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Effect of weed control method on gladiolus (*Gladiolus grandiflorus* L.) cv. American beauty on economics

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Abstract
The present investigation "Effect of weed control methods on gladiolus (*Gladiolus grandiflorus* L.) cv. American Beauty" was conducted in the Department of Floriculture and Landscape Architecture, College of Agriculture, Indira Gandhi Agricultural University, Raipur, Chhattisgarh during the *rabi*season of year 2017-18. The experiment consisted of 11 treatment combinations of different weed control treatments *viz.* Pendimethalin 30% EC @ 1.0 kg a.i. ha^{-1} (PE) + hand weeding at 30 DAP (T_1), Pendimethalin 30% EC @ 2.0 kg a.i. ha^{-1} (PE) + hand weeding at 30 DAP (T_2), Oxyfluorfen 23.5% EC @ 0.25 kg a.i. ha^{-1} (PE) + hand weeding at 30 DAP (T_3), Oxyfluorfen 23.5% EC @ 0.50 kg a.i. ha^{-1} (PE) + hand weeding at 30 DAP(T_4), Pendimethalin 30% EC @ 1.0 kg a.i. ha^{-1} (PE) + Fenoxaprop-p-ethyl 9.3% EC @ 0.10 kg a.i. ha^{-1} at 30 DAP (PoE) (T_5), Pendimethalin 30% EC @ 2.0 kg a.i. ha^{-1} (PE) + Fenoxaprop-p-ethyl 9.3% EC @ 0.10 kg a.i. ha^{-1} at 30 DAP (PoE) (T_6),Oxyfluorfen 23.5% EC @ 0.25 kg a.i. ha^{-1} (PE) + Fenoxaprop-p-ethyl 9.3% EC @ 0.10 kg a.i. ha^{-1} at 30 DAP (PoE) (T_7), Oxyfluorfen 23.5% EC @ 0.50 kg a.i. ha^{-1} (PE) + Fenoxaprop-p-ethyl 9.3% EC @ 0.10 kg a.i. ha^{-1} at 30 DAP (PoE) (T_8), One Hand Weeding at 30 DAP (T_9), Two Hand Weeding at 30 and 650 DAP (T_{10}) and Un weeded (Control) (T_{11}). On the basis of economic assessment of various treatments, it may be inferred that application of Pendimethalin 30% EC @ 1.0 kg a.i. ha^{-1} (PE) followed by one Hand Weeding at 30 DAT gave the highest additional profit of Rs. 1659254.0 $hectare^{-1}$ as well as the highest B:C ratio (1: 2.73) followed by Oxyfluorfen 23.5% EC @ 0.25 kg a.i. ha^{-1} (PE) + hand weeding at 30 DAP with 1: 2.38 B: C Ratio as compared to other treatments. The minimum B:C ratio of 1.00 was recorded at control.

Keywords: Weed management & gladiolus

Introduction
Flowers are wonderful creation of God and one of most beautiful gift of nature to human. They are used to express the feelings of love, joy, sorrow and happiness because they have the power to make us happy and cheerful on different occasion like marriage, valentine day, birthday, funeral wedding etc. Different kind and types of flowers are used by people on different occasions and it stands for strength and moral integrity.

Gladiolus (*Gladiolus grandiflorus* L.) belongs to family Iridiaceae with chromosome number n=15 and native of South Africa and Tropical Africa (Mukhopadhyay, 1995) [4]. The name gladiolus was originally coined by Pliny the Elder (A.D.23-79), from the Latin word *gladius*, meaning a sword, also known as 'Sword lily'. Gladiolus was introduced to India during 19th century (Apte, 1958) [1]. It is referred as "Queen of bulbous flowers" crop, due to its magnificent inflorescence, brilliant colours, attractive shapes, varying sizes, straight and considerably hardy spike with long vase life are desirable characteristics.

