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Kill Weeds

In Small Grains

Circular 217



Agricultural Extension Service, University of Arizona, Tucson

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Kill Weeds

In Small Grains

By **E. H. Everson, Assistant Agronomist,
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Good farming practices are the key to weed control. Chemicals to kill weeds are best used along with good farming practices, not in place of them. Many weeds formerly considered a necessary evil now can be controlled economically by a combination of good farm practices and timely use of chemicals.

Selective Weed Control

Most troublesome winter annual weeds in cereal crops have broad leaves, whereas the cereals themselves have narrow leaves like other grasses. The broad-leaved weeds have exposed growing points in contrast to the growing points in cereals which are enclosed by the leaves.

To be effective, the chemical used to control weeds in cereals must be selective. It must kill or suppress the broadleaf weed while leaving the cereal plants with little or no injury.

Chemicals for Selective Weed Control

For controlling most of the common weeds in cereal crops, 2,4-D in spray solution is the best selective material to use. Numerous forms of 2,4-D are on the market, including the regular ester and amine forms besides low-volatile esters and 2,4-D dust.

Of the various forms of 2,4-D available the **amine form is the one recommended for the selective control of weeds in cereals.**

The volatile esters of 2,4-D are **not recommended** because of the danger of possible injury to nearby susceptible crops. The non-volatile **amine form of 2,4-D is much safer and thereby recommended.** It does not vaporize, so there are no dangerous fumes for the wind to carry to neighboring fields.

In northern Arizona, the ester form of 2,4-D shows some promise for holding bindweed and nutgrass in check.

Rate of Application

One pound of 2,4-D acid (amine form) per acre is recommended for the control of most common broad-leaf annual weeds in cereal crops in southern Arizona.

Two pints of a commercial pro-

duct of the amine form of 2,4-D would be equivalent to one pound of 2,4-D acid. Most commercial products contain 4.0 pounds of the 2,4-D acid, the active ingredient, per gallon.

Time to Spray

Time of spraying is especially important. Most common annual weeds are **easiest to kill** when they are young and actively growing. On the other hand, the small grains are **quite resistant** to 2,4-D when relatively small.

Spray the annual weeds in cereal fields when the small grains are well tillered. At this stage, wheat is about 4 inches high and barley and oats are about 6 inches high.

Spraying is not recommended during the early seedling stage of wheat, barley, and oats—or after they are in the boot stage. When the boot stage has been reached, the cereals are susceptible to 2,4-D injury while the annual weeds have become large and resistant to killing by the chemical.

A good rule of thumb to follow is to spray when wheat, barley and oats are about "hand-high"!

Application of 2,4-D

Make sure spray equipment is adjusted to deliver the right amount of spray material evenly over the entire field. Size and position of the nozzles, concentration of spray material, pressure, and traveling speed of tractor all affect spray application.

1. Set the spray boom not more than 20 inches above the weed growth for good coverage and less drift.

2. Apply one pound of 2,4-D acid (amine form) per acre, or its equivalent two pints of the commercial amine product, using water as a carrier. About 30 or 40 gallons of water per acre are recommended. With very good spray equipment, lesser amounts of water can be used.

3. A constant pressure of 30 pounds per square inch is recommended for uniform coverage and less drift.

Precautions in Using 2,4-D

Spray when the cereal crops are in the correct growth stage and least susceptible to injury.

Avoid drift by spraying when the wind velocity is less than 7 to 10 miles per hour. The hazard of drift also will be minimized by placing the spray boom as close to the ground as possible while still getting good coverage.

Use the amine form of 2,4-D, avoiding the use of the volatile ester forms.

Note any 2,4-D susceptible crops growing in the area and take every precaution to avoid injuring them either by direct application or drift.

Some of the **susceptible crops** are beets, spinach, beans, melons, squash, tomatoes, cabbage, cauliflower, lettuce, stone fruits, grapes, nut trees, berry crops, ornamental shrubs and cotton.

Spray equipment used for 2,4-D should not be used for anything else. Even small amounts left in a

sprayer can cause serious injury to sensitive plants. **Do not spray cotton with equipment in which 2,4-D has been used.**

When spray equipment **must** be used for other sprays, thoroughly clean it as follows:

1. Rinse with fresh water several times flushing it through the pump and hoses.

2. Fill the tank with water, adding one pound of lye, soda ash, or salsoda for each 100 gallons of water or one quart of ammonia for each 100 gallons of water, and let stand overnight.

3. Circulate this material for a few minutes and pump out.

4. Rinse with two or three tanks of clean water.

5. **2,4-D cannot be cleaned from wooden tanks.**

Cultural Practices

Good farming practices are the key to weed control since they directly influence the vigor of the crop plant stand and the weed population. Small grains are excellent competitive crops and discourage the invasion and growth of weeds when the cereal stands are vigorous.

A few of the practices which aid the small grains in this competition are listed below.

- Plant adapted small grain varieties which are recommended by the Experiment Station. Always use certified seed. Consult your County Agricultural Agent for a list of recommended varieties.

- Obtain adequate stands by planting in a properly prepared seedbed. Where weeds are likely to be a problem, plant in a moist seedbed. "Irrigating-up" is not desirable.

- Promote rapid growth of the crop by proper fertilizer practice. Common winter annual weeds do

not grow as fast as vigorous barley, wheat, and oat plants.

- Plant at the proper time. The recommended date in your area is before most winter annual weeds germinate. Consult your County Agricultural Agent for recommended planting dates.

- If the border system of irrigation is used, drill the seed across the borders. Otherwise the borders are likely to become weed patches.

- Properly rotate your crops.

A good rotation for southern Arizona is 2 to 4 years of alfalfa, 2 years of cotton, or other summer crops and 2 years of small grains. Small grains are planted from November 15 to February 15 and harvested in late May or the first week in June.

The arid summer period after each grain crop provides an excellent place in the rotation for dry summer fallow to control most perennial weeds. Johnson grass in particular is readily eradicated by this practice.