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Adoption status, constraints and suggestion regarding flower production technology in Punjab

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Abstract
The Flower is the most beautiful creation of the nature which cheers up our mood in any situation. Area under flower is very small as compare to other crops like wheat, rice, maize *etc*. Present study was conducted to know the adoption status of flower production technology, constraints faced by the farmers and to get their suggestions for the improvement in adoption of flower cultivation. For this study, 50 flower producers and 100 other farmers were randomly selected from ten villages of Patiala, Ludhiana, Fatehgarh Sahib and Mohali districts of Punjab. It was found from this study that 80.00 per cent of the flower producers had medium and low extent of adoption regarding the recommended flower production technology while only 20.00 per cent flower producers had high extent of adoption. From 17 aspects of flower production technology, preparation of soil got first rank whereas packaging of flowers got last position in rank hierarchy. High fluctuation in weather conditions, lack of training & skilled labour, Lower market price of flowers and price fluctuation were the major constraints recorded in the study. All the farmers had suggested fixing market price of flower produce and proper crop insurance coverage to uplift the flower cultivation in Punjab.

Keywords: Adoption, constraints, crop insurance, flower producers, production technology

Introduction
The flower is the most beautiful creation of the nature. Nowadays, the celebration of any occasion is impossible without the use of flowers. It plays an important role during god worship, departure of soul or in grief. In a layman language, flowers are our partners from birth to death. Production of flower crops is increasing day by day due to its high demand in different aspects. These trends are being observed since 2003-04 onwards (Anonymous, 2017). In addition to the beautification of the land, flower production is most important for beekeeping industry which provides an alternate source of income to the Indian farmers. In India flower production is comparatively less than western countries due to the lack of knowledge about its advantages. There are therapeutic uses of flowers which are used in Ayurveda medicines (Subhashree *et al*, 2015) [7]. In India highest flower production has been recorded in Tamil Nadu (19%), 416.63 thousand tons followed by Karnataka (13%) 280.92 thousand tons (Anonymous, 2018).

Flower cultivation has been studied as the most well paid and profitable agri-business (Bijalwan *et al*, 2017) [4]. Also, Indian floriculture has gained a hike in exportation of cut flowers due to the advancement of technologies in marketing, post-harvest and marketing approach (Khuraijam *et al,* 2017) [6]. New term "Eco- floriculture" has been introduced for the production of flowers for ecological, economical and ethical value points (Bijalwan *et al*, 2017) [4]. The flower industry comprises of the export and import of cut and loose flowers, landscaping and gardening, protected cultivation, essential oils and perfumes, floristry and value addition (Chawla and Patil, 2016) [5]. Natural dyes (value added product) made from marigold, hibiscus, bixa etc. are the substitute against the synthetic colors which are harmful for human health. The constraint to the floriculture industry is the inadequate supply of the water, pest infection and lack of nursery facilities. To make floriculture as the main stream business, there should be an effective interaction with people, florists, scientists and research scholars. There must be a sufficient provision of seeds, subsidy on farm inputs and awareness among people (Akintoye, 2011) [2]. Present investigation was carried out with following two objectives:

a) To determine the adoption status of recommended flower production technology by the flower producers.
b) To identify the constraints of flower production and to get farmers' suggestions regarding improvement in adoption of flower cultivation.

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Material and Methodology
The study was conducted in the Punjab state. A stratified multistage random sampling design was followed to select the study area and respondents. At the first stage, on the basis of highest concentration of flower production four districts *viz.* Patiala, Ludhiana, Fatehgarh Sahib and Mohali were selected. At the second stage, ten villages were selected from these four districts same on the basis of highest concentration of flower production.

At the third stage, from each village, two complete lists, first of flower producers and second of other farmers were prepared along with the information about their size of land holding. A sample of five flower producers and ten other farmers were randomly selected from each selected village on the basis of probability proportional to number of farmers in each land holding category. In this way, 50 flower producers and 100 other farmers were selected from ten villages in the four selected districts of Punjab. Data was collected with the help of pretested questionnaire through personal interview schedule and it was analyzed with the help of statistical tools like frequency, percentage, mean and standard deviation for this study.

Result and Discussion
1. Overall extent of adoption of flower producers regarding the recommended flower production technology
The use of recommended production technology is important to enhance the quality and productivity for any crop. Flower production in India is very less as compare to developed countries so it was important to study the extent of adoption of flower producers regarding the recommended flower production technology. The data presented in Table 1 revealed that 80.00 per cent of the flower producers had to medium and low extent of adoption regarding the recommended flower production technology while only 20.00 per cent flower producers had fall under high extent of adoption of recommended flower production technology. It indicates that there is a huge adoption gap between the recommended and adopted practices by the flower producers and by bridging this gap, farmers can enhance their productivity and quality of flower produce and can fetch more profit. Similar finding was found by Hossai and Rahman (1994) [10].

