



Connecticut Horse Environmental Awareness Program

The Art and Science of Pasture Management

Is the area you call *pasture* looking more like a dusty weed patch than a healthy grass population that provides feed and recreation for your horse(s)? Perhaps it would be better named *exercise lot*. If that is what your objective for this area is, refer to the fact sheet on *Sacrifice Areas*. If your objective is to maintain a grass cover on the area, this fact sheet is for you.



This rotated pasture system shows pre-grazing (*left*) and post-grazing (*right*).



Proper grass height at which to stop grazing (2-3 inches).



Proper grass height at which to begin grazing (6-8 inches).

Benefits of a Well-Managed Pasture:

- Reduces environmental impacts of your operation, including movement of soil and manure to waterbodies.
- Improves property aesthetics, which makes for good neighbor relations and increases property value.
- Provides feed and recreation for your equine friends.

Pasture management contains elements of both art and science. There is much variation in resources and philosophies of horse management from farm to farm. A person who is managing a pasture must take a number of variables into consideration, and balance them with some basic principals of grass production.

Items to Consider:

1. Animal Needs/Restrictions

- The total number of horses that will utilize the pasture.
- The necessity of grouping horses for turnout periods and the size of each group.
- The desired length of turnout periods based on need for exercise and/or dietary limitations (e.g., you may need to restrict grass intake of some overweight animals or those prone to founder, etc.).

2. Land Resources Available

- Pasture acres available for the number of horses - are you lacking sufficient acreage, or are there too many acres of pasture for the animals to keep adequately grazed?

3. Grass Needs

- Enough leaf area to intercept sunlight for photosynthesis.
- Rest periods following grazing to allow regrowth of leaves and to maintain a healthy root system.
- Proper soil pH and fertility to increase grass vigor and reduce weed competition.
- Protection from hooves during vulnerable times, such as when the soil is wet.

Pasture Management Basics:

Over-grazing and poor fertility weaken and thin grass populations, leaving opportunity for weeds to invade. If you want to have grass, then you must become a grass manager as well as a horse manager. When you do, the money that you spend on lime, fertilizer, and seed will be well-spent. Rotating horses to new pasture periodically will give grass a chance to regrow and strengthen its root system.

1. Rotate and Rest Pastures

***** Rule of Thumb *****

Graze animals when grass is 6 to 8 inches high
Rest grass when it is 1-1/2 to 2 inches high

- Exception to the rule-of-thumb: A Kentucky bluegrass/white clover pasture can be grazed beginning at 4 inches of height. Bluegrass is tolerant of shorter grazing heights, and the clover will be stimulated by the sunshine it will receive.

Resting pastures is critical! Recovery time for grasses ranges from 10 to as many as 60 days, depending upon season, weather, and soil characteristics. Generally expect to wait 14 days for grasses to regrow to grazing height in spring, and 30+ days in summer. A good rule of thumb for grazing in Connecticut is to avoid exceeding 7 days on any one paddock. To do this, divide your total pasture area into a minimum of 5 paddocks, and rotate animals to a new paddock at least once a week. This system will allow each paddock to rest for 28 days. To provide a substantial portion of the horse's forage from pasture you will need one acre per horse and you will need to implement a rotational grazing system.

- In springtime when grasses are growing quickly, you may need to move horses through the rotation faster in order to keep up with the grass. Doing this will prevent the plants from getting too mature and unpalatable before you've had a chance to graze them. If you make hay, you may choose instead to withhold 1/2 of your pasture from your grazing system so that you can harvest a first cutting from it. After it grows back, the field(s) may be added back into your rotation system.
- Experiment with portable electric fencing systems to subdivide pastures into paddocks. Ensure that the permanent perimeter fencing is sturdy and reliable. Portable or temporary fencing allows a lot of flexibility in how much area you give your horses from day to day. It also facilitates mowing and haying operations due to the ease of picking it up and getting it out of the way. Over time you may find that you are placing your fences in the same places, and you may choose to erect permanent fencing in its place.
- Pay attention to landscape variations in different parts of your pastures, and utilize them to your advantage. South-facing slopes dry out earlier and allow the first spring grazing. Wetter areas may be saved for mid-summer, when dry areas have slowed in grass production. If a first cutting of hay is

desired, keep the most easily harvested areas out of the rotation until the crop is removed, and grass regrows to the 6 to 8 inches grazing height.

2. General Maintenance

- Keep grasses in their "vegetative" state with a combination of grazing and mowing. Harvesting grass before it gets too tall will keep it in a leafy state and prevent it from becoming reproductive, also known as "going to seed." Mature grass is coarser, stemmy, and not as palatable or nutritious as leafy, actively growing plants. Horses will become very selective in their grazing, causing the pasture to become clumpy in appearance, and less productive. The spring flush of growth may be more than your animals can keep up with. Grasses can grow more than twice as fast in spring as they do in summer. Plan to mow or make hay on a portion of your pasture to maintain it in a vegetative state. Ideally, a paddock should be mowed every time animals are removed and rotated on to the next paddock. Mowing should be done as soon after the animals are removed as is possible. If mowing is delayed for too many days, new regrowth that occurs in the interim will be clipped off and wasted.
- Soil test your pastures to determine the need for fertilizer and lime, and follow the recommendations provided. If your pasture is new or has not received lime and fertilizer for many years, you may wish to test for 2-3 years in a row to establish a healthy fertility level. After that, a test every 3 years is sufficient. Remember that if your soil pH is too low (acidic), any fertilizer you apply may not be accessible to the grass plants. You may be wasting your money on fertilizer if you are not maintaining the proper pH range on your pastures!
- "Drag" or chain harrow pastures as needed to break up and spread manure piles. Harrowing will help manure to be broken down more quickly, spread fertility more uniformly, and dry out parasite eggs more quickly. During wet weather, parasites may not be controlled by this method. Be sure to follow a regular deworming program and consider lengthening the rest period between grazings.
- Clip weeds before they form a seed head. This will reduce the weed seed store in your pasture soils. It will also control woody plants such as tree and shrub seedlings which may invade open areas.

