

# **Response of Coastal Bermudagrass to a High Sulfur Content Sulphate of Potash-Magnesia**

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## **Summary**

Coastal bermudagrass response to a sulfur-magnesium treatment combination was evaluated on a Galilime fine sandy loam soil containing 8.3 and 24.2 ppm sulfur (S) and magnesium (Mg), respectively, in the 0 to 6-inch depth. Rates of 0, 40, 80, and 120 lb S/A and 0, 2.95, 5.89, and 8.8 lb Mg/A were applied to the same plots as a 57 percent S content sulphate of potash-magnesia. Nitrogen, phosphorus, and potassium were equalized over all plots initially at rates of 100, 100, and 250 lb of N, P<sub>2</sub>O<sub>5</sub>, and K<sub>2</sub>O/A, respectively, and nitrogen at the rate of 100 lb/A was applied after each cutting. Three harvests of grass were made. Yields averaged

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**KEYWORDS:** Fertilizer rates/sulfur/magnesium/soil test.

5,004, 2,715, and 5,237 lb dry matter per acre at each cutting, respectively, and totaled an average of 12,950 lb/A for the three cuttings. The S-Mg combination treatment had no statistically significant effect on yield of grass.

### **Introduction**

Coastal bermudagrass response to sulfur has been reported in East Texas on the Darco, a deep sandy loam soil. However, shallower soils such as the Cuthbert have not shown this response. Soil test levels of magnesium in the surface 6-inch depth are usually reported as medium to low. This study was initiated to evaluate response of Coastal bermudagrass to a combined treatment of sulfur and magnesium on a Gallime fine sandy loam.

### **Procedure**

A Gallime fine sandy loam soil having a surface pH of 5.1 was selected for this study. This soil contained 8.3 and 24.2 ppm sulfur and magnesium, respectively, in the surface 6-inch depth. Rates of S were 0, 40, 80, and 120 lb/A and were broadcast onto the surface of 10 x 20 plots. Magnesium levels were not equalized over all plots, but were allowed to increase as the S rate increased. Sulphate of potash magnesia containing 8.4 percent  $K_2O$ , 4.2 percent Mg, 8.4 percent sulfate-S and a total of 57 percent S was the fertilizer material used to vary the sulfur rate. Potassium treatment was equalized on all plots at 250 lb  $K_2O/A$ . Nitrogen and phosphorus ( $P_2O_5$ ) were each applied at 100 lb/A, initially. Nitrogen at 100 lb/A was applied after each of the first two cuttings. Yield samples were taken in July, August, and November.

### **Results and Discussion**

Responses of Coastal bermudagrass to the sulfur-magnesium rates are indicated in Table 1. Yields by

**TABLE 1. EFFECT OF SULFUR-MAGNESIUM COMBINATION RATES ON YIELD OF COASTAL BERMUDAGRASS**

Treatment S-Mg lb/A	Yield of Coastal bermudagrass dry matter			
	Harvest 1	Harvest 2	Harvest 3	Total
	Pounds/Acre			
0-0	4,860	2,517	5,161	12,530
40-2.95	4,590	2,835	5,079	12,500
80-5.89	5,217	2,638	5,614	13,460
120-8.80	5,348	2,871	5,094	13,310
Mean	5,004	2,715	5,237	12,950
L.S.D	N.S.	N.S.	N.S.	N.S.
C.V. $\sqrt{S^2/x} \bar{X} 100$ (p = 0.10)	12.7	13.7	8.8	6.2

treatment were not significantly different, statistically. This indicates that available S and Mg were in adequate supply in the soil, if not in the top 6 inches, possibly in the lower depths. Sulfur and magnesium in the harvested grass have not been analyzed.