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Fertilization of Perennial Warm Season Grasses

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Most producers are preparing for next year's pasture fertilization so it is important to review which nutrients are needed. Fertilizer requirements of perennial pasture grasses under grazing are very different from those managed as a hay crop. Approximately 80% of the phosphorus (P) and 65% of the potassium (K) consumed in forages are returned to the soil in cow manure and urine which may be re-utilized by the pasture crop. Substantial amounts of dietary nitrogen (N) are also returned to the soil in urine and manure, however, volatilization and leaching losses are high. Producers have enjoyed tremendous savings in fertilizer cost since the introduction of the new IFAS recommendations which eliminate the need for P and K fertilizer for established bahiagrass pastures in south Florida. Such a reduction in fertilizer use is also in tune with the need to minimize negative environmental impacts from excessive pasture fertilization.

On-going studies are evaluating fertilizer requirements for other pasture grasses such as limpgrass and stargrass. In 1996 in Osceola county, applying 60 lb P₂O₅/A plus 60 lb K₂O/A plus micronutrients with a base 50 lb N/A to a 'Floralta' limpgrass pasture did not improve annual forage yield (6.0 ton/A) compared to a 50 lb N/A with no P, K or micronutrients. However, as a result of a longer rainy season in 1997, Floralta forage yield showed a slight response to the complete N-P-K fertilizer treatment.

In a fertilizer study replicated in Hardee, Manatee and Pasco counties strips of bahiagrass, limpgrass and stargrass were established in the same pasture. Sections of grass strips were fertilized in early-March, 1998 and 1999 with: 1) 60 lb N/A, 2) 60-25-60 lb N-P₂O₅-K₂O/A, 3) 60-25-60 lb N-P₂O₅-K₂O/A plus micronutrients, and 4) a

control with no fertilizer. For both years, there were no differences in mean annual yield between the N-only and the complete fertilizer treatments in Hardee and Manatee counties and all three grasses responded the same way. However, on the sandy ridge in Pasco county, the complete fertilizer treatment plus micronutrients consistently produced more limpgrass and stargrass forage than the N-only or the N-P2O5-K2O treatments by 10 to 18% depending on year. Yields from the N-P2O5-K2O and the N-only treatments were also the same at Pasco, but all fertilizer treatments out-yielded the no-fertilizer treatment at all sites.

In a third trial on a wet site in Hardee county, selected combinations of 60 lb N/A with P (0, 20, 40 and 80 lb P2O5/A) and K (0, 40, 80 and 160 lb K2O/A) were applied to Floralta pasture that had not received any P or K the previous 8 years. Plots were fertilized in July 1998 and 1999 and harvested after 35 days regrowth. Plots were re-fertilized with the said amounts of N-P-K fertilizer after the first harvest and a second 35-day harvest was taken each year. Forage yield increased in a linear manner in response to P application for all four harvests. Forage yield showed no response to K application except for the 1999 second harvest when yield increased up to the 40 lb K2O/A rate.

The P2O5 and K2O levels most commonly recommended by IFAS for limpgrass and stargrass pastures in south Florida are 40 lb P2O5 /A and 80 lb K2O/A. The studies discussed in the preceding paragraphs question the validity of this recommendation. A recent survey by the South Florida Beef/Forage Program showed that most cattlemen use a mixed blend of fertilizer on limpgrass and stargrass pastures. On the average they apply 295 lb/A of a 17-5-9 (N-P2O5-K2O) formula. This fertilization practice is supported by the results of the field studies discussed above.

We are continuing to research the fertilization requirements of the major perennial warm season grasses planted in south Florida including the need for fall fertilization. From these results we will develop efficient and economical pasture fertilization practices that will benefit Florida cattlemen.