

Reseeding pastures and hay fields

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Introduction

Establishing and maintaining a productive pasture requires careful management and clear goals. Each year, a significant number of individuals, mainly horse owners, contact UMass Extension asking how and when paddocks should be reseeded. Reseeding a pasture may be necessary to increase productivity, improve the nutritional value of forage, and fill in bare spots. However, it is important to first understand the reason(s) behind the need for reseeded. If a farmer/horse owner simply follows past management practices after the pasture is reseeded, the pasture will return to the previous, poor condition.

Pasture management begins with soil management and continues with a proper grazing plan. Efficient grazing plans include an adjusted stocking rate and the rotation of animals between paddocks to allow grazed forage enough resting time to regrow. Nutrient levels in the soil should also be regularly monitored, and nutrient application decisions (i.e. lime and fertilizer) should be made according to soil test results. Most soils in the Northeast are acidic and normally have a pH value lower than 6; an optimal soil pH is between 6 - 7 for most pasture plants. Frequent liming of pastures may be essential to achieve this pH range, which will maximize the nutrients available to plants. In addition, maintaining a pH in this range is important to prevent damage from aluminum toxicity to plants roots that occurs at low pH levels. Finally, pastures are established for use for many years, therefore pasture species should be selected to match soil type, drainage, fertility, weather condition, type of animals, and grazing management style.

Planning for reseeded a pasture should begin months in advance. Basic steps and considerations for successful establishment of a new pasture are described below.

Testing Soil to Determine pH and Nutrients

Soil samples should be taken many months in advance of seeding. Samples should be taken even earlier if a no-till system will be used because lime and fertilizer cannot be mixed into the soil in no-till systems. Early application of lime, in all planting systems, is important to provide enough time for lime to react with the soil and raise its pH to the desired level. Coarse-texture lime products need more time to raise the soil pH, but they are generally cheaper and easier to apply. If the soil test result indicates that the magnesium (Mg) level in the soil is low, then dolomitic lime (Mg based) should be used as opposed to calcitic lime (Ca based). Regardless of how much lime a soil testing lab recommends, it is not beneficial to add more than one ton (2,000 lbs.) of lime at each application. Soils cannot react to lime in excess of this amount in a single application.

If a large amount of lime has been recommended, it should be split into 2-3 applications with 3-4 months between each application.

For detailed information on soil sampling, please review the following factsheet:

http://ag.umass.edu/sites/ag.umass.edu/files/factsheets/pdf/Sampling%20Soils%20for%20Meaningful%20Results%2008-18_0.pdf

Phosphorus and potassium fertilizer should be applied based on the recommendations of a soil testing lab. It is important to note that nitrogen fertilizer should not be applied at the seeding time as it will quickly stimulate weed populations. For more information on the nutrient requirements of various crops, please review the following factsheet:

http://ag.umass.edu/sites/ag.umass.edu/files/factsheets/pdf/nutrient_recommendation_for_field_crops_in_ma_0_1.pdf

Selecting Pasture Seeds

The nutritional requirements of animals vary by the animal species, their life stage and activity level, and some forage plant species may be toxic to specific animals. Selecting the right species of pasture plants is very important, and your decision will affect performance and production efficiency for the entire life of the pasture/hay field. Factors to consider when selecting plant species include winter hardiness, drought resistance, and tolerance to wet conditions. Proper pasture mixtures include legumes, which offer high nutritional quality and support overall pasture growth during both low and high temperature periods of the growing season. Legumes should make up at least 25-30% of the pasture stand, not only to provide better forage quality, but also to eliminate the need for nitrogen fertilizer. Some legume species may have high productivity, palatability and nutritional value (e.g. alfalfa), but require higher levels of management and may not be suited to use in pastures.

The following important tips should be considered when selecting pasture/hay seeds:

- Type of animal (nutrition needs and toxicity issues).
- Adaptability to climatic and soil conditions. For more information, please review the following factsheet: http://ag.umass.edu/sites/ag.umass.edu/files/factsheets/pdf/selecting_forage_species_15_06.pdf
- Reliability of the source for seeds. Avoid purchasing unknown varieties that may not be suited to your conditions.
- In general, custom mixing the seeds of the species/varieties at the desired ratio is preferred to pre-mixed blends.
- Purchasing new, improved varieties is highly recommended and should be discussed with the dealer.
- If drought is not a major issue, palatability and yield should be considered.
- Some species require a higher level of management to successfully establish and persist.

