

Bermudagrass Fertilization Strategies in Tennessee

*Dr. Gary Bates
Plant Sciences
The University of Tennessee*

Over the last several years, bermudagrass has become an increasingly popular forage crop for Tennessee producers. The large horse industry has increased the demand for high quality hay. In addition, a decrease in tobacco acreage and an increase in the number of producers getting out of the dairy business has resulted in an increase people producing hay for the horse market. The availability and promotion of new bermudagrass varieties has resulted in a large number of acres of bermudagrass being planted specifically for the horse hay market.

There has been limited research on bermudagrass in Tennessee. Fertility trials from several years ago indicated that approximately 360 lb of N could be applied in split applications to achieve maximum yield (Figure 1).

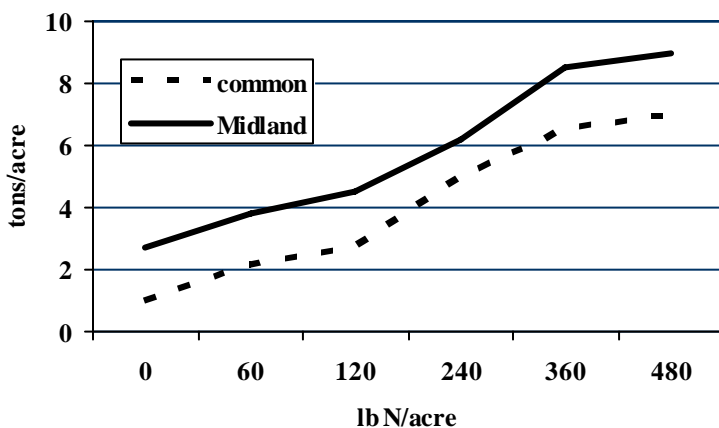


Figure 1. Yield of two bermudagrass varieties at various nitrogen rates. (Fribourg and co-workers. 1980. TN Farm and Home Sci. Report 114.)

Recommendations for bermudagrass fertilization have been based on this research, as well as other work done across the Southeast. Most producers have been interested in the high yields that can be obtained with bermudagrass, so their fertilization programs often included up to 400 pounds of nitrogen split into four applications.

As more producers began submitting bermudagrass samples for analysis through the UT Forage Testing Laboratory, lab workers began a routine screen for nitrates in bermudagrass samples. It was surprising that over 70 percent of the samples tested positive for nitrates. Samples that tested positive in the screening process were then analyzed for nitrate level determination. This information is important due to the toxicity of nitrate to ruminant animals, and to the fact that all nitrogen, regardless of the form, is used in the calculation of crude protein for the forage

analysis. This crude protein calculation may lead some producers to assume their bermudagrass cutting had an excellent protein level, when in reality some of the nitrogen that was counted as protein was in the nitrate form (Figure 2).

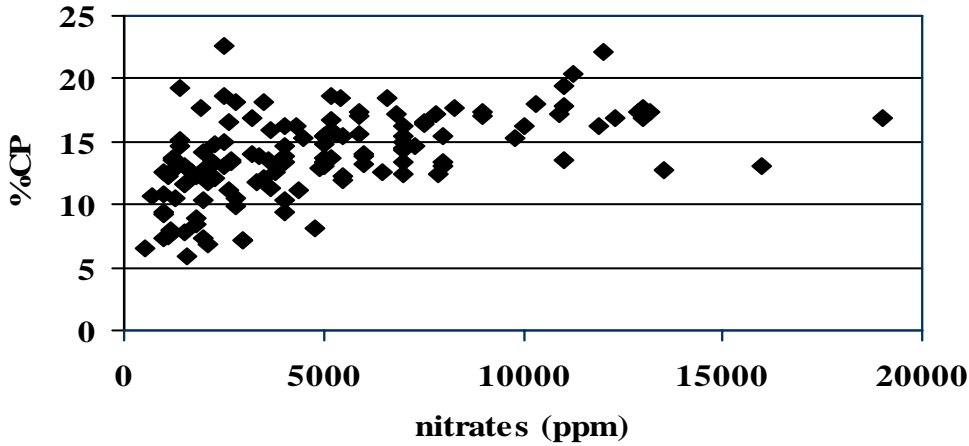


Figure 2. Relationship between nitrate level and crude protein level in bermudagrass samples submitted to the UT Forage Testing Laboratory.

The large number of samples testing positive for nitrates raised the concern of forage professionals in the state. Further research in the area of bermudagrass fertility indicated that nitrogen fertilization recommendations need to be further defined (Figure 3).

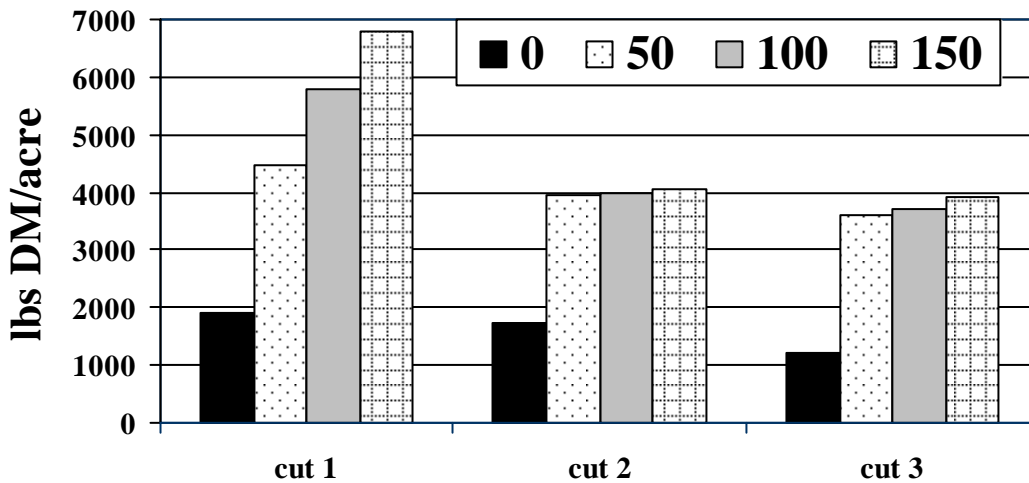


Figure 3. Relationship between nitrogen fertilization rate and yield for bermudagrass. (Cripps. MS Thesis. 1998. TN Tech.)

This data illustrated that heavy nitrogen fertilization rates could be used early in the growing season. But later applications need to be reduced, due to limited increase in yield with heavy N fertilization.

Current recommendations encourage producers to apply up to 150 lb of N early in the season, but no more than 50-75 lb of N per acre with later cuttings. Producers are encouraged to only apply more than this if soil moisture conditions are such that bermudagrass growth is not limited.