

Pasture Establishment for Small Scale Livestock Operations



How do I go about the task of establishing a pasture?

If you are renovating an existing pasture you will first need to determine what plant species exist there now and what the overall condition of the pasture is. You must also decide on what expectations you have for your pasture. We will discuss these items later.

If you are not renovating an existing pasture you need to determine overall conditions of the land to be established in the pasture. You must decide what expectations you have for your pasture just the same as if you were doing a renovation. This may make a big difference in what species you select and how you might establish them.

The equipment choices and the way you go about renovations and establishment are very similar, so you will deal with them as one issue. We will, however, discuss the differences between the two philosophies as well as their commonalities.

General notes for renovations.

It is important to determine what is currently growing there. It is important to know this in order to decide what course of action you may need to take to renovate the pasture. If the pasture already consists of mostly grass and legume species it may not be necessary

to re-establish a new seeding. It may require a change in your management scheme to make what is there more productive. Why destroy a stand of grasses and legumes which already has a well-established root system, which takes several years to establish with a new seeding. It will have much more vigor and be ready to be grazed right away with your new management strategies.

In checking the overall conditions, you need specifically check the forage stand for density and soil conditions. In checking the forage stand you want to be looking down at your feet. The common mistake is to look across a field and the density of the forage appears thick, however when we look down we often times see bare open ground, which signifies a less than dense stand. In this case again you need to concentrate our efforts on changing management schemes to thicken the stand.

Checking soil conditions for renovations requires the same considerations as you would do for establishment. The first thing to check are the fertility levels. The best way to do this is to take a soil sample and have it analyzed for pH and nutrient levels, specifically phosphate and potassium. You can obtain a soil testing kit from your County Cooperative Extension Office and just follow the instructions contained in the kit. Many

seed and fertilizer dealers offer soil testing services if you do not feel you want to do it yourself. Apply lime and fertilizer according to the test results to bring field conditions up to meet plant needs to ensure a successful pasture.

You will need to know what particular soil type is in your pasture area for two reasons. First this information is required to be submitted with your soil test you send to Penn State. Second it is important to know the soil type so you can find out internal characteristics of the soil. You need to match plant requirements to soil conditions so the species you select can survive. Specifically you need to know something about the depth of the soil, but more importantly you need to know the internal drainage class. This information can all be found in the soil survey for your county. The soil survey contains a set of maps that show soil types for the entire county as well as interpretative tables that will give you all kinds of information about your soils. This information is available in the local USDA Natural Resources Conservation Service office or County Conservation District office.

This soil information is not crucial if you are not going to do any new seeding. The plant species that are present should be those that can survive under the conditions that exist on your pastures.

General notes for new establishments.

Taking a soil test is the first step, and then follow the same general guidelines listed above. The second step is to get the soil information for the area to be seeded. The availability of this information is discussed above.

Select species.

Match forage plant characteristics, the needs to the soil conditions. Also, you must match the intended use or management of the pasture with selecting the forage species to be planted. These intended uses or management scenarios might include: managing for aesthetics;

optimum forage yields; management levels (intensively to none) are you going to employ once established; and nutritional levels of forages? Penn State Cooperative Extension has a series of Agronomy Fact Sheets that list all the attributes and characteristics for individual forage species. These are available at your County Extension office. You can match all of the above criteria and select the best-suited species to plant. You can also get help from your County Agent and many seed dealers.

When selecting species keep a few of these general principles in mind:

Kentucky Bluegrass – Makes rapid growth in the spring and fall, but may go dormant in summer due to dry/hot weather conditions. Good for horse pasture because it forms a dense sod and tolerates close grazing. Tolerates all soil drainage conditions except droughty. Has aesthetic values.

Orchardgrass– Early maturing but very palatable if kept in vegetative stage of growth. Not tolerant of close grazing. High yielding forage. Does best on well to moderately well drained soils. Moderately tolerant of dry soils.

Perennial Ryegrass – Very palatable and highly nutritious. Easily established. Does best on well to moderately well drained soils. Goes dormant in hot/dry weather. Has aesthetic values.

Timothy – Low yielding and grows back slowly. Does best on well-drained sites. Not tolerant to frequent grazings.

Tall Fescue – Withstands foot traffic well. Has internal fungus that can cause livestock health problems. Purchase only certified fungus-free seed. High yield potential and can tolerate frequent harvests.

Smooth Bromegrass – A sod forming grass that tolerates dry soil conditions.

Not tolerant of frequent grazings. Can be coarse and stemmy.

Reed Canarygrass – Tolerates wet to dry and droughty soil conditions. As it matures it gets coarse so keep in vegetative stage for grazing. Hard to establish.

Alfalfa – Not recommended for small pasture acreages. Very tolerant of droughty conditions.

