

Environment of a

HEALTHY HORSE



A Month to Month Guide

JANUARY

During winter, horse stables should be kept no more than 5° to 10° warmer than the outside temperature.

NOTES



Consider creating a small “sacrifice area” so remaining pasture is used sparingly for grazing or exercise during winter. It is cheaper to construct a small sacrifice lot in comparison to the cost of reseeding large areas of bare pasture. Sacrifice lots should not be in areas of concentrated flow. Locate sacrifice areas away from wells and other bodies of water.

HORSE Health Tips

- ✓ Hay is the best source of warmth and energy for horses in winter.
- ✓ Supplying warm water may entice a horse to drink more during cold weather.
- ✓ It is important that horses get plenty of exercise even during the cold months to help maintain good gut mobility.
- ✓ If you blanket your horse over the winter, continue to check the horse’s weight by taking the blanket off at least once a week.



$9 \text{ horses} \times 1000 \text{ lbs} = 9000/1000 = 9 \text{ AEUs}$

$9 \text{ AEUs} / 3 \text{ acres pasture} = 3 \text{ AEUs per acre}$

Contact your County Conservation District for more information.

PENNSYLVANIA'S NUTRIENT MANAGEMENT ACT

Do I need a certified Nutrient Management Plan?

Sample Calculation:

Step 1. Multiply 1000 (lbs) x # of horses on your property / 1000 = AEUs*

Step 2. If you have less than 8000 pounds of horses, **stop here**. You are not regulated under PA's Act 38 Nutrient Management. If you have greater than 8000 pounds of horses, **continue to Step 3**.

Step 3. Divide AEUs / acres of pasture and hay or cropland** = AEUs per acre

Step 4. If your AEU per acre result is greater than 2, you are regulated under PA's Act 38 Nutrient Management law. If your result is 2 or less, you still need a manure management plan. Contact your local County Conservation District for more information.

*AEUs-- Animal Equivalent Units; 1000 pounds is the average weight for a full-size horse. Use this number for this calculation unless you have miniature or draft horses. Then, you need to adjust the average pounds per horse.

**Do not include woodland, wasteland or farmstead.

Winter Ventilation

Horses need shelter from cold winds, rain and snow, but it is not necessary to keep them in a closed barn all winter. Horses kept outdoors with access to a run-in shed, opening away from normal wind patterns, will generally have fewer respiratory disease problems than horses kept in poorly ventilated, heated barns.

Open windows and doors may help to provide a healthy environment for the animals. In winter, the goal of ventilation is to control moisture, odor and ammonia levels that have built up in the closed barn. Proper ventilation provides circulating fresh air. The best way to provide draft-free fresh air is through an opening at the eave, where the roof meets the sidewall. Ridge openings in the barn roof allow stale, warm, humid air to escape.

A horse's most comfortable air temperature range is between 45 and 75° F. What is a well ventilated stable going to feel like to you? The indoor temperature is almost as cold as outdoors, but comfortably dry with no condensation dripping from the structure. Cold and humid conditions are uncomfortable for horses. During winter, stables should be kept no more than 5 to 10° F warmer than the outside temperature. While this assures fresh air conditions, it may mean freezing can occur inside the stable. Therefore, it is useful to have frost-free hydrants for water service.



Stall with proper ventilation at windows, doors and walls.

FEBRUARY

Nutritional needs of the horse do not change in the winter.

NOTES



HORSE Health Tips

- ✓ It is time to make an appointment with your horse's veterinarian to have a yearly physical exam and routine spring vaccinations administered.
- ✓ A Coggin's Test will be needed if showing is planned.
- ✓ Don't forget to have the veterinarian do a microscopic fecal exam for intestinal parasites.



NUTRIENT MANAGEMENT PLANNING

Managing the nutrients found in animal manure is important when keeping animals. Improper management of nutrients from manure can lead to pollution of streams, ponds and lakes, ground water and wells. Nitrate-nitrogen is the component that presents the most pollution potential since it moves freely in the soil. Most of horse manure's nitrogen is contained in the urine.

Animals need clean, unpolluted water to drink. Consuming polluted water exposes horses to viruses, bacterial infections and parasitic infections. Proper management of the nitrogen, phosphorus, potassium and other nutrients is possible, and necessary. A manure management plan or nutrient management plan will help your operation manage nutrients in an environmentally responsible way. Contact your local Conservation District, Cooperative Extension or NRCS office for assistance.

WINTER CARE OF YOUR HORSE

Horses have two natural defenses against cold; a long hair coat and a layer of fat between the skin. Both provide excellent insulation against the cold. The long winter hair reduces the loss of body heat and provides the first line of defense against the cold. Its insulating value is lost when the horse becomes wet and/or covered in mud. It is important to provide a dry sheltered area in cold, wet weather combined with regular grooming. In damp weather, be alert for rain rot and other skin problems. If unchecked, rain rot can result in hair loss and irritation to the horse.

Keep a horse from losing its hair coat and body weight and approaching an energy deficient state. Most nutritional needs of the horse do not change during winter. Vitamin, mineral and protein requirements still depend on the horse's age and physiological status and not on the time of year. Feed horses according to body condition.

