RESPONSE OF BLUE PANICGRASS, *PANICUM ANTIDOTALE* RETZ., TO FREQUENCY OF CLIPPING AND FERTILIZATION

A Thesis

By

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C H A P T E R V I

SUMMARY AND CONCLUSIONS

A study was conducted on the Texas A&M Plantation near College Station, Texas, from April 1966 to October 1966, to evaluate the response of blue panicgrass, Panicum antidotale Retz., to frequency of clipping and nitrogen fertilizer.

Plants were subjected to 3 frequencies of clipping (3, 6, and 9 weeks) and 4 levels of nitrogen fertilizer (0, 50, 150, and 250 pounds per acre of nitrogen as ammonium sulfate) in all combinations.

Largest production of forage was experienced with a 9-week frequency of clipping and 150 pounds of nitrogen fertilizer, but protein content was lower with the 9-week frequency. The change in yield with fertilization was not as great as expected in a plant which is believed to require heavy fertilization. Small effects of nitrogen on production of herbage were obtained with frequent harvest; whereas, with mild and late harvests, the higher levels of nitrogen doubled production.

The frequency of clipping exerted a greater influence on quality and quantity of forage than nitrogen levels. Clipping each 3 weeks gave highest protein content but was too severe on plant growth. The 6-week frequency of clipping allowed the plant sufficient time to recover from previous defoliations and production did not differ significantly from the 9-week frequency.

Crude protein content of dry forage at each harvest was influenced by nitrogen fertilization and age of plant material at cutting. Crude protein level increased as nitrogen fertilization increased. On the

other hand, crude protein levels decreased with increasing age of plant material.

There was an interaction of clipping frequency and nitrogen level on leaf:stem ratios. The ratios decreased as clipping was delayed. The leaf:stem ratio decreased as nitrogen increased from 50 to 250 pounds per acre at both 3 and 6-week harvesting but increased with 9-week harvesting.

The peak of leaf area index development of blue panicgrass was approximately 5 to 6 weeks after cutting. LAI was low following clipping and increased slowly during the early regrowth period. The increase in LAI following clipping was more rapid with 3-week harvesting than 6-week harvesting indicating a greater leaf surface residual or more active residual leaves following frequent cutting. LAI was lower in 9-week material than 6-week material indicating loss of old leaves or reduced tillering which would limit leaf development.

These data suggest an intermediate harvest frequency and approximately 150 pounds of nitrogen per acre. It is not possible to maximize both yield and protein content, but this treatment combination appears to be a good compromise. Total protein production is maximized, and a peak LAI indicates an adequate plant recovery period following clipping.