



## **Horse Pasture Management- Basic Land Stewardship Concepts**

### **Source:**

*This summary document contains adaptations from various public domain North American publications on horse pasture management and land stewardship. Edited, adapted and compiled by Phill Blake, District Conservationist, NRCS, Napa California. January, 2010.*

### **Equine Grazing Behavior**

Horses are instinctively selective grazers, basing their choice of pasture plants on what tastes good (palatability) as well as availability. Horses prefer to eat young, immature plants and will graze some areas of a pasture down to the bare ground. In other parts of the pasture, plants are avoided and allowed to grow to maturity, which lessens palatability and nutrient availability. In addition, horses will not graze in areas where they defecate, so pasture plants around manure piles are also mature and less palatable. This grazing pattern is often called "spot" grazing.

Horses can also graze much closer to the ground than cows can because horses have upper and lower incisors. However, clipping off the plants too close to the ground can cause problems for plant re-growth.

Close cropping of pasture plants, trampling and selective grazing can seriously affect the productivity of a pasture. Selective grazing of areas with short, new growth over and over again, without giving the plants a reprieve, causes the plants to decline in vigor or persistence. As the desirable species of forage are grazed out or trampled, weeds tend to invade the pasture. Thus, horses can quickly turn a pasture into a weed patch or dry lot.

Although horses are selective in their grazing habits, they can be "persuaded," with proper pasture and grazing management, to eat pasture that they might otherwise choose to avoid. This approach is not being unkind to your horses, it is simply managing their grazing to give them as much pasture as you can for as long as possible.

### **How much pasture is your horse eating?**

Pasture intake will vary depending on the season, species and quality of pasture grazed, length of grazing time and grazing management.

In addition to what your horse consumes, you must also account for how much forage your horse damages through trampling. One rule of thumb is that a horse will eat, trample or damage 1 pound of forage per pound of body weight per month (or 1 kg forage per 1 kg body weight). Therefore, to sustain an average 1,100 lb (500 kg) horse, a pasture must be capable of producing at least 1,100 lbs (500 kg) of forage each month. With proper grazing management, the amount of forage needed per horse can be reduced by 10 to 20 per cent.

The amount of forage a pasture produces varies by the type of forage growing and the season. Grass and grass-legume pastures produce more forage over the grazing season than pastures consisting of native rangeland species. Growth is most abundant in the late winter and early

spring months, while growth slows and nearly ceases in the late fall and winter.

## **Grazing with other livestock**

Grazing cattle or sheep with horses can keep pastures grazed more uniformly and can help maintain the pasture's forage in the high quality growth stage. Cattle and horses select the same forage species, but horses tend to graze particular areas in the pasture while cattle and sheep graze more at random. Cattle will also graze the more mature forage left by horses, and sheep will utilize more of the forbs and shrubs.

Furthermore, livestock avoid grazing near their own manure, but are willing to graze near piles left by other species. Cattle, sheep and horses do not share the same intestinal parasites, so there is no risk of becoming infected when grazing around each other's droppings. Cattle, sheep and horses may all graze the pasture at the same time, or one group may precede the other.

## **How Many Horses Will My Pasture Support?**

The most common question asked by horse owners is, "How many horses can I keep on my property?". Unfortunately, the answer to this question is not always straightforward, and there is considerable variability. Several factors will determine the number of horses your pasture(s) will support:

**Acreage available for grazing** - Land available for grazing is what is left over after you exclude areas used for buildings, stables, trees, house, driveways, rivers and creeks.

**Species of forage growing in the pasture(s)** - Horses kept on dryland Mediterranean rangeland pastures require more land to sustain each horse. Irrigated, "improved", tame grass and grass-legume pastures will produce more forage than dryland rangeland, allowing more horses to be supported by a smaller area.

**Quality of the pasture forage available** - The more desirable the forage species growing in your pasture and the more forage available for grazing, the higher the pasture quality. If your pasture is overgrazed, full of weeds and bare spots, grazing productivity will be greatly diminished.