Ladino / White Clover –Ladino is well suited for mixes with tall grasses and the white dutch is best suited to be mixed with short species such as ryegrass or bluegrass. Not tolerant of droughty conditions. Easily established.

Red Clover – Very poor persistence. Easily established. Suited for mixing with tall grasses. Does best on well-drained sites.

Generally it is recommended that a mixture of a grass and a legume be planted. The legume provides a source of nitrogen for the grass and it also increases the protein and energy level of the forage that is grazed by the livestock.

Determine establishment method.

You need to determine how you are going to plant the pastures. There are two ways to accomplish this. One is by a method that involves no tillage of the soil and the other involves total tillage and working of the soil to prepare a seedbed. Both methods are acceptable but equipment availability generally will determine how planting will be accomplished. If you are going to have a custom operator do the work then it is determined by the equipment they have available. The no-till method requires the use of herbicides to control weeds and other plant growth.

Establishment steps to follow.

1. Soil Test – As discussed above it is important to soil test to determine pH and soil fertility levels. This needs to

be done 8 months ahead of when planting is to be accomplished.

2. Apply lime and fertilizer – Apply lime and fertilizer according to the results obtained from the soil test. This can be done by fertilizer dealers or by you or by the custom operator who is doing the seeding. The lime should be applied 6 months prior to planting. Fertilizer can be applied at planting time.

3. Prepare a good seedbed – Most forages require a well-prepared and firm seedbed unless you are using a no-till process. Finely worked seedbeds allow good soil to seed contact; however it also increases the chances for soil erosion problems. Proper precautions need to be followed in order to prevent erosion. This should be done just prior to planting.

4. Buy quality seed – After you have determined what forage species to plant then you need to purchase a variety that will meet your needs. Purchase good, high quality seed because often times a “bargain” does not mean high quality seed. You want to ensure a good job the first time. Re-seeding is double the expense.

5. Planting – The seeding should be done with an appropriate drill depending on whether the soil has been tilled or not. This should be done in late April to early May or late August to about mid-September. These dates are guides and checking on best seeding times in your local area will help guarantee a successful job.

6. Maintenance – A newly seeded pasture should not be grazed until the plants reach at least 8 to 9 inches in height. Then they should be grazed only lightly. This newly seeded stand will not have a very well developed root system and will be pulled out of the ground very easily by the grazing livestock. Even after they are well established a good grazing

management scheme needs to be followed to prevent overgrazing and the destruction of the pasture. Grazing management principles are contained in the accompanying section to this publication entitled "Managed Grazing for Alternative Livestock".

Lime and fertilizer levels need to be maintained therefore it is recommended that a soil test be taken every 3 to 5 years and lime and fertilizer applied as needed. If the pastures do not contain 30% legumes a yearly application of nitrogen fertilizer is necessary to maintain and feed the grasses. Apply nitrogen at a rate of 60 to 80 pounds of actual nitrogen per acre per year. It is preferred that this nitrogen be applied in split applications of 30 to 40 pounds in the spring and the same rate in early fall.

Clip or mow pastures to a height of 2 to 3 inches as needed to keep paddocks in a vegetative stage of growth. This keeps all the forage growing back at the same uniform, palatable stage of growth. This also helps to control many weeds and keeps them from flowering and setting seeds.

Drag pastures to spread droppings at least once a year. Use a chain link harrow or other device to drag the pastures. By dragging and breaking up manure droppings you will reduce parasite populations by exposing them to air and sunlight.

References:

NRCS, Pennsylvania Technical Guide.

The Agronomy Guide, Penn State University.

Controlled Grazing of Virginia's Pastures, Virginia Cooperative Extension Service Publication 418-012, by Harlan White and Dale Wolf, 1995.

Pennsylvania Forage Handbook, Penn State University, 1992.

Terminology for Grazing Lands and Grazing Animals, Pocahontas Press Inc., 1991.

Agronomy Facts 32, Pasture and Hay for Horses, Penn State University.

Agronomy Facts 43, Four steps to rotational grazing, Penn State University.

Horse Industry Handbook, A Guide to Equine Care and Management, American Youth Horse Council, 1994.

Equine Pasture Management, A Year-Around Approach", Rutgers Cooperative Extension FS770.

Establishing and Managing Horse Pasture, Rutgers Cooperative Extension FS368.

Managing Grazing of Horses, Oklahoma Extension Facts F-3981, Oklahoma State University.

Making Sense of Fencing, Emily Kilby, Equus 231, 25-33.

Fence, Jack Moore, Equus 243, 58-66.

Pasture Fencing for Horses, British Columbia Ministry of Agriculture, Fisheries and Food Fact Sheet, Order No. 316.150-1, 1994.

Horse Paddocks, Controlling Soil Erosion on Small Pastures, Council of bay Area Resource Conservation Districts.

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