

**Residual Effect of Chlorimuron-ethyl Applied to Soybean on Succeeding Crops**

**Asha Arora, V. K. Jain and P. C. Jain**

J. N. K. V. V. College of Agriculture, Gwalior-474 002 (M. P.), India

Sulfonylurea herbicides although used in small quantities (4-20 g ha<sup>-1</sup>) can persist in soil for more than one growing season and may injure rotational crops such as sugarbeet, lentil, mustard, sunflower and others (Anderson and Barrett, 1985; Peterson and Arnold, 1985; Friesen and Wall, 1991). Effective control of many problem broad leaf weeds in soybean can be obtained by post-emergence

application of chlorimuron-ethyl. With this object in view, a field experiment was conducted to study the residual effect of chlorimuron-ethyl applied in soybean on succeeding crops.

The experiment was conducted during rabi season of 2001-02 at Research Farm, College of Agriculture, Gwalior on sandy loam soil (pH 7.2), low in available nitrogen and medium in available

Table 1. Residual effect of chlorimuron-ethyl applied in soybean on succeeding mustard, wheat and gram 30 days after sowing

Treatment	Mustard			Wheat			Gram		
	Plant length (cm)	Fresh weight (g plant <sup>-1</sup> )	Dry matter (g plant <sup>-1</sup> )	Shoot length (cm)	Fresh weight (g plant <sup>-1</sup> )	Dry matter (g plant <sup>-1</sup> )	Shoot length (cm)	Fresh weight (g plant <sup>-1</sup> )	Dry matter (g plant <sup>-1</sup> )
Chlorimuron-ethyl 6 g ha <sup>-1</sup> +0.2% S 3 DAS	15.6	2.7	0.3	22.9	0.9	0.2	15.3	0.9	0.2
Chlorimuron-ethyl 6 g ha <sup>-1</sup> 3 DAS	13.8	1.5	0.2	26.3	0.9	0.2	17.1	1.0	0.3
Chlorimuron-ethyl 6 g ha <sup>-1</sup> +0.2% S 7 DAS	14.5	2.4	0.3	25.1	1.0	0.2	16.3	1.2	0.3
Chlorimuron-ethyl 6 g ha <sup>-1</sup> +0.2% S 15 DAS	14.7	2.4	0.3	23.2	0.7	0.2	16.3	1.1	0.3
Chlorimuron-ethyl 9 g ha <sup>-1</sup> +0.2% S 3 DAS	15.1	2.1	0.3	24.3	0.9	0.2	15.5	0.8	0.2
Chlorimuron-ethyl 9 g ha <sup>-1</sup> 3 DAS	15.8	2.5	0.3	24.9	0.9	0.2	15.0	1.0	0.2
Chlorimuron-ethyl 9 g ha <sup>-1</sup> +0.2% S 7 DAS	12.0	1.5	0.3	25.4	0.9	0.2	15.9	1.1	0.3
Chlorimuron-ethyl 9 g ha <sup>-1</sup> +0.2% S 15 DAS	14.5	1.8	0.3	25.2	0.8	0.2	16.5	1.0	0.3
Chlorimuron-ethyl 18 g ha <sup>-1</sup> +0.2% S 3 DAS	11.5	1.5	0.1	26.1	0.9	0.2	17.2	1.1	0.3
Chlorimuron-ethyl 18 g ha <sup>-1</sup> S 7 DAS	13.7	1.3	0.1	25.7	0.9	0.2	15.9	1.1	0.3
Chlorimuron-ethyl 18 g ha <sup>-1</sup> +0.2% S 15 DAS	10.7	1.3	0.1	25.5	0.8	0.2	17.1	1.0	0.3
Pendimethalin 1.0 kg ha <sup>-1</sup> 3 DAS	19.8	2.8	0.4	23.9	0.9	0.2	15.1	0.9	0.2
One hoeing 20 DAS	17.5	2.6	0.3	25.5	1.2	0.3	16.0	0.9	0.3
One hand weeding 20 DAS	16.7	2.4	0.3	27.5	1.1	0.2	16.3	1.0	0.3
Weed-free (3 weedings)	18.5	2.5	0.4	24.7	1.1	0.2	16.2	0.9	0.3
Weedy check	17.3	2.3	0.3	25.9	0.9	0.2	16.6	1.2	0.3
LSD (P=0.05)	4.4	0.9	0.1	NS	NS	NS	NS	NS	NS

NS-Not Significant.

phosphorus and potassium. Treatments consisted of various doses of chlorimuron-ethyl (6, 9 and 18 g ha<sup>-1</sup> with or without surfactant) applied at 3, 7 and 15 days after sowing of soybean (Table 1). Pendimethalin (1.0 kg ha<sup>-1</sup>), one weeding, hoeing, weed-free and weedy check were included in the experiment for comparative assessment. Experiment with 16 treatments and three replications was laid out in randomized block design. Herbicides were applied to soybean as per treatments in **kharif** as spray using 500 litres of water per hectare. After the harvest of soybean, the layout was left undisturbed and mustard variety Pusa bold, wheat variety Sujata and gram variety JG 315 were sown as succeeding crops. Observations on plant height, fresh weight and dry matter production per plant were recorded 30 DAS.

Chlorimuron-ethyl applied to soybean had significant residual effect on mustard growth. No adverse effect on wheat and gram was observed (Table 1). Chlorimuron-ethyl at 18 g ha<sup>-1</sup> alongwith

0.2% surfactant applied either 3, 7 or 15 DAS to soybean reduced the plant height, fresh weight and dry matter of succeeding mustard crop significantly. Plant height, fresh weight and dry matter due to chlorimuron-ethyl at 6 g ha<sup>-1</sup> 3 DAS and plant height and fresh weight at 9 g ha<sup>-1</sup>+0.2% surfactant 7 DAS were significantly reduced as compared to weed-free treatment.

Thus, mustard is a sensitive crop to chlorimuron-ethyl at 18 g ha<sup>-1</sup> applied in soybean.

#### REFERENCES

- Anderson, R. L. and M. R. Barrett, 1985. Residual phytotoxicity of chlorisulfuron in two soils. *J. Environ. Qual.* **14** : 111-114.
- Friesen, G. H. and D. A. Wall, 1991. Residual effect of OGA 131036 and chlorisulfuron on spring sown rotational crops. *Weed Sci.* **39** : 280-289.
- Peterson, M. A. and W. E. Arnold, 1985. Response of rotational crops to soil residues of chlorisulfuron. *Weed Sci.* **34** : 131-136.