Seedbed Preparation for Pasture Renovation

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Why Renovate

In Kentucky renovation has come to mean the re-establishment of legumes in grass pastures and meadows. Many acres of grassland do not contain enough legumes to fix the amount of nitrogen needed and to improve the nutritional value of the forage. A good stand of white clover, for example, has the capacity to fix about 100 pounds of nitrogen per acre. Because of this, pastures containing around 40 percent clover can produce about as much meat or milk as grass pastures fertilized with 150 pounds of nitrogen per acre. For best results in seeding clovers into grass sods, fields should be renovated in February or early March.

Renovation practices can range from simply surface seeding (walking on) legumes without any seedbed preparation to a complete renovation program that includes disturbing up to 80 percent of the present sod, applying lime and fertilizer according to soil test, and controlling grass and weed competition while legumes are getting established.

Surface Seeding

The surface seeding method is used for late winter seedings. During this period (mid-Feb. to late Feb.) soil moisture is normally near field capacity, and "honeycomb" freezes occur which help increase the seed-soil contact. After sowing, use of a drag or spike tooth harrow may improve seed-soil contact. Cattle can also be turned into these fields to tread seeds into the soil surface. If seeding is delayed until March, measures must be taken to reduce grass competition.

Prepared Seedbed

In late winter and early spring, several tillage implements can be used because freezing and thawing and higher soil moisture content softens the soil and makes it easier to work. Disk harrows, spike tooth harrows, chain drags, etc., can be used effectively at this time of year. On pastures with a heavy vegetative cover, there is less danger in working the soil too wet. Shallow tillage can be performed in late winter long before it is dry enough for other farm work on cultivated ground. This is why pasture renovation can and should be done at a season when other farm work is not urgent.
Shallow tillage with a disk or spring tooth harrow provides a rough, irregular surface that can aid in erosion control and in covering the seed. The roughness will disappear in a short time. A good stand of clovers can often be obtained with a minimum (40 percent sod disturbance) of seedbed preparation; however, for alfalfa seeding, 80 percent or more of the sod should be disturbed. Rolling or cultipacking is not necessary on shallow, trashy seedbeds in the spring, because frequent rains will settle loose soil enough for adequate seed-soil contact.

Renovation Seeders

According to forage workers at the University of Kentucky, our farmers should be renovating 2.25 million acres on pasture each year. Because of the widespread need for pasture renovation, the demand for mechanized equipment to renovate pastures has led to the development of renovators that can seed and fertilize at the same time. When a contact herbicide is used to kill the existing vegetation, no tillage is required when using one of these machines.

Controlling Grass and Weed Competition

The availability of contact herbicides has made it possible to kill or suppress undesirable species, so that legumes can now be established without preparing a seedbed. Fields too rough and rocky for the use of tillage tools can be sprayed uniformly to kill all existing vegetation or in narrow strips so that some grass, if desired, remains. Contact herbicides used for this purpose should be applied prior to, or at time of seeding grasses or forage legumes, such as alfalfa, clover and birdsfoot trefoil. Apply only to grazed or mowed pastures which are not more than 2 to 3 inches in height at the time of treatment. Follow the label directions for use of these products and for restrictions on grazing or feeding the forage produced.

Application of Lime, Fertilizer, and Inoculant

Fields to be renovated with legumes should be soil sampled in order to determine the need for lime and/or fertilizer. If soil pH is below 6.2-6.3, enough lime should be applied to raise it to 6.4. The best time to apply lime and any phosphate or potash which may be necessary is just ahead of seedbed preparation. This allows a shallow incorporation which will be particularly important for lime on strongly acid soils. Nitrogen fertilizer should not be used since it will encourage growth of grass and make it more difficult to get clover seedlings rapidly established. Clover seed should be inoculated with rhizobia specific for the species, immediately before sowing the seed. This will help ensure good nodulation for fixation of atmospheric nitrogen.