Herbicides for firebreaks

Geoffrey A. Pearce
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WEED CONTROL

HERBICIDES FOR FIREBREAKS

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

IN recent years, great interest has been shown in the possible use of chemicals for creating firebreaks as an alternative to cultivation.

The advantages are obvious, and suitable treatments are available; the main deterrent at the present time is cost.

**Advantages**

In many situations it is not possible to use cultivation to make a firebreak. Around buildings and yards, along fence-lines or on industrial sites, there is little space to negotiate tractors and implements. Once the soil is cultivated dust is often a problem, whereas a bare consolidated surface is relatively stable.

The continual cultivation of the same strip, year after year, particularly on sloping ground, is often the cause of erosion and the formation of gullies.

In these situations the use of chemicals should be considered, but it must be remembered that cultivation, where possible, is much cheaper than a spray treatment.

**Methods**

The most practical method of controlling the growth of weeds depends largely on the types of weeds present.

Plants classified as *annuals* are those which complete their life cycle from seed in less than one year. Usually they are easy to kill but because of their abundant seed production they are very persistent. A *biennial* lives for one year but less than two. Very few weeds fall into this category. A *perennial* is one which lives for more than two years and may live indefinitely. Where perennial weeds are present these should be treated independently. This may be done by a mechanical or chemical treatment.

**Early Winter Treatment**

The most economical method of establishing a firebreak with herbicides, where *annuals* are the main vegetation, is by an early winter treatment within four weeks of germination. At this time the weeds are still small and easily killed, and the herbicide is applied to the soil surface and thus will remain and kill the weed seeds as they germinate.

**Spring Treatment**

Weeds can be just as readily controlled with spring applications as with earlier treatments, but the rate of application must be increased and of course this means it is more costly. Also, unless the spray is applied early enough the dead material must be burnt to obtain a bare surface.

The one advantage to be gained by delaying the treatment is that there is no need for a residual herbicide to be used, this saving is more than offset by the increased rate of application required.

**Herbicides**

Weed-killing chemicals are called herbicides. A contact herbicide is one which only kills the plant parts to which it is applied. A residual herbicide is one which, once applied, remains in the soil for varying lengths of time and kills the weed seeds as they germinate.

**Monuron** and **Diuron**

These two closely related herbicides are most effective when used as residual treatments. Placed in the upper layer of the soil they kill the weed seeds as they germinate.
Guarding valuable property from the risk of fire is made easy by the proper use of herbicides.

Monuron is also quite effective in killing annual weeds in the seedling stage but relatively ineffective for established plants.

Diuron is only recommended for use when combined with another herbicide capable of killing established weeds. When used in conjunction with paraquat, the diuron has a residual effect while the paraquat takes care of the growing weeds.

Both herbicides are fairly insoluble so that regular agitation is required to keep the material in suspension.

Atrazine

Atrazine has similar properties to Monuron, and is used in a similar capacity. It has some effect on established plants but should be used mainly as a soil treatment to act against germinating seeds.

Vorox AA

Vorox AA is an equal mixture of amitrol (40 per cent.) and atrazine (40 per cent.). The amitrol is effective against established weeds while the atrazine is left in the soil to kill germinating seeds. It can be applied at any time during the growing season but the rate of application must be increased as the plants become larger.

Steriweed

Steriweed contains 5 per cent. 2,4-D, which is effective against broadleaved seedlings, 15 per cent. 2,2-D.P.A., which is used for the control of grasses, and 30 per cent diuron, which has a residual effect on germinating seeds. Thus it is a well balanced combination spray suitable for most situations, providing it is applied while the weeds are small.

Paraquat and diquat

Paraquat and diquat are closely related, quick acting, contact herbicides which have no residual effect. For this reason they should only be used by themselves when there is little likelihood of further weed emergence.

The alternative is to combine them with a residual herbicide, such as diuron, which will remain in the soil and kill the weed seeds as they germinate. Wetting agent at the rate of two pints per 100 gallons should be added to the spray mixture.

Diquat is mainly effective against broadleaved weeds, while paraquat is used for grasses. Where both types of weeds are present the two sprays can be combined, while for either broadleaved weeds, or grasses by themselves, only the appropriate spray should be used. This will then halve the cost of the treatment.
Treating a narrow strip, such as shown here, with a herbicide early in the year is relatively cheap and all growth is prevented for the year.

2,2-DPA

2,2-DPA is a selective grass weed killer which is mainly absorbed through the leaves. Wetting agent should be added to the solution to help the chemical stick to the leaf. It is particularly effective against couch and kikuyu but not entirely satisfactory for paspalum. It has little residual effect and should be applied during the growing season. A second treatment is often required to control regrowth and dormant roots.

Banana Weedazol Total

This chemical contains 2,2-DPA (61 per cent.) and amitrol (24 per cent.), and is recommended specifically for the control of paspalum where this is desirable.

Application

Where it is desired to obtain a residual effect, an even application of the herbicide is essential. Any area of soil left untreated will produce weeds and these often become larger than usual because of the lack of competition.

For spring applications, and where the weed growth is very dense, thorough wetting is necessary when using contact herbicides. For these reasons a volume of at least 100 gallons of water per acre is recommended.

Where the treatment is undertaken during the early part of the growing season, best results will be obtained if the spraying is done when the soil is moist and while the weeds are still in the seedling stage.

Dry plant material and other matter lying on the surface will reduce the effectiveness of the herbicide.

