# Managing and Replacing Toxic Fescue

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Research from many states has demonstrated conclusively that the endophyte is associated with quality problems in tall fescue. Interdisciplinary teams of researchers at different locations are presently engaged in studies attempting to provide answers to many of the remaining questions concerning the endophyte. A cause-effect relationship between the endophyte and a toxin has not been shown conclusively.

Research suggests at least four areas that should be considered to offset or eliminate the endophyte effect in animal production:

1. *Manage to minimize the effect*—Research suggests that the effects of the endophyte can be reduced through managing pasture and hay fields. Grazing management that will keep the plant young and vegetative will result in better animal performance than permitting the plants to become mature. Likewise, harvesting the first hay crop in the boot stage will result in better animal performance than late cut hay. Bushhogging, clipping or the use of growth regulators to prevent seedhead formation will result in better production from the pasture and better animal performance. Other management factors such as chain harrowing, fertilizing, pest control, creep grazing and rotational grazing can result in improved overall pasture management and animal performance thus minimizing the effects of the endophyte.
2. *Avoid the Endophyte*—Problems associated with the endophyte can be avoided simply by using other forage species. Other cool-season grasses, warm-season grasses and legumes can be used, thus, eliminating the endophyte effect. These species can also be used in combination with fescue pastures to avoid the endophyte effect during the hot summer months. A system of using infected fescue in spring and fall, with other grass or grass-legume mixtures for summer grazing will make it possible to avoid the endophyte during the most critical period.
3. *Dilute the Endophyte Effect*—Sufficient data exist to show that the negative effects on animal performance associated with the endophyte can be diluted substantially by the presence of other feeds in the diet. A most practical and economical way of diluting the effect is by growing legumes with the infested fescue. Research from many states over the years has shown increased pasture production, liveweight gains and conception rates when legumes are renovated into fescue pastures. Hoveland, et. al. showed that even small amounts of birdsfoot trefoil or ladino clover in endophyte-infected fescue pastures sharply increased steer gains in Alabama. Gay, et. al. showed a benefit of legumes in fungus-free pastures in Kentucky. Cattle grazing fungus-free Kenhy gained 1.37 pounds per day while cattle grazing fungus-free Kenhy that had been renovated with red clover gained 1.64 pounds per day.
4. *Replace infected stands with low endophyte varieties*—Several low-endophyte or endophyte-free varieties are available. These include Johnstone and Kenhy from Kentucky, A.U. Triumph from Auburn, MO 96 from Missouri, Forager from Indiana and fungus-free Kentucky 31 from a number of sources. Additional varieties will likely be available this year with still more in the future. It is recommended that careful consideration be given to choosing a low-endophyte variety. A new variety that is simply "low-endophyte" or "endophyte-free" will be of little or no value if it is not adpated to your area, does not produce well, or is susceptible to disease or other pests. When considering a new variety, attention should be given to adaptability, agronomic performance, animal performance, persistence and pest resistance.

Cost for converting from high to low endophyte fescue will vary depending on land class and farming programs. Where fescue is used in rotation with other crops cost differences will only be the difference between low and high endophyte seed. On the other end of the spectrum with sloping land where erosion hazards are high, cost of chemicals, fertilizers, seed and tillage equipment will range from 50 to over 150 dollars per acre.

Level of infection should be determined before deciding to replace an old stand. Several states now have laboratories for determining endophyte level. Accurate sampling is important. Consult your County Extension Agent for Agriculture to determine cost, number of samples, time of sampling and laboratory address.

Any infected fescue field to be replanted should not be allowed to produce seed during the reestablishment year. Prevent seedhead formation by having grazing, clipping or chemical treatment. Preventing seed formation will insure that any seed remaining in the soil will be over one year old at the time of the new seeding. Research has shown that the

endophyte dies in the seed usually within a year, thus any volunteer plants from old seed would be endophyte free.

Methods of replacing endophyte infected stands include:

A. *Rotation*—rotating with other crops followed by seeding low-endophyte varieties. There are many options ranging from no-till corn for silage followed immediately with new fescue to longer term rotations involving two or three crops. With any rotation option, careful consideration must be given to herbicide residue, erosion hazard, (leave all waterways—it's better to have a highly infected sod waterway than a non-infected gully) and degree to which the old sod is destroyed.

B. *Prepared Seedbed*—Certain situations would permit destroying the old sod through tillage, preparing a seedbed and seeding new fescue. It is not always easy to destroy all of an old fescue sod by tillage. The objective is to destroy all the old fescue and get a good stand of the new variety without erosion.

C. *Chemical Kill, No-till*—On sloping land where methods A and B are not feasible because of erosion hazards—chemical kill of infected stands followed by no-till seeding is the only remaining option. The chemical kill, no-till can be used to go direct from fescue to fescue, or other forage crops can be used in a rotation. It is critical that chemicals be used effectively; thus, getting the existing infected fescue killed. This requires attention to label instructions and striving for optimum effectiveness. Recommendations on chemicals, rates and times of application will vary among states, consult state recommendations for details.

Additional research is underway at different locations within the fescue belt on chemicals, rates and times of application. Research in Kentucky has shown satisfactory results using both Roundup and split applications of Paraquat. Best results have been found when September seedings were made, poorest results were found for spring seedings. Although chemical kill was satisfactory in spring, competition from warm season annual weeds killed the newly seeded fescue.

**Although many questions remain, research has resulted in major breakthroughs with tall fescue. We are possibly nearing discoveries which will answer many of the remaining questions relating to fescue quality and, perhaps, provide additional solutions. Cooperative inter-disciplinary efforts will be required within and among states for this and forthcoming information to be of maximum benefit to livestock producers. Likewise, patience will be required of livestock producers and various segments of agribusiness. There are still many questions to be answered; however, application of the existing and forthcoming technology, along with required management, will have a drastic impact on animal agriculture.**