

# General Horse Care



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## Overview

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The purpose of this publication is to give the new and experienced horse owner the opportunity to learn more about basic horse care. We hope the reader will gain a greater understanding of the care of the horse. Each topic provides the horse owner tips and information that he or she may find useful. From general nutrition to vaccinations and deworming, each topic is described in detail. Keep in mind that each horse is an individual and has its own needs. Thus, it should be noted that there is no substitution for a good working relationship with your veterinarian as to the best possible care for your horse.

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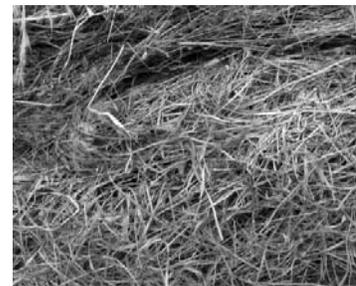
## General Nutrition and Feeding Management

When determining the feeding program for your horse herd, there are many factors that can affect the type and amount of feed to use. As a general rule of thumb, consult your local veterinarian if at any time your horse shows a lack of appetite or upset stomach. As we all know, horses have much more sensitive stomachs than other livestock. The University of Arkansas Division of Agriculture has put together some basic points to keep in mind when feeding horses.

1. Feed at regular times (at least twice daily), with three daily feedings preferred when feeding rates exceed 1% of body weight. Research has shown that horses fed two to three smaller feedings will digest feed more successfully.
  - Any feed changes should be made gradually over a period of 7 to 10 days. When making a feeding change, start with only a very small amount. A general rule of thumb is to begin with only a handful and work your way up over a 10-day process.
  - Changes in the rate of feeding should not exceed one pound per day for each horse.
  - Horses fed on a consistent schedule are less likely to go off their feed or develop undesirable stall habits (vices).
  - Horses fed on inconsistent schedules may get hungry and bolt to their feed, possibly resulting in digestive disorders.
2. Combine feed with at least 1% to 1.5% of the horse's body weight of good quality hay or the equivalent in pasture to make a complete ration. For a more complete description of feeding hay to horses, please see hay section.
3. Have plenty of fresh, clean water available at all times. Horses will typically drink less water during the winter; thus, it is imperative to ensure that water troughs are kept clean, especially during the winter. Troughs should be emptied and scrubbed twice a week at a minimum.
4. Prevent the rapid eating of any feedstuffs by the horse. Horses have the tendency to eat much faster than their stomachs can digest. It is crucial to maintain consistent feeding times and amounts to ensure that rapid eating does not take place.
5. Use only top quality feeds.
  - Avoid dust and mold, and keep the feed manger clean.
  - Proper feed storage reduces feed waste.
  - Horses' digestive systems are not equipped to deal with dust, mold, etc., so poor quality hay or grain will not be digested efficiently and may cause health problems for the horse.
  - Store feed in a dry, well-ventilated area protected from rodents and insects.
  - Do not feed moldy or insect-infested feed to animals as it may cause illness



Moldy pellets



Moldy hay

or death. When opening a new bag of feed, always examine the grain thoroughly. Moldy or insect-infected feed can be found in any part of the feed bag.

6. The product should be fed to the animal species as directed on the label. The vast majority of feed companies offer a label on each bag of feed as to how to feed their product. Each of these labels is tested through research conducted by those companies.
7. Reduce and/or delay feeding a horse that is hot, excited or showing pain, fever or diarrhea. Horses that have just finished being worked should be allowed time to cool off before being fed.

8. Let horses eat in a natural position from troughs with large bottoms, placed at normal head height or lower. The optimal feeding program for horses includes troughs that are low to the ground and large enough so that if feed is spilled, it will remain in the trough.



**Horse eating from low trough**

9. In the winter, the amount fed may need to be increased about 10% to 15% to offset increased body heat losses.
10. Exercise horses regularly. Daily exercise helps maintain regular eating habits, desirable stall behavior and general health.
11. Check teeth regularly. Sharp points can develop on the teeth which can cause problems with eating and also performance, as they may interfere with the action of the bit.
  - The veterinarian can remove the sharp points by floating (rasping).

