CONTROL OF ARTICHOKE THISTLE WITH PICLORAM

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Artichoke thistle (*Cynara cardunculus*) is well established as a weed on the black basalt soils to the north and west of Melbourne. Control of the weed is difficult because it can develop new growth from the crown as well as reproduce from seed. The hormone-type weedicides will give control for several months but will not eradicate the weed unless used repeatedly.

Trials have been carried out since 1963 to determine the effectiveness of picloram in controlling artichoke thistle. Twelve months after the first spraying it was apparent that all parent plants had been killed and very little seedling regrowth had occurred at the lowest rate used - 8 oz a.i. per 100 gal. (50 g per 100 litres).

Further trials have been carried out to determine the optimum rate and time of application of picloram to control artichoke thistle. The results of some of these trials are presented.

Spot Spraying

The rates of picloram applied have varied from 0.5 to 16 oz per 100 gal. (3.1-100 g per 100 litres) of spray solution. Picloram has been applied alone and in mixtures with 2,4-D and MCPA at various times during the year. Results showed that there was little difference between picloram alone and the various mixtures, but that there was a significant difference between times of application. The rate of picloram which gave a high per cent kill of established plants and a low per cent regeneration of seedlings in the following year dropped from 10 oz per 100 gal. (6.4 g per 100 litres) for a July application to 3 oz per 100 gal. (18.7 g per 100 litres) for application in November. To obtain consistently good control with treatment at any time over several months, a rate of 8 oz per 100 gal. (50 g per 100 litres) is now recommended.

Boom Spraying

As with the spot spraying experiments a wide range of rates of picloram has been evaluated. Initial results showed that 8 oz per acre (0.56 kg per hectare) gave a kill of established plants and allowed few seedlings to re-establish. Further work showed that the timing of application is critical for maximum results and that, at the optimum time, a rate in excess of 8 oz per acre (0.56 kg per hectare) is not required. The optimum time appears to be from August to October, i.e., up to the

budding stage of growth; later treatments will allow many plants to flower. The treated areas were not grazed after spraying and few seedlings became established in the dense pasture. This was probably a combination of competition and residual chemical effect.

AERIAL SPRAYING

When successful results followed from boom spraying artichoke thistle, it was decided to evaluate aerial application. Because of the steep, rocky topography in many areas of infestation aerial spraying could be advantageous.

In the first trial a helicopter was used to compare picloram at 4 and 8 oz per acre (0.28 and 0.56 kg per hectare), so in the following year 50 acres (20.24 hectares) were treated using this rate and a fixed-wing aircraft. A poor kill resulted because the thistles were beginning to flower and were under moisture stress due to drought conditions.

In 1969 approximately 300 acres (121.4 hectares) of artichoke thistle were sprayed using 1 gal of Tordon 50-D in 3 gal. of water per acre (i.e. picloram at 8 oz per acre or 0.56 kg per hectare). Results were variable but the overall result was satisfactory. Best control resulted on the flatter areas where even application was obtained. The grazing of treated thistles too soon after spraying may reduce the effectiveness of spraying.

CONCLUSIONS

Over a number of years picloram has been evaluated for control of artichoke thistle. Effective control can be achieved by boom spraying and aerial spraying at 8 oz a.i. per acre (0.56 kg per hectare) (1 gal. of Tordon 50-D), while a rate of 8 oz a.i. per 100 gal. of water (50 g per 100 litres) is satisfactory for spot spraying.