

Sampling and Testing for the Endophyte

Garry Lacefield, Ph.D.

Professor of Agronomy Extension

University of Kentucky

Research and Education Center

Princeton, Kentucky

Several states now have service laboratories available for endophyte testing. Variations do exist among states in specific details on sampling. Within each state one should consult the Extension service for necessary details on sampling.

The following information is restricted to the Kentucky program and is excerpted from University of Kentucky publication PPA-30 written by Dr. W. C. Nesmith and colleagues.

Why Sample?

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 summer toxicosis which some researchers estimate may cost Kentucky producers over \$200 million yearly. This problem can be greatly reduced by identifying the infested fields and replacing them with stands free of the endophyte. The best way to determine the level of infection within a stand is to examine microscopically representative specimens from the field for evidence of the fungus.

Endophyte Testing Laboratory

A service is available that can assist fescue producers by determining the percentage of tall fescue plants infected with this fungus. To obtain useful information, however, it is necessary that the samples 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. Farmers should consider, however, before spending money on sampling that most fields will be highly infested. Several extensive surveys conducted by UK researchers found that over 50% of the stands in Kentucky have greater than 80% of the plants infected compared to only about 7% of the stands having less than 25% of the plants infected.

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 are growing well for at least a month, for best assurance of finding the endophyte. The optimum collection time in Kentucky appears to be April-early June and October-November based on University of Kentucky tests. Specimens collected at other times can yield erratic results. County agents will be kept abreast of the favorability of sampling times so check with the local County Extension Office before sampling the site.

Collecting the Specimens

A specimen is a clump of tall fescue about two inches in diameter which contains several live tillers, crown tissue and some roots. Specimens are best collected using a sharp pocket knife to cut a 2x2 inch plug from the sod. Trim each specimen to about 2 inches in height by cutting and removing excess leaves and much of the root system. Leave just enough soil, thatch and root to help hold the clump together. As a number of specimens are required from each stand, and they must arrive at the lab alive, a bucket or basket should be used to hold them while collecting. Do not collect specimens while they are wet or wilted.

Representative Samples

It is critical that the specimens collected be representative of the field at large. The specimens should be taken at random, by walking a zigzag pattern about the field. Avoid collecting from ditches, pond areas, feeding sites and borders, unless these areas make up more than 20% of the stand. These areas have often been destroyed and reseeded through natural processes and can account for misleading data.

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
10-20 acres	80 specimens
20-50 acres	150 specimens

Protect the Samples

After collecting, place the specimens in a sturdy, plastic-lined box and take them to the county Extension office. Do

not let the container sit in the sun or get too hot. Deliver the specimens early in the week so they will arrive in the lab without delay. Weekend mail sits 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. The report will indicate the percentage of tillers infected with the endophyte. No recommendations as to how this level of infection will affect the animals will be included. This is because the level of infection acceptable is highly variable dependent upon the particular farming system involved. More research is needed before these specifics are known. Growers using this service should become aware of the latest information on the impact and management of the problem through the county Extension office.

Cost

A charge will be made to partially cover the cost involved at the lab. Charges for processing Kentucky samples is \$20 for 1-50 specimens, \$40 for 51-100 specimens and \$60 for 101-150 specimens. This service is not currently available to out of state clients. A check to cover these charges for analyses should accompany the specimen, or prior arrangements for billing should be made. Checks should be made payable to: Division of Regulatory Services.

Mailing Samples

Samples should be mailed to: Seed Laboratory, Division of Regulatory Services, 102 Scovell Hall, University of Kentucky, Lexington, KY 40546-0064. A letter from the county Extension agent for agriculture clearly identifying the sample and volume of specimens should accompany the sample. Place the specimens inside a plastic bag. Then put them into a box or padded envelope. Enclose the letter inside the package, but outside the plastic.