A long hair coat and layer of fat are the horse's best defense against the cold.



FEED STORAGE IN WINTER

It is extremely important that your horse not have access to the feed storage. Store your feed in a secured room and keep grain containers (grain bins, barrels, feed boxes) with tight lids. A 30 gallon trash can will hold a 100 lb. sack of feed. Feed from these containers rather than from an open bag and clean up any spills immediately. It is also helpful to stretch a bungee cord or strap across the container. The grain room should be ventilated to prevent mold and dust. Be sure grain is not stored near any chemicals that may seep into the container.



Areas under feed bins, bunks, and buckets are excellent feeding grounds for rodents. Concrete floors and foundations deter rodent entry as do metal shields on doors and screens over small openings. Young mice can squeeze through an opening as small as 1/4 inch. Overfed, pet cats are not usually good mousers, but a barn cat can deter rodents. Poison bait is not often safe around horse facilities due to the presence of pets and children; however, secure bait boxes are effective.

MARCH

A Pasture Condition Score Sheet can help you determine pasture productivity, and suggest possible treatments if improvements are needed.

NOTES

Healthy teeth can be maintained with regular dental exams and floating.

HORSE Health Tips

- ✓ When beginning to ride following the winter months, start slow and gradually increase the exercise regimen.
- ✓ Spring grasses are starting. Now is the best time to put horses back out on pasture to get acclimated to new grass.
- ✓ Dental examinations and floats can be done this month. Consider having this procedure done every 6-12 months.



SPRING PASTURE CHECK

Before you turn your horse into the pasture this spring, look for any damage to the fence and pasture that may have occurred over the winter. Take a spring pasture walk and check for the following:

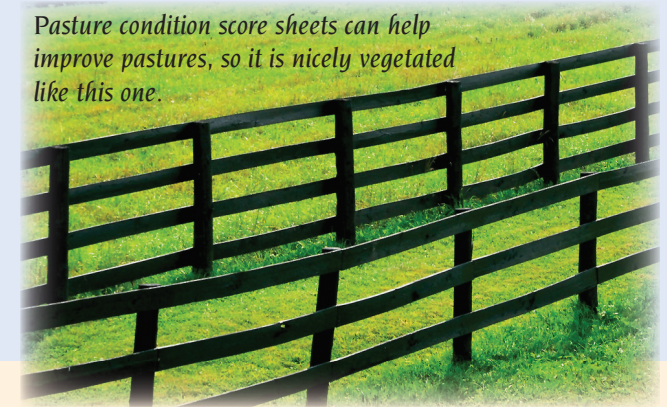
- ✓ a clean water supply is provided in the pasture
- ✓ look for any poisonous plants and remove them (refer to May for more details)
- ✓ look for any holes in the ground that may be dangerous to a horse
- ✓ remove any nails or wire fasteners that may be protruding from the fence
- ✓ be sure gate is securely attached to the fence and the latch can be easily operated
- ✓ replace any rotten fence posts
- ✓ be sure wire is tightly fastened and not sagging anywhere
- ✓ remove any tree limbs that may have fallen on the wire
- ✓ be sure fence posts are securely in the ground
- ✓ remove any machinery, junk or equipment stored in the pasture



Is your pasture too weedy?



Is it too bare?



Pasture condition score sheets can help improve pastures, so it is nicely vegetated like this one.

PASTURE CONDITION SCORE CARD

Are you frustrated by a pasture that can't seem to maintain quality grasses? A well managed pasture has optimal productivity. "Pasture condition" scoring is a systematic way to check how well a pasture is managed. By rating key indicators and factors common to all pastures, the condition can be evaluated. Common pasture resource concerns include

- ✓ poor plant growth
- ✓ poor horse performance
- ✓ weedy species invasion
- ✓ visible soil loss
- ✓ impaired water quality
- ✓ increased runoff

Pasture condition scoring can be useful in deciding when to move your horses or planning other management actions. It involves evaluation of 10 indicators. How would you rate these top 10 indicators in your pasture?

1. Desirable plants
2. Plant cover (live plants)
3. Plant residue (dead/decaying materials)
4. Plant diversity
5. Plant vigor
6. Livestock concentration areas
7. Uniformity of use (uniform, spotty or patterned grazing)
8. Erosion
9. Percent legumes (e.g. alfalfa)
10. Soil compaction

A Pasture Condition Score Sheet is available from the USDA Natural Resources Conservation Service (NRCS) and the Grazing Lands Technology Institute. The Score Sheet will evaluate current pasture productivity and stability of plants, soil, and water resources. The Score Sheet can also identify what treatments are required to improve a pasture's productivity and protect soil, water and air quality. It can be downloaded from the computer at <ftp://ftp-fc.sc.egov.usda.gov/GLTI/technical/publications/pasture-score-sheet.pdf> or contact your local Conservation District or NRCS office.

APRIL

Fence layout should be carefully planned for the best forage intake and exercise.

