

## PROCEDURES FOR NO-TILL ALFALFA

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Technology is now available to successfully establish new stands of alfalfa without the need for tillage and preparation of a fine seedbed. Establishing new stands of alfalfa no-till essentially eliminates the threat of soil erosion while the new seeding is becoming established as well as the resulting ruts and gullies which damage equipment and can be dangerous to equipment operators. In addition to conserving soil, no-till seedings conserve moisture already present in the seedbed. This, plus the dramatic reduction in water run-off, improves the moisture supply for new seedlings. Less time and fuel are required to seed using no-till methods and rocks remain below the soil surface.

There are several "rules" that must be followed for no-till seeding to work. The five most important considerations are:

1. Minimize Competition from the Existing Sod or Cover -- One of the objectives of no-till is to disturb the soil and the existing cover as little as possible. Every effort must be made to prevent the weeds or other plants already present from competing with the new seedlings. Heavy thatch and plant growth tall enough to shade the sod surface must be removed. Depending on the situation, grazing and/or application of herbicides are the primary means for reducing this competition. When seeding alfalfa living competition must be eliminated.
2. Seed on the Proper Date -- Depending on the situation, no-till seeding can be done successfully in late winter, spring, or late summer-fall. It is extremely important to make plans and preparations well in advance so the seeding can be made on time.
3. Ensure Adequate Fertility -- It is a waste of time and money to try to establish or improve stands when the soil fertility and/or pH is too low to support productive plants. Fertilize and lime according to soil test prior to seeding. If possible, apply needed lime at least six months in advance. Alfalfa requires a pH of 6.4-6.7.
4. Use High Quality Seed -- Seed should be of varieties adapted to the area and with a high germination percentage. Cheap, low quality seed is often the most costly item in no-till seeding because it results in not getting a stand.
5. Use a Seeder Capable of Precisely Placing the seed in the Soil -- A number of excellent no-till seeders are available. Each of these needs to be properly adjusted and operated to place the seed about 1/2 inch in the soil regardless of soil conditions.

Seeding rates can be slightly lower for no-till seeding than in tilled seedbeds. Research and experience have shown that 15 lbs of seed per acre is adequate. Most other

inputs such as variety selection, seeding dates, and soil fertility levels are the same for no-till and conventional seeding. Costs are similar for the two methods.

### No-till Seeding Into Sod

It is often desirable to seed alfalfa into a sod such as old pasture or hayfield. In such cases, it is necessary to apply herbicides to eliminate the existing plants, then use a no-till drill to establish new stands in the killed sod.

While late spring seeding in sods killed in early spring can be done successfully, especially in strong tall fescue sods, this method is not recommended in Virginia. In order for herbicides to kill the sod in spring, it is necessary to wait until the plants are actively growing. This delays seeding until weed competition and hot, dry conditions threaten the seedlings.

An alternative to seeding directly into the sod in the spring is to graze in the spring or take a hay cutting from the sod to be seeded into. In early June, when the plants are 2-4 inches tall, apply herbicide and seed a summer annual forage crop such as foxtail millet, sorghum sudan, or pearl millet. After this crop is harvested in early August, apply herbicide to the regrowth and drill in the alfalfa. Foxtail millet works particularly well because it makes no regrowth after being cut, thus eliminating the need for herbicide in most instances.

Another viable option is to graze or mow the sod closely by August 1, apply paraquat, wait 10-14 days, make a second paraquat application, then seed. In late summer, weed competition is not severe and the seedlings have an opportunity to become well established before the next season. However, seedings made in Virginia at this time in recent years have frequently been weakened or destroyed by sclerotinia stem and crown rot.

The most effective procedure for establishing alfalfa in a sod in most areas of Virginia is to apply herbicides during late fall-early winter while weeds and other plants are still growing. Then seed in the killed sod in early March.

