

OCCURRENCE, PREVENTION AND TREATMENT OF FESCUE-RELATED AGALACTIA IN FALL-CALVING COWS

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A number of instances of agalactia (failure to produce milk) in mature cows grazing Tall Fescue pasture in the fall months have been reported in recent years. At present, it would be unwarranted to characterize this phenomenon as widespread. However, a number of cases have occurred and the impact on the individuals concerned has been detrimental enough to call it to the attention of cattle producers.

It is possible that agalactia, and other fescue fungus related problems (rough hair coats, elevated body temperature as well as the lameness, swollen hooves and occasional sloughed tail due to fescue foot), will be worse in 2004 simply because weather conditions have allowed fescue (and presumably the fescue fungus) to maintain growth throughout the summer, without the usual summer dormancy.

Description

The prevalent symptom of this phenomenon is agalactia, or the failure of cows to produce milk after calving. This situation typically develops in mature, fall-calving cows (second calving or later) grazing Tall fescue pasture. The reported cases often involve a number of animals (ten to fifteen per report is not unusual). This should not be interpreted to preclude the possibility of smaller numbers being affected. It is possible that cow-calf producers fail to identify agalactia as the cause of death if only one or two calves die.

Cows may or may not exhibit pre-calving udder development. In at least one case, udder development occurred in two diagonal quarters with no development in the other two. Symptoms are consistent with fescue toxicity (see following section). These include elevated body temperature, shade-seeking behavior and matted hair (from wallowing in mud

holes). Cows may exhibit weight loss, but this is not consistently reported.

Symptoms which are usually noticed first by producer are typical of calf starvation (frequent, non-productive nursing attempts, listlessness, gaunt appearance, sunken sides). Calves may simply die of starvation, however secondary symptoms may develop as a result of starvation, and decreased resistance to disease (probably related to absence of colostrum antibodies). These may include respiratory infections such as pneumonia, and atypical diarrhea (scours).

A similar problem has been documented, and may be even more prevalent, in mares.

Causes

The most important predisposing factor is the presence of the endophytic fungus, *Acremonium coenophialum*, within the Tall Fescue in the pasture. This fungus has been implicated as a causative agent due to the documented relationship between this fungus and depressed prolactin secretion. Prolactin is an important hormone in controlling milk production in cows. Applied research has shown that fungus-infected fescue depresses milk production in cows.

In 2003, Fisher and others, reported that copper levels were decreased in fescue samples taken from across the state. Virginia Tech work (1998) showed that fescue endophyte decreases forage copper levels. This might indirectly indicate that 2002 had higher fescue endophyte, but this should be taken as speculation.

Despite the effect of fungus-infected fescue on lactation, the exact role of the fungus as a causative agent in complete cessation of milk production is less clear. It is speculated that the reported cases of agalactia are due to a combination of agents or circumstances, with the fungus as one (perhaps the primary) factor. These interactive factors (discussed below) may include inadequate general nutrition, selenium deficiency, soil factors and mycotoxins.

Inadequate general nutrition - The period around parturition and early lactation is when the cow's nutritional requirements are highest. It is generally recommended that diets be adjusted during the third trimester of pregnancy and early lactation so that the necessary nutrients are provided. In fall-calving cows, most of the nutrients consumed during late pregnancy and early lactation are obtained from pasture. If the pasture is inadequate in either quantity or quality, the nutrient needs are unlikely to be met unless the pasture is supplemented.

An example of a fairly typical situation where both quality and quantity may be compromised is during a drought. In both 1988, 1990 and 2002 drought was a problem during the summer when fall-calving cows were in late pregnancy. If fall-calving cows were not provided with supplemental hay or grain, it is likely that there was inadequate nutrition. This may have resulted in a marginally deficient state, which could have caused them to be more susceptible to the detrimental effects of the endophyte fescue fungus.

Selenium deficiency - Selenium is a mineral which is required in only minute amounts in the diets of cattle. Tennessee is classified as a selenium-marginal area, which means that a given farm or field may or may not be selenium deficient. A lack of necessary selenium in the diet has been implicated as a predisposing factor in a number of problems such as white muscle disease, diminished antibody production, reproductive dysfunction and retained placenta. Selenium deficiency has not been proven to be implicated in fescue-related agalactia in cattle, however selenium has been used in the prevention and treatment of this problem in the field.

Fisher et al. (2003) found low levels of selenium in a limited number of samples (30) collected in 2002.

Soil factors - It is well-established that the nutritive value of forages is linked to various soil conditions. Soil pH plays a major role in plant uptake of nutrients. Selenium, for example, is poorly absorbed by plants when the soil pH is below 6.1 or 6.2. There is also indication that nitrogen fertilization may increase production of certain ergot peptide alkaloids that have been implicated in decreasing milk production. This has not been adequately field-tested to make confident recommendations related to nitrogen fertilization in practical situations. It would probably be unwise to over-fertilize with nitrogen in situations where the fungus may be a problem. This does not, however, preclude the use of nitrogen fertilization on pastures as presently recommended.

Mycotoxins - There are estimated to be over 800 molds that can occur in livestock feeds. Most are relatively harmless, but some produce toxins that can be detrimental to cattle health and production. However, no interaction between mycotoxins and the fescue fungus in inducing agalactia has been documented.

Preventing Fescue-Related Agalactia in Cattle

A number of measures can be taken to reduce the management problems and

potential losses that may accompany fescue-related agalactia in fall-calving cows. One obvious measure is to avoid calving in the late summer and fall, however many producers prefer a fall calving season, and many others have split calving season with a certain percentage that are born in the fall. Some producers have an unplanned (year-around) calving season with some portion naturally arriving in the fall.