NOTES

HORSE Health Tips

- ✓ Watch older horses for winter coat shedding. If their hair remains long, they have odd fat deposits or cresty necks, they should be checked for metabolic diseases like “Cushing’s Disease”.
- ✓ Gas colic usually starts to be seen around this time of year. Observe how the grass is growing and limit how long horses are out on pasture.
- ✓ Grass can also cause laminitis in horses during the spring.



This unsightly mud lot is an unhealthy horse environment. Runoff entering a stream from this mud lot would discharge pollutants to the stream and could constitute a violation of PA’s Clean Streams Law.

FENCING CONSIDERATIONS AND PASTURE LAYOUT



Fence layout should be carefully planned before construction. Not all fence materials are suitable for horses. Savings on cheaper but unsafe horse fence may eventually add up in veterinary bills for injuries. Stallions, weanlings, mares, mares with foals and geldings all have different fencing requirements. Paddock layout should allow for movement of horses to prevent overgrazing, provide access for removal of manure, have openings or gates for completing chores, and accommodate access for machinery/equipment.

There are many types of effective horse fencing, but there is no “best” fence. Each fencing type has inherent tradeoffs in its features. Often there is a place for more than one type of fence on a facility. Fences should:

- ✓ be substantial and highly visible to horses, who are naturally farsighted (wire fences are least visible)
- ✓ be strong enough to contain a horse, yet have some “give” to it
- ✓ be high enough to discourage jumping
- ✓ be solid enough to discourage testing its strength
- ✓ be smooth on the horse side to prevent injury
- ✓ not have openings that could trap a head or hoof
- ✓ not have sharp edges or projections in case of scratching, leaning or falling into the fence

Good example of paddocks for pasture rotation or separation of horses.

Controlled or rotational grazing of pasture grasses requires that some areas periodically remain without grazing for regrowth of grass.

Generally in the Northeast, 2-3 acres of good pasture per horse is needed for summer feeding purposes.

A good management tool for horse facilities on limited acreage is to provide at least one all-weather paddock for foul weather turnout. Also known as a sacrifice lot, this area takes the worst wear while attempting to preserve grass in the remaining paddocks. This typically ungrassed, exercise lot should be located away from water bodies, and should have green vegetation around it to catch any runoff water, nutrients and sediments.

Trees should be fenced off. Horses can strip off tree bark and dead branches posing a safety hazard. Some trees are poisonous to horses.

*Pasture in need of better grazing and layout management.
Surface runoff has pollution potential.*



MAY

Planning your pasture for spring blooms will provide a safe zone, with nourishing food choices for your horse.

NOTES

Thorny and invasive multiflora rose can take over a streambank and is toxic to horses.



HORSE Health Tips

- ✓ First aid kits are a valuable asset to have in your barn and horse trailer. Ask your veterinarian to help you put one together or where to find a pre-made kit.
- ✓ For horse owners with trailers, now is a good time to check your truck and trailer. Inspect for tire wear, spare tire air pressure, brakes, floor boards, lights, welds, latches, or loose bolts.
- ✓ Don't forget to stock the trailer with extra items like halters, lead ropes and other essentials.



Creating a Safe Zone to Prevent Accidental Ingestion of Poisonous Plants

There are three major factors contributing to plant poisoning in horses. First, horses often eat what is palatable to them before they move on to less palatable items. Horses will often only resort to eating many types of poisonous plants because of undernourishment, starvation or over grazed pastures. This is why it is highly recommended to have a rotational pasture system and a pasture management plan.

Another factor is your horse's browsing tendency. Does your horse like to roam into areas they should not? Can they wander near waterways or your neighbor's house or fields? Accidental poisoning can easily occur in areas that are not regularly monitored or where you cannot control the vegetation that is planted. Be aware of areas surrounding your pastures, even if it is not your property.

The third factor is weather conditions. Cold and dark weather can increase the non-protein nitrogen in some grasses and alfalfa as well as too much nitrogen applied to a pasture or hay field. Drought conditions can cause other plants like sorghum, sudan grass and wild cherry trees, to contain even more toxic concentrations of prussic acid. Storms can cause tree limbs to fall into or near pastures. Leaves from trees that are not dangerous when alive and green, can become toxic when wilted. It is advisable to check pastures for fallen limbs after every storm event.

Common Ornamental Landscape Material Poisonous to Horses:

| | | |
|-------------|--------------------|----------------------|
| Azalea | Lily of the Valley | Mountain laurel |
| Delphiniums | Lobelia | Rhodendron |
| Foxglove | Lupines | Snow on the Mountain |
| Larkspur | Monkshood | Yew |

Common Trees That Can Cause Illness::

| | |
|-------------------------------------|---|
| Black Locust – leaves, seeds & bark | Black Walnut - whole tree |
| Red Maple – leaves | Silver Maple – leaves |
| Sugar Maple - leaves | Cherry Trees – Wilted leaves and branches |

Common Poisonous Weeds Found in pastures and fields:

| | | |
|-----------------|-------------------------------|------------------|
| Bracken Fern | Jimson Weed | Buttercup |
| Nightshade | Cocklebur | Poison Hemlock |
| Corn Cockle | Poke berry | Pokeweed |
| Toadstools | Water Hemlock | White Snake Root |
| Multiflora Rose | Ergot – Fungus on rye grasses | |

Buttercups



Rhodendron



Trailer Safety Considerations

Be sure your horse trailer is properly constructed and meets state requirements for brakes and lights. The trailer should be serviced and checked regularly for the following:

- ✓ weakened or rotted floorboards
- ✓ sharp protrusions in the trailer's interior or exterior
- ✓ rusted or weakened door hinges and latches
- ✓ wheel bearings, tire inflation and wear
- ✓ safe and proper operation of hitch, lights and brakes
- ✓ broken welds and loose bolts



Red Maple Leaves

JUNE

A complete manure management system involves collection, storage and disposal of manure.

