ANNUAL GRASS WEED CONTROL WITH HALOXYFOP, A SELECTIVE POST EMERGENCE HERBICIDE

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The last few years in New Zealand have seen the development of several selective post-emergence grass herbicides primarily to control annual and perennial grasses in vegetables, horticultural field and seed crops, and forestry. Comparison of these herbicides has shown interesting differences in their activity on various grasses.

The performance of haloxyfop one of the most active and broad spectrum of these herbicides has been well recorded previously in this forum, particularly its activity on perennial grasses. Hartley (1984) reported on its activity on perennial and annual grasses in Hawkes Bay, Rahman *et al* (1985) described its residual life in soil., Saville *et al* (1986) reported its activity on pampas grass (*Cortaderia* spp) in forestry and Harris (1987) summarised its activity on a wide range of common perennial grasses.

Between 1983 and 1987 staff of Ivon Watkins-Dow Ltd conducted 35 small scale trials to determine the activity of haloxyfop (Gallant) on a range of common problem annual grass weeds.

Treatments were applied using a back-pack mounted precision sprayer, with a hand held boom operated at 200 kPa and delivering 200-400 litres of spray per hectare, through either Teejet 730-231 or 730-154 flat fan nozzles.

All trials were of randomised block design with two or three replicates. Plot size was generally 10 or 20 m². Visual evaluation of trials was made at three intervals up to 12 weeks after treatment.

Grasses were treated at a wide range of growth stages and conditions from actively growing to drought stressed. The majority of treatments, however, were applied to actively growing grasses, up to early tillering. A level of control greater than 80% is considered acceptable under these conditions. The rates of haloxyfop required to give this level of control are summarised in Table 1.

TABLE 1: Rate of haloxyfop required to achieve over 80% control of actively growing annual grasses.

Grass Weed	No. of trials	Haloxyfop kg ai/ha
<i>Echinochloa crus-galli</i> (barnyard grass)	11	0.0625-0.125
<i>Digitaria sanguinalis</i> (summer grass)	10	0.0625-0.125
<i>Avena fatua</i> (wild oat)	5	0.0625-0.125
<i>Eleusine indica</i> (crowfoot grass)	6	0.125
<i>Setaria viridis</i> (green bristle grass)	4	0.125
<i>Panicum dichotomiflorum</i> (smooth witchgrass)	4	0.125
<i>Poa annua</i> (annual poa)	3	0.250
<i>Vulpia</i> spp. (vulpia hairgrass)	2	Not controlled

As Table 1 shows, 0.125 kg/ha of haloxyfop controlled the majority of susceptible grasses. The exception is *Poa annua* for which 0.25 kg/ha was required to give adequate control. This activity is of particular interest as none of the other selective grass killers currently developed, control this grass adequately. *Vulpia* spp. were not controlled by haloxyfop.

As in the case of perennial grasses the addition of a non-ionic surfactant such as Multifilm X-90 at 0.25% v/v or an emulsifiable paraffinic oil such as B.P. Crop Oil enhanced the activity of haloxyfop. This was particularly so when grasses were at an advanced stage of growth or under moisture stress. On annual grasses there was little

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difference between the surfactant and the oil. The commercial formulation of haloxyfop, subsequently developed, has incorporated a suitable surfactant.

While it is recommended that grasses be treated when as small as practically possible, it was found that susceptible species listed in Table 1, could be controlled regardless of the size of the grass, provided the rate of haloxyfop was increased correspondingly. Where very large plants are treated the period from application until maximum effect may be extended from a normal 3-6 weeks to 12 weeks.

The flexibility of timing of application that this allows coupled with a broad spectrum of activity on grasses and safety on a wide range of broadleaf crops and trees provide the user with a very versatile and efficient grass weed herbicide.

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