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EFFECT OF INTERCROPPING IN GLADIOLUS WITH CORIANDER, FENUGREEK AND SOYA

Kunvar Manvendra Pratap Singh* and Devi Singh

Department of Horticulture, Allahabad School of Agriculture, Sam Higginbottom Institute of Agriculture, Technology and Sciences (SHIATS), Allahabad

**E-mail: manvendrasingh987@gmail.com*

ABSTRACT: The present experiment on "intercropping in gladiolus with coriander, fenugreek and soya under Allahabad condition was conducted during *Rabi* season at research farm of Department of Horticulture, SHIATS, Allahabad. The results revealed that growth parameters of coriander, fenugreek and soya, such as seed germination (%) , plant height, number of leaves and branches/plant were found to be higher under the treatment T_2 (coriander sole), T_3 (fenugreek sole) and T_4 (soya alone) followed by their individual intercropping with gladiolus, viz. T_5 (gladiolus + coriander), T_6 (gladiolus + fenugreek) and T_7 (gladiolus + soya). The performance of gladiolus in all respect (growth to yield) was found better under the combination of T_6 (gladiolus + fenugreek).

Keywords : *Gladiolus, fenugreek, coriander, soya, growth, herbage yield, corm yield.*

Gladiolus cultivation under northern Indian plains, coastal areas of Tamil Nadu and Pondicherry has a potential to change the economic scenario of farmers of these areas. Gladiolus is a flower of glamour and perfection which is known as the queen of bulbous flowers due to its elegant spikes with florets of massive form, brilliant colours, attractive shapes, varying size and excellent shelf life. Gladiolus is grown as flower bed in gardens and used in floral arrangements for interior decoration as well as making high quality bouquet (Lepcha *et al.,* 1). Intercropping with flowering herbaceous plants increases parasitoid survivor-ship, fecundity and retention, and pest suppression in agro ecosystems.(Patt *et al.,* 3)

MATERIALS AND METHODS

This experiment was conducted in Floriculture Unit, Department of Horticulture, Allahabad School of Agriculture, SHIATS, Allahabad. Soil of the experimental plot was sandy loam, uniform in texture and well drained. The experiment was laid out in Randomized Block Deign (RBD) with three replications. A total eight intercropping treatments viz. T_1-Gladiolus alone, T_2-Coriander alone, T_3- Fenugreek alone, T_4- Soya alone, T_5- Gladiolus + Coriander, T_6- Gladiolus + Fenugreek, T_7- Gladiolus+ Soya, and T8-Gladiolus + Coriander + Fenugreek + Soya were adopted. All the recorded observations were subjected to the statistical analysis. The data on growth and herbage yield components of intercropped crops were subjected to Fisher's method of analysis of variance as outlined by Panse and Sukhatme (2).

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RESULTS AND DISCUSSION

Effect of intercropping on herbs with gladiolus

Data depicted in Table 1 revealed that a significant variation was observed in crops (coriander, fenugreek and soya) intercropped with gladiolus. Significantly maximum seed germination in coriander (96.67%), fenugreek (93.33%) and soya (91.67%) was observed under their sole cropping, while the minimum germination of 85%, 83.33% and 81.67%, respectively was recorded under in T_8 treatment (gladiolus + coriander + fenugreek + soya). The same trend was also observed for plant canopies in all three herbs grown individually and/or as intercrop. The tallest plants (33.93 cm, 27.13cm and 27.20 cm) and maximum number of leaves (58.40, 60.07 and 50.33) and branches/plant (15.40, 17.93 and 11.60) were recorded in coriander, fenugreek and soya, respectively when they were grown as sole crop. When they all were intercropped with gladiolus (T_8), plant canopy of these herbs (coriander/fenugreek/soya) reduced to minimum as 24.33cm, 23.13cm and 18.0cm (plant height), 52.13, 46.67 and 44.47 leaves/plant, and 10.53, 14.53 and 7.0 branches/plant, respectively (Table 1). The same trend was also observed for maximum total herbage yield of 7.87 t, 8.80 t and 7.47 t per hectare for coriander, fenugreek and soya, respectively when they were grown as sole crop. Intercropping of all these three herbs with gladiolus (T_8) resulted in the lowest herbage yield.

Table 1: Effect of intercropping in gladiolus with coriander, fenugreek and soya.