### Herbicides Needed

In general, the control of grass sods is best accomplished by two applications of paraquat, although a single heavy application is usually adequate when killing the sod in late fall. Use 1 quart/A plus surfactant followed after at least 2 weeks with 1 pint to 1 quart/A plus surfactant. This application will kill or severely weaken the non-rhizomatous grasses present as well as many seedling broadleaf weeds. Perennial broadleaf weeds will not be controlled in this way, and must be controlled with 2,4-D and/or Dicamba. For spring seeding, use the appropriate herbicides in the summer before seeding as discussed above, supplemented by late fall and early spring 2,4-D for thistle control. The sod may be killed in late fall with one quart per acre of paraquat. Seeding may be done in early March following an application of 1 pint per acre of paraquat to control winter annual weeds. For

fall seeding, control the perennial broadleaf weeds in spring and early summer. **CAUTION:** 2,4-D can be used safely within 1 month prior to a legume seeding. Dicamba, however, persists longer in the soil than 2,4-D, and residues can severely injure or kill legume seedlings. If Dicamba is required for perennial broadleaf control, be sure at least 1 month is allowed between application and seeding for each pint of Dicamba used. Because many perennial broadleaf weeds require 2 or more pints of Dicamba for control, weed control in the year prior to seeding will often be necessary.

Roundup is also effective in killing the sod prior to reseeding. Generally, 2-4 quarts of Roundup are required to control both the short grass sod and perennial broadleaf weeds. Although more expensive than paraquat application, this treatment can be used to control all vegetation, including actively growing rhizomatous species with one application and seeding can be done shortly after application. The time saved associated with this treatment may outweigh the cost consideration in some instances.

#### Insecticide for Alfalfa Seedlings in Sod

Furadan is an important part of the management package in order to protect alfalfa seedlings from insects present in the killed sod. The specific insects or complex of them involved will vary with location and time of year. The granular 15G form of Furadan must be placed into the soil in the row with the seed at the rate of 7.5 lbs per acre. It is desirable to place the seed and Furadan in separate boxes on the seeder. However, Furadan can be mixed with the seed in the seedbox and significant separation will not occur as the seeder travels across the field.

#### **No-Till Seedings Following Crops Rather Than Sod**

A common situation is the need to establish an alfalfa or other forage stand following a crop such as corn, small grain, sorghum, millet, or soybeans. This can be done easily and effectively by no-till methods rather than disturbing the soil to prepare a seedbed. In some cases, these crops can be used as a means of controlling weeds prior to no-till forage seedings.

Spring no-till planting of grasses, clover, or alfalfa may be successful in fields planted to corn the previous season. Preferably, the field would be planted to a small grain cover crop in the fall, but this is not necessary. Seedings in mid-March may not require paraquat at that early date if the seedbed is free of weeds. Be sure the seedbed is free of even very small weeds before deciding not to apply paraquat.

There are several ways to successfully seed forages no-till into a small grain crop in the spring. One method is to spray the small grain with 1-2 pts of paraquat per acre when growth is 4-6 inches tall, then seed. The small grain will usually make regrowth which must be mowed when 5-6 inches tall to prevent smothering the seedlings. Seedings may also be made without tillage into standing (8-10 inches tall) small grain prior to harvesting for silage.

Small grains harvested for silage in the boot stage will normally produce regrowth which must be mowed when 4-6 inches tall to reduce competition to the seedlings. Barley and wheat cut at the dough stage will produce very little regrowth.

Forages may also be seeded into small grain stubble after a silage or grain harvest. If the silage harvest was made prior to dough stage, wait 5-10 days for regrowth to develop, then apply 1 pt. of paraquat per acre to burn back the regrowth and kill weed seedlings. If the harvest was made at dough stage or later, apply 1 pt. of paraquat per acre immediately to kill weed seedlings and seed. Since grain harvest is late in the spring, waiting until early August to spray with 1-2 pts of paraquat per acre and then seeding the alfalfa is usually best. Volunteer small grain must be controlled by mowing or the use of an herbicide such as Poast. Another option is to apply paraquat and seed a summer annual grass by the no-till method after the small grain crop is removed. The forage is then seeded in August following the summer annual as discussed earlier.

#### Herbicide Considerations

Be cautious about herbicide residues from the preceding crop. Triazine herbicides (Atrazine, Princep) will often kill or injure alfalfa planted in the fall following a spring application and can cause injury in the spring following application the previous spring. If alfalfa seeding is anticipated, minimize triazine residues by eliminating Simazine, restricting the amount of atrazine used, and supplementing with the short lived triazine Bladex.

#### Insecticide for Alfalfa Seedings Following Crops Rather Than Sod

The use of Furadan is not critical when seeding in this situation compared to when seeding directly into a sod. The use of 15G Furadan is recommended in Virginia only when seeding no-till into a killed perennial sod such as tall fescue or orchardgrass.