

Establishing and Managing Horse Pastures in Vermont

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Pasture Establishment

Before going out and seeding down a pasture for your horse or horses, it is important to assess the area that you plan to use and to take certain steps to assure a successful forage stand that is appropriate for your needs. Some key factors to consider in seeding a horse pasture include horse stocking rate and usage, your soil type and drainage, soil fertility and pH and, of course, your budget to get the job done. All of these factors must be considered before actually going through the steps of seeding your pasture.



Some steps in establishing a horse pasture may or may not be necessary depending on your goals and budget. Some horse owners want (and need for their business) beautiful paddocks that resemble a well managed lawn. Others just want a basic pasture that minimizes mud and dust and assures good footing for their animals.

Horse Stocking Rate and Usage - Species selection and management will be greatly determined by your stocking rate and usage. If your pasture is less than one acre per horse, then it will mainly be used as an exercise lot and should be managed in that manner.

Soil type and drainage - Your soil is the backbone for any successful horse pasture program. If you don't know your soil type, then contact your county **USDA-NRCS** (Natural Resources Conservation Service) office to get a soil map and information about that soil. This will tell you about your soil's texture (what proportions of clay, silt and sand), drainage and other important characteristics. This information is useful in determining an appropriate species mixture. It may also be useful in helping you decide about any alterations of your soil such as adding subsurface drainage, topsoil or organic matter such as compost or manure. Whether you can get a soil map or not, it is still important to go out and look at your soil. Is it a clay, silt loam or sandy soil? Is it poorly drained, well drained, droughty? Is it a deep soil or shallow to bedrock?

Improving Your Soil - Adding subsurface drainage to a poorly drained soil will improve plant growth and reduce compaction. It will also increase the time your horses can be on the pasture and reduce hoof damage. The design, arrangement and spacing of a subsurface system will depend on your soil type, slope and needs. Check with your local Extension office for any local contractors that put in these systems.

If you are keeping one or two horses on a small area (1/2 to one acre) and you have a really poor soil, and depending on your budget, you may want to consider adding topsoil. Normally,

you want to add at least 4 to 6 inches of topsoil. If your soil is poorly drained, you may still want to put some subsurface drainage in at least appropriate areas.

Another alternative to topsoil is to add organic matter. This will not change the texture of the soil but it can change its structure and improve its ability to grow plants. For clay soils, organic matter improves tilth and structure. For sandy soils, organic matter improves water and nutrient holding capacity. Compost or well cured solid manure are good options. To mix it into the soil, add half the compost or manure before primary tillage (plowing or harrowing) and the second half before secondary tillage (harrowing).

Soil Fertilization and liming - Soil test and apply appropriate lime and nutrients. You can pick up a soil test kit from you local UVM Extension Office. If your soil test shows that your pasture soil is low in pH or nutrients then you should apply the recommended amounts of these before final seedbed preparation and disk or harrow them into the soil to assure even distribution within the top four inches. If possible, apply lime six months to a year before you plan to seed because it takes time to neutralize the soil.

Just before planting, you may want to also apply and lightly disk or rake in some "starter fertilizer" which is usually a small amount of nitrogen (N), phosphorus (P) and potassium (K) that gives the young seedlings a little boost in growth. A typical rate of starter fertilizer would be 100 lbs. of a 10-20-10 fertilizer blend. You can buy these from most seed/fertilizer suppliers.

Pasture Seed - Buy quality seed. In the long term, your seed is the least cost part of your pasture, so start right and spend a few extra dollars for high quality seed. Check the seed tag. Look for the germination date and make sure it is relatively recent. It is best to buy certified seed. This assures genetic purity of the seed (in other words that you are buying the appropriate varieties listed) and that the seed is of high quality for germination and seedling growth.

Use an appropriate seeding mixture. These should be based on species adaptability to soil and climate as well as horse needs. Usually a good horse pasture mixture contains three species or more that would include Kentucky bluegrass, at least one legume such as a clover, and at least one highly productive cool season grass. Kentucky bluegrass produces a resilient sod that recuperates well when cut by horses hooves. The legume supplies additional protein and reduces the need for nitrogen fertilizer while the productive cool season grass grows well in summer when bluegrass slows down in growth. Specific species will depend on soil type and personal preference.