Gladiolus is a very popular flowering plant in international cut flower trade and occupies fourth place after rose, carnation, and chrysanthemum (Bose, 2000) [2]. Commercial cultivation of gladiolus is gaining popularity due to export potential in various parts of the country (Sidhu and Arora, 1989). Delhi, Mumbai, Bangalore are major domestic market centers and the main centers for commercial cultivation are Srinagar (Jammu and Kashmir), Shimla (Himachal Pradesh), Chaubattia and Supi (Uttar Pradesh), Kalimpong and Darjeeling (West Bengal), Shillong and Jorhat (Assam), Pune (Maharashtra), Bangalore (Karnataka) and Ooty (Tamil nadu) etc. It is a popular flower among growers of state because thousands of spikes are being sold every year. In the Chhattisgarh state, it is estimated that gladiolus is cultivated in an area of 1922 ha with a production of 5279 MT (Krishi diary 2017-18).

Material and Methods

Economics (Rs)

Cost of cultivation for each treatment was worked out separately gross return (Rs ha^{-1}) was obtained by converting the harvest in to monetary terms at the prevailing market rate during the course of investigation. Net return was obtained by deducting cost of cultivation from gross return. The benefit: cost ratio was calculated with the help of following formula (Reddy *et al*., 2004).

Benefit cost ratio = Gross return / Net return

Results and Discussion

Influence of weed control treatments on economics

Economics is the most important aspect of any research upon which the recommendation depends. Until and unless a farmer is well convinced about a purposeful gain from a particular package of practices, he would not be willing to adopt the same. It was, therefore, thought pertinent to undertake the studies on economic aspect of the present investigation. The data pertaining to cost of cultivation (Rs. ha^{-1}), gross return (Rs. ha^{-1}), net return (Rs. ha^{-1}) and B:C ratio as affected by different treatments have been summarized and presented in table no. 1.

Data regarding cost of cultivation clearly reveals thatthe highest cost of cultivation (Rs. 456936) was associated with treatment T_{10} which included two hand weeding at 30 and 60 DAP and closely followed by treatment T_2 (Rs. 446064) which included higher dose of pendimethalin applied as pre-emergence followed by a hand weeding and treatment T_4 (Rs. 446040) in which higher dose of oxyfluorfen applied as pre-emergence followed by a hand weeding. The lowest cost of cultivation (Rs.428236) was associated with treatment T_{11}in which weeds were not controlled by any methods.

The results of gross return clearly exhibited that the highest gross return (Rs. 2096196.1) was noted under treatments T_1 (Pendimethalin 30% EC @ 1.0 kg a.i. ha^{-1} (PE) + hand weeding at 30 DAP) which was closely followed by T_3(Oxyfluorfen 23.5% EC @ 0.25 kg a.i. ha^{-1} (PE) + hand weeding at 30 DAP) *i.e.* 1939286.7. Treatment T_{11} where no weed control treatment was applied recorded the lowest gross return (Rs. 863230.4).

A critical study of data regarding net return revealed that maximum net return (Rs. 1651584.3) was noted under treatment T_1 (Pendimethalin 30% EC @ 1.0 kg a.i. ha^{-1} (PE) + hand weeding at 30 DAP) which was followed by T_2 (Pendimethalin 30% EC @ 2.0 kg a.i. ha-1 (PE) + hand weeding at 30 DAP) *i.e.*1471438.6. The lowest net return (Rs. 863230.4) was associated with treatment T_{11} *i.e.* control.All the applied weed control treatments recorded better and higher net returned as compared to unweeded treatment.

An appraisal of mean data of B:C ratio showed that highest B:C ratio (1: 2.71) was found under treatment T_1 viz. pendimethalin 30% EC @ 1.0 kg a.i. ha^{-1} (PE) + hand weeding at 30 DAP closely followed by T_3 viz. oxyfluorfen 23.5% EC @ 0.25 kg a.i. ha^{-1} (PE) + hand weeding at 30 DAP (1: 2.36) and the lowest B:C ratio (1: 1.02) was recorded under treatment T_{11} viz. un weeded.

Higher economic return is an important consideration in selection of weed control treatments for particular agro-climatic zone as farmers are more concerned with higher return per unit area, time and investment. Gross return derivative of total economic yield of any crop. Thus, higher yield results into higher gross return as well as net return. The difference in cost of cultivation in present experiment was due to the different herbicides used and variation in their doses. Different weed control treatments caused significant variation in the gross return, net return as well as benefit: cost ratio. The highest of gross return, net return as well as benefit: cost ratio was recorded at treatment T_1 and T_3. This may be due to the fact that there were significant variation in yield owing to these treatments which in turn envisage more response of the crop. The findings of present investigation are in conformity the report of Swathi Desai (2011) who observed maximum net returns Rs. 7,96,180 with a benefit cost ratio of (1:1.21) with lower concentration of pendimethalin at 0.75 kg a.i. ha^{-1} followed by one hand weeding in gladiolus cv. White Prosperity.The results are also in agreement with the findings of Rao *et al*. (2014) [5], Dhakar *et al*. (2016) [3] and Swaroop *et al*.(2017).

