AAEP American Association of Equine Practitioners

Horse Health Education

HAY QUALITY & NUTRITION

Evaluating Your Horse's Nutritional Needs & Minimizing the Risk to Your Horse's Health

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AAEP HORSE HEALTH EDUCATION:
HAY QUALITY & NUTRITION

Horses are herbivores by design and foragers by nature. They have evolved to utilize grasses and other forage plants as their primary source of nutrition.

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Horses are most content when they can nibble almost constantly. Though it's not always possible to let them graze to their hearts' content, one way to satisfy their urge to chew and provide essential nutrients is to feed high-quality hay.

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HAY BASICS

Hay generally falls into one of two categories: grasses or legumes.

What is readily available and most cost effective generally depends on the part of the country in which you live.

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HAY BASICS

Hay's nutritive value and palatability will depend on a number of factors, such as:

- Plant species
- Level of plant maturity at harvest
- Weed content

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HAY BASICS

- Growing conditions (rain, weather, insects, disease)
- Curing and harvesting conditions
- Soil conditions and fertility
- Moisture content
- Length and method of storage

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Clover Grass

Alfalfa Leaves

LEGUME HAY

Alfalfa and clover are examples of legumes.

Alfalfa is more commonly fed as hay than is clover, although clover may be a component of a mixed hay.

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LEGUME HAY

Legumes tend to be higher in protein, energy, calcium and vitamin A in comparison to grass hays.

This concentrated source of energy and protein may be an advantage when fed as part of the ration for young, growing horses, lactating mares or performance athletes.

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LEGUME HAY

Not all horses need the rich levels of nutrients present in premium alfalfa.

By purchasing a lower quality hay (such as an early cutting or one harvested in a late stage of plant maturity), or by selecting an alfalfa-grass mix hay, you can get alfalfa's dietary benefits without supplying excess nutrients that may predispose young horses to problems such as developmental bone disease and epiphysitis.

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LEGUME HAY

When feeding alfalfa, there may also be a need to include a palatable, high phosphorous mineral supplement as part of the ration.

In doing so, this will bring the calcium:phosphorous ratio into a better balance for the horse. This is most important when feeding young, growing horses.

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LEGUME HAY

High phosphorous supplements are commercially available for this reason.

If alfalfa has an extremely high calcium:phosphorous ratio (over 6:1), the only way to affect the ratio in the diet is to replace at least half of the alfalfa with grass hay.

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LEGUME HAY

Due to alfalfa's high protein and mineral content, your horse will likely drink more water when being offered this legume.

In turn, this will affect the horse's stall in regards to frequent urination, which will require more care to keep the stall dry and ammonia-free.

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GRASS HAYS

Although grass hay is generally lower in protein and energy and higher in fiber than legume hay, this makes it a good choice for many adult horses by providing necessary roughage without excess calories and protein.

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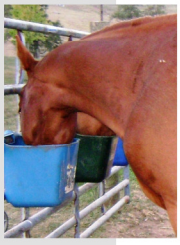
GRASS HAYS



Mature horses require 10 to 12 percent (crude protein) in their diets. Many native or prairie grass hays contain just 6 to 8 percent.

A fortified grain concentrate can be used to supplement the ration, increasing its energy, protein, vitamin and mineral content.

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GRASS HAYS

Common varieties of grass used for hay include:

Timothy Grass

- Timothy
- Orchard
- Brome

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Tall Fescue

GRASS HAYS

- Prairie or wild native
- Oat
- Bermuda
- Fescue

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FESCUE

Tall fescue is a grass, which grows on over 35 million acres of land in the United States.

The USDA recently sampled pastures on horse farms throughout the United States and found that 62 percent of the pastures contained endophyte fungus-infected (EI) grass.

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FESCUE

Approximately 57 percent of the owners or operators of those horse farms were unaware that the EI grass was present in their pastures.

As many as 700,000 horses may graze fescue pastures or be fed fescue hay each year.

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ENDOPHYTE-INFECTED FESCUE

The fescue grass itself is not what is toxic to the horse, but rather the endophyte fungus (*Neotyphodium coenophialum*), which lives within the plant and seeds.

When the horse ingests the infected grass, it is steadily poisoned by alkaloids produced by the endophyte fungus.

