

Although tri-allate has been used to advantage for a number of years, there is a great need for a more effective, and less costly herbicide. Trifluralin and alachlor have given promising results and it is anticipated that they will be fully commercial by 1971.

COMPARISON OF DI-ALLATE AND TRI-ALLATE FOR CONTROL
OF WIMMERA RYEGRASS IN WHEAT

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Wimmera ryegrass can be a strong competitor in wheat crops and Lumb and McPherson (1964) have reported preliminary work on its selective chemical control with di-allate. A closely related herbicide, tri-allate, is also available, and in a number of countries has replaced di-allate. Experiments in the Wimmera and northern districts of Victoria in which di-allate and tri-allate were compared for ryegrass control in wheat are reported here.

Ten experiments on a range of soil types were conducted at three centres from 1962 to 1968. The treatments compared against a no-spray control were di-allate and triallate applied at 8 and 16 oz per acre (0.56 and 1.12 kg a.i. per hectare) either immediately prior to sowing or within a day after sowing. All experiments were of a randomized block design with 4 to 6 replications. Wimmera ryegrass counts were taken in the crop after the wheat had tillered, and plots were harvested for grain yield.

RESULTS

(a) Ryegrass Populations

Di-allate was significantly better than tri-allate for reducing ryegrass populations in six of the ten experiments, and there were no significant differences in the other four. Presowing application of both materials was significantly better than the post-sowing treatment in six experiments.

The higher rate of 16 oz a.i. per acre (1.12 kg a.i. per hectare) of material was more effective than the lower rate in reducing populations in seven experiments, and this trend was also evident in the remaining three.

(b) Wheat Yields

The effect of di-allate and tri-allate on yield was significantly different in only two experiments, and in both cases di-allate was superior.

There was only one case of a difference between the effect of pre- and post-sowing application and, here, pre-sowing was significantly better than post-sowing application.

In three of the ten experiments, 16 oz a.i. per acre (1.12 kg a.i. per hectare) of chemical gave significantly higher yields than 8 oz a.i. per acre (0.56 kg a.i. per hectare) and in one case the reverse situation occurred.

DISCUSSION

At comparable rates, di-allate generally gave a greater reduction in ryegrass population than tri-allate. There were however, a number of situations where a reduction in the ryegrass population was not followed by a yield response. This lack of response can generally be attributed to climatic limitation of crop growth or crop damage from the herbicide applications. Crop damage noted was mainly from pre-sowing application of the heavier rate of both herbicides, and there was no clear indication that tri-allate applied pre-sowing was consistently safer than di-allate applied pre-sowing.

On an economic basis, di-allate applied at 8 oz a.i. per acre (0.56 kg a.i. per hectare) was the best treatment tested. In eight experiments it produced economic grain yield increases, giving an average extra return over herbicide cost of \$8.52 per hectare when applied pre-sowing, and \$5.36 per hectare applied post-sowing. Comparable treatments with tri-allate returned \$2.37 and \$4.10 per hectare, respectively, and were less consistent.

CONTROL OF BROAD-LEAVED WEEDS IN WHEAT

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A series of experiments designed to study crop responses following control of annual broad-leaved weeds in wheat was commenced in the Mallee and Wimmera in 1969.

Among the herbicides tested were linuron, prometryne, bromoxynil and bromoxynil + M.C.P.A. each applied at the wheat 3-leaf stage at 2, 4 and 6 oz a.i. per acre (0.14, 0.28 and 0.42 kg a.i. per hectare).