It is often times much easier to purchase a commercial horse pasture mixture than to formulate your own. There are many mixture brands available through most seed dealers and many of these can be quite good to excellent in meeting your needs. However, it is important to choose a mixture that has appropriate species to your soil and climate and be of high quality seed. The seed tag on the mixture bag will give the proportions of each variety and specie.

Specific Concerns - For light colored or sensitive horses, it is best to avoid seeding mixtures that contain alsike clover which can cause mild toxicity. It appears to be more of an issue with wet clover often in early morning when there is dew. The typical signs of toxicity include gastrointestinal distress including mild colic and diarrhea. It contains a chemical that can cause a photochemical response to light colored horse causing sunburn and blisters. It is probably not a concern if there are small amounts of alsike clover naturally growing in your pastures. It is mainly a problem when the animal is exposed to a concentrated amount. If you have large patches of this clover and you know you have sensitive animals, then you should fence the area off and take some remedial action to eliminate it.

Another forage plant that should be avoided in seed mixtures is "endophyte-enhanced tall fescue" varieties. The endophyte is a fungus that lives and grows inside the fescue plant. It actually benefits the grass by making it more resistant to drought and certain leaf and stem feeding insects. Unfortunately, it produces a toxin that has been reported to cause foaling problems in mares. Many "Conservation Mixtures" contain fescues that may be high in endophyte and those should be avoided for any type of horse pasture (or any livestock for that matter).

Suggested Species – The following table provides are some suggested species for mixtures although there are certainly other options. These are not prescribed mixtures nor does the table imply you have to have all of these species in your mixture. It is just a guide. If you are buying premixed horse pasture seed from a seed supplier, look at the seed tag to make sure it has at least the three basic components – Ky. Bluegrass, a legume, and a tall grass.

<u>Soil Drainage Class</u>	<u>Species</u>	<u>Comments</u>	<u>Lbs/acre of Mix*</u>
Well drained soils:	Ky. Bluegrass	Forage type variety	4 - 6
	White/Ladino clover		1 - 2
	<i>and/or</i> Birdsfoot trefoil	Intermediate to tall types	6 – 8
	<i>and/or</i> Alfalfa	Grazing type varieties	8 – 10
	<i>and</i> Orchardgrass	Pasture type varieties	4 - 6
	<i>and</i> Smooth brome		6 - 8
Moderately drained soils:	Ky. Bluegrass	Forage type variety	4 - 6
	White/Ladino clover		1 - 2
	<i>and/or</i> Birdsfoot trefoil	Intermediate to tall types	6 – 8
	Timothy	Early maturing type	5
	<i>and</i> Orchardgrass	Pasture type varieties	4 - 6
Poorly drained soils:	Ky. Bluegrass		4 - 6
	Birdsfoot trefoil	Intermediate to tall types	2 – 6
	<i>and/or</i> White/Ladino clover		1 - 2
	Timothy	Early maturing type	4 - 8
	<i>and/or</i> Reed canarygrass	"Low alkaloid" varieties	5 - 6

*This range represents an approximate amount within your pasture mixture. Rates may need to be higher if seeding conditions or timing is less than optimum

Seeding Rate – The seeding rate will certainly depend on what forage species make up the bag (some seed are very small and it takes far less pounds per acre to achieve good coverage) as well as the seeding conditions. Generally, your total seeding rate may be between 15 and 25 lbs. of seed per acre for most pasture mixtures. Most commercial brands will have a recommended rate on their bag.

Time of Seeding - Seed as early as possible in the spring when your equipment can get on the field. A good rule of thumb is that you need about six to eight weeks of good growing conditions after seedling emergence; therefore, you want an early seeding so plants are old and vigorous enough to withstand the hot, dry periods of summer.

A late summer seeding is also an excellent time to plant pastures, but this should generally be done by mid-August if possible. Again, the six to eight week rule of thumb applies here as well so plants are old enough to resist winter injury.

Seedbed Preparation - Prepare a good seedbed. Most forage seeds are small and require a fine, firm seedbed to assure good soil-to-seed contact. A firm seedbed allows close depth control for shallow seed placement. If you step on a good firm seedbed, your foot should only sink down about ¼ inch. If it's deeper than this, the seedbed is too fluffy and you will likely get poor germination.

After primary and secondary tillage, use a roller to firm up the soil unless you are using a cultipack seeder, which firms and plants in the same pass. An excellent implement for final tillage and firming the soil is a harrow-packer.