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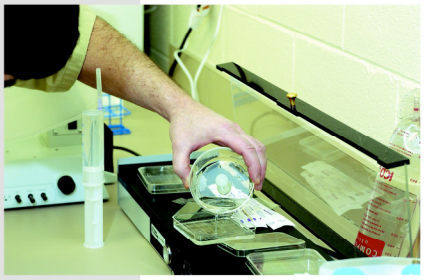
ENDOPHYTE-INFECTED FESCUE



Endophyte-infected grass will look perfectly healthy and nutritious to the eye.

The only way you will know if you pasture grass or hay is infected is through laboratory analysis.

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ENDOPHYTE-INFECTED FESCUE

Because of the horse's extreme sensitivity to the toxin, fields with as little as 5 to 10 percent infection rates can pose potential hazards to broodmares and foals.

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PROBLEMS IN THE HORSE

The most significant problems associated with endophyte-infected fescue relate to the horse's reproductive performance. They include:

- Lower conception or breeding rates
- Abortions
- Prolonged pregnancy (normal gestation averages 342 days)

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PROBLEMS IN THE HORSE

d Bag Delivery

- Foaling difficulty (dystocia)
- Premature placental separation (red bag)
- Thick or retained placentas
- Lack of or poor milk production (agalactia)

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PROBLEMS IN THE HORSE

- Lower immunoglobulin (IgG) levels in milk
- Higher rates of newborn foal death
- Increased risk of laminitis
- Altered serum hormone levels

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PROBLEMS IN THE HORSE

Other less significant reactions to endophyte-infected fescue may be loose feces or diarrhea and more profuse sweating.

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MANAGEMENT PRACTICES

While research shows that some horses are able to rid their systems of the toxin and recover from its ill effects in as little as 30 to 45 days, a good rule of thumb is to remove broodmares from endophyte-infected fescue 60 to 90 days prior to foaling.

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MANAGEMENT PRACTICES

Replace the forage with a balanced ration that includes high-quality hay, grain and supplements.

Make sure you are not inadvertently buying hay from an endophyte-infected field. The toxin can remain in fescue hay for several years after it has been cured and baled.

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MANAGEMENT PRACTICES

To avoid any doubts, choose a different variety grass or feed legume such as alfalfa. If a producer is advertising endophyte-free (EF) fescue hay, it would be wise to have the hay tested before purchasing and feeding it.

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ENDOPHYTE-FREE FESCUE

To eliminate problems associated with endophyte-infected fescue and livestock production, researchers have developed endophyte-free and friendly-endophyte tall fescue seed.

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ENDOPHYTE-FREE FESCUE

Unlike some fungi, *Neotyphodium coenophialum* is only spread via infected seed.

If a field is established using enophyte-free seed, it should remain that way unless contaminated by seeds from infected fescue.

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ENDOPHYTE-FREE FESCUE

When replanting a pasture, it is extremely important that all infected plants and seeds be destroyed prior to sowing.

Seeds may remain viable in the soil for a year or more.

Discuss the best methods for eliminating stands of infected fescue with an agronomist, toxicologist or your county extension agent.

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ENDOPHYTE-FREE FESCUE

It is generally recommended that an interim crop, such as an annual forage or row crop, be grown for at least one season before replanting fescue.

If you choose to replant fescue, make sure the seed is certified as fungus-free.

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OTHER MANAGEMENT CONSIDERATIONS

If it is impractical to replant your endophyte-infected fescue pastures at this time, it will be especially important to observe these management practices:

- Have your pasture tested to determine the level of infection.
- Mow fields prior to the development of seed heads, which contain the highest level of toxins in the plant.

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OTHER MANAGEMENT CONSIDERATIONS

- Remove horses from EI pastures in conditions of extreme heat or drought.
- Remove broodmares from EI pastures 30 days prior to breeding and 60 to 90 days prior to foaling.
- Keep accurate records of breeding and anticipated foaling dates.

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OTHER MANAGEMENT CONSIDERATIONS

- Notify your veterinarian for initiation of drug therapy if your mare has been grazing EI fescue prior to foaling.
- Monitor the mare closely during late pregnancy.
- Contact your veterinarian if impending signs of birth, including udder development and relaxation of vulva and muscles around the tailhead, fail to develop within the expected time frame.

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OTHER MANAGEMENT CONSIDERATIONS

- Attend the birth.
- If the mare fails to show signs of normal birth progression, contact your veterinarian immediately.
- Keep mares and foals off EI fescue until after weaning to prevent agalactia (poor milk production).

