



# ECONOMICS OF DIFFERENT *GLADIOLUS* CULTIVARS GROWN UNDER OPEN FIELD CONDITIONS IN SOUTHERN ZONE OF ANDHRA PRADESH

Devi Priya Avilala<sup>1\*</sup>, K. Swarajya Lakshmi<sup>1</sup>, R. Nagaraju<sup>1</sup> and D. Drinivasa Reddy<sup>2</sup>

<sup>1</sup>Department of Horticulture, Dr. Y.S.R. Horticultural University, COH, Anantharajupet, Y.S.R. District- 516 105, (A.P.), India.

<sup>2</sup>Department of Entomology, Dr. Y.S.R. Horticultural University, COH, Anantharajupet, Y.S.R. District- 516 105, (A.P.), India.

## Abstract

A field experiment was carried out at College of Horticulture, Anantharajupet, Y.S.R. District during the year 2013-2014 among fourteen cultivars of gladiolus to find out the commercial cultivar under Southern zone of Andhra Pradesh. The results revealed that cost of cultivating gladiolus per hectare amounted to Rs. 8,34,917.43 and there was significant difference among fourteen gladiolus cultivars with respect to B:C ratio. Arka Amar recorded maximum net returns (Rs. 28,70,083 ha<sup>-1</sup>) and B:C ratio (3.41) followed by American Beauty (Rs. 24,80,083 ha<sup>-1</sup>) and B:C ratio (3.02).

**Key words:** *Gladiolus*, economics, cost, cultivation and cultivars.

## Introduction

India ranks 2<sup>nd</sup> next to china under cultivation in floriculture having an area of 309 thousand hectares with a production of 1653 thousand tonnes of loose flowers and 593 thousand tonnes of cut flowers (NHB, 2017). With increasing urbanization, the demand for cut flowers is increasing day by day. Among cut flowers gladiolus occupies fifth place in the international floriculture trade and 4<sup>th</sup> position in bulbous flower trade (Kumar *et al.*, 2007). Gladiolus is an important florist crop, most popular as cut flower in the domestic and International market. Gladiolus was introduced into commercial cultivation towards the end of the 16<sup>th</sup> century, whereas in India, it is of comparatively recent introduction during early part of 19<sup>th</sup> century and gaining importance as a modern cut flower. In India it is commercially cultivated in West Bengal, Himachal Pradesh, Sikkim, Karnataka, Uttar Pradesh, Tamil Nadu, Punjab and Delhi. Though India has suitable agro-climatic conditions for gladiolus cultivation, the scope for expansion of area under this crop is limited and hence, it is necessary to utilize the available land efficiently. One way of doing this is not only to increase the yield but also to obtain higher returns

\**Author for correspondence* : E-mail: devipriya.avilalaa@gmail.com

per unit area. Presently the information available on economic feasibility of adopting different cultivars in gladiolus crop is incompetent. Hence, the present study was carried out to find out commercial cultivar to obtain maximum yield and cost benefit ratio among different gladiolus cultivars.

## Material and Methods

The present experiment was carried out at college of Horticulture, Dr. Y.S.R. Horticultural University, Anantharajupet, Y.S.R. District during the year 2013-2014. The experiment was laid out in Randomized Block Design with fourteen treatments (Ac No. 7, American Beauty, Arun, Arka Amar, Arka Gold, Arka Naveen, Bindya, Darshan, Dhiraj, Sadabahar, Suchitra, Swarnima, Sylvia, Tilak) and three replications. Corms of different varieties were thoroughly cleaned and planted by adopting a spacing of 30 × 20 cm. Recommended dose of FYM @ 25 t ha<sup>-1</sup> and NPK (200:75:75 kg ha<sup>-1</sup>) fertilizers was applied in the form of Urea, Single Super Phosphate (SSP) and Murate of Potash (MOP). The experimental site was kept weed free by periodical hand weeding and need based plant protection measures were taken up to protect the plants from pest and disease incidence. Five plants were selected at random and tagged in each replication

