

Forages



ESTABLISHMENT OF ALFALFA

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Soil Preparation

Prior to any land preparations, take a soil sample for analysis. Apply fertilizer and lime according to the soil test recommendations. It is desirable to apply sufficient lime to raise the soil pH to between 6.5 and 7.0. A small application of nitrogen (20-30 lb/A) may help establish alfalfa on very light, sandy soils or those known to be very deficient in nitrogen. On heavier soils and those with medium nitrogen levels, the establishment application of nitrogen will produce no benefit. Alfalfa does not require applications of nitrogen fertilizer once established if well inoculated with rhizobium bacteria. Fertilizer and lime may be broadcast over the field and incorporated with the tillage operations preparing the seedbed.

The field should be thoroughly tilled to kill any growing weeds and to loosen the hardpan, if necessary. Final tillage operations should break up clods to provide a firm, smooth seed bed. This is particularly important with alfalfa because the seed is so small. Loose soils will dry in the surface layers rapidly and will result in poor soil-seed contact. Rough fields will not allow good seed placement. All three conditions will result in poor germination and disuniform stands in the field. Additionally, it is important to remember that hay will be made off of the field for three to five years or more and a little extra care in leveling the field will make haymaking easier in the years to come.

Variety Selection

Numerous varieties of alfalfa are available in South Carolina. Buying the cheapest seed may be the most costly mistake made. Saving fifty cents on the price of seed is only \$8 to \$10 per acre. But when a superior variety may yield one to two tons more per year and have more years of highly productive stand life, the added seed cost is small and may be recovered in one cutting, or at minimum in the first year. Check with your county Extension agent for results of variety trials and demonstrations and with neighbors to determine best adapted varieties.

A few generalizations can be made:

The less winterhardy varieties begin growing earlier in the spring and grow later into the fall. This means that the least winterhardy variety that will survive the winter will tend to have the longest growing season. It will also tend to recover quicker after being cut.

Varieties with fall dormancy or winterhardiness ratings of 4 to 6 are appropriate for the Piedmont and 6 to 8 for the Coastal Plains.

Also, check the disease and insect resistances of the variety - more is better. In particular, anthracnose resistance will increase yield and stand longevity and phytophthora root rot resistance is important in poorly drained fields or where standing water occurs during rainy periods.



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Clay-coated seed of many varieties is available. The seed generally sells for about the same price per pound as uncoated seed with the recommendation that the same number of pounds of coated seed can be planted per acre as uncoated. Thus the purchaser is buying and planting more clay and less seed. Research has generally shown little advantage to coated seed except where the coating has carried trace minerals that were deficient in the soil. There are some other situations where clay coating may be desirable, however. The clay coating generally carries the rhizobium inoculum so that the trouble and expense of inoculation is avoided. (Note - be sure that the coated seed is from the current year as the inoculum may be dead in year-old seed.) Further, the coated seed is larger than uncoated seed and may meter better in old and/or worn planters.

Weed Control During Establishment

Weed control during establishment is important because alfalfa is slower to establish than many plants and can be overgrown by weeds and crowded out if care is not taken. The first step is to be sure that perennial weeds growing in the field have been killed by either use of herbicides, tillage, or a combination of the two prior to planting. The second step in weed control is to use a pre-plant herbicide. Either Balan (benefin) or Eptam (EPTC) are available for use and work well. The recommended rate for Balan is 1.2 lb Ai/A for coarse (sandy) soils and 1.5 lb Ai/A for fine (clayey) soils. The recommended rate for Eptam is 1.5 lb Ai/A. Both herbicides must be incorporated 2 to 3 inches deep immediately after application to avoid degradation and loss of effectiveness. Light cross disking is recommended for the incorporation. The herbicides will only control weeds that have not germinated but the disking for incorporation will kill newly germinated weeds.

Inoculation

Alfalfa is different from the forage grasses in that it is able to take its nitrogen from the air and does not require nitrogen fertilizer. But alfalfa does not do this by itself. It needs a bacteria, called rhizobium, that grow on the alfalfa roots and take nitrogen from the air in the soil and change it into a form that the alfalfa can use. Without the rhizobium bacteria the alfalfa plant needs nitrogen fertilizer like any other plant. These bacteria do not occur naturally in the soil and must be added with the alfalfa seed to insure their presence. The bacteria may or may not be present in the soil if an alfalfa crop has been grown

on the field previously. In these cases inoculation of seed is cheap insurance. Therefore, always inoculate alfalfa seed prior to seeding unless the inoculum has been included in the clay coating as mentioned above.

Buy good quality inoculum made specifically for alfalfa - inoculum for other crops will not work on alfalfa. The inoculum should be from the current year and should have been stored in a cool place in the store away from sunlight. High temperatures and sunlight can reduce the effectiveness of the inoculum. After purchasing, keep it in a cool place. The temperature on the dash of a pickup can easily exceed 100 °F and kill the inoculum in a short time.

Inoculate the alfalfa seed immediately prior to seeding. Use of a sticking agent is recommended so that some inoculum adheres to each seed. When the inoculum is simply dumped in the seeder box with the seed and stirred by hand, a high proportion of the inoculum remains in the seeder box and does not attach to seeds.

Planting

Fall planting of alfalfa is recommended in South Carolina to give the young seedlings a chance to establish under cooler weather and be established and competitive against weeds the next spring. Alfalfa should be planted in mid to late September in the Piedmont and during early to mid October throughout the rest of South Carolina. This generally is after the hottest summer weather is over (high temperatures can kill young seedlings) and early enough to allow sufficient growth for winter survival. Young seedlings must reach the first trifoliolate leaf stage, and preferably the second trifoliolate leaf stage, to survive the winter.

Alfalfa should be planted with a legume seeder at a depth of 1/4 to 1/2 inch. Seed must be planted shallow because of the small size. The deeper the seed is placed the less will emerge. Less than half the seed will emerge from a depth of 1 inch. Planting can be done with other types of seeders, but the main problems are depth of seeding and accurate metering. If planting is done in rows spaced 8 inches or more apart, consider seeding at half the recommended rate and then immediately seeding the field a second time, perpendicular to the first seeding with the second half of the seed. Many farmers have successfully broadcast seed on the soil surface and then gone over the field with a cultipacker. The degree of success with this method depends on how uniformly the seed is spread across the field.