

## Adoption of Commercial Cut Flower Production Technology in Meerut

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### ABSTRACT

*In India the area under cultivation of different flowers is 103,000 ha. About 99 per cent of the flowers are cultivated in open condition and only 1 per cent under greenhouse condition. Postharvest management and value addition to cut flowers can enhance prices up to 5-10 times. Gladiolus and tuberose, two very popular cut flower crops in India are grown mainly in the temperate parts country. The study was conducted in Meerut and Ghaziabad districts of Uttar Pradesh. The majority of the cut flower cultivators were found to have high (31.3 per cent), very high (28.8 per cent) and medium (20 per cent) level of knowledge of cut flower cultivation technology. Majority of the respondents (80 %) were found to possess high to medium adoption in gladiolus production technology whereas 80 percent tuberose cultivators were found to possess medium to high adoption. In case of gladiolus, the adoption of commercial cut flower cultivation technology was found to be positively and significantly correlated with their education, social participation, and experience in flower cultivation, extension agency contact and mass media exposure. The adoption of commercial tuberose cultivation technology was found to be positively and significantly correlated with their education and mass media exposure, land holding and social participation, caste, family size, occupation, extension contact, economic motivation, risk orientation and experience in flower cultivation.*

**Key words:** *Post-harvest management; Value addition; Gladiolus; Tuberose; Extension agency; Mass media exposure; Commercial tuberose cultivation technology;*

**F**loriculture has become one of the important high value agricultural industries in many countries of the world. International trade in cut flowers is growing at a rate of 25 per cent annual growth rate. The international trade is around US\$ 11 billion and cut flowers contribute 60 per cent of the world trade in floriculture. The global exports increased over ten folds from 0.5 billion in 1995 to 5.1 billion to 2005, which again is poised to double by 2025. India has a long tradition of floriculture. India's share in the US \$11 billion global market is only 0.65 per cent. The total area under cultivation of different flowers in India is 103,000 ha. The major cut flowers grown in India are China aster, rose, tuberose, gladiolus and jasmine. With the changing life styles and increased urban affluence, floriculture has assumed a definite commercial status in recent times and during the past three decades particularly. The commercial activity of production and marketing of floriculture products is also a source of gainful and quality employment to scores of people. India seems to be a dormant seed, a country

with immense potential to emerge as front-runner in global trade but lagging behind in the race. In India 98.55 per cent of the flowers are cultivated in open condition and only 1.5 per cent under greenhouse condition. Postharvest management and value addition to cut flowers can enhance prices up to 5-10 times. The information on the area under floriculture and the production generated is highly inadequate. As commercial floriculture is an activity which has assumed importance only in recent times, there are not many large farms engaged in organized floriculture. In most parts of the country flower growing is carried out on small holdings, mainly as a part of the regular agriculture systems. Gladiolus and tuberose, two very popular cut flower crops in India are grown mainly in the temperate parts of the country i.e. in northern plains and parts of southern India. With the linking of India with global markets, international trade will assume considerable significance besides inducing changes in the domestic agricultural production scenario. There is expected to

be a structural change in the export market-mix. It is also likely that the policy changes initiated may turn the terms in favour of agriculture. With this background, a study was planned with the objective to find out the knowledge and adoption of cut flower cultivators regarding commercial cut flower cultivation practices.

**METHODOLOGY**

The study was conducted in Meerut and Ghaziabad districts of Uttar Pradesh. These districts were purposively selected, as flower cultivation covers a large area in these districts. The districts also enjoyed the infrastructure facilities of a nearby Delhi International Airport and Indian agricultural research institute for the technical support. Two blocks each of these districts Meerut and Daurala from Meerut, Hapur and Modinagar from Ghaziabad were selected purposively, where gladiolus and tuberose were cultivated and one village from each block were selected randomly by using the random number table. Twenty flower growers from each of the four villages were selected by using simple random sampling technique. It accomplished a total of eighty flower cultivators. The data was collected through survey method. The major tools used for data collection were interview schedules (structured and semi-structured), in-depth discussion and secondary sources. Taking into consideration the scope and objectives of the study a well-structured interview schedule was prepared. Based on the result of pre-test, suitable modifications were made and a final interview schedule was prepared. The collected data were coded and tabulated for statistical analysis. The statistical tools and tests such as frequency, percentages, mean, standard deviation, correlation and ‘t’ test were used wherever found appropriate and data were analyzed systematically to draw valid inferences.

