

# TECHNICAL NOTE

UNITED STATES DEPARTMENT OF AGRICULTURE  
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NATURAL RESOURCES CONSERVATION SERVICE  
ALEXANDRIA, LOUISIANA

## AGRONOMY TECHNICAL NOTE NO. 97

### ALTERNATIVE NUTRIENT MANAGEMENT FOR PRESCRIBED GRAZING

Potential production for well fertilized forages is high in Louisiana. Yields for hybrid bermudagrass, common bermudagrass, bahiagrass, and dallisgrass for forage is 5-6 t/ac. on alluvial soils and 4-5 t/ac. on soils outside alluvial areas when lime is applied periodically to maintain proper soil reaction and nutrients are applied annually at recommended rates. The LSU STPAL recommendations for grazing are based on a cow/calf per acre, continuous grazing. Producers with lower stocking rates do not need the amount of forage produced by full recommendations. According to Pasture Fertilization in Louisiana, published in February, 1998, producers using lighter stocking rates can reduce fertilizer use, there by substituting land for fertilizer.

With the above information in mind, unless pastures are managed such that nutrients in the system are adequate to sustain forage production and redistributed evenly in a relatively short period of time, fertilizer will be needed to sustain production. How much should be based on the amount of forage needed to meet livestock requirements, presence or absence of legumes, and expected yields (AUMs) available in NRCS' Pasture and Hayland Suitability Groups. This approach will help producers adjust nutrients inputs to their stocking rates. It may also reduce costs to the producer and can sustain productive pastures for many years provided producers avoid grazing systems which tend to concentrate nutrients in loafing areas.

Limestone recommendations based upon soil pH is the most important consideration in perennial pastures, especially if legumes are important in the forage mixture. Limestone should be applied according to soil test recommendations. The LSU STPAL does not make lime recommendations in increments of less than one ton/ac. Some other labs make recommendations in increments of less than one ton/ac. This is acceptable as long as sufficient lime is applied to raise pH to critical levels or above. Critical pH levels are 5.5 for grass pastures and 5.8 for grass/clover pastures. Lime recommendations from A&L labs can be reduced by one-third since their recommendations are based on a 9 inch tillage depth. Ideally, lime should be applied 3-6 months ahead of planting and incorporated when establishing new stands. In existing pastures, lime should be applied in the fall and lightly incorporated by setting disk blades straight for one trip over the pasture or ahead of chiseling or subsoiling operations to relieve compaction.

Fertilizer application should be based on stocking rate according to one of the following scenarios:

1. Establishment

Apply lime and fertilizer according to soil test recommendations for establishing grasses and/or legumes in new or existing pastures.

2. Low Nitrogen Option (Grazing Only)

Apply 50 lbs N/ac. Do not apply any phosphate or potash since at this low N application N is still the limiting nutrient. This is enough N to produce about 1 ton of grass/ac. which is sufficient for a stocking rate of 1 AU to 4-5 acres. Do not use this option if you intend to cut hay because nutrient removal through hay cutting is greater than for grazing animals. Management and environmental factors will determine how much of the potential production is achieved and how well the forage is utilized.

3. Medium Nitrogen Option

a. Mixed Warm Season Perennial Grasses (Bahia grass, Dallis grass)

Apply 100 lbs. N/ac. At this level of N fertilization, P and K may be limiting if soil tests low or very low for these nutrients. Apply 40 lbs.  $P_2O_5$ /ac. if the soil tested low or very low for P and none if it tested medium or high. Apply 60 lbs.  $K_2O$ /ac. if the soil tested low or very low for K and none if it tested medium or high. This is enough N to produce 2-3 tons of grass/ac. which is sufficient for a stocking rate of 1 AU to 2-3 acres. If a late season cutting of hay is planned, apply 60 lbs. N/ac. about 6 weeks before the growing season ends. Management and environmental factors will determine how much of the potential production is achieved and how well the forage is utilized.

b. Common Bermudagrass

Apply N same as above. Apply 40 lbs.  $P_2O_5$ /ac. if the soil tested low or very low for P and none if it tested medium or high. Apply 80 lbs.  $K_2O$ /ac. if the soil tested low or very low for K and none if it tested medium or high. This is enough N to produce 2-3 tons of grass/ac. which is sufficient for a stocking rate of 1 AU to 2-3 acres. If a late season cutting of hay is planned, apply 60 lbs. N/ac. about 6 weeks before the growing season ends. Management and environmental factors will determine how much of the potential production is achieved and how well the forage is utilized.

4. High Nitrogen Option

Apply 1 lb. N/ac. per day of grazing. This will range from 150-180 days in north Louisiana and 180-220 days in south Louisiana. Apply P and K according to soil test recommendations. This is enough N to produce 4-6 tons grass/ac. which is sufficient for a stocking rate of 1 AU per acre. Management and environmental factors will determine how much of the potential production is achieved and how well the forage is utilized. A single cutting of hay can be made without additional fertilizer.

## 5. Legumes

When legumes are included in the forage mix, apply P and K according to soil test recommendations. Legumes, composing at least 33 percent of the forage mixture and well distributed over a pasture, can supply all N for the low N option and one-half to two-thirds of the N for the medium and high N options.

## 6. Broiler Litter

Where available, mature (4-5 flocks) broiler litter can provide comparable levels of fertility at lower costs. One-two tons/ac. can supply enough N for the low N option. Three to four tons/ac. can supply enough N for the medium N option. Six to eight tons/ac. can supply enough N for the high N option. Before litter is applied a litter analysis is needed to determine the nutrient content of the litter. Apply litter according to the Phosphorus Index risk analysis rating.

Secondary and micro nutrients should be applied as recommended for good forage and animal health. Calcium, magnesium and sulfur deficiencies are becoming more noticeable as fertilizer purity improves. Broiler litter is also a good source of secondary and micro nutrients.

Use the Soil Test Information Sheets available on the LSU STPAL website for information regarding methods, timing, and form of fertilizer application.

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## References:

1. Funderburg, Eddie R., and Edward K. Twidwell. 1998. Pasture Fertilization in Louisiana. Louisiana State University Agricultural Center Pub. 2674.
2. Peevy, W.J. 1972. Soil Tests Results and Their Use in Making Fertilizer and Lime Recommendations. Louisiana State University Agricultural Experiment Station Bulletin No. 660.