

EQUINE LINE



Volume 4, Issue 4 August/September 2010

Pasture Improvement



Donna Foulk, far left, from Penn State Cooperative Extension, at Willow Hill Farm, Montgomery, NY.

Source: eXtension Foundation, www.eXtension.org

Pasture improvement can be undertaken in several ways. If you already have good stands of desirable grass and legume species, it is likely that only minor improvements are needed. Minor improvements include:

- ◆ Grazing management & rest periods
- ◆ Fertilization
- ◆ Weed control

If you don't have a good stand of desirable species, you may need to take more drastic measures. Such measures usually result in the highest yield increase per acre, but can be relatively expensive to complete. Major improvements include:

- ◆ Establishment of new pasture
- ◆ Renovation of existing pasture

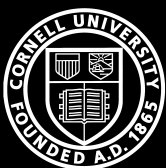
The alternative you choose will depend on the quality of the present vegetative cover, livestock enterprise, use for the pasture, and forage needs. This section will discuss how to establish a new pasture or renovate an existing one. The term "establishment" refers to planting a pasture, and the

term "renovation" refers to a series of actions that lead to a long-term change in the botanical composition of a pasture. Renovation may be partial or total.

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Establishing and Managing Horse Pastures

Establishment

Horses and pastures seem to go together. Pastures provide exercise and a low-cost feed source, but unless productive, they provide only exercise. To achieve both goals, however, they must have a good start. These steps will help:

Soil Test - A test is the best guide for correcting soil pH and soil fertility needs. County Extension Offices have soil sample kits and instructions. Soil pH should be between 6.2-6.5. Lime reacts slowly with soil and is best applied several months before seeding, therefore test soil early.

Apply Lime and Fertilizer - Apply according to soil test. If large lime applications are needed, plow some down and disc some in. Disc the fertilizer into the field after plowing. If using nutrient sources such as manure, apply before plowing or other soil preparation. To start a vigorous crop, correct lime and nutrient needs before seeding. Annual fertilizer applications are required for maintenance. Soil test the field one year after establishment of the pasture. Lime may be needed every 3 to 4 years, so test soil again.

Prepare a Good Seedbed - Most forage seeds and seedlings are small and require a fine firm seedbed. Finely worked soil allows close seed-to-soil contact for germination, and close root-to-soil contact for early growth. A firm seedbed allows close depth control for shallow seed placement. Loose and cloddy seedbeds waste seed and do not sustain early growth well.

Buy High Quality Seed - Use species and varieties which are adapted to the area. Your County Extension Agricultural Agent can supply appropriate information. Avoid shopping for "bargain" seed. The cost difference between "bargain" and high-quality seed is very small when the entire expense is considered.

Use a Good Seeding Mixture - Usually it is best to keep a mixture simple: a highly productive grass, a legume, and Kentucky bluegrass. Bluegrass produces a resilient sod that "heals" well when cut by horses' hooves. The other grass provides feed when the bluegrass goes dormant in the summer. Legumes supply protein and reduce the need for nitrogen fertilization. Management becomes more difficult as more species are added. On highly variable soils, however, more complex mixes can be advantageous. Some

species grow where others do not, ensuring coverage of the entire area.

Grasses to Choose From

Kentucky bluegrass - makes rapid growth in spring and fall, but is dormant in summer months. Tolerates frequent grazing.

Smooth brome - forms a loose sod, but can become coarse and stemmy. Clip for best utilization. Does not tolerate frequent grazing, requires rotational grazing.

Reed canarygrass - is most useful when immature; it may become very coarse later. Clip before seed heads appear. Tolerates wet soils, but even low alkaloid varieties are not as palatable as other pasture species.

Orchardgrass - matures early, so clip to keep it palatable. Tolerates frequent grazing better than some species.

Timothy - regrows slowly after grazing. Use only with other grasses. Does not tolerate frequent grazing, requires a regular schedule of pasture rotation.