NOTES

This grass should be greener on both sides of the fence.



HORSE Health Tips

- ✓ As you head out to do equine activities in the hot weather, be sure you have water for your horses and yourself.
- ✓ Horses like to drink water from home on outings. It is a good idea to take water from home for them to consume.
- ✓ Sponging a horse with water and putting horses in the shade is the best way to cool off a hot horse.





Trail Riding Safety

- ✓ Check the weather-- A thunderstorm or severe winds can easily ruin your ride. Know the forecast before you head out.
- ✓ Check your equipment-- Make sure your tack is in good condition and fits your horse properly.
- ✓ Have a plan-- Make a plan of where you are traveling and be sure you have enough time to get there and back before dark. Know what hazards are on your planned route, such as rocky footing, fallen trees, steep hills, etc. Be sure to tell someone else your plan, in case of an accident or emergency.
- ✓ What to bring-- A few simple items can help prepare you for unexpected events such as a halter and rope to tie your horse and a water bottle for human consumption. Don't forget a pocket knife and/or wire cutters for rope and wire entanglements, and a piece of baling twine for emergency reins or repairs.



Manure Handling

Horses produce large amounts of manure that quickly accumulates! Manure includes both the solid and liquid portions of waste. About 12 tons of manure and soiled bedding will be removed annually from each horse stall. Horse manure is about 60% solids and 40% urine. To put all these numbers in perspective, annual stall waste from one horse would fill its 12 ft x 12 ft stall about 6 ft deep. Getting the manure out of a stall is only the beginning. A complete manure management system involves collection, storage (temporary or long-term), and disposal or utilization.

Manure management needs of pastured horses are different than stabled horses. Field-deposited manure is beneficial as a fertilizer. Manure accumulates where horses congregate around gates, waterers, shade areas, feeders, and shelters. These areas should be cleaned weekly for better pasture management, parasite control, and to diminish fly breeding.

Hand labor is most common in horse stall cleaning. To increase worker efficiency provide plenty of stall light, minimize lifting, and make the temporary manure stockpile area easily accessible. To avoid additional handling, workers can temporarily stockpile manure in a cart, dumpster or spreader. Once the stall cleaning chores are finished or the temporary storage is filled, the manure/bedding is moved to the long-term storage location or removed from the stable site.

Temporary stockpiling of manure and bedding before being moved to long-term storage.



Choose solid, sturdy water buckets that will not tip over. Water containers need daily scrubbing to prevent algae. Check for mosquitoes and take preventative measures.

JULY

Clip pastures to control annual weeds. The recommended clipping schedule is around Memorial Day, Fourth of July, and Labor Day.

NOTES



Horses should be taken off pasture during drought or dry times. Pasture grasses have poor forage quality. Pasture grazed or exercised to "dust" conditions has high potential for sediment and nutrient pollution when it does rain.



HORSE Health Tips

- ✓ Fall vaccinations are given this time of year. Be sure to contact your veterinarian for an appointment.
- ✓ Fly sprays are a must this time of year. Be sure to try new products on a small area before spraying over the entire horse to check for reactions to the ingredients.



Fly Management

Eliminate the habitat for fly larvae to hatch and grow. Flies deposit eggs in the top few inches of moist manure. Eggs can hatch in as little as 7 days under optimal temperature and moisture conditions. Fly breeding season starts when spring temperatures get above 65° F and ends at the first killing frost in fall. Under ideal breeding conditions, one fly can produce 300 million offspring in about 60 days! Few flies will develop if manure is removed from the stable site or made undesirable for fly breeding within a maximum 7 day cycle. Keeping manure below 50% moisture makes it less desirable for egg deposition. Spread manure in thin layers during field application or field dragging to dry. Eliminate moisture by roofing or tarping a permanent holding area and covering any dumpsters or temporary manure storage.

Flies, Lice, Mange

BOT FLIES

- ✓ lay eggs on hair of horses (June through frost)
- ✓ horses fear them and may inflict damage to themselves while fighting them
- ✓ horses won't graze well and may suffer from lack of nourishment
- ✓ flies burrow into mouth and eventually get into stomach and intestines causing damage to the horse
- ✓ clip hairs to remove the eggs

LICE

- ✓ biting and sucking louse cause pain and irritation to horses (especially early spring and winter)
- ✓ careful and regular monitoring detects problems before they get out of control

MANGE

- ✓ mite burrows beneath skin (most evident in winter)
- ✓ horse becomes inflamed, pimply, scurfy, hairs bristle and are lost
- ✓ extremely painful
- ✓ contagious and requires quarantine of infected animals

Stream Crossings

Do you have a stream in your pasture? Do you wish for your animals to have access to both sides of the stream? You will probably need a permitted, stabilized way for your animals to cross the stream, to reduce hoof problems, eroded stream banks, and nutrients in the stream.