**Soil and climate characteristics** – Deeper alluvial, (valley) soils support more horses than shallower hillside soils. With irrigation, less acreage may be required. During times of drought, the number of horses per pasture generally still needs to be reduced. The NRCS county soil survey is an excellent "get-started" publication, providing forage productivity guidelines for the various soils. Contact your local NRCS office for further assistance.

**Grazing management employed** - How you manage your pastures can be the biggest factor that determines the number of horses your land can support. Proper management will increase the productivity and long-term survival of your pasture. The less land you have, or the more horses you pasture per acre, the more intensive management you will need to provide to maintain your pastures in healthy, useful condition.

**Physiological state and size of horses grazing the pasture** - Lactating mares with foals require almost twice as much feed as an idle mature gelding. Similarly, bigger horses graze more grass. Therefore, the number of horses your pasture will support should be adjusted based on the size and physiological state of the horses.

## Calculating Stocking Rates

When determining the number of horses your pasture can support or the amount of land needed to support the grazing of your horses, you are calculating the "stocking rate".

The following equation can be used as a guideline for determining the number of pasture acres required for grazing:

$$\text{Pasture acres required} = \frac{(\# \text{ horses}) \times (\text{average body weight in pounds}) \times (0.035) \times (\# \text{ grazing days})}{\text{Average forage production, in pounds per acre}}$$

For example, say you have two, 1,100-lb horses and you want to graze them for 3 months. You estimate your pasture will produce an average of 2,000-lbs of forage per acre in that 3-month period (refer to Table 9 for average pasture forage production or well managed pastures).

$$\begin{aligned} \text{Pasture acres required} &= \frac{(2) \times (1,100 \text{ lbs}) \times (0.035) \times (120 \text{ days})}{2,000 \text{ lbs per acre}} \\ &= 4.6 \text{ acres would be needed for 120 days of grazing these 2 horses} \end{aligned}$$

## Grazing Management

Managing the grazing of your horses will have a greater effect on the productivity of your pasture than almost any other factor, including the species of forage growing there.

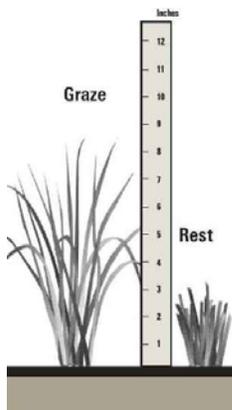
Two important practices that need to be implemented into your grazing management plan are proper timing of grazing and a restoration schedule.

### Time To Eat

A simple way to determine if your pasture is ready to graze is to measure the height of the forage (Figure below). Using a ruler, record the height of the vegetation as it stands naturally (do not stretch or extend leaves) at several locations within the pasture and average the heights. Each 2.5 cm (1 in.) you measure is equivalent to approximately 100 to 250 kg (200 to 500 lbs) of forage.

A pasture should contain at least 15 to 20 cm (6 to 8 in.) of growth before horses are allowed to graze. This rule for grazing height holds true whether you are just turning your horses out in the spring, or you are returning them to a field that was allowed to regrow after a period of rest.

Grasses and legumes need time for sufficient growth before grazing is allowed. If grazed too early, plants may die and be replaced by undesirable plants species and weeds.



*A pasture should contain at least 15-20 cm (6-8 in.) of growth before grazing is allowed. Horses should be removed from a pasture when plants are grazed down to 8-10 cm (3-4 in.).*

## **Rest**

Knowing when to *stop* grazing is just as critical to maintaining a productive pasture as deciding when to begin grazing. Pastures must have a periodic rest from grazing, so they can recuperate.

Once horses have grazed the majority of the grass in a pasture down to 8 to 10 cm (3 to 4 in.), remove the horses from the pasture. Never allow grass to be grazed shorter than 8 cm (3 in.). This practice ensures that the grass will have enough food reserves to permit rapid regrowth. You can put horses back on pasture when the grass has regrown to about 15 to 20 cm (6 to 8 in.).

Re-growth of pasture plants usually takes two to six weeks, depending on the time of year. In the early spring, forages grow much faster than any other time of the year, so pasture rest periods may be shorter in the spring and longer in the fall and winter.

