Annual Weeds in Spring Oats

The weed problems in oats correspond to those for wheat and barley. Apply herbicides when oats are 6 to 8 inches high, but avoid spraying in the boot stage. Since oats are the most sensitive of cereal crops to 2,4-D, use the amine form at 1 to 2 pounds per acre. This application has given satisfactory results.

Perennial Weeds

Perennial weed control in grain crops presents a more difficult problem. A program of repeated spraying is usually necessary to obtain control of many serious perennial weeds. In some cases, use of a higher gallonage of water per acre for spraying application may insurce control. Some of the more serious perennial weeds may be best controlled by using a planned spray program for the entire year.

Such a program would include several spray applications. Good results have been obtained using 1 to 2 pounds of 2,4-D applied to morning glory in 50 to 100 gallons of water per acre at frequent intervals whenever the weed is in bloom. Another possibility for morning glory control may be spraying selectively in the morning or evening. Since oats are the most sensitive of cereal crops to 2,4-D or MCP, use the amine form at 1 to 2 pounds per acre. This application has given satisfactory results.

Use sterilants to control patches of serious perennial weeds. In some cases, use of a higher gallonage of water per acre for spraying application may insure control. Some of the more serious perennial weeds may be best controlled by using a planned spray program for the entire year.

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Perennial Weed Control Recommendations

<table>
<thead>
<tr>
<th>Weeds</th>
<th>Selective</th>
<th>Nonselective</th>
<th>Time</th>
<th>Sterilants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canada thistle*</td>
<td>2,4-D or MCP 1 to 1½ pounds per acre.</td>
<td>2,4-D or MCP 1 to 3 pounds per acre.</td>
<td>Just before bud stage.</td>
<td>Chlorate-Borate 8 to 12 pounds per sq. rd. Sodium Chlorate 4 to 6 pounds per sq. rd. (fire hazard).</td>
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<tr>
<td>Morning glory</td>
<td>2,4-D 1 to 1½ pounds per acre.</td>
<td>2,4-D 1½ to 3 pounds per acre.</td>
<td>Apply in early blossom stage.</td>
<td>Chlorate-Borate 8 to 12 pounds per sq. rd. Sodium Chlorate 4 to 6 pounds per sq. rd. (fire hazard).</td>
</tr>
<tr>
<td>White top</td>
<td>2,4-D or MCP 1 to 1½ pounds per acre.</td>
<td>2,4-D or MCP 1 to 2 pounds per acre.</td>
<td>Apply in the fall when new growth appears.</td>
<td>Chlorate-Borate 8 to 12 pounds per sq. rd.</td>
</tr>
<tr>
<td>Russian knapweed</td>
<td>2,4-D 15 to 20 pounds per acre.</td>
<td>During bud or blossom stages.</td>
<td>Chlorate-Borate 8 to 12 pounds per sq. rd.</td>
<td></td>
</tr>
<tr>
<td>Horehound rush*</td>
<td>MCP 1 to 1½ pounds per acre.</td>
<td>MCP 3 pounds per acre.</td>
<td>During active growth.</td>
<td>Ammotriazole 2 to 4 pounds per sq. rd.</td>
</tr>
</tbody>
</table>

Promising results with amino triazole at rates of 6 to 10 pounds per acre applied at the bud stage of thistle or during active growth in the case of horehound rush. This chemical is nonselective, but does not sterilize the soil.

Formulations and Properties

Hormone herbicides are usually available as sodium salt, amine, and ester formulations. The sodium salt and amine forms are both water soluble. Esters are emulsifiable with water, and marketed both as standard and low volatile types. Standard esters are considered to be of the high volatile type. Most common of this type are isopropyl and butyl esters. Low volatile esters include the propylene glycol butyl ether ester, tetrahydrofurfuryl ester, butoxy ethanol ester, isooctyl ester, and many others.

The terms volatility and drift are often confused. Volatility is the tendency of a material to become a gas under high temperature. The terms high volatile and low volatile simply indicate how readily these two types of esters vaporize. Low volatile esters tend to vaporize less than high volatile esters at the same temperature. The amine and sodium salt forms do not present a volatility problem. Drift is the movement of fine particles of a spray solution. The term volatility, as used in spraying, is the formation of a gas from a hormone weed killer which may be carried by the wind and injure sensitive crops. But drift is simply the movement of spray droplets due to wind. Both can cause serious damage to sensitive crops on which they may drift.

Carriers

Water at 5 to 40 gallons per acre for ground application and at least 3 gallons per acre for airplane application is the carrier used for 2,4-D applications to grain crops. Sometimes the addition of a wetting agent may give better weed control. This is particularly true where the amine or sodium salt is used. A wetting agent should not be used when underseeded legumes are present.

Precautions

In areas where the use of 2,4-D is hazardous due to drift or volatility, use lower pressure and higher volume of water. Lower pressure results in larger spray particles which are less subject to drift. In such areas a compound of low volatility such as the amine or low volatile ester type should be used.

Sterilants to control patches of serious perennial weeds. In some cases, use of a higher gallonage of water per acre for spraying application may insure control. Some of the more serious perennial weeds may be best controlled by using a planned spray program for the entire year.

Use sterilants to control patches of serious perennial weeds. In some cases, use of a higher gallonage of water per acre for spraying application may insure control. Some of the more serious perennial weeds may be best controlled by using a planned spray program for the entire year.