Tall fescue - withstands traffic. An internal fungus may cause problems for horses. The fungus called an endophyte has been shown to affect pregnant mares. Endophyte-free tall fescue varieties are commercially available for pasture use. Only use seed that is certified endophyte-free.

Perennial ryegrass - is palatable and nutritious. It is not very winter hardy, re-seeding may be needed in more northern locations. Recently, endophytes have been introduced to some perennial ryegrass cultivars. When purchasing perennial ryegrass buy endophyte-free cultivars for pasture use.

Legumes to Choose From

Ladino clover - a giant form of white clover that associates well with tall grasses, but is somewhat susceptible to drought.

Red clover - use only newer, more disease-resistant varieties. They persist for 3 to 4 years while older varieties last only about 2 years. Slobbers is associated with an alkaloid (slaframine) found in red clover.

Birdsfoot trefoil - is a good pasture legume, but difficult to establish. Leave 3 to 4 inches of growth for recovery after grazing.



Alfalfa - presents management problems in pastures. Use only where 5 weeks are available for recovery after rotational grazing.

Suggested Pasture Mixes

SPECIES RATE / ACRE

Well Drained Soils Moderately Drained Soils

Kentucky bluegrass	10 lb
Kentucky bluegrass	8 lb
Orchardgrass	6 lb
Timothy	5 lb
Ladino clover*	1 lb

Poorly Drained Soils Grasses alone require

Nitrogen fertilizer

Kentucky bluegrass	10 lb
Reed canarygrass	8 lb
Timothy	4 lb
Ladino clover*	1 lb

**On light sandy soils, 2 or 3 pounds of red clover may be substituted.*

Seeding - Late summer seeding often does a better job than spring seedlings because of cooler weather after seedling emergence. Usually there are also fewer weed problems. Seed from mid-August to early September, or as early in the spring as possible. Use a technique which covers seed only ¼ to ½ inch. Leaving seed on the soil will only result in a poor rate of germination. Bandseeding, drilling, or use of corrugated-roller seeder are better methods than surface broadcasting.

Control Weeds - Early weed growth will ruin a pasture. Either use herbicides or clip closely as often as needed. If using herbicides, read and follow all label instructions.

Grazing - Do NOT begin until there are 8 to 9 inches of growth. The root system must be well established or horses will pull the plants out while grazing.

Management

Horses graze selectively, often eating one kind of plant and passing over others. This leaves unutilized areas which become unpalatable and can eventually eliminate the most palatable species. Good management can reduce these problems and make the pasture more useful.

Delay Early Grazing - A common cause of pasture failure is grazing too early. This can occur in early life of new pasture or any pasture in early spring. Keep animals out of a pasture until there is at least 8 to 9 inches of growth. Young plants are easily damaged by horses' hooves

earlier, and the root systems are not sufficiently developed to prevent the whole plant from being pulled out as horses graze. Avoid use of the pasture in early spring when soil is soft. Sod will be cut by hooves and compacting of the soil will cause additional damage. Wait until soil is dry and firm before beginning spring grazing. Better yet, wait for 8 to 9 inches of growth.

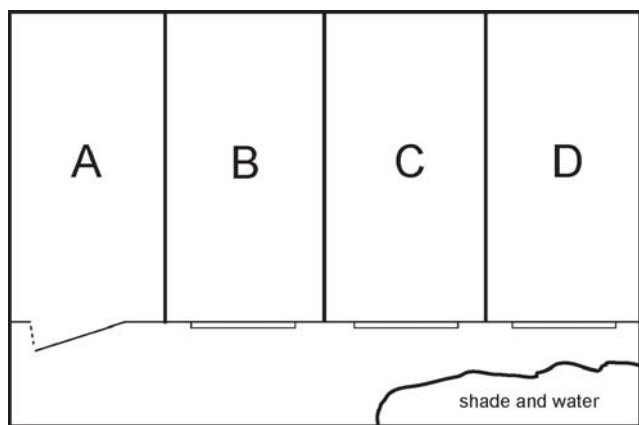
Fertilize Annually - To keep a pasture productive, fertilize it annually. Start with a soil test. County Extension Offices have soil test kits and instructions. Base fertility applications on test results and retest every 3 to 4 years. Lime will probably be needed too. The soil test will also provide this information. Take horses out of the pasture when liming or fertilizing and keep them out for several days or until after a rain. The most appropriate times for making these applications are in the spring before grazing begins, or in the fall after grazing ends. In pastures with only grasses, nitrogen can be applied just after a grazing period in a rotational system, or in continuously grazed pastures to stimulate growth for the next 5 to 6 weeks.

