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

T.E. Telford and C.L. Tuohey
Department of Agriculture, Victoria

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).

TABLE

Herbicide (0.28 kg/ha)	Plant Population - per ft (per m^2)	Yield bus/ac kg/ha
Fumitory (Pink) (Walpeup South)		
Not sprayed	45.0 (484)	14.7 (990)
Prometryne	4.7 (51)	17.7* (1190)
Bromoxynil + M.C.P.A.	27.0 (291)	15.8 (1060)
Fumitory (Pink) (Sea Lake)		
Not sprayed	19.8 (213)	35.0 (2350)
Prometryne	10.1 (109)	33.8 (2270)
Bromoxynil	6.5 (70)	37.6 (2530)
Bromoxynil + M.C.P.A.	2.4 (26)	36.0 (2420)
Turnip (Walpeup)		
Not sprayed	7.4 (80)	29.0 (1950)
Linuron	0.1 (1)	28.3 (1900)
Bromoxynil	0.6 (6)	28.9 (1940)
Bromoxynil + M.C.P.A.	0 (0)	30.4 (2040)
White Ironweed (Tempy)		
Not sprayed	12.8 (138)	23.5 (1580)
Linuron	1.4 (15)	25.1 (1690)
Prometryne	1.1 (12)	26.5 (1780)
Bromoxynil + M.C.P.A.	4.6 (50)	31.8* (2140)
Amsinckia (Dooen)		
Not sprayed	31.6 (340)	43.9 (2950)
Prometryne	15.2 (164)	53.0* (3560)
Bromoxynil	4.4 (47)	52.5* (3530)
Bromoxynil + M.C.P.A.	17.3 (186)	53.9* (3620)
Deadnettle (Dooen)		
Not sprayed	200.4 (542)	27.7 (1860)
Linuron	50.4 (542)	27.5 (1850)
Prometryne	61.2 (659)	31.5 (2120)
Bromoxynil	50.2 (540)	29.5 (1980)
Bromoxynil + M.C.P.A.	88.6 (954)	29.6 (1990)

* Significantly (P = 0.05) different from no spray treatment

The table shows the weed populations after wheat tillering and subsequent wheat yields from six experiments with fumitory (*Fumaria* sp. - pink-flowered), wild turnip (*Brassica tournefortii*), white ironweed (*Lithospermum arvense*), amsinckia (*Amsinckia* spp.), and deadnettle (*Lamium amplexicaule*). Only those materials which reduced weed numbers are shown, and only those results from a most commonly recommended rate of 4 oz a.i. per acre (0.28 kg a.i. per hectare). It is planned with the aim of assessing the economics of control of these and other broad-leaved weed species.

The results in 1969 show that, despite large reductions in weed populations, few significant yield increases occurred. The notable exception was with amsinckia, where a yield improvement of about 9 bushels per acre (600 kg per hectare) was obtained. These and other experiments indicate different competitive abilities of various weeds and, until sufficient constant rate experiments have been done with each species, the probability of the economic worth of control will not be able to be assessed.

CHEMICAL CONTROL OF CAPEWEED IN WHEAT AND OATS

T.G. Reeves
Department of Agriculture, Victoria

Capeweed (*Arctotheca calendula*) can occasionally be a widespread weed in cereal crops in north-east Victoria. It most commonly occurs when the autumn 'break' rainfall is below normal, resulting in soil conditions being too dry for effective pre-sowing cultivation. In years of average autumn rainfall, the weed is confined mainly to crops sown on the lighter soil types of the district.

From 1965 to 1969 a range of herbicides was evaluated for control of capeweed in wheat and oats. These were bromoxynil, bromoxynil + MCPA, prometryne, diquat, linuron, and picloram applied at the crop three to four leaf stage, and 2,4-D amine, 2,4-D ester, and picloram applied at the crop post-tillering stage. All experiments were of randomized block design with from four to six replicates. Capeweed density counts were made in spring and grain yields were obtained.

All herbicides applied at the crop three to four leaf stage, when the capeweed rosettes were generally less than 4 in. (10 cm) in diameter, produced marked reductions in weed density.