**Table 1:** Cost of cultivation (hectare<sup>-1</sup>) of gladiolus cultivars.

S.No	Particulars	Unit	Quantity	Price Unit <sup>-1</sup> (Rs.)	Total (Rs.)
1.	Planting material	Plant <sup>-1</sup>	30cm × 20 cm spacing	5.00 corm <sup>-1</sup>	7,50,000
2.	Manures- FYM	tonnes	25	400	10,000
3.	Fertilizers				
	Urea	Kg	434.78	6.00 kg <sup>-1</sup>	2,608.68
	S.S.P	Kg	468.75	9.00 kg <sup>-1</sup>	4,218.75
	M.O.P	Kg	80	20.00 kg <sup>-1</sup>	1,600.00
4.	Plant protection chemicals				
	Chlorantranilprole (Coragen)	ml	150	-	2,000
	Redomil	Kg	6	1600 Kg <sup>-1</sup>	9,600
	Copper oxy chloride	Kg	3	530 Kg <sup>-1</sup>	1,590
<b>Labour inputs (Man days)</b>					
5.	Land preparation	MD	30	130	3,900
6.	Planting	MD	30	120	3,600
7.	Manure application	MD	10	130	1,300
8.	Fertilization	MD	10 × 3	120	3,600
9.	Plant protection chemical application (drenching)	MD	10 × 5	120	6,000
10.	Irrigation	MD	5 × 10	130	6,500
11.	Weeding	MD	15 × 5	120	9,000
12.	Harvesting	MD	15 × 8	120	14,400
13.	Transport and other expenses				5,000
Total					8,34,917.43

in all treatments for the purpose of recording yield parameters. Based on the yield data, the gross returns and net returns were calculated for each treatment. The benefit cost ratio (B:C) was determined by dividing the net returns with the total cost of each treatment on hectare bases. The cost of cultivation in each treatment was worked out based on the actual expenditure incurred on each item. The cost of corms, manures, chemical fertilizers, pesticides, fungicides, labour wages and all the

cultural practices including harvesting was worked out based on the prevailing prices and wages during the cropping season and expressed as cost of cultivation per hectare.

**Gross income:** The gross income was calculated on the basis of sale price of gladiolus spikes and corms prevailing during the study period. The total yield of gladiolus cut flowers and corms was multiplied with the average price prevailed in the market and expressed as total income per hectare.

**Table 2:** Economics of different gladiolus cultivars.

Cultivars	Yield hectare <sup>-1</sup> (Lakhs)		Revenue (Rs.)		Gross returns (Rs.)	Net returns (Rs.)	B:C ratio
	Spikes	Corms	Spikes	Corms			
Acc.no 7**	1,50,000	1,50,000	9,00,000	6,00,000	15,00,000	6,65,082.6	0.81
American Beauty*	3,90,000	3,90,000	17,55,000	15,60,000	33,15,000	24,80,083	3.02
Arun*	1,90,500	1,90,500	8,57,250	7,62,000	16,19,250	7,84,332.6	0.95
Arka amar**	3,70,500	3,70,500	22,23,000	14,82,000	37,05,000	28,70,083	3.49
Arka gold**	3,00,000	3,00,000	18,00,000	12,00,000	30,00,000	21,65,083	2.63
Arka naveen*	3,60,000	3,60,000	16,20,000	14,40,000	30,60,000	22,25,083	2.71
Bindya**	1,69,500	1,69,500	10,17,000	6,78,000	16,95,000	8,60,082.6	1.05
Darshan*	3,40,500	3,40,500	15,32,250	13,62,000	28,94,250	20,59,333	2.51
Dhiraj*	3,30,000	3,30,000	14,85,000	13,20,000	28,05,000	19,70,083	2.40
Sadabahr*	2,70,000	2,70,000	12,15,000	10,80,000	22,95,000	14,60,083	1.78
Suchitra*	2,80,500	2,80,500	12,62,250	11,22,000	23,84,250	15,49,333	1.89
Swarnima**	1,90,500	1,90,500	11,43,000	7,62,000	19,05,000	10,70,083	1.30
Sylvia**	2,40,000	2,40,000	14,40,000	9,60,000	24,00,000	15,65,083	1.90
Tilak**	2,50,500	2,50,500	15,03,000	10,02,000	25,05,000	16,70,083	2.03

Cost of spikes: Grade I \*\* -6.00 Rs. per spike, Grade II \* -4.5 Rs. per spike; Cost of corms: 4 Rs. per corm.

Net income = Gross income - cost of cultivation in each treatment.

$$\text{Benefit cost ratio} = \frac{\text{Net returns}}{\text{Total cost of cultivation}}$$

The data were analyzed using the procedure outlined by Panse and Sukhatme, (1967).

