

FESCUE TOXICOSIS IN HORSES

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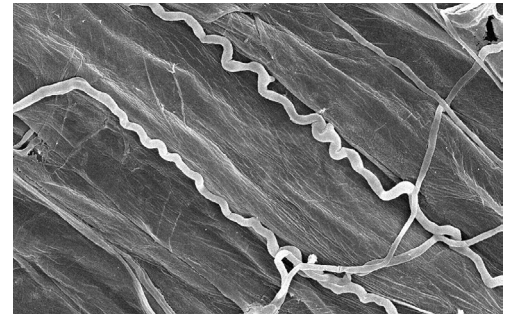
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Tall fescue [*Lolium arundinaceum* (Schreb.) S.J. Darbyshire] was first introduced to the United States in the late 19th century but did not become widely used until the 1940s. Now it is one of the more significant cool-season forage grasses with more than 1 million acres planted in north Georgia alone. Tall fescue is the most heat tolerant of the cool-season grasses because of a fungus, called an “endophyte,” that grows within the plant. While the nutrient composition of tall fescue compares favorably with other cool-season grasses, the endophyte produces ergot alkaloids that can have negative effects on animals that eat the fungus-infected forage.



Microscopic image of *Epicloe coenophialum* by Nick Hill, UGA

The specific endophyte (E+) in tall fescue is *Epicloe coenophialum*, (formerly *Neotyphodium coenophialum* and *Acremonium coenophialum*) and it grows within the plant in a mutually beneficial relationship. Through this symbiotic relationship, the plant is aided by increased drought and heat tolerance, improved seed germination and production, seedling vigor, tiller growth rate, improved mineral uptake, and insect and disease resistance. In return, the endophyte receives nutrients, protection within the plant, and dissemination through the seed.

“Fescue toxicosis” refers to the suite of challenges that tall fescue presents to an animal’s health and productivity. Relative to cattle, horses are more sensitive to the alkaloids in tall fescue infected with toxin-producing endophyte. Horses suffering from fescue toxicosis exhibit prolonged gestation, increased incidence of foal and mare mortality resulting from dystocia (difficulty giving birth, or foaling), thickened placenta that have a tendency to separate from the uterine wall prematurely (also known as “red bagging”), agalactia (lack of lactation) in postpartum mares, and less vigorous and immune-challenged foals. This circular provides more information about fescue toxicosis in horses, including management guidelines that can reduce or eliminate the negative effects of the toxic alkaloids.

Signs of Fescue Toxicosis

Prolonged gestation: Normal gestation in mares averages 350 days. Mares consuming endophyte-infected tall fescue are reported to have an extended gestation of two weeks or more past the normal time frame for parturition (foaling, or giving birth). In studies to date, individual mare sensitivity to available ergovaline (ergot alkaloid) levels that fluctuate with environmental factors potentially impact parturition.

Dystocia: The prolonged gestation period appears to contribute to frequent dystocia problems, as well as inadequate preparation of the reproductive tract and fetal malpresentation. Foals tend to have larger-than-normal skeletal frames due to the extended gestation period and are often rotated 90 to 180 degrees from the normal position for delivery.

Agalactia: There appears to be a connection between fescue toxicity and milk production by the alkaloid that reduces production of prolactin, which is a hormone released late in gestation that promotes the onset of milk production in the mare. Mares grazing endophyte-infected tall fescue have lower prolactin concentrations throughout gestation and at foaling than those on non-infected pasture.

Thickened placenta: In many cases of fescue toxicosis, foals present normally but are encased in a placenta so tough they cannot break through and suffocate without human assistance. Placentas of mares that grazed endophyte-infected tall fescue are thickened, reddish in color, and heavier than those grazing non-infected pasture.

Foal mortality: Pregnant mares are not the only ones affected by fescue toxicosis—their foals have issues as well. Problems can include still births, weak foals with poor muscle mass, and septicemic foals. Septicemia, a systemic infection from bloodborne bacteria, can partially be explained by agalactia on the part of the mare and foals too weak to nurse. Foals can be large-boned and emaciated in appearance with overgrown hooves.

What Are Your Options?

Pasture Management

There are a variety of methods to deal with the problem of fescue toxicosis in horses. One is to eliminate toxic tall fescue by killing the stand and replacing it with an alternative forage crop. Endophyte-free tall fescue cultivars are available, but they do not persist well in the Southern U.S., nor do they have the drought and pest resistance of the toxic tall fescue varieties. An excellent alternative is to establish winter annual grazing or a novel endophyte-infected tall fescue. Novel endophyte tall fescues contain a naturally occurring endophyte that does not produce the alkaloids that are toxic to grazing livestock. Novel endophyte tall fescues have all the positive agronomic aspects of the toxic tall fescue, including persistence, drought tolerance, and pest resistance. For more on novel endophyte tall fescues, see UGA Extension Circular 861, [*Novel-Endophyte Infected Tall Fescue*](#).

