

Weed Management Studies in Garden Pea (*Pisum sativum* sub sp. hortens L.)

Harinder Singh and N. N. Angiras

Department of Vegetable Science and Floriculture

CSK Himachal Pradesh Krishi Vishvavidyalaya, Palampur-176 062 (H. P.), India

The garden pea (*Pisum sativum* sub sp. hortens L.) is one of the important cool season vegetable crops in mid and high hills of Himachal Pradesh grown over an area of 8000 hectares with annual production of 8000 metric tonnes. Weeds have been found to reduce the pea yield upto 42% (Singh and Tripathi, 1984). Manual weed control although most effective but is time consuming and uneconomical. Therefore, chemical weed control is the possible solution to increase pod yields by effective control of weeds. A field experiment was conducted at the experimental farm of Department of Vegetable Science and Floriculture, CSK HPKV, Palampur during winter season of 2001-02 to find out efficacy of herbicides and their doses to manage weeds in garden pea and their effects on green pod yield of garden pea. Alachlor and pendimethalin each at 1.0 and 1.5 kg ha⁻¹, fluchloralin at 0.75 and 1.0 kg ha⁻¹, hand weeding once (30 DAS), hand weeding twice (30 and 60 DAS), weed-free and weedy checks were tested in randomized block design with three replications. Alachlor and pendimethalin were applied as pre-emergence, whereas fluchloralin was soil incorporated before planting. The soil of the experimental field was silty clay loam in texture with pH 5.0-5.6. Pea variety 'Palam Priya' was sown on December 2, 2001 in rows 45 cm apart with plant to plant distance of 10 cm. Crop was raised under recommended package of practices of the zone.

Coronopus didymus, *Ranunculus arvensis*, *Bidens pilosa*, *Polygonum alatum* and *Vicia* spp.

collectively constituted 84.6 % and *Phalaris minor* constituted 15.4% of total weed density. All treatments significantly reduced the dry matter accumulation of total weeds over weedy check (Table 1). Weeding twice, being at par with pendimethalin at 1.5 kg ha⁻¹ significantly reduced the total dry matter of weeds over remaining treatments. Pendimethalin at 1.5 kg ha⁻¹ and weeding twice had weed control efficiency of 78.6 and 77.2%, respectively.

Pendimethalin 1.5 kg ha⁻¹ being at par with alachlor at 1.5 kg ha⁻¹ was effective in reducing dry matter accumulation of *B. pilosa* effectively over the remaining treatments. Pendimethalin at both the doses, fluchloralin at 1.0 kg ha⁻¹ and weeding twice being at par with each other resulted in significantly lower dry matter accumulation of *P. alatum* over the remaining treatments. All the herbicides at their higher doses were similar to weed-free in reducing the dry matter accumulation of *Vicia*. Weeding twice was at par with pendimethalin at 1.5 kg ha⁻¹, alachlor at 1.5 kg ha⁻¹ and weed-free with respect to effect on *P. minor*.

None of the herbicides had adverse effect on emergence of pea. All treatments except alachlor at 1.0 kg ha⁻¹ and weeding once resulted in significantly more number of pods per plant over weedy check which is attributed to better growth of the crop due to more availability of nutrients, moisture, space and light to the crop due to reduced crop-weed competition.

Table 1. Effect of treatments on weed dry weight (g m⁻²) and pea

Treatment	Dose (kg ha ⁻¹)	<i>Coronopus didymus</i>	<i>Phalaris minor</i>	<i>Ranunculus arvensis</i>	<i>Bidens pilosa</i>	<i>Polygonum altatum</i>	<i>Vicia spp.</i>	No. of pods plant ⁻¹	Pod yield (t ha ⁻¹)
Alachlor	1.0	5.11 (25.3)	4.15 (16.4)	3.92 (14.6)	4.06 (15.3)	4.09 (16.1)	2.71 (6.4)	10.3	7.7
Alachlor	1.5	4.16 (16.9)	2.78 (13.5)	3.48 (11.3)	2.94 (7.7)	3.10 (8.6)	1 (0)	10.9	9.4
Pendimethalin	1.0	3.68 (13.0)	3.06 (8.5)	2.90 (7.8)	3.65 (12.4)	2.43 (5.0)	2.32 (4.4)	12.7	9.6
Pendimethalin	1.5	2.95 (7.7)	2.53 (5.7)	2.72 (6.6)	2.57 (5.7)	2.33 (4.6)	1 (0)	13.2	10.8
Fluchloralin	0.75	4.58 (20.3)	3.89 (14.5)	3.43 (11.0)	3.81 (13.8)	3.57 (11.8)	3.19 (8.6)	11.2	9.1
Fluchloralin	1.0	3.93 (14.7)	3.21 (9.5)	3.34 (10.4)	3.18 (9.2)	2.68 (6.3)	1 (0)	12.0	9.7
Hand weeding	Once	6.28 (38.6)	4.72 (21.5)	4.79 (22.0)	4.17 (16.5)	4.41 (18.7)	3.44 (10.9)	9.5	7.2
Hand weeding	Twice	2.73 (6.5)	2.50 (5.4)	2.47 (5.3)	3.50 (11.3)	2.86 (7.3)	2.31 (4.6)	12.8	10.6
Weed-free	-	1 (0)	1 (0)	1 (0)	1 (0)	1 (0)	1 (0)	13.4	11.3
Weedy check	-	6.98 (47.8)	5.18 (26.2)	4.87 (22.8)	4.63 (20.5)	4.49 (19.3)	3.61 (12.2)	8.7	6.4
LSD (P=0.05)		0.92	1.95	0.85	0.58	0.57	0.70	1.89	0.34

All the treatments gave significantly higher green pod yield over weedy check (Table 1). The highest green pod yield was obtained in weed-free treatment. Pendimethalin at 1.5 g ha⁻¹ being at par with weeding twice was the next best. This increase in yield increased the pod yield of pea by 70% over

unweeded check.

REFERENCE

- Singh, O. P. and S. S. Tripathi, 1984. Chemical weed control in peas. *Indian J. Weed Sci.* **16** : 49-51.