Manage Grazing - Many pastures are over-grazed, but few are undergrazed. Either situation is undesirable. Unfortunately, seasonal growth variations also contribute to these problems.

Overgrazing is probably the more common problem for the owner of one or two horses and limited acreage. As a guideline, it takes about 1 acre of pasture to support one horse for an entire grazing season. Frequently, there are two or more horses on less than 1 acre. The available feed gets "eaten into the ground," and these areas become exercise lots. Not much can be done except to provide more space.

Undergrazing results from having too few animals in a pasture. Part of the feed is not eaten, becomes coarse and stemmy, and is wasted. The solution is to force the animals to consume the feed while palatable. Confine the animals to a portion of the pasture; overgraze it for a short time. When the feed is consumed in that area, let them graze the rest of the pasture. This is a good time to clip the first area, spread the droppings so they will dry, apply fertilizer, and allow the area to recover. This is called rotational grazing and is one of the most efficient ways to manage a pasture. A series of small pasture or paddocks may also be used. In effect, each area is overgrazed for a short time, and then allowed several weeks to recover. The last areas to be grazed may need early clipping to keep them palatable. The time for grazing any one paddock is determined by the amount of feed available, the size of the area, and the number of horses.





The diagram above shows a system for rotational grazing. Put the animals in paddock A and allow them to graze until the feed is consumed to about 2 to 3 inches. Leave the gate to paddock A open so horses have access to shade and water. Some areas may not be eaten well, particularly around droppings. When Area A is grazed down, move the horses to Area B, repeating the procedure as in Area A. While the horses are in Area B, clip and fertilize Area A, spread droppings, and let Area A recover. When Area B is grazed down, move all the horses to Area C. Continue to rotate the horses from one area to another throughout the grazing season. This system is much more efficient than constantly grazing the entire pasture for a whole season.

Clip That Pasture - Regular clipping is one of the least expensive (but most useful) practices in pasture management. Clipping an entire pasture after a period of grazing removes the unused feed and allows all of the plants to start new palatable growth.

Previously undergrazed areas will be grazed after clippings. Many weeds will be controlled, and droppings can be spread to dry. Clip several times during the grazing season.

Weed Control - Clipping will help to control weeds that appear in pastures. However, it will not remove all weeds. Those which persist in spite of clipping may need to be controlled by using herbicides. County Extension Agricultural Agents have information about herbicides to be used in these cases. Remove animals from the pasture when herbicides are used and **keep them out** for the time specified on the herbicide container. Whenever using any pesticide, *read and follow instructions on the label.*

Horse Pasture Improvement - Factors Affecting Seedbed Preparation

From eXtension Foundation, www.extension.org

There are several factors to consider in seedbed preparation:

Soil Temperature. The first requirement for seed germination is a minimal soil temperature. Planting in a cool, wet soil before the soil is warm enough will result in poor germination with many seeds rotting in the soil.

Moisture. Seedbed preparation is critical because the seeds are small and cannot germinate if planted too deeply. A seed requires both moisture (seed softens and swells) and oxygen to germinate. Seedbeds where moisture is not adequate often result in desiccation and death of the new seedlings. The seed should be covered with enough soil to provide moist conditions for germination but not so deep that the shoot cannot reach the surface. Only a small amount of soil is needed to cover the seed and keep it from drying out. Remember, if the seed is buried too deeply, the seedling will never make it to the surface.

