

Weed Management in Isabgul (*Plantago ovata*)**B. K. Sagarka, B. B. Ramani, R. K. Mathukia, C. N. Jadav and V. D. Khanpara**

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Isabgul (*Plantago ovata* Forsk), a winter season medicinal crop, has larger demands and is traded in major medicinal drug markets of the world. The crop has achieved considerable area in Saurashtra region of Gujarat. It is commonly sown by broadcasting on flat beds where hand weeding is troublesome, costly and time consuming. Therefore, herbicidal control of weeds may be an effective alternative.

Therefore, a field experiment was conducted during the **rabi** seasons of 2000-01 to 2002-03 at Junagadh Agricultural University, Junagadh (Gujarat) to evaluate isoproturon, thiobencarb and fluchloralin in this crop. The soil of the experimental field was medium black clayey with pH 7.7, EC 0.28 dSm⁻¹ having 236.3, 27.5 and 263.2 kg ha⁻¹ available N, P and K, respectively. The experiment was laid out in a randomized block design with three replications. The treatments involved two doses of isoproturon (250 and 500 g ha⁻¹), fluchloralin (900 g ha⁻¹) each applied as pre- and post-emergence, thiobencarb (1500 g ha⁻¹) as post-emergence, two weedings (20 and 40 DAS), four weedings (15, 30, 45 and 60 DAS) and weedy check (Table 1). Pre- and post-emergence applications were done on the next day of sowing and at 30 DAS, respectively. The variety Gujarat Isabgul-1 was sown by broadcasting the seeds on flat beds on November 8, November 6 and October 30 in the respective season. The spray volume was 500 l ha⁻¹. The spray was done with the help of manually operated knapsack sprayer using flood jet nozzle. The crop was raised with standard package of practices for the region.

The dominant weed species in the experimental field were: *Eluopus villosus* (52%), *Digera arvensis* (23%), *Dactyloctenium aegyptium* (7%) and *Cyperus rotundus* (7%). The other minor weed species were *Indigofera glandulosa*, *Leucas aspera* and

Asphodelus tenuifolius. Fluchloralin at 900 g ha⁻¹ pre-emergence, two weedings and pre-emergence application of isoproturon at 500 and 250 g ha⁻¹ proved most effective against *E. villosus* (Table 1) and were at par with four weedings. Two hand weedings and pre- and post-emergence application of isoproturon at 500 g ha⁻¹ were most effective against *D. arvensis*. The total weed density was significantly lower under four and two weedings than weedy check as well as rest of the treatments. Two hand weedings and pre-emergence application of isoproturon at 500 g ha⁻¹ recorded lowest dry weight of weeds and remained at par with four weedings (Table 1). The weed control efficiency of these two treatments was 86.6 and 56.8% with weed index 1.9 and 7.0%, respectively.

Fluchloralin at 900 g ha⁻¹ was phytotoxic (Table 1). Significantly higher number of tillers plant⁻¹ and larger spikes over weedy check were recorded under four weedings, two weedings and pre-emergence application of isoproturon 500 g ha⁻¹ which resulted in better yield under these treatments. Significantly higher seed and stover yields of Isabgul were produced under four weedings, two weedings and pre- and post-emergence application of isoproturon at 500 and 250 g ha⁻¹ over rest of the treatments and weedy check. Owing to low expenditure, the maximum net return of Rs. 10,168 ha⁻¹ was accrued under pre-emergence application of isoproturon at 500 g ha⁻¹. Similar results have been observed earlier by Patel *et al.* (1996) under north Gujarat conditions.

REFERENCE

- Patel, I. S., M. V. Patel, H. D. Patel and R. H. Patel, 1996. Weed management in blonde psyllium (*Plantago ovata*) under north Gujarat condition. *Indian J. Agron.* 41 : 476-479.

Table 1. Effect of treatments on weeds and crop (Pooled over three seasons)

Treatment	Dose (g ha ⁻¹)	Stage of application	Weed density (No. m ⁻²) 60 DAS			Dry weight of weeds (kg ha ⁻¹)	No. of tillers plant ⁻¹	Length of spike (cm)	Seed yield (kg ha ⁻¹)	Stover yield (kg ha ⁻¹)	Net returns (Rs. ha ⁻¹)	
			<i>E. villosus</i>	<i>D. arvensis</i>	<i>C. rotundus</i>							Total
Isoproturon	250	Pre-em.	2.75 (12)	2.35 (5)	1.94 (5)	5.04 (27)	1328	11.1	2.8	468	5647	8187
Isoproturon	250	Post-em.	3.17 (15)	1.86 (4)	1.41 (2)	4.80 (27)	1089	11.3	3.0	456	5647	7975
Isoproturon	500	Pre-em.	2.90 (11)	1.42 (2)	2.05 (5)	4.15 (20)	718	16.9	3.0	584	6426	10168
Isoproturon	500	Post-em.	2.80 (13)	1.30 (2)	1.09 (1)	4.43 (22)	1126	16.3	2.9	501	5707	8666
Thiobencarb	1500	Post-em.	3.11 (16)	2.17 (5)	1.95 (5)	5.56 (36)	1287	10.7	3.0	400	4295	6125
Fluchloralin	900	Pre-em.	1.46 (3)	2.37 (5)	2.11 (7)	4.53 (21)	1214	16.7	3.6	166	1346	1882
Fluchloralin	900	Post-em.	3.51 (18)	2.32 (6)	2.00 (5)	5.93 (37)	1513	10.7	2.7	396	4369	6098
Two weedings	-	20 & 40 DAS	2.07 (5)	0.88 (0)	1.42 (3)	2.89 (9)	223	16.5	2.9	616	7008	7497
Four weedings	-	15.30.45 & 60 DAS	1.73 (3)	0.71 (0)	0.82 (0)	2.00 (4)	45	16.6	3.0	628	6575	6857
Weedy	-		3.63 (19)	2.88 (8)	1.44 (2)	5.74 (37)	1661	9.9	2.1	299	4903	5773
LSD (P=0.05)	-		1.61	0.81	0.84	1.71	860	3.5	0.6	207	1862	-

The data on weed density were subjected to square root transformation and values in parentheses are original.