Rotating horses through a series of pastures (termed “rotational grazing”) or removing horses from pastures for part of the day (known as "limited grazing") are practices that will provide rest periods.

The key to maintaining a productive pasture is to manage your horses so that grazing removes only a certain amount of the plant and leaf area, leaving enough behind for the plant to recover and begin re-growing again.

## **Grazing Systems**

Several grazing schemes can be used to control your horse’s grazing and, at the same time, to promote healthy pastures. Keep in mind that no one grazing scheme is best for all situations, and a combination of techniques may work best for you.

### **Rotational grazing**

The concept behind rotational grazing is to break up larger pastures into smaller sections, so you can control your horse's grazing in a smaller area. This practice encourages the horses to be less selective and to graze the available forage more evenly. Once one section is grazed down, the animals are moved to a new section while the grazed section is allowed to rest and recover from grazing and hoof damage.

As a first step towards a rotational grazing system, you may want to first try dividing an existing large pasture in half and then alternate grazing. Then, try further subdividing the pasture after you gain some experience (diagram below).

Ideally, you want at least four smaller pastures that provide enough grazing for seven to ten days. This grazing duration gives each pasture a rest of three to five weeks. As the grass matures and growth slows during the summer, you will likely have to decrease grazing time and increase resting time.

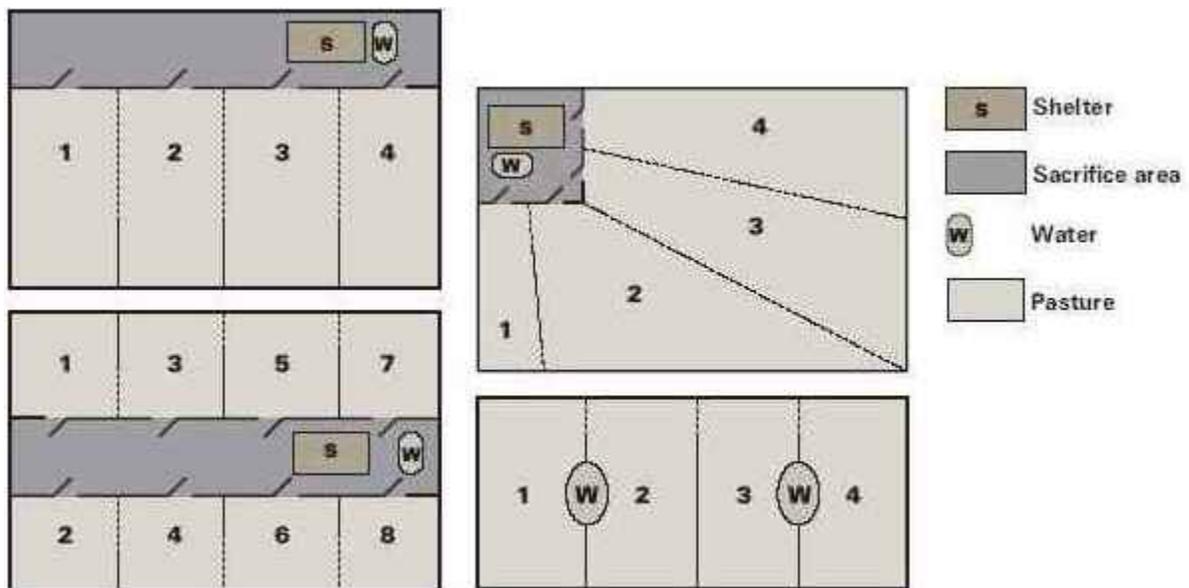
The movement of horses should be based on the growth rate of the pasture and the specific height of the forage, not on the calendar. Begin grazing when the forage is 15 to 20 cm (6 to 8 in.) tall. Once horses have grazed a pasture down to 8 to 10 cm (3 to 4 in.) rotate them onto the next pasture.

In the late winter and early spring , when growth is fast, you may find that your horses cannot

keep pace with the rapidly growing grass in your pastures. While you could wait for your horses to graze one pasture down to 8 to 10 cm (3 to 4 in.), the forage in your other pastures would mature and quickly become less palatable. Instead of waiting, you might choose to move your horses to other sections sooner, so they have a chance to graze the tops of all pastures. Alternatively, you might be able to harvest grass hay from one or more pastures that cannot be effectively grazed in the spring and early summer.

