

Controlling Weeds in Alfalfa

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Weeds compete with alfalfa for moisture, light, and nutrients, and, as a result, can reduce alfalfa growth. Weeds also can greatly reduce the quality of harvested hay, especially from the first cutting. Weed-free alfalfa is usually higher in protein and digestibility, thus it has a higher feed value and is more palatable, so that livestock consume more forage and produce more meat and milk. Toxic weeds (such as tansy ragwort, black nightshade, or poison hemlock) can make a hay unacceptable as feed.

Types of control

Cultural and mechanical. Weed problems in established alfalfa can be minimized by good management. Moisture stress, low fertility, diseases, insects, nematodes, improper cutting, and soil compaction all weaken alfalfa plants and allow weeds to compete more effectively. Summer annual weeds rarely invade dense, vigorous stands of alfalfa. Winter annual weeds, however, can become established in spite of proper management, because their active growth period coincides with alfalfa dormancy.

Winter annual weeds in established alfalfa sometimes can be controlled with a spring-tooth harrow to uproot young weeds. Cultivation may injure alfalfa crowns and delay the first cutting, or it may increase stand loss from diseases that infect the injured crowns. However, in alfalfa grown for seed, cultivation is an effective method of control, especially when the alfalfa is planted in rows.

Normal hay harvest, combined with a vigorous stand of alfalfa, will control most upright-growing annual weeds, such as lambsquarters and pigweed, and will retard many perennial weeds. Cutting alfalfa—early

if necessary, before the weed seeds mature—will keep weeds from spreading, except in the case of quackgrass and other creeping perennials.

When weeds become established in spite of preventive efforts, treating with herbicides or rotating to a cultivated row crop for several years may be necessary. Without good cultural practices, however, herbicides will seldom give the desired results, because weeds will reinvade the bare spots in the stand where there is little competition from alfalfa.

Chemical. Not all weed problems will justify chemical treatment. Some weeds such as dandelion, lambsquarters, shepard's purse, filaree, and quackgrass are reasonably nutritious and palatable as forage. To benefit economically from using herbicides in alfalfa, growers must be able to receive a premium price for weed-free hay or must take advantage of the improved quality by feeding their own livestock.

In addition, they must have a fairly good stand of alfalfa. If the stand is too thin, the total forage yield may drop appreciably with the weeds removed, and returns from the alfalfa may not justify the cost of spraying.

There is no standard economic threshold for weed populations in forage crops, but research at the University of Wisconsin suggested that to justify the cost of herbicides, an alfalfa stand should contain at least four to five crop plants per square foot, and the field ought to be kept in production for at least two more seasons. This threshold could change, however, with different prices for alfalfa.

Herbicides

The *Pacific Northwest Weed Control Handbook* (available through the Extension Services of Oregon State University, Washington State University, and University of Idaho) contain a list of herbicides registered for use on alfalfa, along with the application rates and information on their suitability for specific uses.

Because the status of herbicide registration changes so frequently, growers should refer to this publication, which is updated annually, for recommendations. The product label will give more detailed information about a specific herbicide, including a list of weeds controlled, directions for application, and safety precautions. Any use of the product not included on the label is illegal.

Most herbicides registered for use on alfalfa must be applied only on pure alfalfa stands, because the chemicals may injure or kill desirable grasses. The margin of tolerance of many herbicides used in alfalfa is narrow. Excess herbicide can injure alfalfa; therefore, calibration of spray equipment and proper application rates are essential.

New seedlings. Many weed problems in alfalfa can be avoided by the use of preplant herbicides. Glyphosate (Roundup), applied at least 10 days before planting, controls almost all existing vegetation if sufficient top growth is present when the application is made. It has no residual soil activity and will not control weeds that germinate after application. It is especially useful for controlling creeping perennials such as quack-

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grass, field bindweed, Canada thistle, and johnsongrass.

EPTC (Eptam) and benefin (Balan) are applied preplant to clean soil and must be incorporated immediately. They both control grasses and some broadleaf weeds by preventing seedling emergence. The lower rates on the labels should be used on coarser soils and the higher rates on finer soils. EPTC is the more active, broader spectrum herbicide, and it will control perennial grasses, such as quackgrass, better than benefin.

Some selective herbicides are available to use in alfalfa postemergence. Seedling broadleaf weeds less than 3 inches tall or rosettes less than 2 inches across can be controlled with 2,4-DB (Butoxone or Butyrac) or bromoxynil (Buctril). Alfalfa should have 2 to 4 trifoliolate leaves. These herbicides become progressively more damaging to alfalfa as it matures.

Certain annual broadleaf weeds, such as smartweed, prostrate knotweed, and chickweed, have proven resistant to 2,4-DB, especially west of the Cascades. Combining bromoxynil and 2,4-DB improves control of mustards, henbit, pigweed, and kochia. Bromoxynil should not be used when the temperature exceeds 70° or is expected to exceed 70° during the days following application, as crop injury may occur.

Sethoxydim (Poast) controls grasses only, postemergence. Grasses should be actively growing; control is erratic if grasses are stressed by drought, temperature, insect injury, etc. Two applications may be necessary for more mature grasses. Sethoxydim will not control annual bluegrass or any of the fine fescues and is weak on downy brome and quackgrass.

Established stands. Sethoxydim (Poast) may also be used on grasses, postemergence, in established alfalfa.

Pronamide (Kerb) controls grasses and broadleaf weeds. At the higher rate, pronamide controls quackgrass in established alfalfa. Pronamide should be applied at the start of dormancy (late October through early December). It also may be used on new plantings after alfalfa has reached the first trifoliolate leaf stage of growth. Optimal herbicidal activity occurs when applications are made under cool conditions (55° or less) and are followed by rainfall or overhead irrigation.

Several other herbicides may be applied to established alfalfa while the

crop is dormant but the ground is not frozen or snow-covered. Hexazinone (Velpar), diuron (Karmex or Direx), and metribuzin (Sencor or Lexone) control grasses and broadleaf weeds preemergence or early postemergence (before they are 2 inches tall or across). When the alfalfa is stressed from insect, disease, winter injury, etc., the possibility of crop injury is increased. On the lighter soils east of the Cascades, hexazinone satisfactorily controls established perennials such as dandelion and quackgrass.

However, on heavier soils west of the Cascades, hexazinone has no advantage over diuron, which is less expensive. No other crop should be planted within 24 months of the last treatment of hexazinone or diuron. If the grower plans to rotate the field out of alfalfa the following year, metribuzin may be used. Metribuzin should not be used on sand or on soil with a pH greater than 7.5.

Paraquat (Gramoxone Super) tank-mixed with hexazinone, diuron, or

metribuzin improves weed control over either one alone, by killing weeds that have already emerged and are up to 6 inches tall. Paraquat is not active in the soil. It is a restricted-use herbicide, and safety precautions must be taken to avoid breathing it during application.

Use pesticides safely!

- **Wear** protective clothing and safety devices as recommended on the label. **Bathe or shower** after each use.
- **Read** the pesticide label—even if you've used the pesticide before. **Follow closely** the instructions on the label (and any other directions you have).
- **Be cautious** when you apply pesticides. **Know** your legal responsibility as a pesticide applicator. You may be liable for injury or damage resulting from pesticide use.

Pacific Northwest Weed Control Handbook

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