Several stream crossing methods can be used in combination with stream fencing. In most instances, the activity of placing a bridge or culvert in a stream is an activity that is regulated by the PA Department of Environmental Protection (DEP). In some counties, the local county Conservation District can issue stream crossing permits. Check with your local county Conservation District for more information on stream fencing and permits for stream crossings.

Left: Example of stabilized stream crossing. Right: Extremely overgrazed pasture with unlimited access to stream. Pasture management should include paddocks to reduce overgrazing and a designated stream crossing to limit horse access to the stream.



AUGUST

Every barn needs a written emergency preparedness plan. The County Emergency Management Services and local fire company should have a copy of your plan.

NOTES



HORSE Health Tips

- ✓ Ticks can pose risks for horses as well as people. Continue with fly spray to use spot-on treatments to help deter these pests.
- ✓ Check the tail and mane for the presence of ticks. Wash area well with soap and water.

WATCH OUT FOR TICKS

| LARVAE | NYMPH | ADULT |
|---|-------|-------|
| | | |
| DEER TICK Northeast & Upper Midwest | | |
| | | |
| WESTERN BLACK-LEGGED TICK West Coast | | |
| | | |
| BLACK-LEGGED TICK Midwest & Southeast | | |
| | | |
| LONE STAR TICK Throughout the U.S.A. | | |
| | | |
| AMERICAN DOG TICK Throughout the U.S.A. | | |
| | | |
| PACIFIC COAST TICK Throughout the U.S.A. | | |

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LYME DISEASE

Know the signs

- Lameness or stiffness
- Swelling of limbs or joints
- Fever
- Lethargy/Reluctance to move
- Loss of appetite
- Vomiting
- Depression

If you see these signs in your dog, contact your veterinarian immediately.

Emergency Preparedness

FIRE: Have you taken steps to assure your horse is taken care of following an emergency in the safest, least stressful way? If you own a horse barn, does everyone who works with you know the emergency plan? Does the County Department of Emergency Services and local fire company have a copy of your plan?

Every barn needs a written emergency plan. Each person boarding with you should have a copy of the plan. The plan should include escape routes, the order the horses will be removed and by whom. Everyone should be instructed on how to make and use a break-away halter.

If your barn burns, where will your horses be moved if they need to be relocated? Who will haul the horses to the new stable? Will they have the shipping boots your horses will need to be loaded, if you require them?

Firefighters have to train for long hours on fighting fires, but they rarely spend time on agricultural rescues. Most firefighters are not comfortable with horses and that paired with turn out gear, flashing lights, sirens and panic can spell disaster. Invite your local fire department to your farm. Show them your horses, your barn and share your emergency plan with them. Answer all their questions and don't be afraid to ask a few of your own. YOU will NOT be pulling horses out of a burning barn. Make sure the firefighters know where your ropes and halters are and let them practice putting them on.

Ask the fire company to respond to any fire call at your home without sirens. Horses can hear much better than we can and will know the fire trucks are coming when they are still miles away. Responding without sirens will increase the ability of the firefighters to safely rescue your animals.

TRAILER ACCIDENT: In the unfortunate incidence of a trailer accident away from home, are you prepared? What will happen to your animals if you are taken to the hospital? Keep an "In Case of Emergency (ICE) Form" in your truck or trailer. An "ICE Form" should include your name, address and phone number. Include your veterinarian's number, and a person to be notified if you have to be taken to the hospital.

Other items to include might be your farrier information, and contact information for who would be the emergency transporter of your horses. List another location your horses can go to if they cannot be returned to your stable. Individual sheets for each horse listing any personality traits that need to be considered by rescue personnel is also helpful. Medical conditions should be listed with each horse transported, as well as any current medicines being administered.

Many equine owners say they have names and contact information on halters but in many rescue scenarios the halter may not be on the horse. A tattoo, brand or micro chip is a better identification method, especially if your horse is transported often.

No one wants to think about an emergency situation, but preplanning can help insure that proper care is given to your horse. Contact your local Cooperative Extension office for further assistance.



Summer Coat Management

Skin disorders and funguses are common problems in the summer, especially when the same grooming equipment is used for multiple animals. Brushes and grooming tools should be cleaned and disinfected regularly throughout the season. To minimize your chances of cross-contamination, place brushes in a 5-gallon bucket and soak for at least an hour in a mixture of detergent, bleach and water. Rinse thoroughly and allow equipment to dry in the sun. Disinfect equipment routinely and every time a horse shows signs of a skin disorder.

SEPTEMBER

Ideally, long-term manure storages should be sized for 6 months of storage.

NOTES



HORSE Health Tips

- ✓ If you are thinking about buying a new horse, talk to your veterinarian about a pre-purchase examination.
- ✓ Think about the breed, age and experience of the horse and suit that with the person who will be doing the riding.
- ✓ Saddle fit is a must with any new horse. Your veterinarian can help with this procedure.