If the size of your available acreage is small, you may find that your first pasture has not yet recovered to grazing height by the time you have rotated through all the other pastures. To avoid overgrazing, supplemental feeding and/or reduced or restricted grazing time may have to be used to give each pasture adequate rest.

There may be several options for dividing your pasture into smaller plots for rotational grazing. Remember that all sections must allow access to water. Also, try to divide pastures in such a way that horses can have access to shade or shelter, especially if they will be confined to these areas for more than a few hours (next diagram).



*Options for dividing your pasture to facilitate rotational grazing.*

### The Grazing “Pressure Valve”

If pasture forage is in short supply, either because of limited acreage, seasonal slumps in pasture growth or too many horses, you can decrease the pressure on your pastures by:

- Decreasing the stocking rate by removing some or all of the horses from the pasture
- Leaving the horses on pasture for only a few hours daily, rather than all day
- Feeding hay for at least four hours before turning horses out on pasture

### Advantages of Rotational Grazing

- Increases the amount and quality of forage obtained by grazing
- More animals can be supported on the same acreage of pasture
- Reduces or eliminates selective or spot grazing
- Allows for more complete utilization of pasture forage
- Minimizes rejection areas, where horses will not graze

- Promotes the growth of desired species and reduces the number of undesirable species and weeds.
- Can help control parasites and discourage some animal diseases
- Provides better manure distribution and nutrient recycling
- Allows for frequent horse-human contact

## **Practice Limited Grazing**

The more horses you have on your property, and the less land you have, the more challenging it will be to manage your pastures. You can still preserve your pastures and keep them healthy by limiting the amount of time your horses graze, although more hand-feeding will be required,

There are many ways to modify a limited grazing routine to fit your horses, farm and schedule. You might choose to turn your horses out once or twice a day, before or after work, for a few hours each time. Night turnout is appealing to some owners because the absence of the sun prevents bleaching of the haircoat. If you have several horses, you could turn one group out at night and a separate group out during the day, so the ground suffers less abuse at one time.

Always remember to monitor the height of the grass. As the vegetation is grazed down to 8 to 10 cm (3 to 4 in.), remove your horses and place them into a corral or dry lot area (see the information on "Sacrifice areas" below). Wait until the forage has regrown to a height of 15 to 20 cm (6 . 8 in.) before allowing your horses access to pasture again.

## **Continuous grazing**

Many horse owners allow their horse access to a pasture continuously. The horse usually remains on the same piece of land over the whole grazing season. This type of grazing system is called "continuous grazing".

Although continuous grazing requires the least amount of capital investment and management, this type of system can be very unhealthy for the land. Unrestricted access allows horses to be highly selective during much of the grazing season, creating both overgrazed forage and areas of under-used and wasted forage. A loss of desirable forage species, invasion of weeds, erosion and the non-uniform distribution of horse manure are other problems commonly associated with continuously grazed pastures.

To maintain a healthy plant stand with continuous grazing, you will need a sufficiently large land area and you need to maintain a low stocking rate.

## **Using "Sacrifice" Areas**

You can greatly improve the health and productivity of your pastures by creating and using sacrifice areas. A sacrifice area is a small enclosure such as a paddock, corral or pen, or turnout area. The concept is that a selected area is sacrificed from the grazing system and is used to confine the horses to protect pastures from over-use at critical times.

Create a sacrifice area (winter paddock) to be used during the rainy season or when your pastures are becoming overgrazed. Using a sacrifice area keeps horses from destroying pastures. It also confines the wastes to an area surrounded by grass strips or pastures which can act as a filter for the contaminated runoff. Laying down wood chips in a sacrifice area will help cut down on mud problems and have the added benefit of helping breakdown the nitrogen in the horse urine and manure. Installing rain gutters and roof runoff systems on barns or sheds to divert rainwater away

from sacrifice areas will reduce the amount of animal waste washed from the sacrifice areas and it will prevent clean rainwater from becoming contaminated by manure.

