Endophyte Presence and Ergot Alkaloid Concentrations

Toxic tall fescue stands (usually seeded with KY 31) contain a fungal endophyte (i.e., a fungus “within the plant”). The fungus produces toxic alkaloids that reduce animal performance and well-being.

Knowledge of endophyte presence and toxicity requires two separate tests. Fescue (Figure 1) tillers are gathered to determine the presence of endophyte (Figure 2) and to calculate the percentage of toxic fescue in pastures.

Sampling fescue for ergot alkaloid concentration provides a comprehensive picture of pasture toxicity and is helpful for managing fescue pastures across a farm – rather than simply determining presence and absence of the endophyte. As testing can be expensive, consider your objectives and farm management when prioritizing fields to sample or dates when samples will be taken.

When to sample?

- Sampling is best once the fescue seed head has emerged on plants that are healthy and green.
- Early spring sampling may reduce the accuracy of test results as the endophyte does not become active in the plant until after spring green-up.
- Avoid tillers with seed heads.
- In most parts of Virginia, seed heads generally develop in the latter part of May and remain through mid-July if undisturbed.
How to Sample for Endophyte Presence in Fescue Pastures?

- Only fescue (see Figure 1) plants should be selected for endophyte analysis. Some grass species can be mistaken for fescue.
- Sampling should be done on living plant tissue. Dried samples will not have active endophytes.
- Collect tiller samples from 20 to 50 different plants throughout the field. Samples must be representative of the pasture as a whole.
- Where possible, avoid sampling areas that are near urine patches and manure pats, or that appear to have clumped growth (Figure 3).
- Collect tillers larger than 1/8" diameter
- To sample, follow the tiller to its union with the crown, and cut off the tiller at the ground surface. Trim away any excess leaf from the sample and clip the tiller to a total length of around 4", being sure the base of the tiller remains intact (Figure 4).
- Transfer tillers into a zip-lock bag and keep cool and fresh throughout sampling and shipping using a damp paper towel

Using the Information:

- Once infection and toxicity levels of pastures are known, a plan may be developed to manage and reduce livestock alkaloid intake through pasture management (rotation and overseeding), supplementation and ultimately renovation.

Where to Send Samples*

Sample handling and testing fee information is available from:

- Agrinostics Ltd. Co. (info@agrinostics.com) http://www.agrinostics.com/index.html
- Auburn University Fescue Diagnostic Laboratory http://www.ag.auburn.edu/enpl/services/fescue.htm
- North Carolina Department of Ag and Consumer Services Plant Industry Division, Seed Section Endophyte Testing Service https://www.ncagr.gov/plantindustry/seedandfertilizer/seed/Endophyte.htm
- University of Kentucky Seed Laboratory Division of Regulatory Services http://www.rs.uky.edu/seed/ServiceTesting/howto_submitsamples.php
- University of Kentucky Veterinary Diagnostic Laboratory http://www.vdl.uky.edu/TestInformation

*The list above is provided for information purposes only. Inclusion does not imply an endorsement from USDA NRCS. Certified labs that can provide this testing service for Virginia can contact J.B. Daniel at j.b.daniel@usda.gov to be added to the list.