Table 1: Distribution of flower producers according to their extent of adoption regarding recommended flower production technology N=50

S. No	Extent of adoption	Frequency	Per cent	Mean	Standard deviation
1	Low	18	36.00		
2	Medium	22	44.00	16.66	1.49
3	High	10	20.00		

2. Extent of adoption of recommended flower production technology by the flower producers
In this study the adoption level of flower producers about the recommended flower production technology was studied and it was clear from the Table 2 that the respondents had maximum adoption about preparation of soil as it got first rank among 17 different aspects of flower production technology followed by application of FYM and irrigation, which got equal 2.18 mean score and presented at second position in rank hierarchy. Maximum 44.00 per cent of flower producers had full adoption regarding preparation of soil while rest 56.00 per cent fall under the category of partial adoption. Sowing depth & method and recommended dose of fertilizers both got third rank with 2.16 mean score followed by sowing time (MS-2.12), preparation of flower beds (MS-2.10), IPM/IDM (MS-1.94) and seed rate (MS-1.90) which was placed at fourth, fifth, sixth and seventh positions in rank hierarchy, respectively. Extent of adoption regarding these aspects was high as compare to others because these were the basis practices which they use normally in other crops also. Weed management and site & soil selection got eighth and ninth rank followed by marketing of products (MS-1.56), harvesting method (1.50) which got tenth and eleventh rank. More technical knowledge is required regarding these four aspects so mean score was reported less as compare to normal operations. Harvesting stage of flower and grading of flower (NS-1.48) got twelfth rank followed by value addition of flower and packing of flower which got thirteenth and fourteenth rank with mean score 1.38 and 1.36 in rank hierarchy. It shows that these practices required highly technical knowledge so extent of adoption regarding these aspects is low as compare of other aspects.

Table 2: Distribution of flower producers according to the adoption level regarding different aspects of recommended flower production technology N=50

S. No	Aspects of flower production technology	Full adoption Frequency (%)	Partial Adoption Frequency (%)	Non Adoption Frequency (%)	Mean Score (MS)	Rank
1	Site & Soil selection	08(16.00)	26(52.00)	16(32.00)	1.84	IX
2	Preparation of soil	22(44.00)	28(56.00)	00(00.00)	2.44	I
3	Application of FYM	17(34.00)	25(50.00)	08(16.00)	2.18	II(a)
4	Preparation of flower beds	15(30.00)	25(50.00)	10(20.00)	2.10	V
5	Seed rate	11(22.00)	23(46.00)	16(32.00)	1.90	VII
6	Sowing time	16(32.00)	24(48.00)	10(20.00)	2.12	IV
7	Sowing depth & sowing methods	17(34.00)	24(48.00)	09(18.00)	2.16	III (a)
8	Recommended dose of fertilizers	18(36.00)	22(44.00)	10(20.00)	2.16	III (b)
9	Irrigation	17(34.00)	25(50.00)	08(16.00)	2.18	II(b)
10	IPM/IDM	11(22.00)	25(50.00)	14(28.00)	1.94	VI
11	Weed management	08(16.00)	27(54.00)	15(30.00)	1.86	VIII
12	Harvesting stage of flower	04(08.00)	16(32.00)	30(60.00)	1.48	XII(a)
13	Harvesting Method	05(10.00)	15(30.00)	30(60.00)	1.50	XI
14	Grading of flowers	04(08.00)	16(32.00)	30(60.00)	1.48	XII(b)
15	Packaging of flower	02(04.00)	14(28.00)	34(68.00)	1.36	XIV
16	Value addition of flowers	01(02.00)	17(34.00)	32(64.00)	1.38	XIII
17	Marketing of products	04(08.00)	17(34.00)	29(58.00)	1.56	X

3. Constraints reported by flower producers and other farmers in adoption of flower production technology

The information regarding the constraints faced by the flower producers in flower production and constraints reported by the other farmers which were acting as barrier for them in the adoption of flower cultivation. All constraints were studied in five areas *i.e.* environmental constraints, technical constraints, labour related constraints, economic constraints and marketing related constrains. The information so collected has been presented in Table 3.

