

# Update on Max Q Tall Fescue

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**E**arlier, (Georgia Cattleman, April 2000 issue), we reported on our research results with Max Q tall fescue, which contains a non-toxic fungal endophyte that furnishes excellent animal performance but also has the toughness and stand persistence of toxic endophyte-infected varieties. This development is a result of cooperative research between Dr. Joe Bouton at the University of Georgia and Dr. Gary Latch at Ag Research in New Zealand. In our previous article, we also gave recommendations on planting and management of this unique grass that has the potential for greater animal production and profit. Max Q is not for all cattle producers. Higher seed costs and a requirement for good management procedures mean that only professional cattle producers and pasture managers should consider planting Max Q.

This article presents an overall look at our research with Max Q and how it looks to us at this time. Field research on Max Q is being done at four locations. Animal grazing trials and some yield are in progress at the Northwest Branch Station, Calhoun, with Phil Worley, superintendent; and at the Central Georgia Branch Station, Eatonton, with Vaughn Calvert, superintendent. Forage yield trials are located at the Plant Sciences Farm, Athens, and the Mountain Branch Station, Blairsville, with Joe Garner, superintendent.

## The fungal endophyte in tall fescue

Our previous research showed that the tall fescue fungal endophyte (lives inside the plant and is not visible externally) is beneficial for plant drought and grazing tolerance, competition with other grasses, and survival in pastures. However, the endophyte produces a toxic alkaloid which is detrimental to cattle conception and gains. Although removal of the endophyte from the plant will eliminate toxicity and greatly improve

animal performance, its removal often reduces tall fescue survival, especially during hot, dry summers. Therefore, we have conducted our animal performance and stand survival research based on the question of whether Max Q will give producers the best of both worlds, excellent performance like endophyte-free varieties, but stand survival equal to toxic endophyte-infected varieties.

## How did cattle perform on Max Q?

During 1999, at both Calhoun and Eatonton, average daily gains on endophyte-free and Max Q varieties were over 2 lb. per day for steers and about 2 lb. per day for heifers. In contrast, average daily gains on toxic infected tall fescue varieties were reduced by more than 50%. For other measures of tall fescue toxicity such as elevated body temperature and depressed blood prolactin levels, Max Q was identical to endophyte-free varieties in not showing any toxicosis. These advantages offer the potential for substantial economic gain to a livestock producer for both endophyte-free and Max Q varieties.

## How do Max Q stands hold up in pastures?

In grazed pastures, stands of endophyte-free, Max Q, and toxic infected tall fescue were holding up well. However, endophyte-free pastures were not able to carry as many animals when compared to the same tall fescue varieties either infected with the toxic endophyte or with Max Q. In separate small plot variety trials in bermudagrass sod grazed closely during the hot dry summers of 1998 and 1999, endophyte-free tall fescue varieties lost 77% more stand than the same varieties infected with the toxic endophyte. This was to be expected and shows the value of toxic endophyte infection for plant survival. However, varieties infected with Max Q demonstrated much better stand retention

with only a 12% comparable stand loss for the Jesup variety and a 35% loss for the Georgia 5 variety when compared to the same varieties infected with toxic endophyte. It should be emphasized that these tall fescue stand losses occurred in closely grazed bermudagrass sods during two drought years. These conditions are much more stressful than where Max Q is grown alone without strong bermudagrass competition.

## Continuing and future research

We are continuing the existing pasture trials with steers and heifers at both locations to further confirm the advantages of Max Q for animal gains and also for persistence under grazing. Results during the spring of 2000, in spite of drought conditions, continue to show outstanding animal gains for Max Q, similar to that of endophyte-free tall fescue pastures. We have noticed under drought stress that Max Q has produced more forage and remained green longer than endophyte-free tall fescue, probably a result of better root growth and drought tolerance.

A large new beef cow-calf grazing study is in progress at the Northwest Branch Station, Calhoun, to compare Max Q with toxic endophyte-infected tall fescue. Conception rates, cow weights, calf birth and weaning weights will be determined as well as various physiological measurements and effects of the cattle on pastures. Small plot grazed experiments have been continued and expanded to evaluate persistence and productivity of Max Q endophyte in combination with currently available and improved tall fescue varieties.

The future of Max Q is bright and offers opportunity for good livestock and pasture managers in areas where tall fescue is adapted. As additional research data and practical observations on Max Q by cattle producers are available, we should be able to offer better recommendations on management of this new grass.