

CONTROL OF WEEDS IN LUCERNE WITH CARBETAMIDE

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The value of lucerne as a crop has been demonstrated by the recent drought; furthermore, the imposition of wheat quotas has further enhanced its value. Statistics are not available for acreages sown annually, but the largest proportion is sown in the spring. Autumn sowings have been tried in the past but the lack of a reliable chemical for adequate weed control has led to many failures.

Carbetamide was discovered by Rhone-Poulenc and was first reported on by Desmoras *et al* (1963) and Dodel *et al* (1963). The original code number of this chemical was 11,561 R.P. and it is active both before and after emergence. Persistence in the soil is about 2 months, though this varies in relation to climatic conditions. Carbetamide has a low toxicity, its oral LD<sub>50</sub> is about 10 gramme per kilogramme body weight for the rat, and subacute daily doses of 100 mg per kilogramme body weight have been well tolerated by the dog and rat.

The trials discussed were designed to determine the efficacy and crop tolerance of baretamide in straight-sown lucerne at rates up to 48 oz a.i. per acre (3.36 kg per hectare). Six replicated sites in established lucerne and two in seedling lucerne were sprayed in the autumn, and six established and four seedling sites were sprayed at two times of application in the spring.

Crop tolerance to autumn applications in both seedling and established lucerne was excellent at all rates evaluated, up to 48 oz a.i. per acre (3.36 kg per hectare), there being no signs of crop scorch or retardation of growth at any site. However, the weed control spectrum was virtually limited to grass weeds, many broadleaved weeds being tolerant even to the 48 oz dose rate. Of the grass weeds encountered, the following were found to be susceptible to 24 oz a.i. per acre (1.68 kg per hectare) - *Vulpia bromoides*, *Lolium rigidum*, *Hordeum leporinum*, *Hordeum hystrix*, *Poa annua*, *Aira caryophylllea*, *Bromus unioloides*, *Bromus sterilis*, *Bromus arvensis*, and *Bromus mollis*. The following species were controlled by rates of 24-48 oz a.i. per acre (1.68-3.36 kg per hectare) - *Lolium perenne*, *Phalaris minor*, and *Dactylis glomerata*. The following grasses proved resistant - *Bromus arenarius*, *Festuca rubra*, *Avena* spp., and *Cynodon dactylon*. Of the broadleaved weeds encountered, only seedlings of some Polygonaceae species proved susceptible,

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

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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).