COOPERATIVE EXTENSION SERVICE • UNIVERSITY OF KENTUCKY COLLEGE OF AGRICULTURE, LEXINGTON, KY, 40546

PPA-30

Sampling for the Tall Fescue Endophyte in Pasture or Hay Stands

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Most of the tall fescue growing in Kentucky is colonized by the tall fescue endophyte, a fungus which causes disorders in livestock that feed on the infected grass. The animal disease syndrome is called fescue toxicosis, which some researchers estimate may cost Kentucky producers more than $200 million yearly. This problem can be greatly reduced by identifying the infected fields and replacing them with endophyte-free or novel endophyte tall fescue varieties or by managing them in a way to minimize the impact of the endophyte on herd productivity.

One of the simplest ways to reduce toxicity symptoms in cattle is to add red and white clover to existing tall fescue stands.

Endophyte Testing in Kentucky

The best ways to determine the level of infection within a stand include: 1) examining individual tall fescue tillers sampled from the field microscopically for evidence of the fungus, or 2) using a recently developed immunoblot laboratory procedure. In Kentucky, the Division of Regulatory Services, located at the University of Kentucky, offers a service to test tall fescue infection level. To obtain useful information, the samples must be collected in accordance with the guidelines given here.

Selecting Stands to Be Sampled

Only fields of the same seeding date and management unit should be included under the same field designation. The fungus is spread through seed, and since fescue seed can be moved in many different ways, the variation in endophyte level between fields can be great. However, before spending money on sampling, farmers should consider that most fields will be highly infested. Several extensive surveys conducted by researchers at the University of Kentucky found that more than 50 percent of the stands in Kentucky have greater than 80 percent of the plants infected. Only about 7 percent of the stands in Kentucky have less than 25 percent of the plants infected. *Note:* New tall fescue varieties such as MaxQ contain a novel or nontoxic endophyte that cannot be distinguished from other infected stands using currently available commercial laboratory procedures. Therefore, fields planted in novel endophyte fescue should not be sampled.

When to Sample?

It is critical that the specimens be collected during periods when the fungus is most likely to be present in the tillers. Specimens should be collected when plants have been growing well for at least a month, for best assurance of finding the endophyte. The optimal collection times in Kentucky appear to be late April to early June and October-November based on University of Kentucky tests. Specimens collected at other times can give erratic results. Check with the local county Cooperative Extension office before sampling the site.

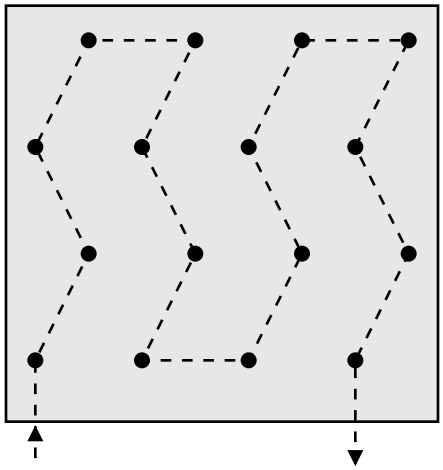
Collecting the Specimens

A specimen is a clump of tall fescue about 2 inches in diameter that contains several live tillers, crown tissue, and some roots. Specimens are best collected using a sharp pocketknife to cut a 2- x 2-inch plug from the sod. Trim each specimen to about 2 inches in height by cutting and removing excess leaves. Also, trim much of the root system. Leave just enough soil, thatch, and root to help hold the clump together. A number of specimens are required from each stand and they must arrive at the laboratory alive, so it is best to use a bucket or basket to hold the specimens while collecting. Collect specimens as quickly as possible, and avoid sampling when plants are wet or wilted.

Representative Samples

Make sure that the specimens collected are representative of the field at large. Take specimens at random by walking a zigzag pattern about the field (see Figure 1). Avoid collecting from ditches, pond areas, feeding sites, and borders unless these areas make up more than 20 percent of the stand. These areas have often been destroyed and reseeded through natural processes and can produce misleading data.

Figure 1. Field sampling pattern.



Related Resources

For more information on management options for endophyte-infected tall fescue, go to the University of Kentucky forage Web site at www.uky.edu/Ag/Forage and look under the "Publications" link, or go to your county Cooperative Extension office. Useful publications include::

- AGR-59 *Tall Fescue*
- AGR-119 *Alternatives for Fungus-Infected Tall Fescue*
- AGR-26 *Renovating Hay and Pasture Fields*
- *Tall Fescue Endophyte Concepts.*

Field Size Affects Specimen Number

The number of specimens to collect is determined by field size:

Less than 5 acres	20 specimens
5-10 acres	40 specimens
More than 10 acres	At least 50 specimens, with higher numbers for larger fields

These sampling recommendations are estimates; more or fewer plugs may be necessary to accurately represent the areas of concern. Large fields of variable terrain should be divided into smaller sampling blocks.

Protect the Samples

After collecting, place the specimens with a cold pack in a sturdy, plastic-lined box and take them to the local county Cooperative Extension office, or send them overnight express directly to the testing laboratory (see address below). Refrigerated storage after sampling is best to ensure sample quality, but when not available, do not let the container sit in the sun or get too hot. Deliver or send the specimens early in the week so they will arrive in the lab without delay. Using weekend mail may mean that the samples sit along the route in hot trucks.

Results

The laboratory's findings will be reported to the person who submitted the sample with a copy to the county Extension agent when requested. The report will indicate the percentage of tillers submitted that were infected with the endophyte. No recommendation as to how this level of infection will affect animals will be included. This is because the acceptable level of infection is highly dependent upon the particular farming system involved. After receiving the results, you are encouraged to meet with your county Extension agent to discuss management options. The publications listed at the end provide more information.

Cost

A fee is necessary to partially cover the cost of laboratory testing. Charges for processing samples are as follows: $35 for 1 to 50 specimens and $60 for 51 to 100 specimens. A billing statement of charges will be mailed after the laboratory analysis is completed. Checks should be made payable to the Division of Regulatory Services.

Mailing Samples

If tillers were collected from more than one stand, mark each group of specimens with a unique name for identification. Place each sample inside a plastic bag, loosely seal, and put into a box or padded envelope with a cold pack. Multiple samples can be included in the same box as long as individual samples are clearly marked. A sample submittal form available online or a letter from the county Extension agent for agriculture clearly identifying the sample and number of specimens should accompany each sample submitted to the laboratory. (The Endophyte Testing Submittal Form can be found at www.uky.edu/Ag/Forage/ForagePublications.htm under "Tall Fescue.") Enclose the letter or form inside the package or box but outside the plastic bag that contains the samples. Mail the samples to: Seed Laboratory, Division of Regulatory Services, 103 Regulatory Services Building, University of Kentucky, Lexington, KY 40546-0275.

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