Firm Seedbed. A firm seedbed is best when establishing forages. The soil must be firmly packed around each seed to permit water to move by capillary action from the soil to the seed. The seedbed may require packing or rolling after the seeding to ensure good seed-to-soil contact. The young seedling also requires good contact with the soil so it can absorb nutrients and moisture. Seedbed for forages should be firm enough that one's footprints in the soil will not be more than 1/4 inch deep. A loose seedbed makes it impossible to control the depth of seeding because the tires and the planter sink into the soil.

Tillage

- ◆ The most common seedbed preparation involves tillage of the soil. Tillage serves several purposes.
- ◆ Eliminate existing vegetation.
- ◆ Turn under surface weed seeds - Tillage helps control weeds before planting and reduces the weed population. Weeds are generally much faster growing than forages, and out-compete the small seedlings during establishment. Tilling under weeds, and burying any weed seeds that are on the soil surface (so they don't germinate) is one method of reducing the weed population. Herbicides may be used to control weeds, but residual effects of herbicides may be a concern.
- ◆ Loosen soil - Tillage operations such as plowing and discing help loosen the soil.



- ◆ Incorporate fertilizer and lime - Fertilizers (especially P & K) and lime work best when incorporated (by tillage).
- ◆ Provide firm seedbed for seeding - Other tillage operations, such as harrowing and cultipacking, help provide a firm, smooth seedbed which is essential for most planting methods, and helpful when harvesting.

Tillage that leaves some residue on the surface will provide a better environment for developing seedlings than an overworked seedbed with no residue or mulch. Too much surface residue or trash may result in seed placement that is too shallow due to the seeding units riding on top of the residue. Cloddy or trashy seedbeds are usually too rough or uneven for uniform depth control and seed placement. Overworking the soil results in fluffy, powdery seedbeds that dry out quickly and are too fine, increasing the potential for surface crusting when it rains. Crusting is particularly a problem with small-seeded legumes. Soil granules, or very small clods, can be beneficial to prevent soil crusting. Major problems with conventionally tilled seedbeds are soil moisture loss during tillage and soil erosion potential until the crop is established.

Other forms of seedbed preparation. For partial renovations it is often desirable to plant forage seeds into an existing stand. To give the new forage seedlings a chance for establishment, it works best to stunt, or slow-down the existing forage.

- ◆ Close clipping or grazing - Close clipping or grazing is one method that may be used. This involves clipping or grazing closer than normally recommended. This will "set back" the existing forage and give the new seedlings a chance to establish.
- ◆ Burning - Burning the surface residue is another method of reducing the existing forage.
- ◆ Non-selective herbicide - Non-selective herbicides can be ones that either kill the top vegetative matter, but not the roots such as Paraquat (most plants will grow back); or a translocated herbicide (such as Roundup) that kills the whole plant. The herbicide may be sprayed on alternating strips with only the sprayed areas being reseeded.

Generally the above methods require no-till planting, or frost seeding planting methods.

Strip-tillage involves tilling alternating (narrow) strips of land. The tilled strips are then reseeded. This method leaves approximately half of the field in the existing forage, and half with the new forage, providing erosion control and some forage for haying.

Fertility of Soil. The fertility of soil should be determined from a representative soil test.

Phosphorus (P) and Potassium (K) are not very mobile in a soil. Therefore, it is best to apply these nutrients when establishing a pasture so they can be incorporated into the soil where they will be closer to the plant roots.

- ◆ P is very critical for root establishment. Available phosphorus should be at least 50ppm.
- ◆ Broadcast P not as effective as banded P (takes 4 times as much P when broadcast).
- ◆ Demand for K by young seedlings is relatively low. It becomes much more important for yield and persistence once stands are established. Exchangeable potassium should be 300 to 400ppm.
- ◆ Nitrogen (N) is mobile. Do not apply too much nitrogen at any one time. If too much nitrogen is applied, nitrogen will be lost due to leaching and volatilization.