## Determining the Amount to Feed

### Estimating a Horse's Body Weight

Knowing a horse's body weight can help you determine how much feed it needs daily. Once the weight has been determined, you can measure your feed to determine the exact amount needed to maximize a healthy nutrition plan. A simple formula can be used to estimate fairly accurately the body weights of individual horses.



**Taking a horse's weight**

The formula uses heart girth circumference, body length measurements and an adjustment factor. The adjustment factor in the equation is 330.

$$\frac{(\text{Heartgirth} \times \text{Heartgirth} \times \text{Body Length})}{330} = \text{Weight (pounds)}$$

### The Process

1. Take measurements with a measuring tape at least 75 inches long.
  - a. Plastic measuring tapes are preferred over cloth.
  - b. Metal measuring tapes are the least desirable, as they can cut the horse.
  - c. Have someone hold the horse rather than tie it up. If the horse begins to act up, the handler can calm him.
2. To measure the heartgirth, run the tape all the way around the horse, using the highest part of the withers. The handler can stand on the other side and assist the person measuring.
3. Measure body length from the point of the shoulder straight back along the horse's side, and to the point of the buttock.
  - a. The tape should go around the corner of the hip and the actual point of the buttock, which is essentially half the distance from the corner to tail.

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- b. When measuring the body length, a third person is needed to measure to accurately make the measurement (one person to hold the horse and two people to make the measurement).

When learning to use this weight estimation system, it is often useful to weigh the horse on a scale for comparison. Most veterinarians have a scale at their vet clinic. It is important that the horse stand somewhat square during measurements. The body length and heartgirth size can be affected by a horse that does not want to stand still, thus offering an inaccurate weight measurement. If you take the measurement of a horse to compare changes in weight over time, always take them at the same time of day. The best time is in the morning before feeding.

This particular equation is more reliable than simply making a visual observation in estimating weight. Additionally, this procedure may not be highly accurate for pregnant mares or for horses with extreme conformational irregularities.

### **1. Measure feed by weight, not volume.**

A 3-pound coffee can of oats is not the same amount of feed as a 3-pound coffee can of corn.

- The can may hold 2 to 3 pounds of oats, while the can of corn may be 4 to 5 pounds.
- Corn is more calorie rich than oats; the can of corn may contain two to three times the energy as the can of oats.
- Any time a horse owner changes feed, he or she must weigh the can of feed to make sure the horse gets fed the same amount of feed every meal.
- Many feed companies offer customized scoops.

### **2. Do not overfeed grain.**

The horse has a very small stomach in relation to its total size.

- Feeding too much grain in one meal can overload the stomach and cause problems such as colic or laminitis (founder).

- A general rule of thumb is to feed no more than 0.5% of the horse's body weight in grain per meal, or no more than 5 pounds of grain per meal for a 1,000-pound horse.

### **3. Do not dilute balanced rations.**

Most feed stuffs are formulated exactly for their intended uses.

- Many horse owners dilute or "cut" these balanced feeds with a cereal grain (usually oats), thereby changing the nutrient balance and decreasing the feed's nutritional value for horses.
- If an owner topdresses a protein, vitamin or mineral supplement on the ration, it can cause serious nutrient imbalances, and possibly toxicities.

### **4. Properly manage group-fed horses.**

- If horses must be fed as a group, use individual feeders spread far apart, put out extra feeders and make provisions for timid horses (low in the pecking order) to ensure that they have the opportunity to eat adequately.
- The only way to ensure that each individual meets its nutritional requirements is to feed separately.

## **Selecting Grain and Hay**

According to Michael Ball, DVM, the nutritional requirements of an individual horse vary with stage of growth, sex, pregnancy and lactation and other outside factors such as healing and recovery from illness, climate and exercise. A general rule of thumb for daily maintenance is to feed 2% of the horse's body weight in pounds of dry matter, so it follows that the average 1,000-pound horse would require approximately 20 pounds of mixed grass hay a day to maintain weight. Heavily lactating mares, intensively worked mature horses and younger weaned horses (4 to 18 months of age) can consume up to 3% of their body weight as dry matter daily. Producers can assume horses grazing on adequate pasture, supplemented with grain, will consume at least half of their daily dry matter intake from grazing.

