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International Plant Nutrition Institute (IPNI)
3500 Parkway Lane, Suite 550
Norcross, Georgia 30092-2844 USA
Phone: 770-447-0335 Fax: 770-448-0439
E-mail: info@ipni.net Website: www.ipni.net

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FERTILITY CONSIDERATIONS FOR FORAGE BERMUDAGRASS

Bermudagrass is an important hay and pasture crop in many states. In some southern states it is considered the most important of all warm season forages. The prevalence of bermudagrass is attributable to its high yield potential, drought resistance, and tolerance of somewhat acidic soil conditions. Bermudagrass yield potential, like any other crop, is subject to water availability—amount and distribution of rainfall, and soil depth as it relates to water storage—but another important and all too common limiting factor is nutrition and fertilizer input.

Bermudagrass can be produced for grazing, hay, or a combination of the two. Hay is generally cut at about 30-day intervals with from two to as many as six cutting per season, depending on climate and moisture. In hay production, nutrient uptake is essentially the same as removal, so whatever the crop takes up is exported from the field in harvest. Thus there is potential for rapid depletion of soil nutrient (P and K) reserves in hay production. In grazing systems some nutrients are recycled via animal urine and feces. How much to credit to this recycling depends on distribution of animal waste, which is a function of several factors such as grazing intensity and water and shade distribution.

Nutrient management practices can impact bermudagrass yield and forage quality, as well as stand density and longevity. Following are a few basic facts to keep in mind when fertilizing bermudagrass this season.

Adequate N nutrition is associated with improved shoot and root growth, stress tolerance, resiliency, and higher protein content. Bermudagrass will take-up about 50 lb of N per ton of biomass. Tissue levels of N should be maintained at about 2.2% of dry matter. Basic N fertilizer recommendations for hay production may call for the application of N at 100 lb/A in the spring, with the remainder applied in split applications just after, or between harvests. As with any general recommendation this should be adjusted to specific conditions.

Phosphorus fertility is commonly associated with increased root growth and branching, increased N use efficiency, and improved drought tolerance and recovery. Bermudagrass will take-up about 12 lb P_2O_5 per ton, thus a top yielding hay crop can remove as much as 100 lb P_2O_5 per acre. Fertilizer P applications should be based on soil test results, but crop removal can also be useful in developing strategies.

Adequate K fertility is associated with increased disease resistance, improved winterhardiness, maintenance of good stand density, and better N use efficiency. Additionally, maintaining adequate K levels through the summer months to the onset of dormancy is important in the manufacture of carbohydrates for root growth and carbohydrate storage. Bermudagrass will take-up about 50 lb of K_2O per ton with uptake reaching as much as 4 lb K_2O per acre per day in a rapidly growing crop. Consequently, reserves of soil K may be reduced rather rapidly under intensive bermudagrass production, resulting in stand density and yield reductions. Soil testing is useful in developing K recommendation for bermudagrass; however, removal should be considered as well, especially in sandy soils with limited cation exchange capacity (CEC).

Secondary elements and micronutrients can also be important in achieving optimal bermudagrass production. This was shown in an east Texas study (Better Crops with Plant Food, No. 2, 2007) where in the fourth year of production Tifton 85 bermudagrass yield was increased 1 ton, or 17% with the application of S fertilizer.

Optimal fertility management practices for bermudagrass can vary considerably with production goals and climatic and soil environments; however, application of the 4Rs of nutrient management (right fertilizer rate, source, time, and place) helps ensure optimum yield and forage quality, improved stand longevity, and profitability regardless of the environment or system.

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For more information, contact Dr. W.M. (Mike) Stewart, Southern and Central Great Plains Director, IPNI, Phone: (210) 764-1588. E-mail: mstewart@ipni.net.

Abbreviations: N = nitrogen; P = phosphorus; K = potassium; S = sulfur.

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