

4. Conclusions - After autumn spraying with an effective weedicide, pastures which were almost completely infested with weeds provided virtually no feed by the end of the winter.

Spraying a moderately infested or a comparatively weed-free pasture with such weedicides reduces winter production by 30 to 70%. The relative severity of the different weedicides depends on the clover:grass ratio.

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CONTROL OF MINTWEED IN PASTURES WITH ATRAZINE IN NEW SOUTH WALES

Experimental work between 1962-1964, in the southern mintweed area of New South Wales between Quirindi and Gunnedah, showed that atrazine will control mintweed (*Salvia reflexa*) for the duration of the growing season after one post-emergent spraying of the first germination in spring or early summer. Early experiments were confined to areas where mintweed was dominant and where very little pasture provided competition. After it was established that atrazine would kill mintweed and application rates had been determined in various situations, the possibility of controlling mintweed in pasture and crops became evident.

The rate of atrazine required for an initial kill of emerged mintweed at various stages of growth from young seedlings to mature plants was established from several field and glasshouse experiments. (See Table - The Control of Mintweed in Grain Sorghum with Atrazine in New South Wales - 3-18).

The quantity of atrazine required for residual control was found to vary seasonally. In two seasons out of three, atrazine at $\frac{1}{2}$ lb a.i./acre gave control of mintweed for the whole season from October to April. In the other season, when mintweed was more prolific as a result of abnormal climatic conditions, atrazine at $\frac{1}{2}$ lb a.i./acre gave control of mintweed for two-thirds of the season.

Atrazine at $\frac{1}{2}$ lb a.i./acre has been found to have virtually no initial ill-effect on several pasture species including *Medicago sativa*, *Dichanthium sericeum*, *Paspalidium* spp., *Eriochloa* spp., *Panicum* spp., *Stipa aristiglumis*, *Chloris truncata*, *Chloris gayana*, *Urochloa panicoides*, and *Boerhavia diffusa*. Increased rates of atrazine up to 1 lb a.i./acre usually cause leaf-edge necrosis on leaves contacted at the time of spraying, but these symptoms do not extend to new growth arising after spraying.

Atrazine $\frac{1}{2}$ lb a.i./acre has been used for controlling mintweed in lucerne and pastures in New South Wales, as this rate has

given acceptable control in the field, both experimentally and commercially, without damaging pasture. In a season when the residual life of atrazine may be shorter, a follow-up spray with atrazine $\frac{1}{2}$ lb a.i./acre may be necessary so as to achieve seasonal control.

Experiments between 1962-1964 were carried out on black self-mulching soils heavily infested with mintweed. Most experiments were carried out with a precision boom sprayer which delivered a spray volume of 32 g.p.a. Commercial equipment was tested and included a boom sprayer, a mistblower, and a high-volume sprayer, all of which gave successful results.

Experiments are continuing in the 1964-1965 season. Atrazine is being tested more fully in Quirindi and Inverell areas for mintweed control in lucerne in replicated yield trials. The establishment of pasture species in areas previously treated with atrazine is also being studied.

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ATTEMPTS AT TOTAL ERADICATION OF CERTAIN WEEDS IN QUEENSLAND

Discussion, almost amounting to controversy, takes place from time to time on the subject of control versus eradication of weeds. In view of the attempts to eradicate poverty weed (*Iva axillaris*) in Victoria, Indian hemp (*Cannabis sativa*) in New South Wales, and Noogoora burr (*Xanthium spinosum*) in South Australia, it may be of interest to record the experience in Queensland in attempts by the Biological Section to clear small areas of potentially dangerous weeds.

Total eradication of annual or perennial weeds, even over restricted areas, is very difficult if the plants have been established long enough to permit seeding.

In Queensland there are several weeds upon which such attempts have been made during the past 14 years.

Total eradication has not been achieved except in the case of two small areas of perennial ragweed. There has, however, been marked reduction and prevention of further spread.

1. Bitterweed (*Helenium amarum* Rock.) - A summer annual, native to Mexico and southern United States of America, it was first identified in Queensland in February 1953, scattered over 100 acres at the Lowood aerodrome.

The first chemical treatment was carried out in March 1953, with sodium salt of 2,4-D (2,4-dichlorophenoxyacetic acid) at 2 lb a.e./acre. There have been 57 separate treatments during the summer months since, with the sodium salt of