Three of the basic grains utilized in equine diets are oats, corn and barley. Here is how they break down, according to the National Research Council (NRC) report, as to nutrient content on a dry matter basis:

- Corn – 1.7 megacalories of digestible energy per pound, 10% crude protein, 0.04% calcium and 0.53% phosphorus.
- Barley – 1.65 megacalories of digestible energy per pound, 13% crude protein, 0.05% calcium and 0.38% phosphorus.
- Heavy oats – 1.5% megacalories of digestible energy per pound; 13% crude protein; 0.06% calcium and 0.33% phosphorus.



Corn



Barley



Oats

Jack Grogan of Uckele Health and Nutrition identifies a number of biological situations that increase the protein requirement to achieve and maintain optimal health:

- Young growing horses, sucklings, weanlings and yearlings all have an increased protein need to help in the development of their rapid lean mass growth, especially muscle and skeletal growth.
- Performance horses also have increased protein needs, though these increased needs can be relatively small, 1% to 2%. Increased protein in performance horses can support muscular activity, improve recovery, reduce muscle breakdown from training and events and support the joints and connective tissue.

Too much of a protein increase, however, can actually decrease performance by stressing the metabolism.

- Pregnant mares have a substantially increased need for protein, especially during the ninth through eleventh months because of the enormous demands on the body during that time and to support a healthy birth. The period of lactation also significantly increases the protein requirement, especially for the amino acids lysine and threonine.
- Brood mares given increased proteins 30 to 40 days before breeding have shown improvements in becoming pregnant and maintaining a healthy pregnancy.

Accidents, injuries, surgeries and substantial increases in physical, mental or emotional stress can also increase protein requirements for optimal recovery and adaptation.

### Factors to Consider When Choosing Hay

When selecting hay for horses, there are many factors that contribute to that decision. One should take into account the sensitive stomach a horse has. Factors that should be taken into consideration include:

1. When was the hay baled? Was it first, second or third cutting. Was it cut this year or last?
2. How many leaves and stems are present? Can affect the protein level.
3. What is the dust, mold and weed content?
4. Is it free of insects?
5. How was it stored?

Table 1 on page 5 breaks down popular hay varieties and their *typical* nutritional levels. Please keep in mind that every bale of hay is different and nutrient values can vary greatly.

Feeding adequate amounts of high quality roughage can prevent many digestive disturbances as well as behavior problems. It also may be beneficial to supply some roughage to decrease the risk of horses developing boredom vices, especially when exercise is limited.

**Table 1. Typical nutrient content of hays fed to horses (as fed basis)**

Hay Variety	Digestible Energy (Mcal/lb)	Total Digestible Nutrients (%)	Crude Protein (%)	Calcium (%)	Phosphorus (%)
Alfalfa	0.8 to 1.1	48 to 55	15 to 20	0.9 to 1.5	0.2 to 0.35
Red Clover	0.8 to 1.1	46 to 52	13 to 16	0.8 to 1.5	0.2 to 0.35
Orchardgrass	0.7 to 1.0	42 to 50	7 to 11	0.3 to 0.5	0.2 to 0.35
Timothy	0.7 to 1.0	42 to 50	7 to 11	0.3 to 0.5	0.2 to 0.35
Bermudagrass	0.7 to 1.0	42 to 50	6 to 11	0.25 to 0.4	0.15 to 0.3
Tall Fescue	0.6 to 0.9	40 to 48	5 to 9	0.3 to 0.5	0.2 to 0.35

Sources: National Research Council, 1989; UK Equine Nutrition Program, 1999.

## Vaccinations

As the weather warms and the grass begins to grow, so does our interest in hauling down the road to a show, rodeo or to our favorite trail. Before loading up and heading out, there are some important vaccination considerations. The American Association of Equine Practitioners lays out some principles that every horse owner should keep in mind.

A “standard” vaccination program for all horses does not exist. Each individual situation requires evaluation based on the following criteria:

- Risk of disease (anticipated exposure, environmental factors, geographic factors, age, breed, use and sex of the horse)
- Consequences of the disease (morbidity/mortality, zoonotic potential)
- Anticipated effectiveness of the selected product(s)
- Potential for adverse reactions to a vaccine(s)
- Cost of immunization (time, labor and vaccine costs) vs. potential cost of disease (time out of competition; impact of movement restrictions imposed in order to control an outbreak of contagious disease; labor and medication if, or when, horses develop clinical disease and require treatment or loss of life)

As a horse owner, your best bet is to contact your local veterinarian and discuss what type of program is the most suitable for your horse. The above list is factors that can affect the individual situation of your horse. Planning ahead of time

with a viable list of considerations is important to the success of protecting your horse.

