

# PASTURE MANIPULATION WITH SIMAZINE, PARAQUAT AND DIQUAT

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Two experiments conducted during 1991 and 1992 in Jerramungup WA, demonstrated that combinations of simazine with either Sprayseed® (75 g/L diquat plus 125 g/L paraquat) or Gramoxone® (200 g/L paraquat) are effective for the control of grass (*Lolium rigidum* and *Vulpia* spp.) and broad-leaved (*Erodium* spp.) weeds in pastures with little damage occurring to companion subterranean clover (*Trifolium subterraneum*).

A range of rates and combinations of the three herbicides were investigated. Simazine applied at 250 g/ha with 500 to 750 mL/ha of Gramoxone or Sprayseed was the optimal treatment for least cost (approximately \$6.00/ha). When applied alone the range of species controlled by each herbicide was reduced compared to that controlled by the mixed herbicide application. There did not appear to be an influence of time of herbicide application (2 June compared to 24 June 1992) on control of *Vulpia* spp. Delaying application time improved control of *L. rigidum* and *Erodium* spp.

These chemical combinations provide control of a range of weed species and result in limited damage to subterranean clover. Application of these herbicide mixes will greatly reduce pasture density and the presence of evenly distributed subterranean clover seedlings is essential. Time of herbicide application will depend on livestock feed availability, weed growth and the importance of a cereal disease break for a following cereal crop.

## A STUDY OF THE MODE OF ACTION OF THE HERBICIDE BUTACHLOR

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Butachlor (*N*-(butoxymethyl)-2-chloro-*N*-(2,6-diethylphenyl)acetamide) is one of the most popular herbicides used for the control of weeds in paddy fields in Taiwan. However, the biochemical aspects of the action of butachlor have been rarely studied.

The primary site of action of butachlor was studied in time course (0.5-8 hour) and concentration (0-70 µM) experiments to determine the effect of butachlor on lipid, protein and RNA synthesis in leaf cells from chlorella (*C. pyrenoidosa*) and of tobacco (*Nicotiana tabacum* cv. Wisconsin 38) (representing sensitive types for butachlor), and embryo cells from rice (*Oryza sativa* cv. Tainan 5) (resistant type). Appropriate amount of <sup>14</sup>C precursors were used for each process during incubation for 8 hours.

The results indicated that the primary site of action of butachlor in plants might be on protein synthesis. The results also demonstrated that the inhibition caused by butachlor was not significantly different between sensitive and resistant type plant cells.