This circular was prepared by D. G. Swan, research assistant, Pendleton branch experiment station; D. O. Chilcote and W. R. Purlick, research assistants in Farm Crops, Oregon State College.
**Annual Spraying Is the Way to Control Weeds**

**Controls**

**Annual Weeds in Winter Wheat**

**EASTERN OREGON**

Tarweed is a serious annual weed. Mustard and other annuals are generally kept in check by early spraying. The period of early spraying is therefore centered around controlling tarweed. This area may have either an early or a late infestation of tarweed, and sometimes both occur in the same field. For this reason, the spray program must be flexible to obtain control when the weed is in its most sensitive growth stage. Spring tarweed when it is at the youngest stage possible for best control with least injury to wheat. When tarweed starts to shoot buds it becomes resistant to 2,4-D. The same is true of most other annual weeds.

Spring spraying has been the general recommendation for obtaining annual weed control in winter wheat. In some areas, however, weeds are an early problem. Where an early weed infestation threatens to seriously damage the stand of wheat, a fall spray may be advised. The best time to spray has normally been during March when wheat is well stooled. Avoid spraying when wheat is in the boot stage. 2,4-D amine or low volatile esters at £ to 1 pound per acre, sprayed when the plant is young. French pink becomes very resistant as it shoots buds and approaches maturity. Wild pea and lupine are somewhat resistant to 2,4-D and MCP, but can be controlled effectively with 2,4,5-T. Infestations of mustard, wild radish, and other annual weeds are easily controlled with applications of 2,4-D if applied before these weeds bloom.

**When to Spray, What to Use**

Spray when wheat is well stooled and before it is in the boot stage. 2,4-D amine or low volatile esters at from £ to 1 pound per acre in 5 to 40 gallons of water per acre by ground application, or 3 gallons of water per acre by airplane application, have given satisfactory weed control. The rate of chemical depends upon the age of the tarweed. The younger the tarweed the more likely it is to be controlled. The youngest stage possible for best control with least injury to wheat, a fall spray may be advised. 2,4-D amine, isopropyl, butyl, or low volatile esters at £ to 1 pound per acre is recommended for vetch control. Poor control has been associated with higher rates of 2,4-D. This causes top burning, resulting in poor translocation and kill. Germination and growth of new vetch plants after an area has been sprayed is another cause of poor control. French pink can be controlled with 2,4-D sprayed when the plant is young. French pink is very resistant to 2,4-D. 2,4,5-T at the rate of 4 to 1 pound per acre to give best results. MCP can be used selectively at 1 to 1 pound per acre for underseeded red or white clover, seeded in spring wheat, the sodium salt or amine form of MCP can be used selectively at £ to 1 pound per acre. MCP should not be used on alfalfa.

**Annual Weeds in Winter Oats**

Winter oats generally are not grown in eastern Oregon areas. In western Oregon, winter oats are usually planted in combination with vetch. For this reason the use of hormone herbicides for weed control is not practiced. For exceptions to this situation the control practices would be the same as for winter barley except that only 2,4-D amine at £ to 1 pound per acre should be used.

**Annual Weeds in Spring Wheat**

In eastern Oregon, you can control tarweed, mustard, and other annual broadleaf weeds in spring wheat by using 2,4-D. You can control pigweed, lambquarters, and other annual broadleaf weeds which are problems in western Oregon spring wheat with hormone herbicides.

**When to Spray, What to Use**

Spray when grain is 6 to 8 inches in height and before the boot stage. The best control is obtained if weeds are young at spraying time. 2,4-D amine, isopropyl, butyl, or low volatile esters at £ to 1 pound per acre in 5 to 40 gallons of water per acre by ground application, and 3 gallons per acre by airplane application, have given satisfactory control. In areas where there is danger of fumes injuring nearby crops use the amine or low volatile ester forms. A 50-50 mixture of 2,4-D and 2,4,5-T at £ to 1 pound per acre will give satisfactory control of wild pea or lupine. In the case of underseeded red or white clover, seeded in spring wheat, the sodium salt or amine form of MCP can be used selectively at £ to 1 pound per acre. MCP should not be used on alfalfa.

**Annual Weeds in Spring Barley**

Weed control problems in this crop are the same as those in spring wheat.

**Annual Weeds in Winter Barley**

Weed control for winter barley is the same as weed control in winter wheat for both eastern and western Oregon.

<table>
<thead>
<tr>
<th>Crop</th>
<th>When to spray</th>
<th>What to use</th>
<th>Carrier</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>When oats are 6 to 8 inches in height, but before boot stage.</strong></td>
<td>2,4-D amine, isopropyl, butyl or low volatile esters at £ to 1 pound per acre for underseeded red or white clover and other annual weeds.</td>
<td>MCP should be used for lupine or wild pea.</td>
<td>Same as above.</td>
</tr>
<tr>
<td><strong>When barley is 6 to 8 inches in height, before boot stage.</strong></td>
<td>2,4,5-T at £ to 1 pound per acre for wild pea or lupine infestations. Same as for winter wheat.</td>
<td>Same as above.</td>
<td>Same as above.</td>
</tr>
<tr>
<td><strong>When barley is well stooled out but before boot stage.</strong></td>
<td>2,4-D amine, isopropyl, butyl or low volatile esters at £ to 1 pound per acre.</td>
<td>Some as above.</td>
<td>Same as above.</td>
</tr>
<tr>
<td><strong>When wheat is 6 to 8 inches in height, but before boot stage.</strong></td>
<td>2,4-D and 2,4,5-T, 50-50 mixture, at £ to 1 pound per acre.</td>
<td>Same as above.</td>
<td>Same as above.</td>
</tr>
<tr>
<td><strong>When wheat is well stooled, but before the boot stage.</strong></td>
<td>2,4-D amine, isopropyl, butyl or low volatile esters at £ to 1 pound per acre.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>