Manure pile stacked at the bottom of surface water drainage way. This is not a proper place for manure piles.



Soil Fertility for New or Renovated Pastures

When establishing a new pasture, choose a flat area. Steep slopes or wooded areas are not ideal for pasture. If you are renovating or improving an existing pasture, determine what species exist now and what the overall condition of the pasture is. Whether establishing or renovating, it is important to check the soil fertility by taking a soil sample and having it analyzed for pH and nutrient levels. A soil test kit can be obtained from the local Cooperative Extension office or some private businesses. Follow the instructions contained in the kit for collecting the sample and sending it for analysis.

The analyzed results will indicate if lime and fertilizer is needed on pastures. Not applying fertilizers to soil test results and not accounting for the fertilizer value in the horse's manure can result in overapplication of nutrients to the soil. Excess nutrients can result in contamination of surface water or groundwater, including the well water you and your horses drink. Contact your local Cooperative Extension office or a seed and fertilizer dealer for further assistance with soil fertility.

Manure piles in the middle of pasture. Piles are subject to surface runoff.



Equine operations should have a dedicated manure storage area. Composting manure is recommended.

Manure Storage

Any on-site manure storage should not contribute to ground or surface water pollution. Ideally, storages should be sized for 180 days of long-term storage in cold climates. This provides winter storage when fields are not accessible and for summer when crops may be present. Store manure away from runoff or floodwater which could cause nutrients to enter nearby waterways. A gutter and downspout system will collect and divert water away from the building foundation and bypass the manure storage. Do not store manure in paddocks due to increased parasite exposure for the horses. Since most horses are kept in suburban or rural residential settings, it is essential for horse owners to be good neighbors. Locate storages downwind from both the farm and neighbors' residences.

Leachate is the brownish liquid that has "leached" from the solid pile contents and drains off a waste pile bottom. Prevent any pile leachate from contaminating groundwater or nearby waterways by capturing or diverting it. The drainage should be treated in a grassed infiltration area. A fully covered manure storage area will have much less leachate and provide better fly control than one exposed to precipitation. A concrete pad with sidewalls will contain leachate from very large, uncovered piles. Polluted runoff will attract mosquitoes and provide a breeding ground for flies. Contact your County Conservation District, Cooperative Extension or USDA Natural Resources Conservation Service office for assistance.



OCTOBER

Hay can be hazardous to your horse's health if improperly cured, dusty or moldy.

NOTES

This surface water running through an overgrazed pasture could enter a stream. The resulting pollution affects all of us.



HORSE Health Tips

- ✓ Find and establish a contact for buying hay for the winter months.
- ✓ Hay analysis is recommended for each new batch of hay bought.
- ✓ Keep feed in rodent resistant containers.

BEDDING

It is our responsibility as horseowners to be concerned about the environment and how our horse interests may be affecting it. Being aware of optional choices in bedding is good stable management. The future will possibly see more nontraditional materials being used for bedding. It will be up to the individual user to determine what is available in the area, to evaluate sources and supplies available, and to determine cost effectiveness.



SELECTING HORSE HAY

Monitoring your horses' hay is extremely important. Hay can be hazardous to your horses' health. Improperly cured or dusty hay can cause lung disease. Moldy hay is potentially fatal to a horse.

Recognizing Safe Hay:

- ✓ Open bale, look for mold. Typically concentrates in center of bale. May see streaks of white flecks or dust. May note sour or sometimes mint-like smell. Mold can be spotty within bale, check carefully.
- ✓ Shake hay, see how much dust rises. Most hay will look a little dusty because it is dry and contains pollen and seeds. Hay with a fine, smoky look to the dust or excessive dust shouldn't be fed to horses. Check for a musty odor.
- ✓ If hay isn't moldy but seems a little dustier than desired, lightly water it. Fluff sections of hay so water reaches inside and feed watered hay immediately to avoid molding.
- ✓ Avoid saturating hay.
- ✓ Be aware that some mold retardants may be harmful to horses.
- ✓ Horses shouldn't be fed from round cattle bales stored in plastic bags. Toxins that build up in the sealed bag can be fatal.
- ✓ If you make your own hay, don't bale it too quickly after cutting. Give it plenty of time to dry.
- ✓ If you buy hay, find a reliable dealer or farmer.



Expanding pellets

A horse kept in a stall will require about 10 to 20 pounds of bedding per day. This bedding should be replaced on a regular basis. Because of many types of bedding materials, wood byproducts (shavings, chips, sawdust), straw, or paper, the composition of the mix of manure and bedding will vary from farm to farm. In general, manure plus bedding will have a volume of between 2 and 3 cubic feet per horse per day.

Mushroom facilities receive a lot of horse manure/bedding to help create mushroom compost. Generally, mushroom facilities want straw-based bedding, not wood/paper-based bedding. For more information about mushroom facilities refer to <http://www.americanmushroom.org>.

Wood shavings and pellets.



NOVEMBER

Each local municipality may have different requirements for keeping horses. Check with your local municipality before purchasing your first horse, or expanding your herd.

