

while members of the Compositae, Geraniaceae, Brassicae, Cruciferae, and Leguminosae were tolerant.

Spring applications to both seedling and established crops induced a variable degree of scorch, which proved to be transient. Control of grass weeds was poor with this time of spraying, particularly at those sites sprayed after mid September. Broadleaved weed control was also poor, though members of the Polygonaceae were erratically suppressed. Generally, weed control was poor if carbetamide was applied in the spring or early summer.

The results of these trials were sufficiently encouraging for further trials with autumn and winter applications to be carried out in the 1970-71 season.

ASULAM IN HOPS

B.H. Hyde-Wyatt
Department of Agriculture, Tasmania

Heavy dock infestations, predominantly *Rumex obtusifolius* with some *Rumex crispus* are established in some hop gardens in north-east Tasmania and cause concern to growers. *Agrostis stolonifera* is spreading in some areas. Herbicides currently used in hops - mainly triazines and bipyridyls - do not control established dock.

Initial screening using asulam at 4 and 8 lb a.i. per acre (4.48 and 8.96 kg per hectare) completely killed dock at both rates and controlled *Agrostis* at the higher.

In 1969-70 rates of 1, 2, 4, and 8 lb a.i. per acre (1.12, 2.24, 4.48, and 8.96 kg per hectare) were applied in June and September, and compared with single and double applications of paraquat (4 oz ion per acre, 113.6 gramme per hectare).

Crop yield was neither reduced (5% significance) nor increased (1% significance) in any trial, though there had been some growth check from high rates applied in September. Percentage dry matter and alpha acid content of the cones were not affected by the highest rate (8 lb a.i. per acre).

When applied in September, asulam gave excellent dock control, though even at the highest rate there was a small residual population. June treatments were less satisfactory, the lowest rate being ineffective.

Agrostis stolonifera was well controlled initially by the high rate of asulam, but recovered to some extent during the season. It is interesting that the best control was achieved by a single application of paraquat in September. At spraying, this grass was some 8-12 in. high (20-30 cm), and when killed, formed a mulch, which apparently suppressed regrowth for a considerable period.

Whenever a good control of the primary weed population was achieved secondary species - predominantly *Poa annua* - moved in.

The failure to obtain any increase in crop yield could be the result of:

- (1) the invasion by secondary species
- (2) failure to control the weed population at the optimum time
- (3) herbicide damage to the crop balancing out the gain from weed control
- (4) the absence of significant competition between crop and weeds, possibly because of adequate irrigation and a liberal fertilizer programme,

and the last of these may be the predominant factor. The irrigation-fertilization regimen could also have prevented a reduction following the September treatment.

For dock kill, optimum timing would, at present, seem to be November, by which time the crop appears resistant. A good *Agrostis* kill is obtained at this time too.

Early treatments were evaluated in the expectation that the young plant would be most susceptible to competition (and also because it is much easier to use equipment in the garden before stringing). This has not been borne out by the results, and future work must include late treatment and an evaluation of the interaction between weed competition and fertilizer programme. Though yields may not be increased, fertilizer use could be reduced.

The grower on whose property the trials were carried out has decided to use asulam; his decision was influenced by his strong personal aversion to docks due in part to his belief that their presence could create an unfavourable impression among visiting buyers. This confirms once again that yield increase is not the only, or even the primary, reason why growers use herbicides.