This also has the added benefit of reducing the amount of water, and thus mud, in your sacrifice area. Cross fencing pastures and rotating animals in order to keep pastures from becoming overgrazed and compacted. A good rule of thumb is that at least three inches of plant leaf material is needed for rapid re-growth and for the bio-filtration of animal wastes.

Sacrifice areas give flexibility to the management of your horse property. Horses can be confined to the sacrifice area when:

- pastures need a rest from grazing
- you want to control the amount of grass your horse consumes on a daily basis
- you want to prevent over-consumption of lush pasture in the spring and early summer
- you need to care for sick or injured animals

Sacrifice areas also have other benefits. They can serve as a central watering location for rotational grazing systems, and they provide a location for supplemental feeding. Sacrifice areas are also ideal for helping to juggle the turnout of compatible groups of horses when pasture area is limited. In addition, manure deposits are confined to a smaller area, which can be cleaned and the manure removed more frequently.

When choosing a location for a sacrifice area, select a site on higher, drier ground, away from wetlands, streams or ditches. Surround the area with at least 8 to 15 m (25 to 50 ft.) of native grass plantings, pasture, or native trees and shrubs. This vegetative buffer will act as a natural filter for contaminated water running off the area.

For chore efficiency, you may want to keep the area close to the barn. You may have several turnout paddocks that you rotate stalled horses through during the day. Alternatively, you could set up a sacrifice area for each horse as a run off of each stall.

The amount of land you have available and the number of horses and their temperaments will all affect the size of the sacrifice areas you need. Approximately 100 square meters (1,000 ft<sup>2</sup>) will be needed for each horse. The shape of a sacrifice area can be square or it can be a long, narrow enclosure that allows horses to run and play. Approximately 6 to 9 m (20 to 30 ft.) wide by 30 m (100 ft.) in length will allow a horse to trot; 60 m (200 ft.) in length will allow a horse to canter.

Footing for the horses is an important consideration for sacrifice areas. The objective is to have a hard-wearing, steady surface that is able to cope with plentiful hoof traffic without degenerating into dust and mud. Woodchips may help eliminate the urine smell often present in outdoor confinement areas. Crushed rock (no larger than 5/8 in.) or sand will also work well in some situations.

The area should slope 2 to 4 per cent to avoid ponding of water and to reduce erosion. Roof runoff from barns and other structures should be drained away from the sacrifice area.

## **Fence Control**

Portable electric fencing or tape is a simple and inexpensive way to create temporary paddocks in a large pasture to facilitate rotational grazing. And when it is time to rotate the horses into a new area, the electric barriers are easy to move. If you use only one tape or strand, then string it at a

height of approximately 84 cm (33 in.); hang double strands at 50 and 90 cm (20 and 36 in.); space triple strands at 40, 70 and 100 cm (16, 28 and 40 in.). Easy-to-install electric fencing systems can be purchased from most farm supply stores.

### **All you can eat?**

A horse turned out to pasture full time will generally graze 14 to 16 hours during each 24-hour period. If the pasture is of good quality, mature horses may become overweight with this much grazing time. Particularly in the spring, this technique would be like allowing your horse to munch on oats all day long.

If your pasture contains adequate quantities of good quality pasture forage, your horse may be able to consume a sufficient quantity to meet their nutritional needs in five to six hours daily. Of course, if your pasture is overgrazed with sparse forage, you will have to increase the amount of time your horse is allowed to graze accordingly.

### **Exercise paddocks**

If your acreage is too small to support the menu of your horses, you can still develop a grassy exercise paddock where your horses can have some free time.

- Plant sod-forming grasses that are more resistant to close grazing and trampling (creeping red fescue and tall fescue grass)
- Limit turnout time to help preserve good ground cover
- Remove manure or drag the paddock regularly
- Mow undergrazed forage
- If the paddock appears overused, give it some well-needed rest

## **Routine Pasture Management**

### **Design and layout**

A good pasture contains a clean, reliable water source, mineral salt blocks and shelter from the sun and inclement weather. Careful arrangement of fences to provide for easy access to water, mineral, salt and shelter should be part of all pasture programs.