Three important environmental constraints were identified and ranked which acted as barrier in flower production. The data given in Table 3 indicate that high fluctuation in weather conditions got first rank followed by decrease in quality and production due to natural clematises and poor drainage system which got second and third rank. Six major constraints were also identified under the technical constraints area and it was found that lack of training about flower production got first rank followed by lack of proper marketing system and lack of

quality agrochemicals required at farmer level which got second and third rank. Lack of resistant and tolerant verities to adverse conditions got fourth rank followed by lack of diagnostic skill of insect-pest and diseases and lack of source of information. From labour related constraints area, it was found that lack of skilled labour is the major constraints followed by high cost of labour and non-availability of labour during harvesting/plucking of flowers. From four main economic constraints, lower market price of flowers and lack of remunerative MSP policy got first and second rank followed by poor crop insurance coverage and high cost of inputs which got third and fourth rank. From marketing related constraints, price fluctuation and perishable nature of flower produce were reported by all the farmers followed by lack of marketing facilities nearby and high cost of transportation which got second and third rank. The above results are similar to that of research finding done by Hossai, and Rahman, 1994 [10] and Dadlani and N.K., 2003 [9].

Table 3: Constraints given by the flower producers in flower production and in adoption of flower production by the other farmers N=150

S. No	Constraints	Frequency	Per cent	Rank
1.	**Environmental constraints**			
a.	High fluctuation in weather conditions	145	96.96	I
b.	Poor drainage system	65	43.33	III
c.	Decrease in quality and production due to natural calamities	142	94.66	II
2	**Technical constraints**			
a.	Lack of training about flower production technology	132	88.00	I
b.	Lack of proper marketing system	128	85.33	II
c.	Lack of diagnostic skill of insect-pest and disease	115	76.67	V
d.	Lack of source of information	107	71.33	VI
e.	Lack of resistant and tolerant verities to adverse conditions	120	80.00	IV
f.	Lack of quality agrochemicals required at farmer level	127	84.66	III
3	**Labour related constraints**			
a.	High cost of labour	135	90.00	II
b.	Lack of skilled labour	145	96.67	I
C	Non availability of labour during harvesting/ plucking the flowers	129	86.00	III
4.	**Economic constraints**			
a.	High cost of inputs	131	87.33	IV
b.	Lower market price of flowers	150	100.00	I
c.	Lack of remunerative MSP policy	146	97.33	II
d.	Poor crop insurance coverage	145	96.76	III
5.	**Marketing related constraints**			
a.	Price fluctuation	150	100.00	I(a)
b.	Lack of market facilities nearby	147	98.00	II
c.	Perishable nature of flower	150	100.00	I(b)
d.	High cost of transportation	103	68.67	III

4. Suggestions given by the respondents

In this study, the suggestions were also collected the flower producers and respondent farmers were to uplift the flower cultivation in Punjab. Total 13 suggestions were collected and presented in Table 4. It is clear from the data that all the farmers had suggested about fix market price of flower produce and proper crop insurance coverage. From the total 150 respondents, more than 90 per cent had suggested to make availability of input & credit facility, quality seed & seedlings, mechanization facility and training facility regarding flower production technology by the state government. About 78.00 to 88.00 per cent of the respondents suggested for the establishment of high tech storage facility, pack house & processing units and effective source of information. Along with these suggestions, suggestions regarding effective technical information, demonstration at farmer level, proper transport facility and market establishment nearby villages were also given by the respondents for the improvement of flower cultivation

venture. Similar finding found out by Bahera (2015).

Table 4: Suggestions given by the flower producers and other farmers regarding the increase of flower cultivation adoption in the study area n=150

S. No	Suggestions	Frequency	Per cent
1	Input & credit for flower production	147	98.00
2	Market establishment nearby village	65	43.33
3	Fix market price	150	100.00
4	Compatible training facility	140	93.33
5	Proper transport facilities	87	58.00
6	Mechanization facilities	143	95.33
7	Availability of quality seed & seedling	146	97.73
8	Effective technical information	142	64.67
9	High tech storage facility	128	85.33
10	Pack house & processing unit	117	78.00
11	Demonstration at farmer level	95	63.33
12	Effective source of information	131	87.33
13	Proper Crop insurance coverage	150	100.00

5. Recommendation
On the basis of our own observation and from the finding of the study we offer following recommendations:

- Govt. should take step to provide marketing facilities and proper market price for horticulture crops, adequate credit and crop insurance coverage which may play important roles to adopt the flower production technology.
- Extension agencies and seed companies should avoid that factors which adversely affect the adoption of improved flower production technology such as low quality seed, improperly and untimely supply of seed and supply of that chemical like insecticide, pesticides etc. which are unsuitable to the local conditions.
- Steps should be taken to see that more modal farms, demonstrations plots and seed farms are introduced in the community development blocks to serve the farmers as important centers of information and supply in the process of diffusion of innovations.

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