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Permanent Pastures For Delaware

Pasture, like any other crop, must be properly managed for maximum productivity. Proper pasture management depends on several factors, including fertility, species selection and establishment, weed control, and grazing/ harvesting management.

Producers with existing pastures have two options for improving their pastures. They can renovate or reestablish the pasture. First, evaluate the existing stand of grass and/or legumes to determine if renovation is possible. In a grass/legume pasture, more than 12 plants per square foot should be present. If the number of plants is six or more, consider renovation. If the number is less than six, complete reestablishment is a better course.

Renovation

Once you've made the decision to renovate an existing pasture, you have two alternatives. The first is frost-crack seeding a legume into an existing grass-predominated stand. Frost-crack seeding is a process by which legume seeds are spread on the top of the ground in February or early March, and the freezing and thawing of the soil actually plants them. For frost-crack seeding success, pastures must be clipped or grazed closely, and seeds should be inoculated with the appropriate Bradyrhizobia (commercial legume inoculant specific for the legume to be planted). Do not attempt to frost-crack seed on snow-covered ground.

The other renovation method to use is a no-till seeder. This can be done in either spring (March and early April) or fall (early August through September). Close grazing or clipping before planting is essential otherwise a herbicide application may be required to burn back the original stand of grass. Consult you county agricultural Extension agent for the best materials.

Reestablishment

Soil Fertility

If you decide to reestablish a pasture, consider the soil conditions. Are they variable? Are there wet spots? Sand hills? Or is the soil consistent over the entire area? Obtain a University of Delaware soil sampling kit and conduct a comprehensive soil testing program at least four weeks before your expected planting date to ensure that you get the results in time to make any soil amendments.

With the exception of no-till plantings, soil acidity (pH) changes for new pasture plantings require that lime be worked thoroughly through the rooting zone. Since lime, if surface broadcast, moves down through the soil only about 1 inch per year, your soil sample for new legume plantings should be taken at least four to six months before your expected planting date to allow enough time for lime amendments to modify soil acidity levels.

Your soil test results will indicate several important factors -- the soil pH, phosphorus level, potassium levels plus calcium, magnesium, organic matter, manganese, zinc, and lime requirement. In addition, soil test recommendations give the correct amount of lime and fertilizer needed for your soil to achieve best results.

If soil levels of phosphorus and potassium are low at the time of reestablishment, consider plowing or deep disking at least one-half of the required amounts of these nutrients into the soil to disperse throughout the root zone of the pasture plants. The remainder of the required phosphorus and potassium, along with recommended nitrogen, can be surface-applied just before planting.

Species Selection

In deciding what species or group of species to plant in your pasture, consider the animals that graze there and the soil conditions. Wet soils greatly limit the selection of grass species, as do extremely drought-susceptible soils. The following is a list of several grasses and legumes that can be grown in Delaware.

Tall Fescue:

- Suitable for beef cattle, non-breeding sheep and goats.
- An endophyte-free variety can also be used for breeding sheep and horses.
- Prefers high-fertility soil.
- Persistent grass, adapted to all of Delaware.

Orchardgrass:

- Suitable for all livestock.
- Can grow in poorer soils than many other grasses.
- Persistent grass.

Timothy:

- Suitable for all livestock.
- Short-lived and not drought-tolerant.

Perennial and Tetraploid Ryegrass:

- Suitable for all livestock.
- Probably the highest quality grass.
- Can survive in wet soils, provided standing water does not persist.
- Short-lived compared to many perennial grasses.
- Does best when mixed with a legume.

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Reed Canarygrass:

- Suitable for beef cattle.
- Can survive in wet soils.
- Choose only low-alkaloid varieties (Palatin, Venture,and Rival).
- Drought-tolerant after establishment.

Red Clover:

- Suitable for all livestock.
- Short-lived (two or three years).
- Does not do as well as alfalfa in hot, dry weather.

Ladino Clover:

- Suitable for all livestock.
- Can survive in a wide variety of soils including wet areas.
- Good companion legume for most grasses.
- Does not tolerate high alkaline soils.
- Generally short-lived but if allowed to reseed will reappear when conditions (disease and pest pressures and weather) permits.

Alsike Clover:

- Suitable for all livestockexcept horses.
- Occasionally causes a photosensitivity in livestock.
- Grows on wet soils but is short-lived (three years).

Alfalfa:

- Suitable for all livestock.
- Can be planted in combination with most grasses.
- Does not tolerate wet or acid soils or continuous grazing.
- Works well in intensive grazing programs.

Combinations

For most pastures, it is best to select one grass and one legume species. Experiences in Delaware indicate that tall fescue and orchardgrass work best. The best choice as a persistent legume for general use is ladino clover. Certain situations may warrant the inclusion of alfalfa or red clover.