Keep in mind that the use of antibody titers or other immunological measurements to determine if booster vaccination is warranted is not currently practiced in the horse as standardized tests, and protective levels of immunity have not been defined in most cases. A correlation between antibody levels and protective immunity under field conditions has not yet been identified.

Horse owners should have realistic expectations and understand that:

- Vaccination alone, in the absence of good management practices directed at infection control, is not sufficient for the prevention of infectious disease.
- Vaccination serves to minimize the risks of infection but cannot prevent disease in all circumstances.
- The primary series of vaccines and booster doses should be appropriately administered prior to likely exposure.
- Each horse in a population is not protected to an equal degree nor for an equal duration following vaccination.
- Protection is not immediately afforded the patient after administration of a vaccine that is designed to induce active immunity. In most instances, a priming series of multiple doses of a vaccine must be administered initially for that vaccine to induce protective active immunity.

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- All horses in a herd should be vaccinated at intervals based on the professional opinion of the attending veterinarian.

Ideally, the same schedule is followed for all horses in a population, thus simplifying record keeping, minimizing replication and transmission of infectious agents in a herd and indirectly protecting those horses in the herd that responded poorly to vaccination, thereby optimizing herd immunity.

- A properly administered licensed product should not be assumed to provide complete protection during any given field epidemic.
- Although rare, there is potential for adverse reactions despite appropriate handling and administration of vaccines.

With proper management practices and planning ahead, the horse owner can better position himself for success.

The AAEP suggests the following vaccinations for adult horses. **(Many of these can vary depending on history of**

**vaccination, and if brood mare. Please consult with your local veterinarian.)**

- Anthrax – Annual. Not recommended during gestation for brood mares and should not be administered concurrently with antibiotics.
- Botulism – Annual.
- Equine Herpesvirus (EHV) – Annual.
- Influenza – Horse with ongoing risk of exposure: Semiannual. Horses at low risk of exposure: Annual.
- Potomac Horse Fever – Semiannual to annual.
- Rotavirus (brood mares) – three-dose series: first dose at 8 months gestation; second and third doses at 4-week intervals thereafter.
- Tetanus.
- Rabies.
- West Nile.

*Special thanks to The American Association of Equine Practitioners for their knowledge, expertise and willingness to contribute.*

## Deworming

Deworming your horse herd is an important aspect of responsible horse ownership. Unfortunately, it goes neglected quite often among horse owners due to a lack of knowledge in the area. While horses can tolerate parasite burdens, uncontrolled parasitic infections can cause many problems. This can be especially seen in foals, yearlings and older, pregnant or debilitated horses. Internal parasites can cause:

- Poor hair coat
- Ill thrift
- Pneumonia (secondary to the presence of migrating larvae)
- Colic
- Perforation of the intestinal tract
- Diarrhea/colitis

There are many different parasites that can potentially infect equids; however, there are only a small number of worms that pose any

real concern to North American horses. The “big four” internal parasites of horses are:

- Roundworms (also called ascarids, *Parascaris equorum*)
- Large (*Strongylus* spp) and small (cyathostomes) strongyles
- Tapeworms (*Anoplocephala* spp)

Other common parasites include:

- Threadworms (*Strongyloids westeri*)
- Pinworms (*Oxyuris equi*)
- Bots (the immature form of adult botflies, including *Gasterophilus intestinalis*)

Deworming is most commonly achieved by administering oral anthelmintics – drugs capable of killing or evacuating parasites. This is referred to as chemical deworming. While there are many anthelmintic products currently available through veterinarians, tack shops or via the Internet, these products all contain many of the

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same ingredients. In fact, there are very few drugs (from an even smaller selection of drug classes) that are effective against equine internal parasites. Furthermore, not all drugs are effective against all of the different types of parasites. The four major drug classes are:

- Macrocyclic lactones (ivermectin, moxidectin)
- Benzimidazoles (fenbendazole, oxibendazole)
- Tetrahydropyrimidines (pyrantel pamoate and pyrantel tartrate)
- Prazino-isoquinolines (praziquantel)

#### ***Different types/doses of dewormers:***

**Ivermectin** targets all parasites except tapeworms and is effective against some migrating strongyle larvae.

**Moxidectin** targets all parasites except tapeworms and is particularly effective against encysted small strongyles.

**Fenbendazole** targets large and small strongyles, pinworms and roundworms, and it is effective against migrating strongyle larvae and encysted small strongyles when used at double the normal dose for five consecutive days.