3. Utilize a Sacrifice Area (See fact sheet on Sacrifice Areas)

Wet pastures can be easily damaged by the cutting and compacting action of hooves. During a hot, dry summer, grass growth may come to a complete halt, and horses may chew plants right down to the soil surface. Having a sacrifice area at your facility will allow your horses to be turned out during these sensitive times without wreaking havoc on your pasture. A sacrifice area also is a good tool for managers who must limit the amount of grass their animals get, and for those who don't have enough acreage to support long hours of grazing.

4. Pasture Renovation - Is Re-seeding Necessary?

If you currently have nothing but weeds and bare soil, you probably should re-seed your pasture. Unless you are interested in establishing a specific species or mix of species, *if you have grass present, in most cases you can revive it to a healthier state by applying the management tips listed on these pages* - i.e., rotations, rest, mowing, pH, and fertility. You are going to have to utilize these practices even if you go ahead and re-seed the pasture, so you may just try them first, and evaluate the results. If you are not satisfied, you can always plant later. These practices will also help to control the weed population. If you find yourself battling a major weed invasion, you may wish to use a chemical control.

If you choose to re-seed, here are some guidelines:

- **Species choice** - A mix of grasses and legumes (at least one of each) is desirable. Legumes may reduce the need for nitrogen fertilization, and they are very nutritious.
- **Legumes** include clovers, alfalfa, and birdsfoot trefoil. White or ladino clover is generally preferred. Trefoil is slow to establish, red clover often becomes stalky and under-grazed, and alfalfa is easily over-grazed. Avoid Alsike clover, which can cause photosensitivity problems in some horses. Clover seed may be added to your grass seed mix. Do not exceed 2 pounds of clover seed per acre. You may also perform a "frost-crack seeding" of clover into existing pastures to improve them. (See below.)
- **Grasses** include Kentucky bluegrass, orchardgrass, bromegrass, reed canarygrass, perennial ryegrass, tall fescue, and timothy. Including at least 2 species in the seed mix will allow for slight variations in the drainage characteristics of the site. Excessively wet or dry pastures may require specific grass species to perform well. If your pasture tends to be grazed down too short, a simple mix of Kentucky bluegrass and small white clover will survive the best (but will not produce much on excessively drained areas or in hot weather.) Orchardgrass and white clover will perform well in pastures that are rotated, as long as the soil is not excessively wet. Timothy and brome do not recover well between repeated grazings, so limit the percentage of their seed in your mixture. Tall fescue is hardy and stands up well to close grazing and trampling. However, some fescue contains an endophyte, a fungus that lives within the cells of the plant. The endophyte causes reproductive problems in pregnant mares but is generally safe for non-pregnant mares, stallions, and geldings. For this reason, endophyte-free varieties of tall fescue are strongly recommended for pastures that will be grazed by pregnant mares.
- **Seeding Methods**
 - **No-till**
From an environmental standpoint, planting seed with a no-till planter is the best way to go, especially if you are dealing with a hillside pasture. This eliminates the need to plow up the soil and reduces the risk of erosion. Ideally, the existing plants are sprayed with herbicides to kill them, or they may be grazed and/or mowed as close to the ground as possible in the fall and planted in the spring. If undesirable grasses are present, (such as Kentucky 31 tall fescue), it is best to use herbicides to eradicate them. Planting may be done from April 1st through May 15th, or from August 15th to September 1st.
 - **Conventional Plowing and Planting**
This method generally includes one pass with a plow or harrow, and one or more passes with a harrow and rake to prepare the all-important seed bed. Rocks may be brought to the surface by the plow action, and will need to be removed before the seeding is done. Conventional plowing is used when the field is appreciably rougher than desired, when soils are very compacted, or when weed populations may be better dealt with mechanically than chemically. However, there is a greater risk of erosion with conventional tillage. Lime and fertilizer may be gently incorporated into the top few inches of soil prior to applying the seed. Planting the seed with a precision seeder or using a roller over areas where seed has been "broadcast" will ensure good seed-soil contact which is important for successful germination. Consider covering sensitive portions of the newly-planted pasture with hay or straw mulch to protect the seed from birds, conserve moisture, and prevent soil erosion. Mulch should be spread at a rate of 70-90- lb./1,000 square feet, or 1-1/2 to 2 tons per acre. Planting should be done from April 1st to May 15th, or from August 15th to September 1st.
 - **Frost-Crack Seeding**
This method is effective for incorporating clover into an existing pasture. Grass seedings may not be successful with this method. Mow or graze the field very short in fall or winter. In February or March, broadcast seed onto the field. The freezing and thawing of the soil surface will work the

seed in. Germinating seeds will have the advantage of early spring moisture. Results may not be visible until midsummer. Keeping grass less than 4 inches will allow the tiny clover plants to get some sunlight and become established. Tall grass will shade them out.

- **Care of the New Seeding**

When new seedlings reach 6 inches in height, mow to 3 inches and apply nitrogen fertilizer. When grass reaches the 6 to 8 inch grazing height, check for grazing readiness by testing how easily you can pluck individual plants from the soil. If plants are coming out of the ground, roots and all, a horse will destroy your new seeding in no time. Wait until the blades break off in your fingers and the plants stay firmly rooted before turning animals onto the pasture. In some instances, you may need to mow a second time and allow a second regrowth. NEVER turn horses out onto new pasture when the ground is wet, or you will risk extensive damage in the form of uprooting, soil compaction, and torn up sod.