

Short communication

Evaluation of the different herbicides for controlling weeds in Onion (*Allium cepa* L.)

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Received : Nov 2009 / Accepted : Nov 2010

Onion (*Allium cepa* L.) is an important bulbous vegetable crop grown in India from the ancient times. The crop is grown for green vegetable as well as mature bulbs. It is popular salad crop and also widely used as a cooked vegetable in soups, stews and casseroles as flavouring in many dishes. The outstanding characteristics of onion are the pungency which is due to volatile oil known as "Allyl-propyl-disulphides". Because of its importance in cookery, onion is called "queen of the kitchen" by Germans.

The integrated methods of weed control offer the possibilities of increasing crop production under weed free environment by keeping the crop more healthy by suppressing the weeds, competing for nutrients and sunlight. Hence there is imperative need to screen out suitable herbicides for weed control along with manual weeding/soil stirring in onion bulb crop under different

spacing. Keeping abreast with the above mentioned facts the present investigation was under taken to evaluate the different herbicides for controlling weeds in onion.

An experiment was conducted at Instructional Farm, ASPEE College of Horticulture and Forestry, Gujarat Agricultural University, Navsari during Rabi season of 2001-2002. Ten treatments with two spacing level were tested in Factorial Randomized Block Design (FRBD) with three replication. The treatments are T1 = Pendimethalin 30 EC @ 1.00 kg a.i. ha⁻¹ (pre-emergence), T2 = Pendimethalin 30 EC @ 1.00 kg a.i. ha⁻¹ (post-emergence at 20 DATP), T3 = Alachlor 30 EC @ 1.00 kg a.i. ha⁻¹ (pre-emergence), T4 = Alachlor 30 EC @ 1.00 kg a.i. ha⁻¹ (post-emergence at 20 DATP), T5 = Oxyfluorfen 23.5 EC @ 0.20 kg a.i. ha⁻¹ (pre-emergence), T6 = Oxyfluorfen 23.5 EC @ 0.10 kg a.i. ha⁻¹ (post-emergence at 20 DATP), T7 = One hand weeding at 20 days after transplanting, T8 = Two hand weeding at 20 and 40 days after transplanting, T9 = Two hand weeding at 20 and 40 days after transplanting + soil stirring T10 = Unweeded control

Six week old healthy uniform seedlings was used for transplanting. Transplanting was done in wet soil at 10 x 10 cm and 15 x 10 cm spacing as per treatment upper one third portion seedlings were removed at the time of transplanting to reduce the transpiration and better establishment of crop. All package of practices is done in the experiment and weed control treatments applied as per the treatments. Weed population counts were taken from an area of one square meter from the net plot of each treatment at 30, 60, 90 DATP and at harvest. Fresh weeds were collected from one square meter area in each experimental plot at 60 DATP and at harvest. Weeds were sun dried for about 9 to 10 days and dry weight was recorded. Different weed flora were identified and recorded.

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Table 1: Effect of spacing and weed control treatments on bulb diameter (cm), bulb weight (g), volume of bulb (cm³) and bulb yield

Treatment	Bulb diameter (cm)	Bulb weight (g)	Volume of bulb (cm ³)	Yield (q ha ⁻¹)
Spacing				
S1 (10 x 10 cm)	3.89	49.64	37.91	205.39
S2 (15 x 10 cm)	4.69	52.08	40.63	217.97
S.Em +	0.06	0.64	0.24	2.93
C.D. AT 5%	0.19	1.83	0.71	8.39
Weed control treatments				
T1 = Pendimethalin @ 1.00 kg ha ⁻¹ (Pre-emergence)	5.28	68.29	43.85	263.51
T2 = Pendimethalin @ 1.00 kg ha ⁻¹ (Post-emergence)	2.99	42.99	41.14	119.12
T3 = Alachlor @ 1.00 kg ha ⁻¹ (Pre-emergence)	4.31	50.30	40.14	225.53
T4 = Alachlor @ 1.00 kg ha ⁻¹ (Post-emergence)	3.98	47.68	37.72	192.89
T5 = Oxyfluorfen @ 0.20 kg ha ⁻¹ (Pre-emergence)	4.61	51.53	40.61	233.14
T6 = Oxyfluorfen @ 0.10 kg ha ⁻¹ (Post-emergence)	4.70	48.59	37.61	189.88
T7 = One hand weeding at 20 DATP	4.14	49.49	31.66	192.31
T8 = Two hand weeding at 20 and 40 DATP	4.48	56.76	41.22	231.43
T9 = Two hand weeding at 20 and 40 DATP + Soil stirring	4.84	67.60	41.68	253.08
T10 = Unweeded control	3.57	25.38	37.38	135.91
S.Em +	0.15	1.43	0.55	6.55
C.D. AT 5%	0.43	4.11	1.59	18.76
C.V. %	8.58	6.92	6.48	7.58
Interaction – S x WCT	NS	NS	NS	Sig.

S = Spacing; DATP = Days after transplanting; WCT = Weed control treatment

Weed population of monocot, dicot and sedges at all stages viz., 30, 60, 90 days after transplanting and at harvest were found significantly minimum in closer spacing of 10 x 10 cm. S2T1 interaction also found to be significant for monocot, dicot and sedges weeds. Dry weight of weeds was also found higher in closer spacing of 10 x 10 cm. Spacing and weed control interaction (S1T1) found to be significant for dry weight of weeds. The lowest dry weight of weeds was observed with pendimethalin @ 1.00 kg ha⁻¹ pre-emergence which remained at par with two hand weeding at 20 and 40 days after transplanting + soil stirring.

Growth and yield attributing components viz., bulb diameter, bulb weight and bulb volume were significantly improved with pendimethalin @ 1.00 kg ha⁻¹ pre-emergence followed by two hand weeding at 20 and 40

days after transplanting + soil stirring (Table 2). Significantly the highest bulb yield (263.51 q ha⁻¹) was observed with pendimethalin @ 1.00 kg ha⁻¹ pre-emergence being at par with two hand weeding at 20 and 40 DATP + soil stirring. Weed population of monocot, dicot and sedges at all stages viz., 30, 60, 90 DATP and at harvest was found lowest with pendimethalin @ 1.00 kg ha⁻¹ pre-emergence (Table 2). Similar results were also reported by Patel *et al.* (1983) and Kumar *et al.* (1992).

References

- Kumar V, Thakral KK, Pandita ML (1992) Effect of different weed control treatments in kharif onion. *Haryana J Hort Sci* 21(3-4): 269-273
- Patel CL, Patel ZG, Patel RB (1983) Integrated weed management in onion bulb crop. *Indian J Weed Sci* 15(1): 7-11