Treatment	Seed germination (%)			Plant height (cm)			No. of leaves/plant			No. of branches/plant			Herbage yield/plot (g)			Herbage yield (t/ha)		
	C	F	S	C	F	S	C	F	S	C	F	S	C	F	S	C	F	S
T_1 -Gladiolus sole																		
T_2 - Coriander sole	96.67			33.93			58.40			15.40			787.33			7.87		
T_3- Fenugreek sole		93.33			27.13			60.07			17.93			880.00			8.80	
T_4 -Soya sole			91.67			27.20			50.33			11.60			746.67			7.47
T_5- Gladiolus + Coriander	88.33			29.20			56.00			13.67			507.00			5.47		
T_6 -Gladiolus + Fenugreek		85.00			25.20			53.67			16.00			666.67			6.67	
T_7 -Gladiolus + Soya			85.00			22.73			46.80			9.93			481.00			4.81
T_8 -Gladiolus + Coriander + Fenugreek + Soya	85.00	83.33	81.67	24.33	23.13	18.00	52.13	46.67	44.47	10.53	14.53	7.00	377.00	421.33	357.33	3.44	4.21	3.57
C. D. (P = 0.05)	2.44	4.05	3.51	4.68	1.92	4.35	2.41	6.38	1.79	2.02	1.45	1.50	120.51	201.60	114.13	0.87	2.02	1.14

Table 2 : Effect of intercropping on gladiolus with coriander, fenugreek and soya.

Treatment	Plant height (cm)	No of leaves/ plant	No. of shoots / corm	Days to spike initiation	Days to opening of the first floret	First floret durability (Days)	Spike length	Rachis length	No of floret per spike	No. of opened florets / spike	No. of partially opened florets / spike	Floret size (cm)	Durability of spike (days)	No. of spikes /ha (lakh)	No. of corms /planted corm	No. of corms /ha (lakh)	No. of cormlets/ plant	No. of cormlets/ha (lakh)
T_1	26.87	4.40	1.53	68.53	80.67	9.27	75.93	47.93	15.33	13.27	2.07	8.53	9.73	1.38	2.07	1.86	20.40	18.36
T_2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
T_3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
T_4	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
T_5	28.97	5.13	1.80	66.67	78.33	9.60	76.80	49.33	16.00	13.87	2.13	8.73	10.47	1.08	2.13	1.28	21.73	13.04
T_6	34.87	6.93	2.13	63.60	74.40	10.67	80.67	52.80	18.67	16.20	2.47	9.67	12.20	1.28	2.40	1.44	23.93	14.36
T_7	30.73	6.20	1.93	65.33	76.53	10.07	78.47	51.13	17.07	14.80	2.27	9.13	11.27	1.16	2.20	1.32	22.73	13.64
T_8	24.73	3.73	1.47	69.80	82.20	8.87	74.87	46.87	14.20	12.27	1.93	8.27	8.87	0.44	2.00	0.60	19.93	5.98
(C.P. = 0.05)	1.90	0.73	0.16	1.32	1.76	0.40	1.05	1.39	1.06	0.91	0.25	0.25	0.79	0.09	0.10	0.07	0.91	0.57

Effect of intercropping on gladiolus with herbs

It is evident from the data (Table 2) that plant height (34.87cm), number of leaves/plant (6.93) and number of shoots/mother corm (2.13) were significantly maximum when gladiolus was inter cropped with fenugreek (T_6). The minimum plant height (24.73 cm), number of leaves/plant (3.73) and number of shoots/mother corm (1.93) in gladiolus were noted under T_8 treatment (gladiolus + coriander + fenugreek + soya).

Significantly the earliest spike emergence (63.60 days after planting) as well as earliest opening of first floret (74.40 DAP) were observed when gladiolus was intercropped with fenugreek (T_6) followed by T_7 (gladiolus + soya), T_5 (gladiolus + coriander) and T_8 (gladiolus + coriander + fenugreek + soya). Maximum durability of first floret (10.67 days), longest spike (80.67cm) and maximum length of rachis (52.80 cm) were in gladiolus intercropped with fenugreek (T_6) followed by gladiolus + soya (10.07 days, 78.47 cm and 51.13 cm, respectively) and gladiolus + coriander (T_5).

Gladiolus intercropped with coriander + fenugreek + soya (T_8) exhibited the lowest values for spike (74.87cm) and rachis (46.87cm) length, and first floret durability (8.87 days). Significantly the highest number of florets/spike (18.67), number of opened florets/spike (16.20) and maximum floret size (9.67cm) were found in gladiolus intercropped with fenugreek (T_6), and values for these parameters were observed minimum (14.20, 12.27 and 8.27 cm) with T_8 (gladiolus + coriander + fenugreek + soya). Longevity of spike (12.20 days) as well as number of partially opened florets/spike (2.47) was also maximum in combination of gladiolus + fenugreek. Yield of spikes (1.28 lakh/ha), corms (2.40/mother corm, and 1.44 lakh/ha) and cormels (23.93/plant) were noted maximum in gladiolus intercropped with fenugreek (T_6).

From the above going discussion, it may be concluded that individual growing of coriander, fenugreek and soya (as sole crop) performed best for their growth and yield traits. While, intercropping of gladiolus with fenugreek (T_6) resulted best performance regarding growth, flowering and yield of gladiolus. Thus, intercropping of gladiolus with fenugreek may be recommended for higher benefit.

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