If you own portable fencing, water troughs and feed bunks, your pasture layout can be changed to better serve your needs throughout the year. You can design your pastures to manage for high rainfall years or drought. You can also move your fencing to change your horses use of their pasture, which will protect more susceptible areas from regular hoof traffic.

### **Soil testing and fertilizing**

The quantity and quality of the forage produced by your pastures can usually be greatly increased by proper fertilization. In addition, application of the correct amount of fertilizer can decrease weed problems by making your grass plants so vigorous that weeds cannot get established.

To determine the amount of fertilizer your pastures need, you must first have your soils tested. Soil testing reveals the existing nutrient levels in the soil, as well as the nature and condition of the soil, all of which can be corrected to improve pasture production.

Once you have found out from your soil test what nutrients your pastures need, apply only those nutrients in the amounts recommended. Over-fertilizing is not only costly, but may also

contribute to surface water pollution.

Commercial fertilizer mixtures typically supply combinations of nutrients in various proportions, the most common ones being nitrogen, phosphorus and potassium. These mixtures should only be used if ALL the nutrients they contain are lacking in the pasture. A better alternative would be to have a custom fertilizer mix created for your pastures based on the recommendations made in your soil analysis.

Be aware that the type of plant species growing in your pasture may affect which nutrients are needed for better production. Grasses benefit from nitrogen fertilization, whereas legumes respond better to phosphorus, potash and lime. A pasture containing a mix of grasses and legumes may not need nitrogen fertilization if the pasture generally contains at least 40 per cent legumes. In fact, untimely or excessive nitrogen fertilization of a grass-legume pasture may be detrimental because grasses might crowd out the legumes.

Additional applications of nitrogen can be made throughout the growing season. If you practice rotational grazing, a good time to apply nitrogen is just after you rotate your horses off the pasture. Most importantly, fertilizers should be applied only during the growing season when plants can utilize the nutrients.

Horses should be taken off the field when fertilizer is applied. Read the fertilizer product label to determine when it is safe to return horses to the pasture. If you have questions or concerns, consult with your veterinarian.

To monitor the effectiveness of your fertilizer program, you should perform new soil tests on your pastures every two to three years.

### **Weed prevention and control**

Weeds are undesirable plants that have either limited or no grazing value. Common weeds such as yellow star thistle, purple star thistle, goatgrass, and medusahead grass are invasive and reduce pasture production.

Weeds thrive in overgrazed and abused pastures, competing with desirable plants for sunlight, moisture and nutrients, and often winning. Weeds severely reduce the feed value of your pasture, and at their worst, some weeds are even harmful to your horses. The techniques for getting rid of existing weeds in your pasture include removal by hand, mowing and herbicide application. Weed removal should be done before perennial weeds bud and before annual weeds seed.

If you choose to apply herbicides, make sure the product you are using is effective for the specific weed you are trying to control and that you apply it at the correct time or stage of growth. Only spray areas with weeds and be aware of wind drift.

Horses should be removed from herbicide-treated pastures. Not only may the chemicals be harmful to horses, some herbicides make poisonous plants more attractive or palatable. The length of time horses will have to be held off pasture depends on the product used. Always read and follow all instructions and precautions on the product label.

Herbicide application may correct your current weed problem. However, if you do not change your management style to prevent weeds from becoming established, they will come back. Weeds often get started in handling areas, fence lines, watering sites or winter feeding areas. Monitoring these sites on a regular basis is the best method for early detection of weed problems.

## **Tips for weed prevention**

- Promote healthy growth of desirable pasture plants with a proper fertilization program
- Do not overgraze your pastures
- Buy certified weed-seed-free hay
- Mow pastures regularly before weeds go to seed or before they shade out developing grasses
- Early identification of undesirable weeds and poisonous plants

## **Mowing**

Horses are selective grazers, eating some plants close to the ground and leaving others untouched. Plants also grow rapidly around manure piles, as a result of the added fertility of the manure and because horses avoid grazing near these spots, so you will want to mow.