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ONGOING RESEARCH

Veterinary treatments are available to offset abnormal pregnancies, difficult births and poor milk production.

Further studies will perhaps reveal other concerns relating to growth, development, body condition and performance, and what can be done to prevent them.

Until then, it is important to analyze your pastures and manage horses according to what you find.

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MEETING NUTRITIONAL NEEDS

A horse's protein and energy requirements will depend on age, stage of development, metabolism and workload.

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MEETING NUTRITIONAL NEEDS

Hay alone will not meet the total dietary requirements of young, growing horses or those used for high levels of performance.

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MEETING NUTRITIONAL NEEDS

High-quality hay may supply ample protein and energy for less active horses.

These horses may also need to be provided with a mineral supplement.

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MEETING NUTRITIONAL NEEDS

A mature horse will eat 2 to 2.5 percent of its body weight per day with roughage recommended for at least half of this percentage.

For a 1,000-pound horse, that means at least 10 pounds of hay each day.

10 lbs of compressed hay cubes

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EVALUATING HAY

Most people purchase hay based on how it looks, smells and feels. These are "qualitative" factors, which are important. However, when appraising hay, it is what's in the inside that counts.

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EVALUATING HAY

When purchasing hay, ask that one or several bales be opened so the inside can be evaluated. (Do not worry about slight discoloration on the outside, especially in stacked hay.) Regional problems that involve forage are not uncommon. Keep in mind the following points:

- Choose hay that is fine-stemmed, green and leafy as possible. It should be soft to the touch.
- Avoid hay that is over-cured; excessively sun-bleached; or smells moldy, musty, dusty or fermented.

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EVALUATING HAY

- Examine the leaves, stems and flowers or seedpods to determine its level of maturity.
- Select hay that has been harvested when the plants are in early bloom for legumes, or before seed heads have formed in grasses.
- Avoid hay that contains a significant amount of weeds, dirt, trash or debris.

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EVALUATING HAY

- Examine hay for signs of insect infestation or disease. Be especially careful to check for blister beetles in alfalfa. Ask the grower about any potential problems in the region.
- As little as four to six grams of blister beetles can be deadly to an 1,100-pound horse.
- Blister beetles swarm in alfalfa fields and are drawn into bales by accident. Even small parts of these beetles are toxic to a horse.

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EVALUATING HAY

- Cantharidin is the chemical found in blister beetles that is a contact irritant and a vesicant (causes blister formation). The tissues often affected by cantharidin are gastrointestinal mucosa (including the mouth), renal or bladder and the heart muscle.
- Consult your veterinarian immediately if you think your horse is exhibiting signs of blister beetle poisoning.

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EVALUATING HAY

- Reject bales that seem excessively heavy for their size or feel warm to the touch. (They may contain excess moisture that could cause mold or spontaneous combustion.)
- If you open a bale that is dusty or smells of mold, discard the bale. Feeding of molded hay can result in various health problems such as COPD and colic, just to name a few.
- Purchase and feed hay within a year of harvest to preserve its nutritional value.

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EVALUATING HAY

- Store hay in a dry, sheltered area out of the rain, snow and sun; or cover it to protect it from the elements.
- When purchasing hay, have the hay analyzed by a certified forage laboratory.

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QUANTITATIVE LABORATORY ANALYSIS

No matter how good hay might look, only through chemical analysis can its actual nutrient content be determined.

Core samples should be taken from a number of bales within a stack and combined.

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QUANTITATIVE LABORATORY ANALYSIS

The forage laboratory then determines the following by percentage:

- Dry Matter (DM)
- Crude Protein (CP)
- Crude Fiber (CF)
- Minerals including calcium, phosphorous, potassium and magnesium.

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QUANTITATIVE LABORATORY ANALYSIS

The forage lab might also recommend testing for other vitamins and minerals.

This is a good idea, especially if you live in an area with known deficiencies or toxicities.

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FEED WHAT YOU NEED

Horses at different ages and stages of growth, development and activity have different dietary requirements.

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FEED WHAT YOU NEED

Consult your veterinarian or a qualified equine nutritionist when formulating your horse's ration.

He or she can help you put together a balanced diet that utilizes hay, grain and supplements in a safe, nutritious and cost-effective way.

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