Seedbed Preparation

Prior to seedbed preparation, fertilizer and lime should be applied based on the recommendations of a soil testing lab. If the pH is low, lime should be applied 6 to 12 months in advance. Preparing a field for reseeding often begins with killing and removing the existing vegetation either mechanically (plowing) or chemically (herbicides). If too much residue is left in the field you may consider using a flail mower or mowing and possibly bailing the residue. If a conventional tillage system will be used, the field should be disked and leveled before planting. Pasture seeds are quite small, and increasing seed-to-soil contact will result in faster, more uniform germination and establishment.

Seeding Methods

1- Cultipacker Seeder:

A cultipacker seeder has two corrugated rollers with a seed box in between (Figure 1.). The first roller makes a groove in the soil in which the seed is dropped (Figure 2.). The second roller covers the seed by packing soil around the seed. A cultipacker seeder does not apply fertilizer, so fertilizer should be broadcast prior to seeding.



Figure 1.



Figure 2.

2- Grain Drill:

In this method, forage seeds are drilled into the soil at the desired depth. Controlling the seeding depth can be difficult with grain drill seeders. Drilling seeds often results in a higher germination rate than that of broadcasting seeds. Fertilizer is banded in the soil 4-7" below the seeds. When seeds are planted shallow, drag chains or a cultipacker roller should be pulled behind the drill to cover the seeds with soil and increase seed-to-soil contact (Figure 3.).



Figure 3.

3- No-till:

No-till planting systems help reduce soil erosion, conserve soil moisture, and reduce fuel and labor costs. A specialized no-till planter is required to assure good seed-to-soil contact (Figure 4.) In brief, the no-till planter cuts a slit in the soil and any residue on the soil surface, seed is placed into the slit, and the planter has press wheels to gently push the seed into the soil to help ensure good seed-to-soil contact. No-till planters work best



on sandy or silt loam soils. Planting in both directions in a grid format may be necessary to increase the stand density.

Figure 4.

Time of Seeding

Generally, cool-season pasture species such as white clover, orchardgrass, perennial ryegrass, bromegrass, Kentucky bluegrass, etc. can be seeded either in the early spring or in the early fall. However, seeding in the late summer/early fall results in less weed pressure than spring seeding. Almost all weeds growing in fall-seeded pastures are annual weeds and will be winterkilled. The following spring, established pasture that was seeded in the fall will resume its growth before early summer weeds can offer much competition.

Seeding Rate

Seeding rate depends on the species being planted, method and time of planting, climate conditions, type and number of grazing animals, and the intent of reseeding. Please review the following factsheet on recommended pasture and hay species and seeding rates:

http://ag.umass.edu/sites/ag.umass.edu/files/fact-sheets/pdf/selecting_forage_species_15_06.pdf

Establishing a new pasture/hay field is a long-term investment, and it can be expensive to re-seed a failed pasture. Therefore, when establishing new pasture or re-seeding, it often pays off to spend \$50-60/acre extra in order to plant at a higher seeding rate to assure denser, satisfactory stands. Moreover, higher seeding rates reduce competition from annual weeds.

Management During Establishment

Newly seeded pastures need to be given adequate time to establish a strong root system prior to grazing. New plants should be allowed to grow to a height of 8-10" before they are grazed, and animals should be monitored and promptly moved once the new plants are grazed down to 3-4" tall. Alternatively, new seeding can be mowed prior to first grazing allowed to regrow to 8-10" to avoid trampling damage to the new seeded stand. Plants should be left to regrow to a height of 8-10" before grazing again. It is very important not to graze the new stands during wet periods as this can result in a significant reduction of regrowth and impede long-term establishment.

Efficient management of both new and existing pastures requires identifying and keeping the right stocking density, rotating animals between several paddocks, and providing a long enough rest periods for the grazed pasture to regrow. A dense stand and frequent grazing/cutting will effectively manage weeds.