A chemical for doublegee

Geoffrey A. Pearce

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A chemical for doublegee

Cover Page Footnote
The trials mentioned have been carried out at Chapman, Wongan Hills, and Merredin Research Stations. Much of the work was undertaken by district weed control officers and the managers of the stations. It is also desired to acknowledge the assistance given by Imperial Chemical Industries of Australia and New Zealand who supplied the Dicamba. The work was financed by the State Wheat Research Fund.
WEED RESEARCH

A CHEMICAL FOR DOUBLEGEES

Doublegee grows very quickly and forms a dense rosette on the ground. It is a strong competitor during the early growth stages of pasture and crops.

By G. A. Pearce, M.Sc. (Agric.), Biological Services Division

DURING the past two years, finance has been made available from the State Wheat Research Fund for an intensive study on doublegee. A newly-developed herbicide has been shown to give complete control of growing plants, while ecological studies have started to yield valuable information about seed behaviour.

Doublegee is the most widespread weed in the northern and central agricultural areas. As the weed is a heavy seeder, dense stands under favourable conditions can crowd out pasture species. Plant counts of 700 per square yard have been recorded and this is equivalent to more than three million plants per acre. An infestation of 10 plants per square yard has been shown to reduce the yield of wheat by 39 per cent. under extreme conditions.

Doublegee germinates during the first four to five weeks of the growing season, and makes rapid early growth. In the northern districts pastures are often completely dominated by this weed for the first three months of their life. Once flowering and seed formation has occurred the rate of growth is reduced, and by September its influence as a competitor becomes less marked. Doublegee is one of the few weeds which is regarded seriously by all farmers who have paddocks infested with it.

Herbicide trials were started in 1952 and since then a large number of chemicals have been tested for the control of doublegee. In the past, only general purpose weedkillers which were too costly for extensive areas have been able to kill this weed.

In 1962 a number of new herbicides were found to kill doublegee and further testing this year has conclusively shown that
Dicamba* is the most economical and effective.

The Herbicide

Dicamba (dimethylamine salt of 2 methoxy-3, 6-dichlorobenzoic acid) is soluble in water and behaves similarly to other hormone-like-herbicides. It is not toxic and appears to be particularly effective against the family to which doublegee belongs. It is available as a 20 per cent active-ingredient formulation.

Rate of Application

Table 1 shows the percentage of plants killed by the application of various rates of Dicamba to doublegee in pasture. Where the doublegee plants are less than four inches across and not seeding, an application of 2 oz. active ingredient (¼ pint 20 per cent.) per acre is recommended. This can be applied as a high or low volume spray. Once the plants are more than four inches across, or have produced seed, it is necessary to increase the rate to 4 oz. (one pint 20 per cent.) per acre.

* Previously known as Banvel D.

<table>
<thead>
<tr>
<th>Growth Stage</th>
<th>Rate Active Ingredient</th>
<th>% Plants Killed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doublegee 2-4 in. diameter</td>
<td>2 oz./ac.</td>
<td>90 99 98 98 100 100 100 100 100</td>
</tr>
<tr>
<td>4 oz./ac.</td>
<td>100 100 100 100 100 100 100 100 100</td>
<td></td>
</tr>
<tr>
<td>8 oz./ac.</td>
<td>100 100 100 100 100 100 100 100 100</td>
<td></td>
</tr>
<tr>
<td>Doublegee 4-10 in. diameter</td>
<td>2 oz./ac.</td>
<td>50 60 50 60 50 60 50 60</td>
</tr>
<tr>
<td>4 oz./ac.</td>
<td>98 98 98 98 98 98 98 98 98</td>
<td></td>
</tr>
<tr>
<td>8 oz./ac.</td>
<td>100 100 100 100 100 100 100 100 100</td>
<td></td>
</tr>
</tbody>
</table>

Time of Application

Doublegee plants develop resistance to herbicides as they become older and larger. For this reason the treatment should be applied as early in the season as possible. However, doublegee mostly germinates over a period of four to six weeks and it is necessary to delay spraying until a full germination has occurred. The most practical time of application is therefore some six to eight weeks after the germinating rains or when the doublegee plants are from four to six inches in diameter.
Effect on Pasture Plants

Table 1 also shows the percentage of different pasture plants killed by the three rates of application used. It is seen that the application of even 2 oz. of Dicamba will kill sub-clover and medics. Medics such as Cyprus and Commercial barrel clover are more susceptible than sub-clovers. If the treatment is applied therefore, the loss of the clover must be accepted. Grasses are not damaged by the spray but as the clover or medic is the most important component of most pastures, careful consideration must be given before embarking on a large scale programme.

Control or Eradication?

It must be realised that the herbicide treatment will only kill the plants growing at the time of spraying. Dormant doublegee seed is known to carry over from year to year, but the quantity varies due to several factors. The percentage of seed which remains dormant each year will depend on how favourable the conditions are at the time of germination. In the northern districts the percentage of dormant seed appears lower than in the colder southern districts. However, it is not possible to indicate the likely reduction of any infestation after a single herbicidal treatment. Detailed trials have been started during the past two years and until these are finished this question cannot be answered.

Use in Cereals

Although trials were undertaken in 1963 for the control of doublegee in cereals it is too early to make definite recommendations. One would not expect any damage to the cereal provided the spraying was undertaken when the crop was at the correct growth stage. However, malformed heads have been noticed at all rates of application and further investigations are necessary.

In Brief . . .

(1) Doublegee growing in pastures can be controlled by spraying with Dicamba.

(2) If the plants are less than 4 inches in diameter the application of ½ pint of 20 per cent. concentrate per acre is recommended. Where the plants are more than 4 inches the rate should be doubled.

(3) All clover and medics present will be killed at these rates of application.

(4) The possibility of a reduced stand the year after spraying will depend on the amount of dormant seed present.

(5) The results of another year's trials are required before recommendations can be made concerning the use of Dicamba on cereals.

ACKNOWLEDGMENTS

The trials mentioned have been carried out at Chapman, Wongan Hills, and Merredin Research Stations. Much of the work was undertaken by district weed control officers and the managers of the stations. It is also desired to acknowledge the assistance given by Imperial Chemical Industries of Australia and New Zealand who supplied the Dicamba. The work was financed by the State Wheat Research Fund.

The effects of Dicamba are similar to other hormone-like herbicides. Twisting and splitting of the stems occurs for two to four weeks and the plants are usually dead after six weeks.
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