

## **Fescue Tolerance Testing**

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Fescue toxicosis is characterized by clinical symptoms such as vasoconstriction, immunosuppression, and poor thermoregulation. Fescue toxins bind to membrane receptors of cells that control constriction of blood through capillaries responsible for heat dissipation. When cattle consume toxic tall fescue, they lose ability to move blood to their skin where heat can be lost to the environment. As they lose this ability they become more prone to heat stress. In the winter, this lack of blood flow leads to other clinical symptoms, such as fescue foot and loss of tail switch, that occur from restricted blood flow.

Fescue toxicosis is also characterized by poor performance, such as low rate of gain, low weaning weight, low conception rate, and low milk production. This lack of production costs beef producers between \$180 and \$200 million each year in Missouri alone; it costs livestock producers in the eastern US well over \$1 billion annually.

Two approaches to reducing the impact of fescue toxicosis is 1) to replace toxic fescue with a nontoxic grass, or 2) manage the toxic grass with a series of effective practices. One of the newest management practices is the selection of animals that are tolerant to toxic tall fescue.

Cows were grazed on toxic tall fescue and calf weaning weight was measured. DNA was sampled from the cows and analyzed to determine if any genetic similarity could be found between the dam's DNA and weaning weight of the dam's calf. A genetic pattern was identified that was predictive of weaning weight. The genetic pattern of the dam that correlated to its calf's weaning weight were genes that play a role in regulating cell membrane receptors.

Research to date has measured a difference of 112 Lbs in weaning weight loss due to a susceptible dam grazing toxic tall fescue compared to nontoxic forage. Selecting for fescue tolerance results in approximately 56 Lbs greater weaning weight. It is possible to select for cows that are more tolerant to toxic tall fescue. As with any single trait marker, single trait selection is not wise. It is possible that the best producing cows in a herd or fescue intolerant. Consequently, consideration of using T-Snip testing should be as part of the selection criteria for a herd.