

Novel Endophyte Fescue Management

Kentucky (KY) 31 fescue is a widely adopted, cool season perennial forage grass recognized for the positive characteristics of adaptability, hardiness/persistence, and dependable lengthy grazing season under Missouri's diverse weather conditions, grazing/hay management systems and soil types. The positive characteristics that we see in KY31 fescue is due in part to the presence of an endophyte fungus (endo = inside : phyte = plant).

Why Novel Endophyte Fescue?

The endophyte fungus found in KY31 produces toxic ergot alkaloids, most notably ergovaline, that cause fescue toxicosis. MU Guide 4669 (<https://extension2.missouri.edu/g4669>) is one resource that discusses this issue. These toxins cause vasoconstriction and hormonal effects in livestock (cattle, horses, sheep). Fescue toxicosis is characterized by poor health and production, including low rate of gain, poor milk production, and poor reproduction. The endophyte fungus is transferred from one generation to the next through the seed.

Incremental alleviation practices, such as dilution with other forages, nitrogen management and grazing height management, have been implemented over the decades to potentially reduce the costly effects of fescue toxicosis. However, these practices can be costly to time and resources and still do not directly address the production of toxic alkaloids in KY31 fescue.

Replacing KY31 fescue with novel endophyte fescue eliminates the costly effects of fescue toxicosis. Naturally occurring novel endophyte fungus, which produce no ergot alkaloids or significantly below fescue toxicosis threshold levels, are inserted into endophyte free fescue. ***A word of caution, there are "endophyte free" varieties commercially available and should not be confused with novel endophyte fescue varieties.***

Preparing for Novel Endophyte Fescue

Identify potential novel endophyte fescue fields 12 months prior to a fall planting. It is recommended to start small and incrementally add fields over time. Soil sample potential field. Refer to MU Guide 9215 "Soil Sampling Pastures" for info on collecting samples (<https://extension2.missouri.edu/g9215>). If soil test results indicate lime, apply at least 6 months before planting.

It is important to eliminate existing stand of KY31. Following the Spray-Smother-Spray program (reference sheet available) on existing KY31 fescue fields has proven most successful for eliminating. Refer to MU Guide 4661 "Warm-Season Annual Forage Crops" (<https://extension2.missouri.edu/g4661>) for info on recommended smother crops, pearl millet and sorghum-sudangrass. Fertilize according to soil test for your smother crop species. If row crop fields are to be renovated, look through all the herbicide product labels for any potential plant back restriction intervals.

Research cultivars and select one that best fits your needs for your livestock. **Look on bag for the "Alliance for Grassland Renewal" label.** Cultivar product lines include, but maybe not limited to after this printing, Pennington Max-Q, Barenbrug BarOptima, DLF Protek, and Mountain View Estancia. Order seed in advance since supplies can vary depending on year and demand. Consider attending a Novel Endophyte Fescue extension meeting or field day.

Establishing Novel Endophyte Fescue

Establishment of any cool season grass requires some basic considerations. If you are renting a drill, contact the agency or company months in advance to reserve. Clean out any existing seed from drill and properly calibrate before planting. Set drill to plant (under field conditions) an average depth of ¼ inch. Insure press wheels close the seed furrow. Check and re-check drill while planting the field.

Avoid adding any other crop seed with the fescue, especially clover. If legumes are desired, they can be frost seeded a full year after establishment. Some guides may mention a nurse crop such as oats or wheat when planting. These are not necessary and could cause unnecessary competition, especially under adverse conditions.

Planting window for novel fescue is September up to October 1st. Seeding rate is 15 pounds pure live seed (PLS) per acre (potentially increase under adverse conditions). Fertilize according to soil test for newly established novel fescue.

Managing New Stand

Stay off new stand during the fall and winter. Haying the first season is ideal. Grazing the first harvest increases likelihood of damage. If grazing, wait for 6 to 8 inches of growth and practice rotational grazing. It is critical with any cool season grass to avoid overgrazing (below 4 inches, ideally) and provide a rest period for regrowth. Keep any cool season grass in vegetative stages to reduce risk of reduced quality and diverting energy to reproduction. ***Novel fescue is patent protected technology and cannot be harvested for seed unless under contract with company that owns that specific variety.***

Scout fields for weeds. Refer to MU IPM Guide 1031 “Weed and Brush Control for Forages, Pastures and Non-cropland” for weed identification and control recommendations (<https://extension2.missouri.edu/ipm1031>).

Be mindful to avoid reintroducing KY31 seed into the field, potentially through very mature, poor quality KY31 hay or seed transfer by contaminated equipment. One perceived concern is pollen flow from neighboring fields. Endophyte fungus is passed through the seed, not pollen. Success has also been in fields where grass waterways remained in KY31 due to highly erodible soils. The key to success is maintaining a healthy, vigorous, vegetative stand through grazing, clipping (hay or mowing), fertilizing and resting/recovery periods of fescue.

Consider attending a Regional Grazing School taught by University of Missouri Extension and USDA-NRCS to help maintain forage through a managed intensive rotational grazing system.

Resources

Craig Roberts (robertscr@missouri.edu) and John Andrae (Clemson) – “Fescue Toxicosis and Management”

Craig Roberts – Research report - <https://plantsciencesweb.missouri.edu/roberts/research/fescuetoxicosis.htm>

Sarah Kenyon – “Managing fescue toxicosis through forage canopy, limestone, novel fescue”

<https://mospace.umsystem.edu/xmlui/handle/10355/61940>

Hancock and Andrae – University of Georgia - “Novel Endophyte-Infected Tall Fescue”

<https://extension.uga.edu/publications/detail.html?number=C861&title=Novel%20Endophyte-Infected%20Tall%20Fescue>

Alliance for Grassland Renewal - <http://www.grasslandrenewal.org/>