Table 1: Yield and economics of gladiolus as influenced by different weed control treatments.

Treatments	Cost of Cultivation (Rs. ha^{-1})	Gross Return (Rs. ha^{-1})	Net Return (Rs. ha^{-1})	B:C Ratio
T_1: Pendimethalin 30% EC @ 1.0 kg a.i. ha^{-1} (PE) + hand weeding at 30 DAT	444612	2103865.7	1659254.0	2.73
T_2: Pendimethalin 30% EC @ 1.0 kg a.i. ha^{-1} (PE) + hand weeding at 30 DAT	446064	1917502.3	1471438.6	2.30
T_3: Oxyfluorfen 23.5% EC @ 0.25 kg a.i. ha^{-1} (PE) + hand weeding at 30 DAT	444600	1947157.5	1502557.8	2.38
T_4: Oxyfluorfen 23.5% EC @ 0.50 kg a.i. ha^{-1} (PE) + hand weeding at 30 DAT	446040	1705792.2	1259752.4	1.82
T_5: Pendimethalin 30% EC @ 1.0 kg a.i. ha^{-1} (PE) + fenoxaprop-p-ethyl 9.3% EC @ 0.10 kg a.i. ha^{-1} at 30 DAT (PoE)	432108	1604255.4	1172147.7	1.71
T_6: Pendimethalin 30% EC @ 2.0 kg a.i. ha^{-1} (PE) + fenoxaprop-p-ethyl 9.3% EC @ 0.10 kg a.i. ha^{-1} at 30 DAT (PoE)	433560	1593273.8	1159714.1	1.67
T_7: Oxyfluorfen 23.5% EC @ 0.25 kg a.i. ha^{-1} (PE) + fenoxaprop-p-ethyl 9.3% EC @ 0.10 kg a.i. ha^{-1} at 30 DAT (PoE)	432096	1578166.7	1146070.9	1.65
T_8: Oxyfluorfen 23.5% EC @ 0.50 kg a.i. ha^{-1} (PE) + fenoxaprop-p-ethyl 9.3% EC @ 0.10 kg a.i. ha^{-1} at 30 DAT (PoE)	433536	1561305.9	1127770.1	1.60
T_9: One hand weeding at 30 DAT	442586	1753804.2	1311218.5	1.96
T_{10}: Two hand weeding at 30 and 60 DAT	456936	1805167.6	1348231.9	1.95
T_{11}: Unweeded (Control)	428236	1285354.8	857119.0	1.00

Sale Rate: Spikes @ Rs. 3/ spike $Corm^{-1}$ @ Rs. 2 / $corm^{-1}$

Reference

1. Apte SS. Kieming van gladiolus kralen1 (Spouting of gladiolus corms1) Meded Dir Juing. 1958; 21:749-753.
2. Bose TK, Yadav LP. Commercial flowers. Naya Prokash Publishers New Delhi. 2000, 267-329.
3. Dhakar Sunita, Swaroop K, P Singh Kanwar, Singh P, Das TK, Kumar Prabhat. Integrated weed management practices in gladiolus and their effect on flowering, weed density and corm yield Indian J Hort. 73(4), December, 2016, 570-575.
4. Mukhopadhyay A. Gladiolus, ICAR Publications. 1995, 45-50.
5. Rao K. Dhanumjaya Kameswari, P Lalitha, Girwani A, Baby Rani T. Chemical weed management in gladiolus (*Gladiolus grandiflorus*). Agric. Sci. Digest. 2014: 34(3):194-198.
6. Reddy BR, Reddy PM. Studies on time of sowing of sunflower and weed management practices in groundnut and sunflower intercropping during kharif season. Indian journal of Dryland Agricultural Research and development. 2005; 20(1):19-30.