Establishment

Proper soil preparation is important when establishing any pasture species. A conventional method of establishment involves moldboard plowing (remember to follow your soil test recommendations). Two or three diskings followed by a cultipacker are needed to prepare a weed-free, firm, level seedbed. Seed can then be drilled into the seedbed or broadcast, followed by a light harrowing or cultipacking to incorporate the seed into the soil. In some

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instances, the use of a nurse crop may be advantageous. A small grain, such as oats or barley (oats is preferred), can be seeded at a rate of 1 to 1 1/2 bushels per acre, along with the pasture species. Don't exceed these seeding rates; a thick nurse-crop stand can inhibit the growth of the desired pasture species. The small grain should be mowed off or grazed before heading.

No-till pasture establishment is also an option. For best results, consider no-tilling forage into wheat stubble or a killed-off permanent pasture. These fields tend to be level and offer a better chance of success. Consider increasing the seeding rate by 20 to 30 percent when planting no-till, and always consider germination rate and purity of the seed when determining seeding rates. Consult your county agricultural Extension agent for the feasibility of no-till pasture establishment in your situation.

Weed Control

Both annual and perennial weeds can have a negative impact on your pasture establishment plans. The best way to avoid weed problems is to control established perennial weeds using approved herbicides before you plant. For minor infestations, spot treatment is the most ecologically sound method of control. Annual weeds pose a bigger problem. For this reason, fall planting leads to more success in pasture establishment. Very few herbicides are labeled for use in new pasture plantings. Also, many herbicides that will eliminate broadleaf weeds are harmful to legumes and those that will control weed-grass species will harm desirable grasses. It may be easiest to establish a stand of pure grass and be able to control broadleaf weeds the first year using approved herbicides. The second year no-till or frost-crack seed legumes in the stand.

Grazing/Harvesting Management

Two basic options exist for grazing your pastures: continuous grazing and rotational grazing. Producers who are unwilling to move their animals on a regular basis should opt for continuous grazing. This practice will reduce the potential stocking rates for the pasture and require additional management in clipping the stand periodically. Rotational grazing requires that animals be moved every one to seven days to another pasture while the recently grazed pasture is allowed to rest for about 35 days. Rotationally grazed pastures should be bush-hogged to remove mature forage and stimulate new, nutritious forage. Advantages of rotational grazing include increased stocking rates and greater overall productivity. Disadvantages are increased costs in fencing and labor.

Pasture plants can also be harvested mechanically as hay or green chop or haylage if forage production exceeds that needed by livestock. Stockpiling is another option in pastures predominated by tall fescue. Tall fescue is allowed to flourish during the fall growth period (leave ungrazed from early- to mid-August until late fall). Accumulated forage can be grazed in late fall and early winter as a way to extend the grazing season. Only tall fescue offers this advantage since its quality remains relatively high, despite its physiological maturity.

Precautions:

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Pastures for horses or breeding sheep should contain the lower rate of legume. Endophyte-infected tall fescue should not be used for breeding sheep and pregnant or nursing mares. Some horses have also exhibited increased salivation ("slobbers") when kept on pastures with high clover content.

Suggested Pasture Mix for Delaware

- Well-drained soil type
- Tall Fescue (endophyte-free variety), 10 to 12 lbs/A OR
- Orchardgrass, 6 to 8 lbs/A OR
- Tetraploid Ryegrass, 10 lbs/A plus
- Ladino Clover, 0.25 to 0.5 lbs/A OR
- Medium Red Clover, 6 to 8 lbs/A

For appropriate pasture mixes on other soil types, consult your county agriculture Extension agent.

Additional Management Tips

- Test the soil in your pasture every other year. Follow soil test recommendations for lime, nitrogen, phosphorus, and potassium. If soil test results indicate low pH, phosphorus, and potassium levels, amendments should be worked into the soil by disking prior to planting.
- Always remove livestock from pastures following a nitrogen application and keep the animals out until adequate rainfall has occurred to wash the fertilizer off the plants and into the soil. This will prevent potential problems of nitrate toxicity.
- When applying manure or sludge as fertilizer, also remove animals until rainfall or irrigation water has washed the forage.
- Twice a year or more use a drag chain or field harrow to spread manure piles left by horses or cattle.
- If you are rotationally grazing your pastures, size the paddocks so stock will consume all existing growth. Don't overgraze the newly established stand. Allow at least a 30-to-35-day rest period between grazings.
- If you are continuous grazing, clip your fields as a non-chemical way of controlling weeds. This will improve forage quality as well. Don't let weed species go to seed in your pasture.
- With an approved herbicide, spot-spray undesirable annual and perennial weed species. Read and follow all label precautions for the chemicals you use.

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