**RESULTS AND DISCUSSION**

*Knowledge level of cut flower cultivators about improved cut flower production technology:* The distribution of the cut flower cultivators according to their knowledge of cut flower cultivation technology is presented in Table 1.

The mean score for knowledge was 10.32 out of maximum score of 12. The majority of the cut flower cultivators were found to have high (31.3 per cent), very high (28.8 per cent) and medium (20 per cent) level of knowledge of cut flower cultivation technology. About 11.3 per cent and 8.6 per cent of the cut flower

cultivators had low and very low level of knowledge of cut flower production technology respectively. Since, cut flowers are cultivated commercially; very few cut flower cultivators were having low level of knowledge in this area. Almost 80 percent of the cut flower cultivators were having either high or medium level of knowledge of cut flower production technology. It may be concluded that cut flower cultivation had boosted knowledge level of the cut flower cultivators in this area.

Table 1. Distribution of cut flower cultivators according to their knowledge of cut flower production technology (N=80)

Knowledge level of cut flower production technology	N	%age
Very low (Less than 9)	7	8.6
Low (9 to 9.85)	9	11.3
Medium (9.86 to 10.70)	16	20
High (10.71 to 11.50)	25	31.3
Very high ( More than 11.50)	23	28.8
Total	80	100
Mean=10.32		
Standard deviation=1.29		

*Extent of adoption of gladiolus cut flower production technology:* Among the production practices, 12 aspects were included in the adoption index. The total adoption score on improved gladiolus cultivation for each farmer was computed by adding up the scores of all twelve items. These adoption scores were further analyzed and the results are given in Table 2.

Table 2. Distribution of gladiolus growers on extent of adoption. (N=80)

Extent of adoption of cut flower production technology (Gladiolus)	N	%age
Very low (Less than 9)	7	8.8
Low (9 to 9.90)	10	12.5
Medium (10 to 10.90)	17	21.3
High (11 to 11.90)	23	28.8
Very high ( More than 11.90)	23	28.8
Total	80	100
Mean=10.56		
Standard deviation=1.27		

The result shows that 28.8 per cent each of respondents had high and very high adoption behavior about scientific gladiolus cultivation practices followed by 21.3 per cent of medium adoption behavior. The low and very low adoption constitutes 12.5 percent and 8.8 per cent respectively. So it reveals that a majority of

the respondents (80 %) were found to possess high to medium adoption behavior. This was a positive trend which needs to be taken ahead with further efforts in this direction.

*Extent of adoption of tuberose cut flower production technology* : Among the production practices, 12 aspects were included in the adoption scale. The total adoption score on improved tuberose cultivation for each farmer was computed by adding up the scores of all twelve items. These adoption scores were further analyzed and the results are given in Table 3.

Table 3. Distribution of tuberose growers on extent of adoption. (N =80)

Extent of adoption of cut flower production technology (Tuberose)	N	%age
Very low (Less than 9)	11	13.8
Low (9 to 9.90)	9	11.3
Medium (10 to10.90)	29	36.3
High (11 to11.90)	18	22.5
Very high ( More than 11.90)	13	16.3
Total	80	100

Mean=9.77

Standard deviation=1.19

The results show that 36.3 per cent of respondents had medium and 22.5 per cent had high adoption behavior about scientific tuberose cultivation practices followed by 16.3 per cent of very high adoption behavior. The very low and low adoption constitutes 13.8 percent and 11.3 per cent respectively. So it reveals that a majority of the respondents (80 %) were found to possess medium to high adoption behaviour. This was encouraging finding and further efforts should be made to bring the same trend for other categories.

*Correlation analysis between extent of adoption of gladiolus cultivation practices and selected variables of the cut flower cultivators*: Correlation of adoption behavior with socio-personal-economic, psychological and communication characteristics of cut flower cultivators was studied using multiple correlation co-efficient. The results indicated in Table 4 shows that the adoption of commercial cut flower cultivation technology was found to be positively and significantly correlated with their education, social participation, and experience in flower cultivation, extension agency contact and mass media exposure.