Seeding Techniques - There are several ways that forage seed can be distributed onto the pasture area. A popular way is to use a cultipack seeder, such as a Brillion, which places the seed and firms the soil. Another excellent method is to use a grain drill where seed depth can be controlled. Seed can also be distributed used broadcast methods either with a spinner-spreader or by hand. If you broadcast seed, be sure and follow up with a cultipacker pass. If you use a grain drill, be sure to either use press wheels or follow with a cultipacker pass.

Remember that the goal is to get uniform coverage of all your desired species. Calibrating your spreader to apply at half the rate and then going over the area in a cross pattern is a good way to improve seed distribution.

Delay grazing - If spring seeded, do NOT begin grazing until there is at least 8 to 10 inches of growth. The seedlings need time to establish their root systems or the horses can literally pull the plants out of the ground. Generally, you would not graze on late summer seedings until the following year.

Managing Established Horse Pastures

Horse behavior on pasture is not very compatible with good grass growth and persistence. Horses tend to selectively graze one species over another often leaving some area poorly utilized while others become severely grazed. The following are some considerations when grazing horses on pastures:

Know and adjust your stocking rate - Generally, you want at least one acre per horse to assure adequate grazing and proper management. With a higher o a stocking rate than this, the pasture really becomes more of an exercise lot rather than a source of feed. If stocking rate is too low and the area is too large for your number of horses, then forage growth will surpass feed demand leading toward uneaten, coarse, stemmy areas. In this situation, some of the land could either be grazed by other livestock or used for hay for parts of the year.

Rotationally graze - This involves the division of pasture into several subunits so the horses can be rotated through the system at a rate in which grass growth is matched with horse needs. Move

horses into paddocks when they reach between 6 and 8 inches of height and remove them when there is about 2 to 3 inches left. Rest periods between each grazing can vary from two weeks in the spring to four or more weeks in the summer months.

Delay early spring grazing - Turning horses on pasture before it is ready leads to a lot of damage to the grasses which can have consequences for the rest of the season. Keep animals out until the grass is at least 6 to 8 inches in height. If necessary, use a "sacrifice" pasture until the others are ready.

Clip pastures periodically - Clipping helps to remove any of the coarse unused feed and helps to control weeds.

Fertilize annually - Adequate nutrients not only stimulate forage growth, but also assure better levels of mineral nutrients in the feed. Start with soil test and base fertilization and liming rates on actual needs rather than some general recommendation. You can pick up a soil test kit at any UVM Extension Office. Remove horses from a pasture that is to be fertilized or limed and keep them out for several days or until a good rain. The best time for application of phosphorus, potassium or lime is either early spring before the grazing season (if the soil is dry enough to support your equipment) or in the fall after the grazing season.

If there is a significant amount of clovers or other legumes in the pasture, then there is no need for nitrogen (N) fertilizer. On grass pastures, N fertilizer will stimulate growth and increase pasture production. However, N is only effective for the next 5 to 6 weeks after application; therefore, split applications during the season are most effective. It can be applied just after a grazing in a rotational grazing system. Generally, an application rate of about 50 lb. of actual N per acre is appropriate. This is about 150 lbs. of ammonium nitrate (33.4% N) or 110 lbs. of urea (46% N). The decision to use N fertilizer really depends on your stocking rate and your need for the additional forage. If you have plenty of pasture, you don't need to fertilize with N.

Caution: Add N fertilizer at the proper rate or less - over fertilization of N can lead toward nitrate accumulation in the forage. Keep horses away from fertilizer bags - the concentrated fertilizer can be toxic.

Overseed - Areas that become spotty (especially in exercise lots) can be over seeded but will need time to rest the area to assure the seedlings get a good catch. If you don't have the pasture area to afford keeping animals out totally, then consider the use of temporary electric fence to surround the treated areas. A good time to over seed is in early fall (September). For small areas that will be hand seeded, mix seed with a little potting soil mix and broadcast over area. A suggested mixture for this purpose is 40% perennial ryegrass (unless you have non-structural carbohydrate sensitive horses), 40% Kentucky bluegrass and 20% Ladino clover.

For More Information on Forges and Pastures, go to: <http://pss.uvm.edu/vtcrops/>

- Revised 10/2014

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