- ◆ The addition of N fertilizer is not recommended in partial renovation because it stimulates re-growth of existing grasses and weeds, increasing competition between young seedlings and existing vegetation for water, light, and soil nutrients.

Soil pH. pH of Soil can also be determined by a soil test.

- ◆ Lime is used to raise the soil pH when the soil pH is below 6.2. Lime should be added in the establishment phase and incorporated into the soil.
- ◆ The ideal pH for alfalfa and most legumes is 7.2 with values between 6.5 and 7.5 being satisfactory.
- ◆ Grasses do best when soil pH levels are between 5.5 and 7.0.

Seedbed Preparation. In many situations (i.e. sloping or other erosion-prone areas) no-till planting of forages into existing sods is the only option. However, pasture plants are most easily established on well-prepared, clean-tilled seedbeds when a choice between seedbed type is possible. The amount of tillage necessary to prepare a good seedbed depends upon what crop was last grown on the site. When converting cropland into pasture, less tillage is needed than if establishing new pastures on soils formerly in brush or native grasses. When tilling pasture sites, consider the erosion potential and minimize erosion in new pastures. On sloped sites you may want to suppress or kill existing forage with herbicides and no-till into the existing dead sod to minimize or prevent soil erosion. Most grass and legume seeds are small, so a firm, moist seedbed is essential in all situations to obtain a good stand. Seedbeds of this type provide good seed-soil contact and conditions favorable for seed germination and plant emergence.



Weed Control in Horse Pastures

By *Krishona Martinson, Equine Extension Specialist,*
University of Minnesota

An essential component of managing horse pastures involves the task of controlling weeds. Some weeds that can be found in horse pastures are poisonous to horses.

Controlling weeds is probably one of the most important decisions to think about when managing horse pastures. Weeds are generally less palatable, less nutritious, and are less dependable as a forage supply to horses than the desirable pasture species they replace. Some pasture weeds are poisonous to horses. From a control standpoint, grouping weeds into categories based on life span is most practical. Annual, biennial and perennial are the main life spans of weeds.

Lifespan of Weeds

Annual

An annual germinates from seed, grows, matures, and dies in less than one year. Chemical control of annuals works best when applied in the spring to actively growing, young weeds. Mechanical control, such as mowing, is very effective against annuals.

Biennials

Biennials require two years to complete their life cycles. They form a rosette (group of leaves at ground level) and store food in their roots the first year and flower the second year. Control measures, chemical or mechanical, are most effective when applied during the first year's growth. If treatment is delayed until the second year, early season application of a herbicide before bloom is important.

Perennials

Perennials live more than two years, and grow back from the same roots year after year. Perennials move nutrients into their roots during fall to prepare for winter. Because of this, chemical control of perennials works best when applied in the fall to actively growing and well-developed foliage. As the nutrients move into the roots, the chemical will too. Application of herbicides in spring, or frequent mowing during the summer is also effective in controlling growth until fall. However, mowing alone may take a several growing seasons to effectively control the perennial weeds.

Herbicides and Minimizing Weeds in Pastures

Herbicides

When using herbicides, always read and follow labels carefully. Always follow grazing recommendations after herbicide application. Herbicide may make toxic weeds

more palatable to horses. Horses should be excluded from the sprayed area for seven to ten days after treatment if poisonous plants are present. Herbicides alone will not result in a weed-free pasture.

Most herbicides control either grasses or broadleaves (i.e. alfalfa and clover). If you have a mixed pasture (both grasses and legumes like alfalfa and clovers), there are no herbicide options that will control unwanted weeds and leave BOTH legumes and grasses.

Steps To Minimize Weeds in Pastures

- ◆ Proper grazing management is a must. Overgrazing easily damages pastures. Overgrazing pastures tends to pull out roots of desirable plant species, giving weeds space to take hold.
- ◆ Protect new seedlings from grazing until they are well established and graze moderately thereafter.
- ◆ Allow established pastures a recovery period after grazing. This will reduce weeds and increase pasture yield and nutrition value.
- ◆ If possible, mow after each grazing period to control many pasture weeds and encourage new pasture growth. However, do not mow the pasture closer than four inches above the soil.
- ◆ During excessive dry or wet conditions, remove horses from pastures.
- ◆ In pastures with excessive weeds, where pasture forages are thin, reseeding may be the best practice.
- ◆ High yielding, well-managed pastures will choke out weeds.