Age of cut flower cultivators was however, having negative correlation with adoption. Some of the variables

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like caste, family size, occupation, land holding, risk orientation, economic motivation, annual family income, were having positive correlation but were found to be non-significant.

Table 4. Correlation analysis between adoption of gladiolus cut flower cultivation practices and selected independent variables.

S. No.	Socio-personal-economic variables	Correlation coefficients (r) of adoption behavior of improved cultivation practices
1.	Age	-0.194
2.	Education	0.306**
3.	Caste	0.176
4.	Family size	0.058
5.	Occupation status	0.064
6.	Social participation	0.271*
7.	Land holding	0.212
8.	Annual family income	0.117
9.	Experience in flower cultivation	0.248*
	Psychological variables	
9.	Risk orientation	0.000
10.	Economic motivation	0.153
	Communication Variables	
12.	Extension contact	0.227*
13.	Mass media exposure	0.552**

\*\* Significant at 0.01 level of probability

\* Significant at 0.05 level of probability

*Correlation analysis between adoption of tuberose cultivation practices and selected variables of the cut flower cultivators*: The result of the correlation analysis revealed that the adoption of commercial tuberose cultivation technology was found to be positively and significantly correlated with their education and mass media exposure at one per cent level of significance. Land holding and social participation were found to have positive and significant correlation at five percent level of significance. The variable age was found to have negative correlation with adoption. However, the rest of the variables, namely, caste, family size, occupation, extension contact, economic motivation, risk orientation and experience in flower cultivation were found to be positive but non-significantly correlated with the adoption of tuberose cultivation technology.

Education was found highly significantly correlated with adoption of tuberose cultivation practices. This means that more educated cut flower cultivators had greater adoption of tuberose cultivation technology.

Similar is the case in social participation and mass media exposure as these were also had positive correlation with adoption. Here it was observed that age had negative correlation as was the case in gladiolus. So, younger the farmer higher was the adoption. One additional variable coming as significantly correlated was land holding which was non-significant in case of gladiolus

Table 5. Correlation analysis between adoptions of tuberose commercial cut flower cultivation practices and selected independent variables.

S. No.	Socio-personal-economic variables	Correlation coefficients (r)
1.	Age	-0.102
2.	Education	0.342**
3.	Caste	0.181
4.	Family size	0.104
5.	Occupation status	0.056
6.	Social participation	0.246*
7.	Land holding	0.261*
8.	Annual family income	0.176
9.	Experience in flower cultivation	0.176
Psychological variables		
9.	Risk orientation	0.126
10.	Economic motivation	0.183
Communication variables		
12.	Extension contact	0.119
13.	Mass media exposure	0.443**

\*\* Significant at 0.01 level of probability.

\* Significant at 0.05 level of probability.

In case of gladiolus and tuberose, from the correlation findings we can conclude that the age was proved to be negative with the adoption. So, the extension

strategy should be of targeted approach towards the young farmers who had high adoption rate of gladiolus cultivation technology and old age group farmers should be educated regarding new innovations. Education level of farmers was found to have positive and significant contribution with adoption. This implies that higher the education level more will be the adoption of improved cut flower gladiolus cultivation technology. Hence, because social participation proved to be significant there is a need to further improve the social participation of the flower cultivators by mobilizing them towards forming the self help groups and to form co-operative associations. Extension agency contact should be further strengthened which found to be significant with the adoption .By using the mass media services like news papers, radio, T.V etc. the new technologies regarding the gladiolus and tuberose cultivation can be communicated to flower cultivators. The results of this study are inline with the findings of *Reddy and Tirky (2004)*, *Hegde (1992)* and *Chandegara et.al. (1999)*.

**CONCLUSION**

The extension strategy should be of targeted approach towards the young farmers who had high adoption rate of gladiolus and tuberose cultivation technology and old age group farmers should be educated regarding new innovations. There is a need to further improve the social participation of the flower cultivators by mobilizing them towards forming the self help groups and to form co-operative associations. Extension agency contact should be strengthened for higher adoption of cut flower technologies among flower cultivators by using the mass media services like News Papers, Radio, T.V etc.

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