NOTES



HORSE Health Tips

- ✓ Check horse's weight and body condition before going into the winter.
- ✓ Gradually change any new diet schedules.
- ✓ Usually horses need less grain and more hay this time of year.



This is an overgrazed pasture with a small stream running through it. Areas of high animal concentration should be located as far as possible from surface water.



Municipal Zoning Requirements

Each local municipality may have different requirements on the non-commercial keeping of livestock. This is something to consider if you want to purchase your first horse, or expand your herd. If you reside on property in a rural location, there may be allowances for keeping horses. Ordinances allowing horses to be kept on residential property usually require a minimum lot size. Depending upon the mature weight of the horse, you may be limited on the number of horses that you can maintain on your property. Check with your local municipality for regulations related to horses and to ensure you are in compliance.

If you currently operate or are planning to operate a riding stable, you should again contact your local municipality. Riding stables typically require parking, fencing and buildings. Building placement and construction could require permits issued by the municipality.

Safe Stables

Stalls-- Box stalls should be a minimum of 10' x 10'. The door should have a latch that is easy to operate in emergency but difficult for horses to open. Stall walls should have no splinters, protrusions, broken boards or sharp edges. In the lower five feet of the stall wall, spacing between boards should not be greater than 2 inches. Spacing between bars and/or mesh in upper stalls should not exceed 3 inches.

Feeders-- All feeders should be sturdy, clean and free of sharp edges. Feeders hung on the stall walls should be hung as high as your horse's chest and feeders placed on the ground should not be easily overturned.

Hay is safest when fed on the ground. If you are using hay racks, be sure the rack is hung at the horse's withers to prevent eye and lung damage from the dust. Hay nets need to be used with extreme caution. They should be hung high enough that when empty, your horse's foot can not get caught in the netting.



Examples of well planned stalls. Notice the covered edges and smooth surfaces.



WINTER HOOF CARE

One aspect of horse health often neglected is hoof care. Even though you are not regularly riding the horse, the hooves still grow during the winter months. In addition, the horse may be traveling on uneven, frozen ground that can crack and break feet. Have the shoes removed and the hooves trimmed before turning the horse out for winter, and have the feet trimmed on a regular basis. This insures that when spring arrives, the horse will have sound hooves capable of holding a shoe.



Be conscious of where your horse has access. Their waste could be a source of pollution, along with sediments and stormwater. Rain water will run off the top of snowpack, potentially carrying manure with it. Snowmelt with a lack of stormwater controls can cause pollution, too.

Water Availability and Water Quality

Horses require six main classes of nutrients to survive; they include water, fats, carbohydrates, protein, vitamins and minerals.

Water is the MOST IMPORTANT nutrient; horses can't live long without it! Always make sure there is an adequate, clean supply of water. Horses generally drink about 2 quarts of water for every pound of hay then consume. In high temperatures, hard work, or for the lactating mare, the water requirement may be 3 to 4 times the normal consumption.

Signs that your horse may be water deficient include decreased feed intake and physical activity, and signs of dehydration like dry mucous membranes in the mouth, dry feces, and decreased capillary refill time. Possible causes of water deficiencies include no water source, low water palatability, illness, or poor accessibility (frozen, can't reach it, or contaminated).

Water buckets should be checked regularly for cracks and algae growth. Keep a scrub brush handy to keep buckets rinsed well.



Are you certain your horses have an abundant supply of clean water?

The Tail End



Manure Utilization

Remove manure from the farm at least every 7 days during fly breeding season or operate a properly managed composting facility. Naturally occurring fly predators, tiny, non-stinging wasps and parasites, are beneficial to the manure storage. Avoid indiscriminate use of larvicides and other pesticides that kill predator wasps and parasites. When cleaning out the storage, leave a 4-inch DRY pad of manure over the bottom of the storage area to provide a stock of fly parasites and predators. Manure removal can be staggered to leave one section per week to supply fly predators and parasites. Remove a winter's stockpile of manure during cold weather (< 65°F) before fly breeding begins.

Proper field application demands equipment such as a tractor and spreader so that the manure is applied in a thin layer over the soil. The thin layer is essential for drying the manure to discourage fly breeding and also spreads the nutrients for more optimal plant use. Weekly spreading in the summer will disrupt fly breeding and egg development cycles. To minimize pollution from runoff, do not spread manure on frozen ground or near waterways.

Another manure disposal option is to contract with a hauler who will remove the waste from the stable facility. The waste can be used in a commercial composting operation or for other functions where the waste disposal is the responsibility of the hauler. Dumpsters are positioned at the stable for temporary stall waste storage; a full dumpster is replaced with an empty one. Dumpsters should be sized so that the contents are emptied at least weekly during fly-breeding season.

A less formal "contract" disposal is to interest neighbors in free garden organic material. Empty feed sacks filled with horse manure are a useful package for manure distribution.

Remember, if a horse operation has greater than 8 Animal Equivalent Units (AEUs) overall, and a density of horses per acre greater than 2, the operation must manage the manure in compliance with an approved Nutrient Management Plan. Operations that have fewer than 8 AEUs, or a density of less than 2, still need to manage the manure in compliance with a Manure Management Plan.