Mowing can increase the quantity and quality of grazing. Mowing your pastures cuts all the plants to the same height, stimulating more uniform regrowth and preventing grass plants from getting too tall and tough to be appetizing to horses. Cutting down weeds before they have a chance to go to seed is also a very important weed management technique.

Set your mower deck to a height of 10 to 15 cm (4 to 6 in.). Ideally, pastures should be clipped before grass seed heads emerge (.heading.) to encourage plants to produce leafy, higher quality vegetation. If you use rotational grazing, clip your pastures immediately after you remove your horses from the grazed area.

## **Harrowing**

Pastures will also benefit from harrowing the manure. Dragging the pasture spreads manure evenly over the grazing area, thereby recycling the nutrients back into the soil more effectively. Harrowing can be done when it is hot or cold, but it should be performed in dry weather.

Harrowing at this time breaks up the manure clumps, so they can dry out and kill intestinal parasite eggs and larvae. In contrast, spreading manure in warm, moist weather encourages parasite eggs to hatch and thrive, increasing the risk of reinfecting your horse. After scattering the manure piles, do not let the horses graze the area for three to four weeks.

Harrowing can easily be incorporated into a pasture rest-rotation schedule. Immediately after an area has been grazed and the horses have been removed, mow the area and harrow while the grass is short and the manure is still fresh.

## **Drought management tips:**

- Reduce the stocking rate of your pastures
- Give pastures longer rest periods
- Confine horses off of pasture
- Control weeds
- Be aware of poisonous plants - lack of available forage may cause your horse to eat them

## **Equipment Checklist**

The equipment you use to keep your pastures healthy does not have to be complex or expensive - it all depends on the size of your place and your needs.

- Small tractors – Small tractors and ATV's are effective for small farms and can be used to pull harrows and manure spreaders; a tractor and rotary mower may be necessary for larger pastures.
- Harrow - harrows are used for spreading out manure piles in pastures and can also be used to smooth arena surfaces. You can buy a harrow or make one with a piece of chain-link fencing, an old metal bedspring or gate.
- Manure spreaders - a manure spreader can make the job of spreading your manure or compost throughout your pastures a lot easier. Choose a manure spreader that your tractor can handle and that it is not too big to maneuver around your pastures. Make sure the spreader is adapted to horse manure. Cow manure is softer and breaks apart more easily, which makes a difference in how the tines in the spreader are structured.

## **Rejuvenating Poor Quality Pastures**

Many people have existing pastures that are in need of some help. A loss of desired pasture species, an invasion of weeds or bare spots indicate your pasture is hurting. Plowing up a pasture and replanting can be very expensive and time consuming. Fortunately, large gains in production can be made in a poor quality pasture by applying the same management tools you would use on a healthy pasture.

Pastures can often be rejuvenated simply by applying the appropriate fertilizer. In addition to stimulating the growth of existing plants, fertilizer will stimulate dormant seed that is already in the ground. Have your soil tested to determine the proper fertilizer treatment.

A sound grazing system will also promote a healthy pasture by preventing overgrazing. Pasture grasses and legumes need time to rest and recuperate after they are grazed, so they can build up their own reserves. Monitor grass height and remove your horses when the grass is grazed down to 8 to 10 cm (3 to 4 in.). Mow the uneven growth, harrow the manure and let the pasture rest until it has grown back up to 15 to 20 cm (6 to 8 in.) before allowing your horses back out to graze.

Weeds are the biggest culprits in decreasing pasture quality. They steal nutrients from desirable pasture species, and some are harmful to your horses. Weeds should be removed, either physically or chemically. Proper fertilization, grazing management, mowing and early identification will help you combat future weed problems.

Introducing a legume is also a good technique for reviving a horse pasture. Legumes, such as alfalfa and clovers, reduce the need for nitrogen fertilization, improve horse performance and provide better seasonal distribution of forage in mid-summer. Remember that once your pasture has been improved, you must continue to actively manage it, so it will remain a good pasture.

## **A Complete Pasture Overhaul**

You may be in a situation where your current pasture is so far gone that you need to start over. Alternatively, you might have just moved to a new property and want to establish new pastures for your horses. It may also be necessary to seed a new pasture if you are converting a row crop field to pasture or where pasture sod does not exist for some reason.

