

SPOT-GUN APPLICATION OF HEXAZINONE
FOR THE CONTROL OF TREE OF HEAVEN

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Abstract. Tree of heaven (*Ailanthus altissima*) is an erect deciduous tree which spreads by seed and by suckering from shallow lateral roots. In the dense clumps formed by this suckering, plants are commonly 2 to 7 m high with stems of 2 to 8 cm diameter. Picloram/2,4-D¹ and 2,4,5-T sprays may kill existing stems to ground level, but regrowth from roots or stem bases in the following year is common. For larger diameter stems (> 5 cm), cutting and painting the stumps with undiluted picloram/2,4-D often gives better results than foliar sprays but does not eliminate all regrowth.

When tested as a foliar spray, hexazinone exhibited activity against tree of heaven. To reduce the amount of bare ground produced by hexazinone sprays, a trial was conducted in which application was made to the soil surface with a modified sheep drench gun (spot gun).

The trial area in north-eastern Victoria contained a dense infestation of thin-stemmed (< 3 cm) plants for which individual treatment with a spot-gun was impractical. Application was therefore made on a grid pattern. Plot size was 6 m by 6 m, arranged in randomized blocks with three replications. The formulation used contained 240 g L⁻¹ hexazinone. Each "shot" was applied to the soil surface in 15 mL of solution using either a straight stream nozzle which gave a spot of 5 to 8 cm in diameter or a cone nozzle which covered an area of about 40 cm in diameter. Picloram/2,4-D (undiluted) painted on to cut stumps was included as a comparison. Application was made of April 6 1979. The treatments and results are given in Table 1.

Table 1. Effect of spot-gun application of hexazinone on tree of heaven.

Herbicide	Rate (g shot ⁻¹)	Grid spacing (m)	Rate (kg ha ⁻¹)	Nozzle type	% control ¹ at 21 months
	0.24	1	2.4	straight	55 b ²
	0.48	1	4.8	straight	90 a
Hexazinone	0.48	1	4.8	cone	58 b
	0.96	1	9.6	straight	93 a
	0.96	2	2.4	straight	62 b
	1.92	2	4.8	straight	82 a
Picloram (5%)/2,4-D (20%) painted on cut stumps					50 b
Untreated					23 c

¹ Visual assessment of reduction in numbers of live stems and loss of vigour of remaining stems.

² Values followed by the same letter are not significantly different according to Duncan's multiple range test on arc sin $\sqrt{\%}$ transformed data.

¹ Trade name Tordon 50-D.

There were several cycles of dieback and regrowth following hexazinone treatment, and in the first summer after application no treatment gave satisfactory control. By January 1981, 21 months after application, hexazinone at 4.8 kg ha⁻¹ applied to the soil surface as 5 to 8 cm diameter spots on a grid pattern of either 1 or 2 m gave a high level of control. The same rate applied as larger patches with a cone nozzle was significantly ($P < 0.05$) less effective. Doubling the rate with the straight stream nozzles to 9.6 kg ha⁻¹ did not further enhance the control.