Utilize Biological Processes to Further Reduce Weed Pressure

Excerpted from article written by eOrganic author:

Mark Schonbeck, Virginia Association for Biological Farming

Biological controls play a major role in insect pest management in organic and sustainable farming systems, and in biointensive Integrated Pest Management as described by Dufour (2001). Organic growers use several forms of biological controls:

- ◆ Conservation biological control-providing and maintaining suitable habitat for natural enemies of pests. One example is farmscaping-a diversified planting of flowering plants that provide a season-long nectar and pollen supply for predators and parasites of major crop pests.
- ◆ Inoculative release-purchasing and releasing small numbers of a natural enemy, which then multiply and gradually bring pest populations down. Examples include the field releases of ladybird beetles, predatory



stinkbugs, and *Trichogramma* wasps against aphids, pest beetle larvae, and caterpillar eggs, respectively.

- ◆ Augmentative or inundative release-purchasing and releasing larger numbers of a natural enemy to effect rapid pest knockdown. Examples include greenhouse release of lacewings or ladybird beetles, and spray applications of pathogens of insect pests like Bt or Beauveria.

What about biological weed control? Considerable research has been conducted on biological control of weeds with herbivorous or seed-eating insects, specific microbial pathogens of weeds ("bioherbicides"), and soil microorganisms that have the potential to suppress weed germination, emergence, or growth. At this time, however, few organic vegetable growers utilize weed biocontrol agents per se in their weed management programs. Although ongoing research may expand the role of weed biocontrol products, they will probably not ever achieve the prominence of the many biological insect pest controls that are now commercially available (Hallett, 2005). Why is this so?

Most insect pest outbreaks involve one or two insect species attacking a specific crop. Often, the pests can be controlled through conservation or augmentative release of their specific natural enemies. In contrast, many different weed species appear each year in the field. A specialist biocontrol agent that knocks out one or two species may not significantly reduce overall weed growth, while a generalist agent that attacks most or all of the weeds present would likely damage the crop as well. Furthermore, the efficacy of experimental bioherbicides depends greatly on weather, soil, and other factors that vary widely from farm to farm and from year to year.

Classical biological control—the importation and release of a natural enemy of an exotic pest is sometimes used to combat invasive exotic plant species, most often in rangeland or natural ecosystems rather than crop fields.

Grazing Systems for Horses

Written by Robert A. Mowrey, Ph.D.,

Extension Horse Husbandry Specialist and Kevin R. Pond,
Professor, Department of Animal Science, NCSU

Grazing systems used in horse farms include pastures, fences and management techniques used to provide optimal forage for horses. Grazing systems should be flexible based on resources and goals and developed to meet the horse's nutrient requirements. Two common types of grazing systems used in horse farms are continuous and rotational.

Continuous grazing

A continuous grazing system is one where horses are housed on a single pasture for an extended period of time. Advantage to this system is that reduced fencing cost and less daily management is required. A disadvantage to this system is that it is difficult to manage grazing intensity and timing. Continuous grazing systems should be designed to enhance forage utilization by using good pasture management practices and setting appropriate stocking rates. If pastures are not managed properly forage availability is reduced. This type of grazing system is appropriate to use where ample pasture land is available to support the number of horses. Overgrazing should be avoided and plant species selected that will support continuous grazing. Increased management may be needed during periods of rapid or diminished forage growth.

Rotational grazing

Rotational grazing involves moving horses between pastures during the grazing season to allow for periods of pasture rest and regrowth. Time on each pasture will depend upon number of horses and pastures. Advantages to this system include ability to manage more animals on less acreage and improve forage availability and quality. The disadvantages are greater cost due to increased fencing and management.