A complete overhaul of an existing pasture should be a last resort. Pasture renovation can be very expensive, and the pasture may be off limits for a year or more while the new growth becomes established. If you have an existing pasture, consider all your pasture improvement alternatives to revive and support the vegetation already growing before settling on a costly seeding effort. If less than 25 per cent of your pasture growth is desirable plants, opting for complete renovation makes sense.

## **Soil Compaction**

Compaction of the soil makes water filtration and plant growth very difficult. A lack of good pasture management results in poor grass stands, soil erosion, nitrogen runoff and increased feed costs. Keeping horses off saturated and rain soaked pastures during the rainy season. Pastures simply cannot survive continuous grazing and trampling in the winter months when they are saturated with water.

Several factors are of vital importance in establishing a good horse pasture:

- Preparation of an adequate seedbed
- Matching plant species to your soil and climate
- Selection of high quality seed of an adequate variety
- Using proven seeding methods
- Supplying proper fertility
- Control of pests and weeds
- Keeping horses off the pasture until forage plants are well-established (one to three years)

## **Protect Water Quality**

Covering manure storage facilities to prevent rainwater from leaching the nitrogen from the manure pile and reaching waterways. The covering can be as simple as a tarp or sheet of plastic over your manure pile. In the late spring and summer, when the ground is no longer soggy, the manure can be applied as a fertilizer to your growing grasses. Manure mixed with bedding material (shavings), sand or other material also makes an excellent exercise surface in covered riding arenas.

Keep fill, especially manure and garbage, out of wetlands and wet meadows. These areas serve as natural filters for water moving into our streams and groundwater supply. They can not function properly when they are clogged with debris. Consider fencing off streams to limit livestock access. The direct input of animal waste and sedimentation into streams degrades the water quality and destroys the aquatic environment. Horses and other livestock tend to trample down streamside vegetation of trees and undergrowth. These plants are nature's filter system for contaminants from runoff. They also help prevent soil erosion and provide food and shelter for fish and other aquatic wildlife. The overhead canopy that trees provide also keeps the water cool. When these natural elements are destroyed a toxic environment is created for fish and other stream life (cool water carries more oxygen than hot water which benefits fish).

## **Protect “Riparian” (creek bank) Areas**

- Use alternative watering sources to keep your horses away from the water’s edge and reduce trampling of the vegetation.
- Provide attractants such as minerals, supplemental feed and an alternative water source away from riparian areas. These practices will decrease the amount of time your horses spend in the riparian area and will reduce the risk of water contamination.
- Fence off access to riparian areas with either permanent or temporary fencing. This barrier creates a vegetative buffer zone between the water's edge and the pasture, which provides a natural filter for contaminated pasture runoff.
- If you allow your horses to graze riparian areas, turn them out for short periods to prevent overuse and trampling of the area. One option is to include the riparian area in your rotational grazing program.
- Avoid grazing riparian areas during the spring when the vegetation is more vulnerable to damage

## **In Summary.....**

- A productive pasture will decrease your feed costs, enhance your horse's health and attitude, and improve the aesthetics of your property.
- Do not begin grazing until pasture vegetation averages 15 to 20 cm (6 to 8 in.) in height.
- Avoid overgrazing by removing horses when vegetation averages 8 to 10 cm (3 to 4 in.).
- Manage grazing more effectively by incorporating a rotational grazing system or limited grazing plan.
- Mow, harrow and fertilize when appropriate to keep your pasture productive.
- Give pastures adequate rest from grazing.
- Create a sacrifice area to conveniently keep horses off pastures when necessary.
- Keep a realistic stocking rate for your property.
- Take good care of your pasture, and it will take good care of your horse.
- Protect riparian areas by controlling animal access and grazing
- Maintain good vegetative buffers along riparian areas, using native plants, including grasses, shrubs, and trees

## ***Need Help or a Little More Advice ?***

*The USDA NRCS and the University of California Extension Service are excellent sources of information. These 2 entities provide free, non-regulatory help, and frequently are able to team up and provide on-the-ground planning assistance and consultation.*