

FACTSHEET

FESCUE TOXICOSIS

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It's a microscopic fungus, not the forage, causing big problems in pregnant mares

Tall fescue (*Festuca arundinacea* Schreb) is a popular forage thanks to the hardiness and ease with which it grows in an array of soils and climates. It's resistant to drought and overgrazing, a high-quality nutrient source, and a high-yield crop.¹ However, this grass can also cause fescue toxicosis in pregnant mares, causing pregnancy losses and decreased reproduction efficiency.

THE PROBLEM WITH FESCUE ISN'T THE FESCUE

Tall fescue itself is not problematic. Instead, a microscopic endophyte (a fungus that lives inside a plant) called *Neotyphodium coenophialum* causes the issues associated with maintaining pregnant mares on tall fescue pastures and bedding. That fungus produces an array of naturally occurring, nitrogen-containing organic compounds called alkaloids. The most prominent alkaloid produced by *N. coenophialum* is ergovaline.

The endophyte and plant have a symbiotic (win-win) relationship: The plant provides the endophyte with a safe place to live and grow while the alkaloids produced by the fungus make tall fescue insect-resistant, as well as drought and grazing tolerant. Unfortunately, alkaloids are detrimental

to livestock, including horses. When horses consume alkaloids, primarily ergovaline, their blood vessels constrict and prolactin—a hormone required for producing milk—decreases.¹

CLINICAL SIGNS

The most common signs of fescue toxicosis in the mare are¹:

- ◆ Prolonged gestation (30 or more days beyond anticipated foaling date);
- ◆ Abortion or stillbirths;
- ◆ Dystocia (difficult birth) due to the continued growth of the foal;
- ◆ An abnormally thickened and/or retained placenta; and
- ◆ Hypogalactia or agalactia (poor or no milk production, including colostrum).

Foals born to mares exposed to the deleterious alkaloids found in infected tall fescue are weak at



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Fast Facts About Fescue

Tall fescue is found all over North America but predominately in the southeastern states.

An estimated 688,000 horses are maintained on approximately 40 million acres of tall fescue.

Infected tall fescue is believed to have been introduced in Kentucky in 1943 when a specific variety of tall fescue called "Kentucky 31" was first sold, promoted, and widely planted. Unfortunately, it was that popularized variety that contained the dangerous endophyte.

More than 50-95% of tall fescue pastures are endophyte-infected.

birth and larger in size than normal foals, but with less muscle mass and showing typical signs of dysmaturity.³

Affected foals also have an increased risk of infection because they usually don't obtain enough or adequate-quality colostrum (the first milk, which contains antibodies that are passively transferred from mare to foal, establishing immunity in the newborn).¹

Horses besides mares and foals might also suffer from ergovaline exposure, although not as severely. Some research suggests that the endophyte's toxic alkaloids have deleterious impacts on a stallion's semen quality. However, not all studies support this theory.^{2,4}

DIAGNOSING FESCUE TOXICOSIS

Veterinarians typically diagnose fescue toxicosis based on clinical signs and/or the absence of mammary development and parturition at the expected time, if the mare's breeding history is known and accurate.

Laboratories can test for the presence of the endophyte in fescue. Alternatively, the concentration of the toxic alkaloids can be measured in a fescue sample.³ Concentrations >300 parts per billion (ppb) are highly

suggestive of infected fescue and thought to contribute to toxicosis.³ Others suggest that only much lower levels (<150 ppb) should be considered safe.⁴

Finally, veterinarians can measure blood levels of the hormone progesterone. Low progesterone levels in mares known to have grazed tall fescue are suggestive of fescue toxicosis.^{2,5} Unfortunately, this test is only a useful indicator of exposure to endophytic alkaloids after 300 days of gestation.

TREATMENT AND OUTCOMES

If you suspect a mare is suffering from fescue toxicosis, remove her from that field and/or obtain new fescue-free hay and bedding. Ideally, mares with a known exposure to tall fescue should be maintained in a dry stall and fed safe, high-quality hay, such as legume hay, and monitored carefully.

Domperidone, a dopamine antagonist that can prevent or lessen the adverse effects of fescue toxicity, is a common and successful treatment.⁷ Induction of foaling is ill advised, whereas planned cesarian sections improved foal survival rates but weren't economically feasible for many mare owners.³

Ergovaline's Affect on Mares

Ergovaline amount	Associated clinical signs in pregnant mares
300-500 ppb	<ul style="list-style-type: none"> ■ Failure to come into heat ■ Early term abortions ■ Prolonged gestation ■ Retained placentas ■ Difficult births ■ Poor udder development with little or no lactation ■ Poor foal survival

FESCUE TOXICOSIS

PREVENTION IS KEY

Until recently, the only way to avoid fescue toxicosis was to avoid exposure to the toxin. If removing mares from pasture was impossible, then horse owners could replace their current pastures with:

1. Endophyte-free tall fescue (an expensive and time-consuming task that results in a less hardy grass), or
2. Tall fescue containing other types of endophytes that produce only beneficial alkaloids (maintaining the insect- and drought-resistant properties).

Alternatively, fields of infected tall fescue can be diluted with other types of forages to reduce the concentration of ingested ergovaline.⁶

If none of those options seem appealing or practical, consider proactive treatment. In December 2010, the U.S. Food and

Drug Administration (FDA) approved the first product (domperidone in a gel formulation) for the “prevention of fescue toxicosis, a disease that can cause serious reproductive problems in horses.” According to the FDA and the product manufacturer, domperidone administration blocks ergovaline’s toxic effects at a cellular level. Once daily oral administration is reportedly both safe and effective based on laboratory and field studies.⁷

ADDITIONAL INFORMATION

Despite the fact that the perils of feeding mares tall fescue during gestation are well-known, the problem remains prominent throughout North America.

Lack of owner awareness regarding what tall fescue looks like and why it’s dangerous; the costs associated with purchasing high-quality hay; and lack of

Consider all tall fescue endophyte-infected unless proven otherwise.

other grazing options on farms with limited space are only a few reasons why tall fescue toxicosis continues to plague the equine industry. Continued research and owner education therefore

remain an important role of many county or state extension specialists. Contact the extension specialist in your area, or your veterinarian, for more information.

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