

## Weed management studies in garlic

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### ABSTRACT

To find out the effect of different methods of herbicide application in garlic, a study was carried out during *rabi* season of 2006 at CCS Haryana Agricultural University, Hisar. Percent control of weeds was not affected due to method of application of herbicides. Pre-emergence application of pendimethalin at 1.0 kg/ha, oxyfluorfen at 200 and 250 g/ha, pre-emergence spray of trifluralin at 1.0 kg/ha either through sand mixing or spray and oxadiargyl at 100 g/ha applied as pre emergence or 10 and 25 days after transplanting (DAT) as post emergence spray supplemented with one hoeing proved very effective in minimizing population of *C. album*, *Melilotus indica* and *Coronopus didymus*. Efficacy of early post emergence application of oxadiargyl was more as compared to its pre emergence application.

**Key words :** Weed management, Herbicide, Garlic

Due to close canopy structure, garlic crop faces severe competition from weeds resulting in huge yield reduction and some times crop failure also. Herbicidal control of weeds assumes greater significance, being efficient and economical method (Porwal 1995). Due to labour problem farmers feel difficulty in applying herbicides before planting and apply after first irrigation. Further the effectiveness of applied herbicide depends on the application techniques. Keeping it in view, present experiment was planned to study the effectiveness of different herbicides applied through spray or through sand mix broadcast. With a view to evaluate different herbicides and their application techniques present investigation was undertaken.

Experiment consisting of five herbicides at different application rates and methods of application (Table 1) was conducted at Vegetable Research Area of CCS, HAU, Hisar during *rabi*, 2006. Treatments were repeated thrice in a randomized block design keeping a plot size of 3.2 x 2.6 m. Garlic cloves of variety *HG-17* were transplanted on November 12, 2006 at a spacing of 15 x 15 cm. Fluchloralin at 750 and 1000 g/ha was applied before planting by mixing in 800 liters of water per ha and was mixed in soil before planting onion. Onion seedlings were watered one day after transplanting. All the pre-emergence herbicides were applied by broadcasting after mixing with 150 kg sand per ha in standing water one day after planting and by spray with flat fan nozzle using 500 liters of water/ha. Oxadiargyl at 100g/ha was also applied 10 and 25 days after transplanting. Data on density of weeds was recorded at 25 and 50 days after transplanting with the help of quadrat of size 50 x 50 cm by placing at four places in a plot. Data on visual weed control (%) was recorded at 90 days after transplanting (DAT) the crop.

Per cent control of weeds was not affected due to method of application of herbicides. Among herbicides, efficacy of fluchloralin and trifluralin was poor (55-65%) as compared to pendimethalin, oxyfluorfen and oxadiargyl irrespective of method of application. Poor efficacy of fluchloralin as compared to other herbicides in garlic was also reported by Singh and Nandal (2002). Pre-emergence application of pendimethalin at 1.0 kg/ha, oxyfluorfen at 200 and 250 g/ha, pre-emergence spray of trifluralin at 1.0 kg/ha either through sand mixing or spray and oxadiargyl at 100 g/ha applied as pre emergence or 10 and 25 DAT or as post emergence spray supplemented with one hoeing proved very effective in minimizing population of *Chenopodium album*, *Melilotus indica* and *Coronopus didymus* but fluchloralin and sand mix broadcast of pendimethalin and trifluralin were very poor against *Chenopodium murale* as is evident from weed density, percent control of weeds and increased bulb yield of garlic (Table 1). Efficacy of early post emergence application of oxadiargyl was more as compared to its pre emergence application as this herbicide can take care of small emerged weeds also. This is in agreement with the findings of Kathiresan *et al.* (2004) who observed excellent efficacy of this herbicide against weeds in onion in Tamil Nadu. None of herbicide treatment proved effective in minimizing density of *Cyperus rotundus*. Bulb yield was maximum (110.6 q/ha) in weed free treatment which was significantly higher than all herbicide treatments and 50.2% higher than weedy check. Among herbicide treatments, maximum bulb yield (105 q/ha) was recorded with early post emergence application of oxadiargyl at 100 g/ha which was at par with pre emergence application of this herbicide at 100 g/ha, oxyfluorfen at 200 and 250 g/ha, weed free check and two hoeing at 25 and 50 DAS.

**Table 1. Density of different weeds and bulb yield of garlic as affected by weed control treatments**

Treatment	Dose (g/ ha)	Method of application	Time of application	Visual weed control (%)	Weed density(no./m <sup>2</sup> ) 45 DAT			Bulb yield (q/ha)
					<i>C. album</i>	<i>C. murale</i>	<i>Coronopus didymus</i>	
Fluchloralin	750	Sand mix	PPI	55	2.0	28.6	8.2	76.2
Fluchloralin	1000	Sand mix	Pre-em	65	2.0	18.4	4.3	82.5
Fluchloralin	1000	Spray	PPI	65	1.0	11.0	3.0	82.0
Pendimethalin	1000	Sand mix	Pre-em	87	0	14.2	4.2	90.3
Pendimethalin	1000	Spray	Pre-em	90	0	0	0.7	96.4
Oxadiargyl	100	Spray	Pre-em	95	2.0	0	0.7	95.4
Oxadiargyl	100	Sand mix	Pre-em	92	0	0	0	98.8
Oxadiargyl	100	Spray	10 DAT	98	0	0	0	102.2
Oxadiargyl	100	Spray	25 DAT	98	0	0	0	105.0
Oxyfluorfen	200	Spray	Pre-em	97	0	0	0	104.5
Oxyfluorfen	200	Sand mix	Pre-em	100	0	0	0	102.7
Oxyfluorfen	250	Sand mix	Pre-em	100	0	0	0	104.0
Oxyfluorfen	250	Spray	Pre-em	100	0	0	0	103.9
Trifluralin	1000	Spray	Pre-em	60	0	21.3	0.6	80.0
Trifluralin	1000	Sand mix	PPI	58	1.6	23.6	1.3	11.4
Two hoeings*	-		25 & 50 DAP	82	2.2	5.3	2.0	100.6
Weed free				100	0	0		110.6
Weedy check				0	34.0	72.6	5.3	55.0
LSD (P=0.05)				-	3.4	3.2	0.9	-

\* One hoeing at 45 DAT was common to all herbicide treatments except two hoeings at 25 and 50 DAT in T<sub>16</sub>, DAT-Days after transplanting

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