Because there are advantages to fall calving (such as relatively high spring markets for selling weanlings in most years, utilization of fall forage growth and mild calving weather), it is unlikely that producers will quit having a fall calving period. Nor is the incidence of agalactia widespread enough to justify a recommendation against fall calving. A suggested compromise is to avoid calving early in the fall, with first calves being born in October.

Most agalactia prevention measures are standard recommendations for improving production on fescue pastures. These include:

-Test pastures for fescue fungus. Information about sampling and testing can be obtained from your county Extension agent. (Note: this is not as commonly done as it was when this article was first written, but is still possible.)

-Develop a plan for renovating and/or replacing pastures. This should be developed based on the information obtained from the fescue fungus test, as well as knowledge about the production capacity of the land, erosion potential and economic considerations. Detailed fact sheets can be obtained from your county Extension agent that provide excellent advise regarding replacing and/or renovating pastures.

If pastures are to be renovated with legumes, it is suggested that a variety be included that provides significant late summer/early fall grazing. Kobe lespedeza is an example of such a forage which has been widely used in Tennessee.

-Soil test. Obtain information about soil testing from your county agent. Apply soil amendments based on soil testing results.

-Develop a supplementation plan based on forage availability, forage quality and animal needs. No single plan fits all herds in every year. Each situation is unique, and will require appropriate supplementation decisions. In some years, little or no supplementation (other than mineral) will be needed. In other years, such as during a drought, supplementing pasture with quality hay or concentrate can be the difference between success and failure.

Healthy, well-supplemented cows may be less likely to have problems, such as agalactia, that can have serious economic repercussions.

-Provide a complete mineral supplement. A minimum requirement for a "complete" mineral is for it to contain 4 to 12 percent phosphorus and enough calcium to keep the calcium : phosphorus ratio at least 1.5 : 1. Copper levels should be at least 1500 - 1750 ppm to as high as 3000 ppm in areas documented as being high in sulfur (higher levels of copper should probably not be used unless at least 40% of the copper is in an organic form, such as a copper proteinate or copper chelate). Selenium should also be included in the mineral mixture, or provided by injection (this option is more expensive, and is available only through veterinarians) or rumen bolus (a new product in United States which provides selenium for about 120 days). The latter options should be considered if a selenium-related problem is suspected, but care should be taken to avoid over-using selenium because it is required in only minute amounts, and can be extremely toxic.

-Consider using certain feed additives that are known or suggested to ameliorate the effects of Fescue fungus. There are several products which have been shown, under certain conditions, to affect cattle response to the fescue fungus. One product, a seaweed extract, sold as Tasco® "seems to have use in alleviating adverse effects of endophyte on immune function and may improve hair coat condition in cattle grazing infected fescue, but effects on rectal temperature varied due to location." (Saker, et al., 2001). Another product, marketed as F.E.B. 200®, has shown promise in decreasing problems related to fescue toxicity, and possibly improving performance (Ely et al., 2003).

Treatment of Fescue-related Agalactia

In an active case of fescue-related agalactia, with several cow-calf pairs involved, it is important to recognize the symptoms (mentioned above) and obtain an accurate diagnosis quickly. Obtain veterinary assistance immediately. Make certain that the problem is, indeed, fescue-related, and not caused by infectious agents. If the problem is fescue-related agalactia, the following measures should be considered:

-Remove cattle from infected pastures, if possible. Put onto uninfected or low-infected pastures or feed hay. Avoid fescue hay, unless the fescue is known to be a low-endophyte variety or was cut in early spring. Provide concentrate supplementation,

particularly if pasture or hay is of moderate to low quality.

-Consider injection of selenium. This has not been documented as a "magic bullet" solution, but has been used in some situations. The injectable form of selenium is available only from veterinarians. The injectable solution will probably also contain vitamin E, which will certainly do no harm, and may be beneficial.

-Treat calf symptoms. Make certain calves obtain one-half gallon of colostrum (first milk) within the first hour or two of life. It is likely that the agalactia symptoms may begin at the time when the calf first attempts to suckle, so the observant manager can quickly discover the problem at this time. If the calf cannot obtain colostrum from its birth dam, the manager should provide it from another source. Colostrum may be obtained from a nearby dairy, or from other freshening (parturient) cows in the beef herd. It is better to have obtained the colostrum in advance and have it frozen in half-gallon containers so that it can be quickly administered should the need develop. Colostrum is commercially available in some locations. If the symptoms are observed after the second day, colostrum is not indicated. Commercial preparations of electrolytes and readily digestible energy compounds (such as propylene glycol) may be useful, particularly if symptoms of starvation are advanced. Milk replacer may be utilized as calves recover.

It may be necessary to bottle-feed calves to prevent starvation. Other symptoms, such as pneumonia, should receive veterinary attention. Cows may or may not start milking. Should there be complete failure to achieve lactation, the manager should be prepared to raise the calves as orphans. Since this is a routine situation in dairies, most information about raising orphan calves is dairy-calf oriented, but may be useful for the orphaned beef calf. This type of material may be obtained from your Extension agent or your veterinarian.

Do not blame fescue for all milk-letdown problems. Your veterinarian can tell you that there are a number of reasons why cows fail to milk. Work closely with your veterinarian to make certain that the correct diagnosis is made and the best course of treatment is followed.

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