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Potential Causes of Yellowing In Bahiagrass

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A yellowed condition of bahiagrass often occurs in Florida, especially following fertilization in early spring. This occurs in spots or patches among normal appearing green grass and sometimes the yellowed areas are quite extensive.

A series of field and greenhouse studies were initiated in the late sixties by Drs. Schroder and Ruelke in Gainesville to determine the seriousness of bahiagrass yellowing and to determine causes and solutions to the yellowing. Grab forage samples of yellowed and green bahiagrass were analyzed for nutritive value. Uniform cores of soil and grass plugs were taken from yellowed and green patches of pasture. Soil from plugs was analyzed for fertility status. Grass samples were separated into leaves, stems and roots, dried and weighed. Dried grass fractions were ground and analyzed for nutrient composition. Other intact grass plugs from the pasture were potted in the greenhouse and given a variety of fertilizer treatments including N, P, K with various combinations of micronutrients. Additionally, plots of yellowed areas of bahiagrass were treated in the field: (1) check or water only; (2) 90 lb N per acre applied as ammonium nitrate; (3) 90 lb S per acre applied as sodium sulfate; (4) 0.9 lb iron per acre applied as iron chelate, and (5) combination of treatments 2, 3, and 4. Soil sample analyses indicated a pH of 6.0 and Ca, Mg, S, N, P, K, Cu and Fe content were similar for both yellowed and normal areas. Laboratory analyses indicated that both the yellow grass and green grass had similar total digestible nutrients (TDN) of 70%. The yellow grass had a lower crude protein (CP) content (22% vs. 26%) and a higher fiber content (37% vs. 27%). In 1999, yellow and green bahiagrass samples were taken at the range Cattle REC and results indicated similar TDN (52%), the yellow grass had higher CP (10% vs. 8%), Mn (121 vs. 63 ppm) and Zn (42 vs. 23 ppm), but lower Fe (22 vs. 33 ppm).

In the Gainesville greenhouse and field studies, application of iron chelate in solution sometimes produced an earlier greening advantage, however, generally the yellowed grass became green with time, even when no nutrient was applied. In the end, it was not

possible to show that the yellow condition or the ultimate greening response was related to any particular soil nutrient deficiency or nutrient supplied.

However, results on plant sections (leaves, stems and roots) from both pot and field studies all confirmed that greening of bahiagrass leaves occurred with new root growth. The average number of new roots occurring on green grass was as high as 30 times that found in the yellow grass. In conclusion, good bahiagrass top growth and green color was associated with new root development and apparently unrelated to fertilizer treatment.

The question which remains to be answered is this: What combination of environmental (climatic, soil and biological) factors impede bahiagrass root formation in localized sections of the same pasture during spring?

Total level of iron is usually not considered to be deficient in our flatwood soils. Nevertheless, iron is easily tied up with soil organic matter and differential iron availability could result from uneven organic matter distribution. Insect pest (white grubs and mole crickets) damage to bahiagrass roots and sod, although also patchy, is normally progressive from yellow to brown (dead). Yet, it is conceivable for mole crickets to partially damage roots in sections of the pasture during fall and winter and then fly out to mate in early spring. Plants with damaged root systems could lag behind their counterparts in early spring recovery.

New field studies with selected nutrients and insecticides are planned for this fall in which soil organic matter and available nutrients will be examined. Meanwhile, producers are advised that early spring yellowing of bahiagrass generally will not affect seasonal forage yield or quality, but spraying with an iron-containing compound should quickly improve aesthetic look of a yellowed bahiagrass sod. Yellow and brown patches are indicative of a more serious mole cricket problem which must be treated with approved pesticide.