**Oxibendazole** targets large and small strongyles, pinworms, roundworms and threadworms.

**Pyrantel pamoate** targets large and small strongyles, pinworms, roundworms, and when used at a double dose, will kill tapeworms (pyrantel formulations do not have action against encysted or migrating worms).

**Praziquantel** targets tapeworms.

## **Parasite Control via Manure Management**

In addition to chemical dewormers, certain practices are also important for controlling parasite populations. These include:

- Picking up feces (that can contain parasite eggs) from paddocks on a regular basis.
- Rotating pastures.

- Feeding horses away from potentially contaminated areas or using feeds to avoid feeding on the ground.

## **Resisting Resistance**

Anthelmintic resistance is defined as the development of populations of internal parasites that are not killed following the administration of recommended doses of anthelmintic drugs. For example, there is a confirmed resistance of some roundworms to moxidectin and ivermectin, resistance of most small strongyles to fenbendazole and oxibendazole, and some populations are resistant to pyrantel pamoate. In addition, there have been reports of an early return of small strongyle eggs following ivermectin treatment, which some researchers say suggests developing resistance, while others agree this is indicative of a genetic change in worm populations but say it is different from resistance. In addition, there is evidence some roundworms are resistant to pyrantel pamoate, and there is the possibility of resistance of tapeworms to pyrantel pamoate.

Routine testing of drug efficacy is imperative as there is no drug without resistance. You should test on your farm to make the right treatment choices. It is not necessary to completely remove all internal parasites each time you deworm your horse. The goal of deworming is to minimize the risk of future infections by reducing the number of infective stages in the environment.

## **Deworming Schedules**

Deworming schedules should vary from farm to farm. The only sound approach is to use drugs that work but reduce the treatment intensity. Consult with your veterinarian as to what is the most beneficial program for your horse herd. Horses are not equally susceptible to parasite infection, and certain subgroups of horses might need more attention.

*Special thanks to Satcey Oke, DVM, MS; Martin Krarup Nielsen, DVM, PhD; and Craig Reinemeyer, DVM, PhD.*

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## Recognizing the Signs of Equine Colic

Recent studies have shown that colic is the most common cause of death for horses in the United States. It is also the most common health concern for horse owners.

Colic is a term that indicates abdominal pain. There are no two horses that have the same pain threshold. That being said, some horses will display great amounts of pain, while others may be in great pain but do not show the signs the way that others do. Therefore, it is difficult to predict the severity of the colic based on the behaviors of the horse. Likewise, it is difficult to define the cause of colic based on the signs the horse is showing. When a horse is showing signs of colic, the most important priority should be human safety when dealing with the horse, along with contacting your local veterinarian immediately.

Horses can not only hurt themselves but unintentionally cause harm to handlers when developing colic. The most common behavior a horse exhibits when developing colic is to roll. However, the following are some behaviors a horse may also exhibit:

- Laying down more persistently than normal
- Rolling
- Repeatedly getting up and lying down
- Standing stretched out
- Standing as if attempting to urinate frequently
- Turning the head towards the flank
- Repeatedly curling the upper lip
- Pawing the ground
- Kicking at the abdomen

If a horse exhibits any of the signs, the following are some things to keep in mind: Horses that exhibit these behaviors should be placed in a safe environment. For example, a grassy field, deeply-bedded stall or an arena are ideal places. Horses should be kept away from concrete surfaces, bridges, ditches, small stalls and other hazardous areas. Attempts should be made to keep the horse standing and/or walking. Being tied safely is especially crucial during transportation to the veterinarian.



