

Pasture Improvement and Management

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Most New York pastures (and hay fields) can be improved and made more productive with some basic management practices. The following comments can be used to think about pastures on your

Lime or Soil pH: Lime level needs to be optimum for the species being produced. Grasses need a soil pH above 6.0. If alfalfa is being grown for hay, it needs a soil pH of 6.8 or higher.

Soil pH tests can be checked at your local office of Cornell Cooperative Extension (CCE), at many local farm and garden supply centers, or you can purchase a simple Cornell Soil pH Test Kit at your local office of CCE.

If pH is below optimum level, contact a local farm supplier for lime application. A rule of thumb is that it takes one ton per acre of agricultural limestone with an Effective Neutralizing Value (ENV) score of 100 to raise the soil pH 0.5 units on a medium textured soil. For example, to raise the pH of a loam soil from 6.0 to 6.5 will require about 1 ton per acre of 100 ENV agricultural lime. Higher clay content soils require more, sandy soils require less. Detailed lime rate tables are available from CCE offices, or in the current year's "Cornell Guide for Integrated Field Crop Management".

property, how they might be improved, and what might give you the most return per dollar invested.

Soils and Soil Evaluation

Agricultural lime can be applied any time that the soil will support the applicator traffic, even on frozen soils. It takes 6 months for the lime to react and begin to show benefits in your crop. Applications on small areas can be made using lawn or garden type spreaders.

Fertility: Soil fertility can be inventoried with a soil sample submitted to the Cornell Nutrient Analysis Laboratory or other commercial laboratory. Take at least 8 subsamples from around the pasture. Sample to about 6 inches deep, mix them together and then take a one-pint sample to your CCE office or fertilizer vendor. When results come back, fertilizer and lime recommendations will be included if the input forms were properly coded.

Nitrogen is usually the most limiting factor for grass productivity. Early spring applications (April, before animals are pastured) will boost early growth of all common grasses. Use ammonium nitrate (33-0-0) or ammonium sulfate (20-0-0) for topdress applications. Apply enough to give a total 40 lbs/acre of nitrogen (120 lbs/ac of 33-0-0 equals 39.6 lbs/ac of nitrogen).

Phosphorus and **potassium** needs are determined by complete soil tests. Follow the recommendations obtained. For complete fertilizers, the standard system uses the numerical rating to indicate available percent nitrogen, phosphate and potash, respectively. Thus a complete fertilizer such as 15-15-15 would contain 15 lbs each of nitrogen, phosphate and potash per 100 pounds of fertilizer material.

In the absence of a soil test, an every other year application of about 200 lbs/ac of a 0-25-25 fertilizer should supply adequate nutrients for grass or grass-legume mixtures. Fertilizers can be applied any time from April through September.

Stand Management

Continuously grazed pastures will have a carrying capacity of about one mature animal per acre. Well-managed and rotationally grazed pastures can have double that capacity. Much depends on rainfall as most grasses go dormant in mid-summer if dry weather persists.

The **best management practice for improving pastures is rotational grazing**. Grasses and legumes that are continuously grazed never have the opportunity to rebuild needed root reserves. Over-grazing leads to thinning of the desirable species and weed encroachment. Splitting the pasture up into 4 to 6 paddocks will improve carrying capacity, quality of feed (grasses and legumes) and prevent the multiplication of weeds.

If possible, graze paddocks for a week to 10 days then move the animals to another paddock. **Mow or clip weeds** and tall growth at the end of the grazing period. This allows for uniform regrowth and discourages weed growth. During the time animals are not grazing is an ideal time to topdress complete fertilizers or nitrogen fertilizer or make lime applications. For maximum production of grasses, nitrogen fertilizer may need to be applied two or three times during the growing season. Plan to rotate the animals back into the paddock in 4 or 5 weeks.

Allow the desirable species to regrow at least 6 inches in the fall before going into winter dormancy. This usually means taking the animals out of the paddocks by the middle of October. If lime is needed, this is another ideal time to apply.

