



Integrated weed management in gladiolus

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ABSTRACT

A field experiment was carried out during *Rabi* season from 2007-2010 at Chatha, Jammu to find out relative efficiency of weed management practices in gladiolus (*Tagetes erecta* L.). Result revealed significant enhancement in spike yield with 2 hand weedings at 20 and 40 days after transplanting (6.05 t/ha) and pendimethalin 2 kg/ha + 1 hand weeding (5.79 t/ha), both of which were superior to weedy check (3.25 t/ha). The highest weed control efficiency (78.2%) was also achieved with 2 hand weedings, followed by pendimethalin + hand weeding (76.9%). Application of pendimethalin along with hand weeding proved to be economical.

Key words: Gladiolus, Hand weeding, Herbicides, Integrated weed management

Gladiolus is an important cut flower crop commercially grown in many tropical, sub-tropical and temperate parts of the world. It is ideal both for garden display and floral arrangements for table and interior decoration as well as making high quality bouquet. It contributes largely to the floriculture industry by virtue of its yield potential, colour variation and long life. In India, gladiolus has established itself as a commercial proposition. In the modern agriculture, the weed control is becoming essential for higher yield of gladiolus. Employing labour increases cost of cultivation and affects successful commercial flower production. Integrated weed management is effective, economic and eco-friendly approach in improving and sustaining the agricultural productivity (Foy 1993). An attempt was made to find out an effective weed management practice in gladiolus under irrigated subtropical conditions of Jammu & Kashmir.

MATERIALS AND METHODS

An experiment was carried out during *Rabi* season of 2007-08, 2008-09 and 2009-10 at the research farm of Sher-e-Kashmir University of Agriculture Science and Technology-Jammu, Chatha. Soil of the experimental site was sandy clay loam, having pH 7.76, low in available N, P and medium in K. Planting of gladiolus was done by dibbling at a spacing of 40 x 40 cm. Application of N, P and K was made 500, 300 and 200 kg/ha through urea, diammonium phosphate, murate of potash, respectively. Thirteen treatments comprising of hand weeding alone and along with pre-emergence application of pendimethalin 2 kg/ha, atrazine 1.5 kg/ha, glyphosate 2 kg/ha), local thatch

grass mulching in the inter-row, directed burner flaming in inter-rows, besides weed-free and weedy check were laid out in randomized block design. Data on dry weed weight at 60 days after sowing and weed population were collected. Fresh spike yield was recorded at different pickings.

RESULTS AND DISCUSSION

Two hand weedings at 20 and 40 DAS registered minimum weed population (4.66/m²) and weed dry weight (2.58 g/m²), closely followed by pre-emergence application of pendimethalin 2 kg/ha + 1 HW and two directed burner flaming in inter-rows (Table 1). Reduction in weed population and weed dry weight in these treatments can be attributed to relatively better management practices which shifted the competition in favour of gladiolus. There was significant enhancement in weed control efficiency (78.2%) and spike yield (6.05 t/ha) with 2 hand weedings, followed by application of pendimethalin +1 HW (76.9% and 5.79 t/ha), both of which were significantly superior to weedy check (3.25 t/ha). The crop plants in the former treatments experienced good vegetative growth right from the early stages up to the end of cropping period because of less competition of weeds for nutrients, water, space and sunlight.

There was considerable loss in yield due to persistence of weeds. Maximum yield loss *i.e.* weed index value was in weedy check treatment (53.4%) in comparison to weed-free plots. Application of pendimethalin + 1 HW proved to be economical weed management practice. Similar findings were obtained by Singh and Bijimol (1999) and Patil and Shalini (2006).

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Table 1. Effect of integrated weed management on growth, yield and weed dynamics of gladiolus

Treatment	Weed population (no/m ²)			Weed dry matter (g/m ²)			Fresh spike yield (t/ha)			Weed index (%)	Weed control efficiency (%)
	2007- 08	2008- 09	2009- 10	2007- 08	2008- 09	2009- 10	2007- 08	2008- 09	2009- 10		
One hand weeding (20DAS)	6.7 (43.5)	7.8 (60.1)	7.2 (51.1)	3.5 (11.6)	3.4 (10.9)	4.2 (17.0)	4.72	4.81	4.91	30.9	68.3
Two hand weeding (20, 40 DAS)	4.7 (21.2)	4.3 (17.9)	4.9 (23.3)	2.4 (5.1)	2.1 (3.6)	3.1 (8.7)	5.91	6.07	6.14	13.3	78.2
Local thatch grass mulching in the inter-row spaces	8.6 (73.3)	9.2 (84.0)	9.1 (81.9)	4.2 (16.8)	4.2 (17.3)	4.2 (16.7)	4.02	4.29	4.34	39.4	64.1
One hand weeding + local thatch grass mulching	7.9 (62.7)	7.8 (60.0)	7.2 (51.4)	4.0 (15.7)	4.0 (15.6)	3.9 (14.2)	4.36	4.41	4.57	36.1	65.9
Two directed burner flamings in inter-rows	5.4 (27.6)	5.3 (27.3)	5.1 (25.0)	3.4 (10.7)	3.1 (8.7)	2.9 (7.8)	5.37	5.66	5.88	19.1	73.2
Atrazine 1.5 kg/ha pre-emergence	8.2 (65.6)	7.9 (62.0)	7.1 (49.5)	4.3 (17.9)	4.0 (15.6)	3.9 (14.5)	4.06	4.38	4.40	38.5	65.2
Pendimethaline 2 kg/ha pre-emergence	9.0 (80.4)	9.1 (81.9)	9.0 (81.6)	4.7 (21.7)	4.6 (20.5)	4.5 (19.7)	3.90	4.14	4.25	41.1	60.7
Glyphosate 2.0 kg/ha post-emergence directed application	9.2 (82.9)	9.0 (81.2)	8.8 (78.0)	4.6 (20.7)	3.9 (14.5)	4.7 (21.6)	4.06	4.22	4.37	39.4	62.4
Atrazine 1.5 kg/ha pre-emergence + 1HW	6.9 (47.7)	6.2 (37.8)	6.0 (35.1)	3.2 (9.76)	3.4 (10.7)	3.2 (9.3)	4.97	5.17	5.26	26.2	72.0
Pendimethaline 2 kg/ha pre-emergence + 1 HW	5.6 (30.5)	5.1 (25.2)	4.9 (23.8)	2.5 (5.6)	2.9 (7.7)	2.6 (6.1)	5.62	5.80	5.95	16.9	76.8
Glyphosate 2.0 kg/ha post-emergence directed application + 1 HW	6.3 (39.5)	5.6 (30.8)	5.3 (27.3)	2.9 (7.7)	2.8 (7.0)	3.8 (13.6)	5.11	5.35	5.41	24.0	72.8
Weed free	1.0 (0.0)	1.0 (0.0)	1.0 (0.0)	1.0 (0.0)	1.0 (0.0)	1.0 (0.0)	6.68	7.00	7.22	0.0	100.0
Weedy check	12.7 (162.3)	12.5 (156.7)	11.9 (156.7)	12.0 (143.0)	11.9 (141.8)	11.5 (132.6)	3.53	3.24	2.97	53.3	0.0
LSD (P=0.05)	0.59	0.23	0.23	0.38	0.63	0.37	0.595	0.43	0.428	-	-

Original values are given in parentheses; DAS=Days after sowing; HW= Hand weeding

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