

HERBICIDE TOLERANCE OF *VIOLA CORNUTA*

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Keywords: flower crops, viola, tolerance to herbicides

As part of a programme being conducted by the Seed Technology Centre at Massey University on seed production of flower crops, trials were recently conducted on how to establish viola (*Viola cornuta* cv 'Helios') plants to harvest seed. Two herbicide screening trials were conducted on potted plants to determine how to selectively control weeds in field plantings.

The plants were grown in 300 ml planter bags containing Kiwitea loam soil (4.5% organic carbon, pH 5.0) which were placed outside in a sheltered standing out area on sand beds and subjected to daily automatic overhead irrigation. Herbicide treatments were applied using a pendulum laboratory sprayer operating at 200 kPa and 230 litres/ha. Pre-emergence herbicides (Table 1) were applied on 1 December 1992 both to pots which had each just been sown with ten seeds at a depth of 3 mm and to bare soil which was then planted with 7-week-old viola seedlings. The EPTC treatment was incorporated to a depth of 12 cm. Post-emergence herbicides (Table 2) were applied on 23 December 1992 to viola plants which had been transplanted 4 weeks earlier when they were 7 weeks old. All treatments were replicated five times.

TABLE 1: The effect of some pre-emergence herbicides on potted viola seedlings and transplants assessed by scoring 7 weeks after application. Scores range from 0 (unaffected) to 10 (dead).

Treatment	Trade Name	Application rate (kg ai/ha)	Scores after 7 weeks	
			Trans-plants	Direct sown
alachlor	Lasso MT	2.4	0.4	2.2
chlorpropham	Chloro IPC	2.4	2.0	5.4
chlorthal-dimethyl	Dacthal 75W	7.5	2.4	4.0
diuron	Karmex	1.6	9.2	10.0
EPTC	Eradicane Super	4.3	1.2	3.4
methabenzthiazuron	Tribunil	1.4	1.2	2.0
oryzalin	Surflan Flo	3.5	2.6	4.6
pendimethalin	Stomp 330-E	1.3	1.8	3.6
simazine	Gesatop 500 FW	1.5	3.6	10.0
untreated			0.2	1.8
LSD _{0.05}			2.1	2.8

The selectivity of the herbicides was evaluated by scoring treated plants in subsequent weeks for signs of phytotoxicity, and an analysis of variance was conducted on the data using a completely randomised experimental design. No seed yield data could be obtained because flowering was poor even in untreated plants.

Many of the herbicide treatments were selected because they give poor control of field pansy (*Viola arvensis*), a closely related weed species. Viola and field pansy

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appear to tolerate similar herbicides as most of the chemicals tested caused little damage to the viola plants. However, diuron, simazine and the chlornitrofen/picloram mixture appear too damaging to be worth considering further. Plants treated with post-emergence herbicides were scored more severely if they had few flowers at the 9 week assessment, but most treatments received lower scores at this assessment than the untreated control plants. Although it would be necessary to conduct field trials and harvest seed to confirm this finding, it appears that a wide range of herbicides could be used for selective control of weeds in viola seed crops.

TABLE 2: The effect of some post-emergence herbicides on potted viola plants assessed by scoring 7 and 9 weeks after application. Scores range from 0 (unaffected) to 10 (dead).

Treatment	Trade Name	Application rate (kg ai/ha)	Scores	
			4 weeks	9 weeks
asulam	Asulox	1.2	0.2	1.0
bromofenoxim	Faneron	0.75	0.4	0.6
chlornitrofen + picloram	Fodderkleen	1.2 + 0.075	5.4	7.0
clopyralid	Versatill	0.3	0.4	2.8
2,4-D	2,4-D Amine	1.2	0.0	0.8
2,4-DB	Embutox	2.4	0.2	2.8
dicamba	Banvel 200	0.14	0.2	1.8
dichlorprop	Dyprop	2.5	0.8	4.2
haloxyfop	Gallant	0.25	0.4	1.2
ioxynil	Totril	0.8	1.6	2.0
linuron	Linuron 50	1.0	2.4	2.0
MCPA	IWDMCPA	1.1	1.8	4.4
MCPB	IWDMCPB	1.2	0.0	1.0
mecoprop	Duplosan KV	1.2	1.2	2.0
terbutryn	Igran 500 FW	0.5	0.8	1.8
tribenuron	Granstar	0.011	0.8	3.4
untreated			0.6	3.8
LSD _{0.05}			1.6	2.3