Rotational grazing is a practice that, if done correctly, can help increase your pasture productivity. Rotational grazing is dividing the pasture area into several small paddocks.

Rotationally grazing your pasture should also allow appropriate rest periods. In fact, the key to pasture productivity with any rotational grazing design is providing adequate rest periods for pasture recovery and being flexible depending on the season. Resting the pasture is essential and allows the forages to store carbohydrates (energy) in their roots and regrow vigorously. Generally speaking, a pasture will need 30 days of rest for every 7 days of grazing.

Rotational grazing does not need to be complicated, as two pastures can be enough to practice rotational grazing. In some cases horses may need to be rotated before the pasture has been adequately grazed. In this case, horse owners may hay the paddock, or mow the forage to a height of approximately 4". However, in a dryland arid system you should only graze off half of the growth (the take half keep half principal).

Rotational grazing also contributes to better manure management. Instead of one or two big dropping areas, there are several smaller ones throughout the pasture. Smaller manure piles dry and break up faster, reducing fly numbers and odor. Dragging the paddock helps break up



the piles, dries out the manure, and distributes nutrients back to the pasture. Dragging should be done when horses are rotated out of the paddock.

Table 1 provides an example of rotational grazing in a midwestern, cool season grass pasture system.

Table 1. Rotational grazing paddock designs (at recommended stocking rates) for horses based on 2, 3, 4, or 5 paddocks in the Northern U.S. (DG = Days of grazing per paddock; DR = Days rested per paddock)

# of paddocks	Spring		Summer		Fall	
	DG	DR	DG	DR	DG	DR
2	14	14	42	42	28	28
3	7	14	21	42	14	28
4	5	15	14	42	10	30
5	4	16	11	44	7	28

From: www.extension.org/pages/Grazing_Systems_for_Horses

Drylots for Horses

By Ann Swinker, *Extension Horse Specialist*,
Penn State University

Drylots, or exercise paddocks, provide an opportunity to move horses off the pasture during high stress periods to protect pastures from being overgrazed. Drylots can vary in size but should provide a minimum of 400-500 square feet per horse. The size should be increased proportionally as the number of horses increase. These paddocks are typically situated near barns, are used only to provide exercise, and generally contain a limited amount of vegetation. Drylots can also serve as holding areas during periods of heavy rainfall and drought until pasture conditions improve. Extremely wet pasture can be damaged by the tearing action of horse's hooves while cantering. Forage growth is reduced during drought conditions. Continued grazing during droughts will destroy the plant growth reserves.

Drylot Location

Drylots should be located adjacent to pasture areas with a common gate opening into each pasture. A permanent perimeter fence should be used to enclose the drylot area. Corral panels, four board fence, woven wire with a support board, etc. are recommended. Permanent electric fence systems, that are highly visible, provide an inexpensive option.

The drylot area should include a holding shed, an alternative water source, and ample area to feed hay free choice. Ideally the water source and loafing shed should be at opposite ends of the drylot to encourage movement of the horses and limit the soil erosion typically found in heavy

traffic areas. The loafing or run-in shed can be one, two or three sided with a sloping roofline to repel water. Typically a three-sided run-in shed, constructed to allow expansion to accept increased stocking rates is used. Run-in sheds, 12 by 12 foot accommodate one to two horses. As horse numbers increase, run-in shed dimensions should increase by 12 feet per unit of increased horse numbers:

Run in Shed Size	Number of Horses
12' X 12'	1-2
12' X 24'	3-4
12' X 48'	4-5

Heavy traffic areas, such as the entrance to run-in sheds and around water tubs, may require stone or gravel to reduce mud and erosion. Crush and run covered by screenings, ground limestone or number 78 gravel provides footing and eliminates mud without risking injury to the horse's hooves. The crush and run should be used to elevate low areas. The screenings, limestone or number 78 gravel provides a protective footing over the crush and run.