## Results and Discussion

Benefit cost ratio is an important factor which decides the optimum level of inputs to be used for maximization of production and returns in any crop. In the present study, the benefit-cost ratio was worked out for different cultivars of gladiolus. The details of cost of cultivation, gross and net income and benefit cost ratio of different cultivars were presented in table 1 and 2.

The cost of required for cultivating gladiolus per hectare was amounted to Rs. 8,34,917.43 which includes material cost (planting material, manures, fertilizers and pesticides) and labour cost. Among fourteen gladiolus cultivars, American Beauty (3,90,000) recorded highest number of spike and corm yield per hectare followed by Arka Amar (3,70,500). In gladiolus corm production directly depends on number of shoots produced per mother corm as reported by Ramachandrudu and Thangam, (2008). In present investigation, the cultivars American Beauty and Arka Amar produced more number of shoots per mother corm. Kishan, (2010) also reported that American Beauty recorded maximum number of tillers plant<sup>-1</sup> and corms plant<sup>-1</sup> (3.44 and 3.33, respectively).

In gladiolus, spike length is an important qualitative character in view of export. Based on the length of the spikes produced by each cultivar different gladiolus cultivars were graded accordingly grade-I cultivars having spike length varied from 91-70 cm and grade-II cultivars with spike length < 70 cm. In present study, cultivar Arka Amar produced grade-I (82.73 cm) spikes which costs for Rs. 6.00 per spike whereas cv. American Beauty produced grade-II (68.13 cm) Spikes which costs for Rs. 4.5 per spike in market.

There was significant difference among fourteen gladiolus cultivars with respect to B:C ratio. Among different cultivars, Arka Amar recorded maximum net returns (Rs. 28,70,083 ha<sup>-1</sup>) with higher B:C ratio (3.41) followed by American Beauty (Rs. 24,80,083 ha<sup>-1</sup>) with B:C ratio (3.02). Whereas Acc.No 7 and Arun rcordeed minimum net returns (6,65,082.6 and 7,84,332.6 respectively) with B:C ratio (0.81 and 0.95 respectively).

Based on the economics of cost of cultivation, it was revealed that the major portion of cost of cultivation was consumed by planting material itself. In gladiolus the final income is decided based on the out turn of first grade quality of spikes and corms. Similar variations were also observed by Chengappa *et al.*, (1998) in gladiolus, Mysore *et al.*, (2005) in carnation, Singh *et al.*, (2011) in gladiolus.

From the present investigation it was concluded that the gladiolus cultivars Arka Amar and American Beauty were found promising with regard to spike and corm yield per hectare. The same cultivars as mentioned above may be recommended for commercial cultivation under open field conditions of local region. Multilocational trials may be carried out with the promising gladiolus cultivars in different regions of Rayalaseema and can be further evaluated for other crop production practices and to be standardized.

## References

- Chengappa, D.G., N.N. Nethra and D.M.G. Reddy (1998). Cut flower industry in Karnataka: Analysis of trade constraints. Research Report, University of Agricultural Sciences, Bangalore.
- Kishan Swaroop (2010). Morphological variation and evaluation of gladiolus germplasm. *Indian Journal of Agricultural Sciences.*, **80(8)**: 742-745.
- Kumar, P., R.K. Dubey, R.S. Singh and Ramesh Kumar (2007). Effect of *Trichoderma viride* and *Pseudomonas fluorescense* on corm and cormel production in gladiolus. *Journal of Ornamental Horticulture.*, **10(3)**: 184-186.
- Mysore, S., T.M. Gajanana and V. Dakshina moorthy (2005). Economic feasibility and profitability of carnation cultivation. *Journal of Ornamental Horticulture.*, **8(4)**: 254-259.
- NHB Data Base (2017). Published by National Horticultural Board Department of Agriculture and Co-operation Government of India.
- Panse, V.G. and B.V. Sukhatme (1967). *Statistical Methods for Agricultural Workers*. ICAR publication, New Delhi. 100-161.
- Ramachandrudu, K. and M. Thangam (2008). Performance of gladiolus varieties under agro-climatic conditions of Goa. *Journal of Ornamental Horticulture.*, **11(2)**: 91-97.
- Singh, K.P., T.M. Gaganana and K.V. Subramanayam (2011). Effect of planting densities on yield and economics of gladiolus cultivation. *Annals of Horticulture.*, **4(1)**: 104-105.