

APPLICATION OF HEXAZINONE GRANULES BY THE MACSPRED SYSTEM

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The concept of weed control by the dry application of herbicide granules is by no means new; various formulations of several active constituents have been commercially available for over a decade. However, those herbicide granules contained only small amounts of active constituent, and the consequent necessity to apply them in high volumes combined with the lack of application equipment rendered them unsuitable for large scale use.

The advent of hexazinone granules provided some answers to these basic problems. Hexazinone is a highly active root absorbed soil residual herbicide. Coupled with the formulation of granules containing 200 g hexazinone kg^{-1} , this has overcome the historical drawback of having to apply large volumes of granules to effect satisfactory weed control. Although the advantages of not having to load, transport, store and distribute water is common to all granular herbicides, the low volume of hexazinone required has allowed this benefit to be maximized.

Early testing of hexazinone granules proved their excellent efficacy against a wide range of annual and perennial weed species under moisture and temperature conditions favourable to plant growth. These tests were conducted on a range of soil and climatic conditions and indicated that the overall performance of the granular formulation of hexazinone was at least equivalent to that of spray applications.

Uniform distribution and accurate placement of granules is just as essential as with spray applications. However, as equipment suitable for applying granules accurately over large areas was not available, granule application equipment was developed concurrently with the hexazinone granules.

The use of new principles in the metering, distribution and placement of granules onto the target area was identified as the solution to the application problem. This led to the development of the Macspred range of granule application equipment. Based on the gravity drop of granules through a metering device into an airstream directed through distribution arms, the Macspred evenly distributes the herbicide granules over the target area.

The Macspred development was initially intended to improve the efficiency of weed control along railway lines. Some of the advantages of the Macspred and hexazinone granules in railway use are:-

1. Application rates can be rapidly varied in relation to weed biomass and weed spectrum,
2. Application rates can be rapidly varied across the swath width e.g. the ballast (generally not as heavily weed infested) could be treated with a maintenance rate whilst the more dense growth in the cess may receive an application rate three or more times greater,

3. Application of separate granular herbicide products can be made simultaneously to the ballast and to the cess,
4. The flow of granules can be rapidly cut-on and cut-off, thus allowing an economic spot-out operation,
5. There are no drift problems,
6. The ability to treat an area three or more times faster than is possible with a spray application is achieved through the reduced loading requirement and the ability to apply these granules at greater speeds with the Macspred,
7. The cost of the Macspred is only 10 to 20% of the cost of a railway spray tanker capable of treating the same area.

For railway applications future models of the Macspred will have the option of automatic monitoring of flow rates and push button operation of spot-out applications.

The Macspred principle is being developed to extend its usefulness to other areas e.g. sugar mill tram tracks, roadsides, firebreaks, and small areas around buildings, fences and tank farms.

The Macspred is also being developed for incorporation of the hexazinone granules into the soil surface for weed control along road verges. This placement of the granules ensures they are retained in the target area, thus maximizing the weed control efficacy and minimizing off-target effects.

In conjunction with the continuing development of the Macspred range, emphasis is being placed on maximizing the efficiency of the distribution of low application rates of the two granule products containing hexazinone (trade names Velpar 20 G and Dybar 10/10 G). Rates of these are currently 10 to 50 kg ha⁻¹ of product, but for seasonal weed control, rates below 10 kg ha⁻¹ of product effectively maintain areas weed-free.