Manure Composting

Composting occurs naturally if stall waste decomposes in the presence of oxygen and is kept relatively moist. The microbes that decompose the bedding and manure occur naturally in stall waste.

Finished compost is partially degraded manure and is more organically stable, presenting less of a pollution threat. Composting reduces the volume of waste by 40-70%. Horse manure and bedding is almost perfectly suited for composting because it has appropriate levels of nitrogen (from manure) and carbon (from bedding).

Pathogens and fly eggs are killed by composting's high temperature that occurs on the inside of a properly composted pile. The necessary high temperatures are not reached on the pile exterior, which is one reason a compost pile should be periodically mixed and turned so the exterior material is incorporated into the middle for full composting. Stall waste composts well in piles that are at least 3 feet square by 3 feet deep. Smaller piles will not retain enough heat to reach the proper internal temperature.

A good and thorough guide to on-farm composting (On-Farm Composting Handbook, NRAES-54, 1992) is available at www.nraes.org.



RESEARCH

Pennsylvania State University www.das.psu.edu/equine
University of Pennsylvania www.vet.upenn.edu
Rutgers University www.esrutgers.com
Cornell University web.vet.cornell.edu/public/cuerp



ASSISTANCE

Lancaster County Conservation District

1383 Arcadia Road Room 200 Lancaster, PA 17601 • 717-299-5361 ext. 5 • www.lancasterconservation.org

USDA Natural Resources Conservation Service (NRCS) Lancaster Field Office

1383 Arcadia Road Room 200 Lancaster, PA 17601 • 717-299-5361 ext. 4 • <http://www.pa.nrcs.usda.gov>

Penn State Cooperative Extension Capital Region (Lancaster Office)

1383 Arcadia Road Room 140 Lancaster, PA 17601 • 717-394-6851 • <http://lancaster.extension.psu.edu>

HORSE Health Tips

Henderson Veterinary Associates • www.hvaequine.com



INFORMATION

www.thehorse.com

www.equusmagazine.com

www.AAEP.com

www.elcr.org/hmrc.php

www.extension.org/pages/HorseQuest_Community_of_Practice

Nutrient Management Act (Act 38) <http://panutrientmgmt.cas.psu.edu/>

Lancaster County Watershed Association <http://www.lancasterwatersheds.org>

PA Department of Environmental Protection (PADEP) www.dep.state.pa.us

West Nile Virus information www.westnile.state.pa.us

Toxic Plants www.aspc.org/site/PageServer?pagename=pro_apcc_horsetoxicplants or www.vet.purdue.edu/depts/addl/toxic/cover1.htm
<http://sart.cas.psu.edu/EmergencyPreparednessGuidelinesLivestock.pdf>

Normal vital signs for horses:

Temperature: 99.5 – 101.5 degrees

Pulse: 30-40 beats per minute

Respiratory Rate: 12-20 breaths per minute

Gum Color: Pale Pink

Capillary refill time: less than 2 seconds

Every horse is different. It is important to know what is normal for your horse before there is an emergency. Check these vital signs while your horse is at rest. In an emergency, it is helpful to know your horse's normal vitals. As always, if you have an emergency or your horse is in need of veterinary care, contact your veterinarian immediately.

Veterinarian's Contact Information:

office # _____

cell # _____ Email: _____

Website: _____

Farrier's Contact Information:

office # _____

cell # _____ Email: _____



CREDITS

Winter Ventilation—adapted by Chester D. Hughes, Penn State University Cooperative Extension Capital Region Animal Science Team; taken from Penn State College of Agricultural Sciences *Horse Facilities* #7; “Horse Stable Ventilation”. 2003

Winter Care for Your Horse—adapted from Ann Swinker, PhD, Penn State University Extension Horse Specialist

Feed Storage in Winter
Spring Pasture Check

Creating a Safe Zone to Prevent Accidental Ingestion of Poisonous Plants

Trail Riding Safety
Summer Coat Management

Selecting Horse Hay
Safe Stables

Winter Hoof Care
prepared by Lori Little, Penn State University Cooperative Extension Capital Region Animal Science Team

Fencing Considerations and Pasture Layout—adapted from Penn State College of Agricultural Sciences *Horse Facilities* #5; “Fence Planning for Horses”. 2002

Trailer Safety Considerations

Emergency Preparedness
adapted from Linda I. Spahr, Penn State University Cooperative Extension Capital Region Animal Science Team

Manure Handling
Fly Management
Manure Storage
Manure Utilization
Manure Composting

adapted from Penn State College of Agricultural Sciences *Horse Facilities* #3; “Horse Stable Manure Management”. 2002

Flies, Lice and Mange—taken from a Cornell and Penn State Cooperative Extension publication; *Pest Management Recommendations for Horses*. 2000

Soil Fertility for New or Renovated Pastures—adapted from *Pasture Management for Small Scale Livestock Operations* prepared by the members of Pennsylvania’s Small Scale Livestock Committee. 2002

Bedding— compiled from various articles on University of Wisconsin-Madison website and Rutgers University website

Water Availability and Water Quality—compiled from various articles on Rutgers University website

Tick Identification Card—Fort Dodge Animal Health Products

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