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Importance Of Sulfur Fertilization Of Forages

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Sulfur deficiencies for plant growth have been reported in over 35 states including Florida. Though it is usually termed a secondary plant nutrient, sulfur should be considered one of the major nutrients essential for crop growth along with nitrogen, phosphorus and potassium/ Sulfur is required by plants for the synthesis of certain amino acids which are required for protein production. Thus, if sulfur is limiting, forage quality, as well as quantity, will be reduced. In fact sulfur deficiencies are often confused with nitrogen deficiencies because of the similarity of synonymous. Symptoms of sulfur deficiency consist of stunted plant growth and a yellowing of plant tissue, which are also symptoms with nitrogen deficiency. In less severe cases of sulfur deficiency, visual symptoms may not always show up, but crop yield and quality will still be affected.

Until recently, little attention has been focused on the need for sulfur fertilization in Florida and other parts of the country. This is understandable since in the past low analysis fertilizers contained sulfur and therefore ranchers did not need to be concerned with sulfur fertilization. However, today fertilizer manufacturing technology has become highly advanced and as a consequence high analysis fertilizers such as triple superphosphate and diammonium phosphate are free of sulfur impurities. As a result, sulfur deficiencies are becoming more pronounced and widespread throughout the world. Coarse textured soils such as those commonly found in Florida often exhibit sulfur deficiencies since they have a very low nutrient holding capacity.

It is important to note that sulfur fertilization will only increase yields and quality of crops if the plants are deficient in sulfur to begin with. The sulfur status of a crop is best determined by having a plant tissue sample analyzed for sulfur by a reputable laboratory. In fact, a tissue analysis for sulfur is more reliable than a soil test for determining sulfur deficiencies. For grasses the level of sulfur in the plant tissue should range from 0.2-0.5

percent. If the level of sulfur is less than 0.2 percent the grass will respond to sulfur fertilization.

Recent studies conducted in South Florida demonstrated sulfur deficiencies to result in reduced yields and quality forage. The addition of sulfur (77 pounds of sulfur per acre) increased bahiagrass yields by 25 percent. This research also demonstrated that the addition of 77 pounds of sulfur per acre increased crude protein by 1.2 percentage units and digestibility by 3-4 percentage units 30 days after sulfur was applied. Dry matter yields and quality of Bahiagrass were also found to be higher on plots fertilized with ammonium sulfate as compared to ammonium nitrate. This resulted from the addition of sulfur as ammonium sulfate. Therefore, under certain conditions where sulfur is limiting it may be advantageous for ranchers to apply sulfur to their pastures by using a fertilizer which contains sulfur such as ammonium sulfate. However, it should be noted that when the soil pH is less than 5.5 it will be necessary to apply limestone along with ammonium sulfate since the ammonium sulfate reduces soil pH more rapidly than other sources of nitrogen such as ammonium nitrate.

Further research will be conducted at Ona to determine the optimum amount of sulfur to apply as ammonium sulfate to bahiagrass pasture. This will be necessary to minimize the effect it has on soil pH and reduce the need for limestone to correct the acid forming properties of the fertilizer. It is felt that an economical fertilizer practice can be developed which includes sulfur in the formula.