Stand Improvement

Weed Control: If pastures have become weedy and unproductive, an evaluation of the species present may be needed. If grasses are still present, they can be improved using lime, fertility and grazing management. Usually, some native clover will be present unless the pH is very low. Take a soil test and correct any deficiencies. Nitrogen will stimulate grasses. Cutting or mowing weeds before they produce seed heads will discourage their multiplication.

Perennial weeds are more difficult to control. Herbicides can be used, but follow all label restrictions and know

what weeds you intend to control. Broadleaf weed killers can be used to retard perennial broadleaf weeds without injury to grasses. They will kill out any desirable legumes. It is possible to kill out the broadleaf weeds and legumes and then make a frost seeding of legumes the following March or April.

Frost Seeding: It is possible to improve the seeding mix using low cost seeding methods, but do not expect miracles. Frost seeding can introduce desired species without having to go to the expense and inconvenience of complete reseeding. Advance planning is necessary to make it work!

Soil test in late summer or early fall. If lime is required, apply according to recommendations in the fall to give it time to begin reacting with the soil. If phosphorus and potassium are recommended, they can be applied in the fall. It is not recommended to apply nitrogen in the fall.

Graze the pasture as short as possible in the fall and clip or mow any weeds late in the fall. If broadleaf perennial weeds are present, a low-cost broadleaf weed killer may be applied in late September or October after the animals have been removed from the pasture. In this situation, you want to use up root reserves and weaken the existing vegetation (weeds and grass), just the opposite of normal fall maintenance.

March is the ideal month to make frost seedings. A seeding mixture containing 6 to 8 lbs/ac of desirable

grass and 1 to 2 lbs/ac of common or Ladino white clover can be applied using a cyclone spreader. Apply on a cold, still morning when the ground is frozen and after most of the snow has melted. The freezing and thawing of the soil during March and early April will move the seed into the soil enough to give germination once the soil temperature starts to rise in April. The existing vegetation can be grazed or cut early to improve the competitive position of the new plants.

Reseeding

If a pasture is completely grown up with weeds, reseeding may be necessary. In this case, the soil testing and application of soil amendments needs to be done prior to or at the time of seeding. Broad-spectrum weed control herbicides may be appropriate. You are advised to obtain professional advice regarding these situations and recommendations.

Tillage and planting are best done by a commercial farmer or custom operator with experience in establishing forage crop seedings. Seedings can be successfully planted in early spring (April or early May) or in mid-summer (late July or August). The optimum time depends on weather, soil conditions, species being planted and the severity of weed problems.

Forages are small seeded crops and need optimum planting conditions to obtain uniform, productive stands. It pays to have the proper equipment or hire an experienced operator.

Typical Seeding Mixtures and Rates

Most seeding mixtures should contain a **legume** such as common or Ladino white clover at 2 to 3 lbs/ac. If Empire birdsfoot trefoil is the legume, use 5 to 6 lbs/ac. Adapted **grasses** include timothy, Kentucky bluegrass, and orchard-grass. These should be seeded at the rate of about 6 to 10 lbs/ac in mixtures with one of the above legumes.

In areas of heavy traffic or on somewhat poorly drained soils, tall fescue is an ideal grass. It survives well under conditions of heavy animal traffic such as laneways, show rings or exercise lots, once it is established.

Other grasses (brome or reed canary) and alfalfa are adapted to New York conditions, but do not adapt well to pasture situations unless they are well managed. They are better grown as hay crops.

For specific recommendations and seeding mixes, contact your Cornell Cooperative Extension office. The current "**Cornell Guide for Integrated Field Crop Management**" is a valuable resource for forage crop production. The "**Cornell Field Crops and Soils Handbook**" is a more general publication useful for understanding soils, crops, and field crop production. An older pasture bulletin that many offices may still have on hand is **Information Bulletin 171**,

"**Pasture Management for Horses**". They may also have additional resources or bulletins on pasture management.

Revised 11/4/02
02/06/98