

Simazine, a potential growth regulator

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Cultivation of lupins in Victoria has expanded over the last few years to an area of some 20,000 hectares per annum. Simazine has been applied to most of this area for weed control and with future increased use of lupins as a field crop greater quantities of simazine will be applied.

Some Victorian soils which contained simazine residues in the year after a lupin crop have exhibited phytotoxic effects in bioassay tests with cereal species, (P. Quigley, unpublished data). It is not known whether simazine residues in soil are affecting subsequent cereal crops in this state.

Overseas research has shown that application of sub-toxic levels of simazine, either as a foliar spray or incorporated into soil, has increased the protein content of foliage (Ries et al. 1968; Singh et al. 1972) and grain protein (Kadam et al. 1977). In some instances it has also increased vegetative dry matter production or grain yield (Ries et al. 1968, Ries et al. 1970); however, lower yields have been recorded in other cases (McNeal et al. 1969). These responses have been attributed to a change in plant enzyme systems which stimulates protein synthesis at the expense of carbohydrate reserves within the plant (Singh and Salunkhe 1970). The responses are influenced by edaphic and climatic variables, and individual plant species or cultivars may respond differently.

In the cereal industry, grain protein strongly influences the end use of the products and any substantial variation from normal levels could therefore perturb the industry. With legume grain or forage crops any addition to protein levels would in general be desirable, more so if prices paid to farmers were tied closely to protein content. Any significant changes in grain yield would be of utmost importance to farmers.

Further research is warranted to investigate the extent of spontaneous effects caused by residues of simazine in soil. There is potential for agricultural productivity to be improved by utilization of what is currently considered an environmental contaminant.

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