Cost

The costs of the treatments recommended vary from 168s. to 475s. per acre. This is equivalent to treating a strip one mile long and 8 feet wide. The variation in cost is due to the higher rates of application required when the treatments are applied later in the season, and also the cost of the recommended products.

Reducing Cost

The cost of application can be reduced by using the cheapest treatment during the early part of the growing season.

In the second and third years the rate of application can be reduced by 25 per cent. each year and satisfactory results will still be obtained. This is because the compacted and bare soil will encourage less weeds to germinate, and also because there is a slight build up of herbicide in the soil.

Rainfall and Soil Type

The two most important factors affecting the results, apart from the time and evenness of application, are the rainfall and type of soil.

The amount of rainfall is most important as it governs the rate at which the herbicide is washed from the soil. The type of soil has some effect as leaching occurs more readily in sandy soils than loam or clay soils. For these reasons the recommended rates shown in Table 1 vary depending on the rainfall.
Table 1.—Recommended treatments for making firebreaks according to the type of weed present and the time of application

<table>
<thead>
<tr>
<th>Weeds Present</th>
<th>Time of Application</th>
<th>Herbicide</th>
<th>Quantity in 10 gals. water per 480 sq. yds.</th>
<th>Rainfall below 15 in.</th>
<th>Rainfall above 15 in.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual grasses and broad-leaved weeds</td>
<td>Within 4 weeks of germination</td>
<td>Monuron 80% or Atrazine 80%</td>
<td>6 ozs.</td>
<td>8 ozs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>or Atrazine 40% + Steriweed or Paraquat + Diuron*</td>
<td>12 ozs.</td>
<td>16 ozs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>4-8 weeks after germination</td>
<td></td>
<td>8 ozs.</td>
<td>10 ozs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Late winter or early spring†</td>
<td>Vorox AA or Paraquat + Diquat*</td>
<td>10 ozs.</td>
<td>12 ozs.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>or Amitrol 24% + DPA 62%</td>
<td>8 fl. ozs. each</td>
<td>8 fl. ozs. each</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Couch, kikuyu</td>
<td>During growing season†</td>
<td>2, 2-DPA*</td>
<td>3 lb.</td>
<td>3 lb.</td>
<td></td>
</tr>
<tr>
<td>Paspalum</td>
<td>During growing season</td>
<td>Amitrol 24% + Paraquat*</td>
<td>24 ozs.</td>
<td>24 ozs.</td>
<td></td>
</tr>
<tr>
<td>Woody plants</td>
<td>Spring†</td>
<td>Paraquat*</td>
<td>8 fl. ozs.</td>
<td>8 fl. ozs.</td>
<td></td>
</tr>
</tbody>
</table>

* add 4 fluid ounces of wetting agent.
† burn when dry if necessary.
Although not intended as a firebreak, the bare strip under these vines illustrates the season-long control obtainable with herbicides such as Monuron or Atrazine.

Summary

• Herbicides can be used to make firebreaks but the treatment costs more than cultivation.
• Use chemicals around buildings, along fence lines, and other places where cultivation is undesirable.
• The cheapest treatments are those applied within four weeks of germinating rains.
• An application to a practically bare soil surface gives best results with a residual treatment.
• Check Table 1 for the recommended treatment and Table 2 for the availability and cost of the chemical.

Table 2.—Trade names, distributors and approximate cost of the herbicides listed in Table 1

<table>
<thead>
<tr>
<th>Herbicide</th>
<th>Trade Name</th>
<th>Distributor</th>
<th>Approximate Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monuron</td>
<td>Telvar Monuron</td>
<td>David Gray</td>
<td>42/- per lb.</td>
</tr>
<tr>
<td></td>
<td>C.M.U.</td>
<td>Lanes</td>
<td>60/- per lb.</td>
</tr>
<tr>
<td>Altrazine</td>
<td>Primatol A</td>
<td>Terra Trading</td>
<td></td>
</tr>
<tr>
<td>Amitrol 40%</td>
<td>Vorox AA</td>
<td>Barrow Linton</td>
<td>47/6 per lb.</td>
</tr>
<tr>
<td>Atrazine 40%</td>
<td>Steritweed</td>
<td>I.C.I.</td>
<td>33/- per lb.</td>
</tr>
<tr>
<td>Steriweed</td>
<td>Paraquat</td>
<td>I.C.I.</td>
<td>350/- per gallon.</td>
</tr>
<tr>
<td>Paraoquat</td>
<td>Diquat</td>
<td>I.C.I.</td>
<td>280/- per gallon.</td>
</tr>
<tr>
<td>Diquat</td>
<td>Karmex Diuron</td>
<td>David Gray</td>
<td>42/- per lb.</td>
</tr>
<tr>
<td>Diuron</td>
<td></td>
<td>Lanes</td>
<td>8/6 per lb.</td>
</tr>
<tr>
<td>2, 2-DPA</td>
<td>Various</td>
<td>Agric. Chem firms</td>
<td>27/- per lb.</td>
</tr>
<tr>
<td>Amitrol 24%</td>
<td>Banana Weedazol Total</td>
<td>Barrow Linton</td>
<td></td>
</tr>
<tr>
<td>DPA 62%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
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SERIES 6 HD Diesel, 7 tons (rigid), 12 tons (tractor) 160”, 175”, 190” w.b. 354 Perkins “6”

SERIES 5. Full 5 tonner, 160”, 175” w.b. 173 B.H.P. V.8 or Heavy Duty slant six.

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