

BRUSH CONTROL WITH HEXAZINONE APPLIED BY THE SPOTGUN TECHNIQUE

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Test work conducted over several years and in many areas of Australia has proven the efficacy of broadcast soil applied spray applications of hexazinone¹ against a wide range of brush and timber species. However, when only brush or timber are the target species, pasture damage was unacceptable.

Previous experience with bromacil demonstrated its efficacy against African boxthorn (*Lycium ferocissimum*) when applied as a liquid spot to the soil surface. In an endeavour to minimize pasture damage with hexazinone this same liquid spot application technique is being extensively evaluated for brush and timber control. It was also necessary to develop a suitable applicator which is now marketed as the Du Pont SPOTGUN. It is a specially designed hand held pistol like device that delivers a pre-selected measured dose of the liquid hexazinone formulation.

The spotgun application of hexazinone was initially evaluated against African boxthorn, sweet briar (*Rosa rubiginosa*) and blackberry (*Rubus fruticosus*). As a result of extensive tests 1.0 g hexazinone / spot / plant up to 1 m high was found to be consistently effective in controlling these brush species. This is now the recommended rate for hexazinone.

The spotgun application technique depends on root uptake of hexazinone from the concentrated column of hexazinone moving through the soil from the surface applied liquid spot. A critical factor therefore is the placement of the liquid spot so that the hexazinone moves into the feeding root zone. With African boxthorn the most efficacious results are obtained by placing the liquid spot half way between the base and the drip line. However, for sweet briar and blackberry, placement near the crown has been most efficacious.

Optimum results with spotgun application are obtained when the soil is moist at application, when there is a post-application rainfall and when the target species is actively growing. Experience with spotgun applications of hexazinone have shown that many species may go through two or more cycles of defoliation and refoiliation before the plant finally dies.

The spotgun is supplied with a nozzle for surface application and a spear attachment to inject hexazinone below the soil surface. Experience has shown it is desirable to use the spear attachment when a dense ground cover prevents the hexazinone being applied directly onto the soil surface, or when the target species is growing on sloping ground and there is a risk of the hexazinone being washed down the slope.

¹ Trade name Velpar L.

Spotgun applications have proved to be a most cost-efficient method of using hexazinone for the control of brush and timber species. The spotgun technique only causes a small patch of pasture damage around the point of application; however, this damage is temporary and it disappears in 12 to 18 months depending on the site.

Further test work is continuing with the spotgun and hexazinone to establish its efficacy over a wide range of brush and timber species and to develop recommendations related to their density, and the size and placement of the liquid spot of hexazinone. Test work continues to evaluate

1. Hexazinone doses of 0.25 to 1.0 g / spot,
2. Placement in relation to distance from the base of individual plants,
3. Number of shots of hexazinone liquid in relation to brush or tree size so as to establish a relationship between the number of shots and their height and/or basal stem diameter,
4. Various grid spacings and patterns for control of coppice,
5. Dose and spacing in relation to soil types and moisture levels,
6. Efficacy of surface versus sub-surface application techniques.

Species on which promising results have been recorded and on which testing is being conducted include: bumble or poplar box (*Eucalyptus populnea*), coolibah (*E. microtheca*), mallee (*E. socialis*/*E. dumosa*/*E. gracilis*), Queensland blue gum (*E. tereticornis*), narrowleaf ironbark (*E. crebra*), broadleaf ironbark (*E. fibrosa* ssp. *fibrosa*), yellow box (*E. melliodora*), Dawson gum (*E. cambageana*), bloodwood (*Eucalyptus* spp.), brigalow (*Acacia harpophylla*), prickly acacia (*A. nilotica* ssp. *indica*), black wattle (*A. cunninghamii*/*A. deanei*), turpentine bush (*Eremophila sturtii*), berrigan (*E. longifolia*), punty bush (*Cassia eremophila*), limebush (*Eremocitrus glauca*), narrowleaf hopbush (*Dodonaea attenuata*), white cypress pine (*Callitris columellaris*), tree of heaven (*Ailanthus altissima*), Australian blackthorn (*Bursaria spinosa*), camphor laurel (*Cinnamomum camphora*), rubber vine (*Cryptostegia grandiflora*), *Angophora* spp. and *Tristania* spp.

On some of these species the efficacy of hexazinone as a stem injection treatment is being evaluated. This technique is giving promising results particularly in the control of timber species with stem diameter greater than 7 to 10 cm.