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Switching from toxic to novel endophytes

Most Virginia producers are taking a financial hit from toxic tall fescue. Although a number of management practices can reduce the amount of toxic alkaloids consumed by livestock and minimize their effects on animal performance and welfare, none of these are true cures for fescue toxicosis. E.g., the idea that adding clovers to “hot” fescue pastures will “dilute the toxin” is misplaced. Clovers certainly benefit animal performance, but they provide a similar boost in gain to animals grazing toxic and non-toxic pastures alike.

There is only one (legal) remedy for fescue toxicosis: stop feeding toxic fescue to cattle, and more producers around Virginia are considering replacing toxic fescue. However, converting an established field of toxic tall fescue to a different forage species or a novel-endophyte tall fescue involves substantial cost and risk, not to mention potential losses of productivity during the conversion process. While these may be insurmountable issues for some producers, the benefits will frequently outweigh the costs for others. And, in many cases, strategic replacement on part of the farm may be the most economical approach to reducing fescue toxicity issues. In this article, we describe the three proven and most common ways for successfully converting a pasture to novel-endophyte tall fescue.

The endophyte in tall fescue, whether novel or toxic, can only be spread through the seed of the host plant. The key to completely eliminating all existing toxic tall fescue plants and seeds in a pasture is to kill the existing sod, provide enough time for any missed plants and seeds to grow, and then kill these residual plants with another herbicide application. Three methods for converting toxic endophyte-infected tall fescue stands to novel endophyte currently are recommended, with the primary variation among them being the length of time between herbicide applications.

With the spray-smother-spray (summer) approach, toxic fescue pasture gets sprayed with glyphosate or other grass killer herbicide in the spring and a summer annual grass gets planted in the pasture in late spring or early summer. Following harvest (either grazing or baleage), the field is re-sprayed and seeded with novel endophyte fescue within the optimum planting window (late August to the middle of September).

Although called a “smother” crop, the primary purpose of the summer annual is to meet forage production needs during the conversion process. The selected forage species should have an up-right growth form, which will provide the conditions necessary for toxic fescue seeds to sprout and grow. Pearl millet and sorghum-sudangrass are the usual choices for a summer smother crop. These grasses are stemmy at the base; following harvest they leave little residue which might cover emerging fescue plants. This helps increase the chance that the second herbicide application will reach any residual toxic fescue plants. Low-growing, leafy forages such as crabgrass are not preferred because they can shield small seedlings and escapes from the herbicide.

In the spray-smother-spray (winter) approach, a producer will kill the existing sod in the fall and plant a smother crop for winter/spring forage production. Again, selection for the appropriate growth form of this smother crop is important, and most producers utilize a cereal species such as rye or wheat. Annual ryegrass is not a good choice as it may reseed and continue to smother or compete with the

desirable fescue for years to come. In most cases, a producer will graze or harvest this forage in the spring and spray the pasture again. A forage crop may be grown or the ground may be left fallow over the summer. The final spray takes place in early fall followed by the establishment of the desired novel endophyte fescue.

The third approach (spray-wait-spray) does not involve a harvestable forage smother crop and thus is the shortest of the methods. With this technique, a producer will spray the stand of toxic fescue in the middle of July. The ground is left fallow for 4 to 6 weeks, which gives any missed toxic tillers or seeds a chance to grow. The producer then applies a second herbicide application before planting the novel-endophyte tall fescue.

Before embarking on pasture renovation, remember to soil sample and follow soil test recommendations. Correcting for pH or nutrient imbalances is important in ensuring the successful establishment and production of all forage crops planted. It is also important to minimize the seed production of the toxic fescue in the establishment year by clipping the fescue seedheads before the seeds become viable. Glyphosate or paraquat can be used as herbicide applications in the renovation process. Clover is often a desired species in non-toxic tall fescue stands, but should not be seeded at the same time as the grass. Allow the grass time to grow before frost-seeding the pasture with clover in the February following grass establishment. The new fescue stand can be cut for hay in the year following establishment or even grazed lightly if the plants are firmly rooted.

These three approaches to fescue renovation are lengthy and intensive, but they ensure that there is little risk that the new stand is contaminated with residual toxic tall fescue plants. In the case of the smother crop approaches, the forage produced can offset some of the opportunity costs of taking a field out of production for a season. Conversion is not for every pasture, but these renovation recipes will help minimize the risk for those that decide to convert. Determining when to apply a band aid or when to go for the cure will be the focus of a subsequent article.

For those interested in converting one field or a whole farm to novel-endophyte tall fescue, consider attending the next Fescue Renovation Workshop, March 11, 2019, at the Southern Piedmont Agricultural Research and Extension Center in Blackstone. For more information, contact Gabriel Pent (gpent@vt.edu; 434-818-5542) or John Fike (jfike@vt.edu; 540-231-8654).

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