Horses exhibiting signs of colic

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There are some preventative measures horse owners can take when caring for horses that will aid in the prevention of colic:

- Maintain an appropriate deworming program.
- Rotate available pastures to reduce the level of parasite contamination.
- Keep pastures from becoming overstocked with a high number of horses.
- Maintain a regular teeth floating schedule.
- Do not allow horses to become obese.
- If a change in feed is required, it should be a gradual change
- Keep high amounts of sand out of the environment.

In some instances, food is withheld during the treatment of colic. Reintroducing food to the horse should be gradual and is occasionally recommended to be in the form of a bran mash or by allowing the horse to lightly graze pastures. Colic can come unexpectedly to horses. Having a viable plan in place can potentially keep the colic from worsening and will hopefully save your horse's life.

*Special thanks to Dr. Nat T. Nesser and Dr. Wayne E. Loch.*

## Preventing Barn Fires

While barn fires are probably never 100% preventable, there are some things that horse owners can do that may prevent this disaster, or at the very least minimize the damage and loss of horses.

Here is a list of precautions/actions horse owners can take to help prevent barn fires:

- **Have an evacuation plan for every horse and person from the facility.** Have you laid out an evacuation plan and discussed it with your family and employees? Horses are known to run back into a barn fire, so simply opening the door is not enough to ensure they will escape. A halter and lead rope should hang on each door so they are easily accessible and can be placed on the horse so the horse can be led out quickly. Stalls and barn doors should remain unlocked at all times. They should also be clear of any objects that may slow down the evacuation process.
- **Store hay, shavings, cleaning products and other combustibles away from the barn.** These items will help the fire spread quickly and increase the temperature of the fire exponentially. Keep only a small amount in the barn and replenish as needed. If they are to be kept in the barn, cleaning products, oil and alcohol should be kept in steel boxes.
- **Minimize human error.** Keep “No Smoking” signs visible around and inside barn and demand that there be no smoking in the barn. Also, exercise extreme caution when using welders or cutting torches. The sparks from these items or from cigarettes are enough to ignite a fire. Vehicles should be parked away from the barn. The heat from exhaust pipes has been known to start hay stacks on fire. Furthermore, have an electrician make frequent visits to the barn to check the wiring system for aging and rodent damage. If possible, cut off electricity to the barn if no one is home or around the barn.
- **Keep appliances to a minimum.** Avoid using space heaters or radios that are not battery operated. Overloaded circuits can lead to wires becoming hot and reaching ignition levels. Keep light bulbs caged and switches covered.
- **Install lightning rods at the highest point of the barn.** Lightning rods on rooftop high points are connected by cables that run to ground to divert the energy of a strike away from the structure itself. Some barn owners choose not to use lightning rods, mistakenly

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believing that they attract lightning, but the devices simply conduct lightning that would have hit a structure anyway.

- **Guard against spontaneous combustion.** Avoid leaving manure piles and insufficiently cured hay around the barn. Because there's no ventilation in damp hay, the heat thrown off by the process builds until the ignition point for the drier surface hay is reached. Hay should be stored on pallets with a small amount of distance between each bale if possible. Though it increases labor and expense, keep only a limited amount of hay stored in the barn.
- **Install a warning system.** Flame and heat detectors with electronic eyes can signal the presence of heat or flame as it is rising, and carbon monoxide detectors are valuable, too. Cheap smoke detectors aren't as useful because they are triggered by air particulates and dust to give false alerts.
- **Keep at least one fire extinguisher near or in the barn.** Tags on fire extinguishers

should be checked and contents updated at the local fire department as necessary. An extinguisher should be 10 to 20 pounds, minimum. Personnel should be trained in extinguisher use, as there is no time for a learning curve when a fire is doubling in size every minute.

- **Maintain the proper distance between buildings and barns.** All outbuildings and barns should be a minimum of 50 feet apart from each other. The greater distance between each building, the less likely a fire can spread from one building to another.

Most horse fatalities are due to smoke inhalation; as a horse panics, rises in heart and respiratory rates increase inhalation of toxic fumes. Therefore, it is imperative that you have a plan of action in case of a fire in your barn.

*Special thanks to Jane Seegal, Rebecca Gimenez, PhD, and Nancy S. Loving, DVM, for their contributions to this article.*

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