However, destroying and replacing a toxic tall fescue pasture or hayfield is inherently risky and quite expensive. The significant cost premium for the seed of the novel endophyte tall fescue varieties makes the renovation even more expensive.

Another option would be to manage the toxicosis by removing late gestation mares from infected tall fescue pastures during the last trimester. Veterinarians recommend removing mares from infected tall fescue pastures 45 to 90 days prior to the expected foaling date. This greatly reduces the risk but does not necessarily eliminate the risk. Since the toxins are sometimes stored in fat cells, some mares can show signs of fescue toxicosis even with long-term removal from infected tall fescue.

A third possible method would be to dilute the amount of toxins present with either concentrates or other forage types to reduce the ingestion of E+. While there are no beneficial effects of feeding grain to gravid (pregnant) mares grazing fescue, yearling horses can have slightly higher average daily gains.

Therapeutic Treatment

Some therapeutic treatments appear to reduce or prevent fescue toxicosis symptoms. The alkaloids produced by toxic tall fescue interfere with neurotransmitters and hormone production and activity. These alkaloids have a high affinity for certain receptors within the nervous and endocrine systems, including receptors for certain types of dopamine, which is a chemical messenger that stimulates “reward” responses in the brain and regulates motor control, urine output, insulin production, and other functions in the body.

Certain blocking drugs can help increase milk production, including domperidone, which is an oral gel/paste available from your veterinarian. When mares are given these blockers daily, gestation periods are more normal, they have live foals closer to their expected delivery date, more mammary development, higher prolactin and progesterone levels, and more normal lactation. Also, foals born to treated mares had normal hoof development, musculature appropriate to frame size, and normal bone structure. Producers interested in using dopamine blockers or other potential therapeutic treatments should consult with their veterinarian.

Endophyte Testing

Sampling must occur when the plant has been actively growing for at least 1 month. This generally corresponds to late April until January, depending on your location within the state. Many tall fescue pastures are contaminated with other forage species, so choose your sample material carefully. Endophyte analyses in Georgia are conducted using proprietary testing methods at Agrinostics Ltd. Co. in Watkinsville, GA. Visit the company’s website for the most current contact information, updated forms, pricing, and shipping address: <https://www.agrinostics.com/index.html>.

1. Place a damp (not wet) paper towel in a plastic zip-top bag to keep the tillers (stems) fresh during sampling.
2. Select tall fescue tillers from random locations throughout your pasture or hayfield by walking in a circular or zigzag pattern.
3. Cut the tillers at the soil surface with a knife or razor blade. Avoid immature tillers or tillers with seed heads. Only one tiller should be collected per plant.
4. Collect 40+ tillers (30 for the sample and at least 10 extra).
5. Working over a solid surface, remove leaves from the tillers and cut the tillers so that only the bottom 4–5 in. near the base remain.
6. Place the stem bases in another zip-top bag with a damp (not wet) paper towel.
7. Place the sample into a styrofoam cooler (or insulated box) with an ice pack that has been previously frozen for at least 24 hr.
8. Fill out the sample registration form from the company and include in the box. Place the form in a separate zip-top bag to ensure it is not damaged by the thawing ice pack.
9. Ship the cooler overnight to Agrinostics Ltd. Co. for testing. Do not ship samples after Wednesday each week to ensure they arrive before the weekend.

Note: New tall fescue varieties with MaxQ or Max Q II in their name contain a novel or nontoxic endophyte that cannot be distinguished from other infected stands using currently available commercial laboratory procedures.

Video instructions: <https://youtu.be/s6eF4XBbv7g>

Conclusion

Most tall fescue pastures and hayfields are infected with the *Epicloe coenophialum* endophyte that produces toxic alkaloids. These alkaloids are highly toxic to horses, resulting in prolonged gestation, dystocia, agalactia, thickened placentas, and the increased risk of mortality of both mare and foal. Horses are much more sensitive to the endophyte-infected fescue than other livestock. However, the toxic effects of the endophyte can be successfully managed by eliminating the grazing or feeding of toxic tall fescue. Additionally, some therapeutic treatment options may reduce the impact of fescue toxicosis, such as treatment with the dopamine blocker, domperidone. It is also possible to test your forages for toxic endophyte presence. Contact your Extension agent at 1-800-ASK-UGA1 or your local veterinarian for more information in managing and preventing fescue toxicosis in mares.

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