

on the September and October treatments where slight regrowth occurred after about 3 years.

With repeated applications of picloram, two applications of 2 oz per acre (0.14 kg per hectare) have given control for 20 months on the plots originally treated during September to November, and control for an average of 3 years on all other plots. Thus, two applications of 2 oz per acre (0.14 kg per hectare), gave better control than a single application of 4 oz per acre (0.28 kg per hectare) and approximately the same control as a single application of 8 oz per acre (0.56 kg per hectare).

Three applications of 2 oz per acre (0.14 kg per hectare) have given control for more than 3 years on all except the plots originally treated in the September-November period, as also have two applications of 4 oz per acre (0.28 kg per hectare). Regrowth occurred on the September-November treated plots after approximately 3 years at both rates.

It will be several years yet before final results are obtained from this trial, but indications are that repeated doses of low rates are as effective as a single dose of a high rate. Although the cost of treatment is spread over several years there could be problems of picloram residues in the soil associated with this method of treatment. With a single application of a high rate, the residue slowly disappears, but with repeated applications the herbicide being lost from the soil would be continually replaced.

RELATIONSHIP BETWEEN CULTIVATION, PICLORAM APPLICATION,  
SKELETON WEED CONTROL, AND WHEAT YIELD

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Trials carried out in the Victorian Mallee on skeleton weed (*Chondrilla juncea*) have shown marked differences in the control achieved with picloram applied on cultivated and on uncultivated land. The best control has been on plots which were not cultivated or, in cropping trials, cultivated just prior to sowing. If cultivation occurred shortly after treatment with picloram less control was achieved, while the poorest results were obtained on plots cultivated prior to spraying.

These results have been observed in various trials carried out over a period of 6 years.

Picloram is claimed to be readily absorbed by the roots of plants and, therefore, it would be expected that the control of skeleton weed obtained by applying the chemical to recently cultivated soil would be similar to that achieved by treating the growing plant. As this has not been observed, perhaps absorption by the foliage is of considerable importance.

The rates of picloram used have varied from 0.25 oz to 16 oz a.i. per acre (17.5 g to 1.12 kg per hectare). With the low rates, treatments were repeated as necessary, while only a single application of the higher rates was made in any one trial. The treated areas were fallowed several months before, or the day prior to treatment, or fallowing was carried out several hours, several days, or several months after treatment, while other plots were not cultivated.

At low rates of from 0.25 to 0.5 oz a.i. per acre (17.5 to 35 g per hectare) control of skeleton weed was obtained for 6-7 months on uncultivated plots, while on cultivated land the control was only for 2-5 months.

At the rate of 8 oz a.i. per acre (0.56 kg per hectare) skeleton weed rosettes started to reappear after 29 months on uncultivated land, after 19 months on plots cultivated after spraying, and after 17 months on plots cultivated before spraying. Even with 16 oz a.i. per acre, (1.12 kg per hectare) which is regarded as an eradication rate, more rosettes reappeared on cultivated than on uncultivated plots.

More detailed trials to investigate the relation between picloram treatment and cultivation were carried out in 1967-68 and 1968-69 using rates of from 0.25 to 0.5 oz a.i. picloram per acre (17.5 to 35 g per hectare). The first application of picloram was made in September and the plots sown to wheat in the following autumn. The plots were fallowed the day prior to spraying, fallowed immediately after spraying, or left unfallowed until sowing. Repeat applications of picloram were made as skeleton weed regrowth appeared.

In both years the best skeleton weed control was obtained on the plots left uncultivated until sowing while the poorest control occurred on the plots fallowed prior to spraying.

In 1968 the highest wheat yield also occurred on the uncultivated plots and the lowest on the plots sprayed on fallow. This was due, no doubt, to the differences in skeleton weed control on these plots. During 1969 grass became a problem on the uncultivated plots and in some trials the crop was completely choked out. Grass was less of a problem on the fallowed plots.

For the most effective control of skeleton weed with picloram it thus appears desirable to delay cultivation for as long as

possible after treatment. With this 'chemical fallow' higher yields will be obtained than on normal fallows provided other species, such as grasses, do not become a problem. The reduction in the number of cultivations will partly offset the cost of chemical and may also lessen the problem of soil drift.

COMPARISON OF DI-ALLATE AND BARBAN FOR CONTROL OF  
WILD OATS IN WHEAT

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Wild oat competition in wheat crops can account for substantial yield reductions in localized areas of the major wheat-growing districts of Victoria. Two forms of selective chemical treatment commercially available are pre-emergence control with di-allate or tri-allate and early post-emergence control with barban. The results of experiments comparing di-allate and barban for wild oat control in wheat are discussed in this paper.

The experiments were conducted in the Wimmera and north-east districts on farmers' properties covering a range of soil types and wild oat populations. All experiments were randomized blocks with from 4 to 6 replicates and included some or all of the following treatments - di-allate, 8, 16 oz a.i. per acre (0.56, 1.12 kg a.i. per hectare) applied just before or just after sowing and incorporated with heavy harrows, and barban, 2.5, 5.0 and 10.0 oz a.i. per acre (0.17, 0.35, 0.70 kg a.i. per hectare) applied when wild oats had 1½-2½ leaves and wheat generally had 2-2½ leaves. An unsprayed control was included in each experiment. The variety Olympic was sown.

Yield data from six sites where all of the above rates of both herbicides were compared are shown in the following table: