were the highly faced constraints which scored WMS 1.61 (rank I), followed by miscellaneous constraints which scored WMS 1.55 (rank II) and technical constraints which scored WMS 1.32 (rank III). Other constraints faced by the farmers were 'no/less market avenues, transportation problem, non availability of good quality of planting material etc.

Recommendations

Involvement of rural women in floriculture is negligible (3.00%), so there is a need to motivate the women to get involved in floriculture so as to make rural women empowered.

Government should provide cold storage near flower market and there should be at least one market of flowers in Haryana state that can be helpful in reducing the time, cost and wastage of flowers after the harvesting. Further researches/studies must be conducted to promote floriculture at large scale for better contribution in economic upliftment of small and marginal farmers.

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