

NO-TILL ESTABLISHMENT OF ALFALFA

Márcia Pereira Da Silva, Graduate Student

Renata Nave Oakes, Assistant Professor

Gary Bates, Professor

Department of Plant Sciences



Alfalfa is a perennial cool-season legume grown widely around the world. It is a high-quality, high-yielding forage crop. Alfalfa can be utilized as hay, silage, greenchop, or in grazing systems, allowing producers to use this forage in a variety of ways that fits their farm needs. Seeding alfalfa can be challenging if certain requirements are not followed. Alfalfa is considered a “demanding crop,” so good establishment and management is essential to assure the high yields and exploitation of alfalfa’s great potential.

Establishing alfalfa with no-till practices offers several advantages over conventional establishment. Soil conservation, moisture conservation, reduced weed pressure and a longer planting window are just a few examples. For successful no-till establishment, give attention to the following details.

SITE SELECTION

Alfalfa is a drought tolerant legume with deep-root distribution system that performs best in well-drained soils. Planting alfalfa in poorly drained soil can result in disease issues, reduced persistence and reduced yields.

SITE PREPARATION

- **Control weed issues prior to planting.** Weed pressure can limit the production and longevity of an alfalfa stand. Evaluate the potential planting site for weed pressure and use the appropriate herbicides to control these weeds the year prior to planting. Pay particular attention to perennial weeds such as curly dock, horsenettle, johnsongrass and buckhorn plantain. If herbicides have been used within the previous year, check to make sure no herbicide residues will decrease seed germination.
- **Correct low pH problems.** Soil pH should be 6.5 for optimum alfalfa production. Be sure to soil test at least one year prior to planting. This will allow time for lime applications if the pH is too low. Do not wait until planting to apply lime. It will take at least one year for lime correct low soil pH.

PLANTING

- **Planting dates.** Recommended seeding dates are from March 1 to May 15. If moisture is adequate, seeding date can be extended until about May 22, if needed. It is recommended to plant alfalfa only in the spring if using no-till techniques. Fall planted alfalfa is susceptible to sclerotinia crown rot during the first fall. No-till plantings are more susceptible, since they tend to be smaller going into winter than conventional seedings. **If you are going to fall plant alfalfa, do not use no-till planting techniques.**
- **Seedbed preparation.** It is important to control all competition prior to planting. Using glyphosate or paraquat to kill all existing vegetation is critical to control competition from existing plants. One of the best programs for no-till establishment of alfalfa is to kill the existing stand of grass in September and drill wheat as a cool-season annual. The wheat can be harvested as hay or haylage in late April or early May, sprayed with glyphosate or paraquat a week after harvest, then drilled with alfalfa in mid-May.

- **Planting rate.** The recommended seeding rate for alfalfa is 15-20 pounds per acre. Most alfalfa seed will be preinoculated with *Rhizobium* bacteria for nitrogen fixation. The seed may also be coated with a lime coating. The coating often results in 20-30 percent inert matter in the bag. Research has shown that there is no reason to increase seeding rate over the recommended rate. Check the seed tag prior to planting. If the tag indicates less than 85 percent germination or more than 40 percent inert matter, the seeding rate will need to be increased.

Be sure to properly calibrate the drill that you are using. This is important to ensure that seed is placed evenly at the correct rate across the field. For more information on calibrating drills, review UT Extension publication SP 435-C “No-till Establishment of Forage Crops,” (extension.tennessee.edu/publications/Documents/sp435c.pdf) and visit UTBeef.com to watch the short video on calibrating a no-till drill.

- **Planting depth.** Plant alfalfa no deeper than 1/8 to 1/4 inch deep. Deeper plantings will result in reduced seedling emergence and poor stand establishment. Take time prior to planting to run the drill across a portion of the field to check seeding depth. Make sure to check depth several times as you move across the field.
- **Fertilization.** Apply phosphate and potash at seeding based on soil test recommendations. Include 2 pounds of boron per acre at seeding as well as each subsequent year. Apply 15 pounds of nitrogen per acre to aid in seedling development. No more nitrogen will be need, since alfalfa is a legume and can fix nitrogen from the atmosphere. Be sure to use seed that has been preinoculated with *Rhizobium* bacteria, which are the bacteria responsible for the nitrogen fixation. If you are planting raw seed, you will need to inoculate the seed prior to planting.
- **Weed control after emergence.** Evaluate the field for the first couple of months after planting for weed emergence in the new seeding. Do not be surprised if pressure from crabgrass or other annual grasses is heavy. These weeds, along with other broadleaf weeds, can be controlled through the use of various herbicides. Specific herbicide recommendations can be found in UT Extension publication PB 1580 “Weed Control Manual for Tennessee” (extension.tennessee.edu/publications/Documents/PB1580.pdf).

ANNUAL MANAGEMENT AFTER ESTABLISHMENT

Be sure to soil test every three years to determine the pH and fertilizer needs for the alfalfa. Phosphate and potash should be applied based on soil test recommendations. Follow the most recent soil test recommendations in the years between soil test. Be sure to include 2 pounds of boron each year. Monitor the crop each spring for damage from the alfalfa weevil and during summer for potato leafhopper. Make plans to apply the appropriate insecticide to control these pests. You also should evaluate weed pressure each year to determine the need for herbicide applications.

Once an alfalfa stand is established, you cannot add seed to thicken a stand. Alfalfa exhibits auto-toxicity, which means leaf litter will degrade and release chemicals, preventing new alfalfa seedlings from establishing. If an alfalfa stand begins to thin, seeding orchardgrass or red clover in the fall is one of the best methods to extend the productive life of an alfalfa stand.



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