Sacrifice Lots

This management technique may take some work. You should create a sacrifice area. This is a small enclosure such as a paddock, corral, or pen that is sacrificed for the benefit of the rest of the pasture(s). Livestock should be confined to this area during the winter months and when the pastures are saturated from rain.

Installing a 'sacrifice lot' is a good way to prevent the horses from using a pasture when the conditions are too wet. This area is a fenced dry lot with shelter, water, and feeders, so the horses can be turned out and fed hay, but not allowed access to the pasture. In order to help prevent pollution of runoff through the sacrifice lot, manure and old hay should be picked from the area every 1 to 3 days. This will remove the organic matter that is used to convert soil to mud. Maintain a grass area of about 25 feet around the sacrifice lot to serve as a filter for any runoff.

Keeping it Dry

In high traffic areas like a drylot or hold corral, horse hooves loosen topsoil and compact the soil below. As the soil becomes more compacted with the constant pounding of horse hooves, rainwater is not able to percolate through the soil and pools on top, mixing with the topsoil to create mud. The most important ingredient for making mud is to add water. The rainwater that runs off of impervious surfaces like your barn roof can compound the problem. If the rain isn't direct away from the high traffic areas, you can have a real mud problem.



Regional Horse Council Updates

Orange

This year Orange County Horse Council is sponsoring the NYSHC's Annual Meeting on September 10th and 11th. The main meeting will be in Goshen, NY with several other activities planned for local venues.

As part of the meeting we will be supplying "Goodie Bags" to each attending guest. The bags are being donated by Exclusively Equine Real Estate. If you or your business would like to place advertising info in the bag please contact Deb Corr at 914-474-7722 ASAP, this is free for our membership.

Sullivan:

The newly formed Sullivan County Horse Council is off to a great start this year. We have had a few meetings under our belts and are well on our way to being established. We have a board of directors, established our mission statement, and are working on our logo and events for the following year. We are attempting to set up a spring vaccination day for the county where we can offer vaccinations to the horse owners from vets, planning an equine activities day, setting up educational clinics, and getting our voices heard in the county. Our newly formed chapter is very diverse. Our areas of focus include, pleasure horses, show horses, standardbred race horses, breeders, trail riders, miniature horses, and people who just love horses.....just to name a few. We are holding monthly meetings at the Sullivan County Cornell Cooperative Extension building the first Wednesday of each month at 7:30 pm.

Ulster:

Dr. Jim Nutt VMD, DACVS, from the Rhinebeck Equine, LLP out of Rhinebeck, New York was the Ulster County Horse Council's guest speaker on the August 24, 2010 meeting held at the Marbletown Community Center in Stone Ridge, New York. There were 19 UCHC members in attendance



New York State Horse Council

for the board meeting, the Equine Ulcer Power Point presentation and the lively answer and question period at the end.

The informational power point presentation provided an insight (and pictures) of the horses stomach under different stress related situations such as when they are in training, changes in their environment, and trailering the horse(s). A discussion was initiated on a recent scientific study, discussing the problems and damages caused by stomach ulcers. The clinical signs include such changes in eating and drinking, weight loss, change in attitude, recurrent colic, dull hair coat, less than optimal performance, and foals may also grind their teeth or lay on their back. Equine Ulcers are extremely common in thoroughbred race horses and performance horses (i.e. eventing, hunter and jumpers, and other non-racing performance horses can also be at high risk)

We would like to extend our most sincere thank you to Dr. Jim Nutt for providing this informative talk, information handouts, and the power point presentation to the UCHC members.





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EQUINE LINE

A series of dark grey silhouettes of horses in various running and galloping poses, arranged in a line from left to right, suggesting movement and speed.

Equine Line is produced by *Hudson Valley Livestock Digest* personnel. *Equine Line* is a bi-monthly publication designed to provide the horse owner/enthusiast with timely, relevant information pertaining to the various segments of the equine industry in the upper Hudson Valley and Catskill Mountain areas of upstate New York. Contact your local Cooperative Extension office for subscription information.

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