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Fall Nitrogen (N) Fertilization of Limpograss Revisited

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Low forage production on warm-season grass pastures during the cool, short days of October to March is a major constraint to cow-calf production in Florida. Limpograss (hemarthria) is the preferred warm-season perennial used in Florida for stockpiled forage. It has a higher cool season production and higher total digestible nutrients (TDN) but a lower crude protein (CP) than most other warm season grasses at similar maturities.

Sod-seeding limpograss pasture with summer legumes, like aeschynomene, and protein supplementation have increased animal gains on stockpiled limpograss. A third method of increasing CP nutrition of cattle grazing stockpiled limpograss forage is late N fertilization. Limpograss pasture is usually closed to grazing in early September, fertilized with 50-60 lb N/A, and forage is stockpiled and grazed as needed during the fall an winter.

Drs. Al Kretschmer and George Snyder in 1985 reported that delayed fall fertilization beyond September reduced the amount ot fall forage produced from Bigalta limpograss at Fort Pierce, but increased CP concentration. They later showed that N fertilization in September increased forage production, and a second N fertilization two to three weeks before grazing in November or early December maintained CP content in total forage above 7% for stockpiled Bigalta.

In 1999-2000, we accumulated regrowth of Floralta limpograss forage from September through mid-November at the Range Cattle REC, Ona. On November 19, we applied 30 lb N/A using either granular or liquid ammonum sulfate vs. a no-fertilizer control. Subsequent forage regrowths were harvested to a 6" stubble on 30, 60 and 120 days after

fertilization for dry matter yield. A second forage sample was collected by hand from five locations in a plot, also to a 6" stubble, and composited for each plot on 30, 60, 90 and 120 days after treatment. Composited forage sample was cut up into bottom and top layers and dried to determine the proportion of dry matter yield in each layer. Dried samples were analyzed for crude protein and in vitro organic matter digestion (IVOMD) for top and bottom fractions, separately.

Standing forage yield was not affected by fertilizer treatment on any harvest date. However, standing forage increased from 2.7 tons/A on the day of fertilization to 4.4 tons/A 60 days later because of a warmer 1999-2000 winter season. For the same reason, the top forage dry matter yield increased from 0.8 tons/A initially to 2.5 tons/A 60 days later. A mid-January 2000 freeze caused a decline in standing forage to 3.8 tons/A 120 days after fertilization.

Crude protein content in top forage averaged 7% initially and increased with N fertilization to 11.4% in 30 days and 9.6% in 60 days. There was a slight increase in bottom forage CP from 4.7% to 6.6% as a result of late N application. Following the January frost, CP declined to 5.2% in top forage and to 4.0% in bottom forage 90 days after fertilization. Recovery of forage CP in top forage was faster for the liquid than the granular fertilizer. By 120 days after treatment, top forage CP was 5.8, 6.2 and 9.1% for the no-fertilizer, granular and liquid ammonium sulfate, respectively. Forage digestibility ranged between 50 and 60% regardless of fertilizer treatment, harvest date, or forage layer.

These results confirm that late fall N fertilization will not increase the quantity of stockpiled limpograss. Late N application will improve CP content and TDN:CP ratio in top portion (>12") of stockpiled Floralta limpograss to provide a balanced feed for cattle under moderate grazing until frost. If the bottom layer or frosted forage must be consumed, then a protein supplement may be needed for good animal performance. Recovery of CP in regrowth forage after a frost was faster for the liquid fertilizer. Encouraged by these results, in 2000-2001 we are conducting a wider study on the use of liquid N fertilizer for the fall N fertilization of Floralta limpograss at Ona.