



ANIMAL PERFORMANCE ON TOXIC TALL FESCUE DURING THE SUMMER

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Introduction: Wildtype endophytes living within many tall fescue varieties (including ‘Kentucky 31’) help the plant survive stressful conditions. However, they also produce toxic ergot alkaloids that cause distress to livestock. Among other effects, the toxins constrict blood vessels, reducing blood flow to the extremities. This amplifies heat stress, causing reduced intake and corresponding reductions in weight gains for growing cattle and lower conception rates for breeding cows. Novel or ‘beneficial’ endophytes that produce little or no alkaloids have been matched with new fescue varieties to provide both robust grass performance and no negative effects on livestock. We are comparing these materials on a number of farms around the state to better understand and demonstrate benefits of novel endophyte fescue.

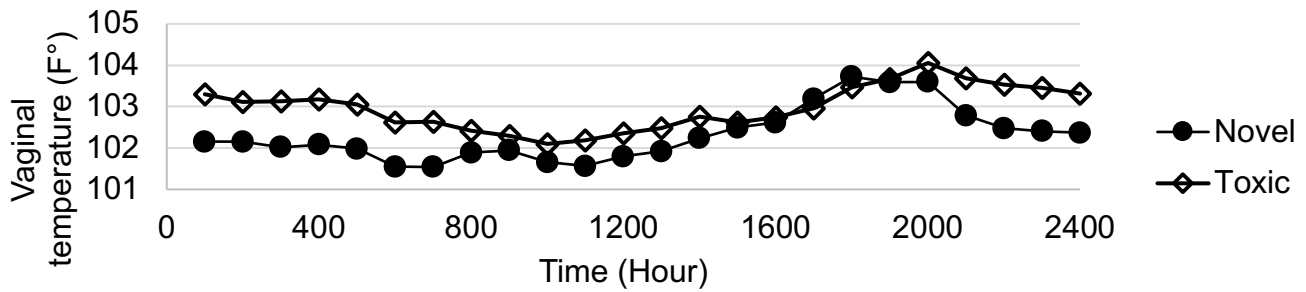
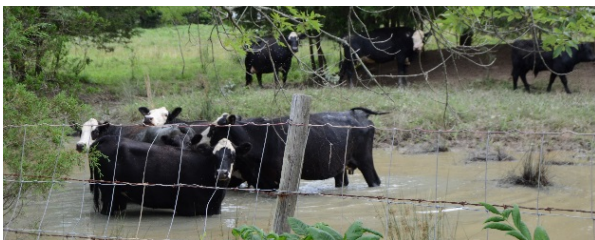


Figure 1: Heifers that grazed toxic fescue had significantly hotter maximum body temperatures. These animals also did not cool down as quickly as those grazing novel endophyte tall fescue.

Table 1: Total ergot alkaloids (TEA) of toxic fescue pastures, air temperatures, and average daily gains of heifers grazing toxic and novel endophyte fescue pastures at two counties in Virginia.

| County | TEA of toxic fescue --- ppb --- | Average air temperature | | Average daily gains | | |
|--------------|------------------------------------|-------------------------|---------|---------------------|-------|------------|
| | | Maximum | Minimum | Toxic | Novel | Difference |
| | | ----- (°F) ----- | | ----- lb/day ----- | | |
| Patrick | 1870 | 88 | 63 | 1.33 | 1.78 | 0.45 |
| Mecklenburg* | 1600 | 87 | 66 | 2.36 | 2.75 | 0.39 |

*Gains adjusted based on assumptions about gut fill.



Cows and calves grazing on toxic tall fescue in the summer will head to the water or shade in an attempt to cool down.

Cow-calf: For cow-calf producers, tall fescue can reduce weaning weights by about 50 lb and conception or pregnancy rates by about 16%. Based on those estimates, utilization of toxic tall fescue resulted in an average annual loss per cow of \$160, or nearly \$2 billion annually. (Values based on 2005 to 2014 cattle prices. Estimates from Kallenbach, R. 2015. Coping with tall fescue toxicosis: Solutions and realities. *Journal of Animal Science* 93(12): 5487-5495.)