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ALFALFA INTERSEEDED INTO COASTAL BERMUDAGRASS
I. EFFECT OF ALFALFA ROW SPACINGS

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Background. Coastal and other hybrid bermudagrasses are the major warm-season forages grown on the sandy, acid, upland Coastal Plain soils of the South. Bermudagrass tolerates certain acid soil conditions, drought stress, and some management abuse. Alfalfa is the most widely grown forage legume in the world. Alfalfa is adapted to a wide range of climate and soil conditions, but is best adapted to deep loam soils with good drainage. Alfalfa requires neutral to alkaline soils. It will not grow on acid soils unless the pH is adjusted to approximately 7 by application of limestone. In this study, alfalfa was interseeded into Coastal bermudagrass to determine the feasibility of growing the two together, evaluate any improvement of forage quality, and measure the interrelated effects of alfalfa row spacings.

Research Findings. A Darco loamy sand established to Coastal bermudagrass was limed to achieve a pH near 6.9. The limestone was roto-till incorporated into the Coastal sod prior to spring growth. The following fall the bermudagrass was harvested at a 2-inch height and 'Alfagraze' alfalfa was drilled in rows spaced 9, 18, 27, and 36 inches apart. The seeding rate was 20, 10, 6.6, and 5 lb per acre for the 9- through 36-inch row spacings, respectively. A fertilizer blend containing 0-20-23 as N, P_2O_5, and K_2O and 3% magnesium, 6% sulfur, .16% boron, 1% copper, and .1% zinc was applied in late winter and mid-summer. The alfalfa and bermudagrass components of the forage were hand-separated and oven-dried for calculation of dry matter yield. This report includes data from the second year of the study.

For the 1992 season, 6 harvests were taken. The first harvest occurred April 3 and the last on September 15. Yield data show that alfalfa declined slightly and bermudagrass increased as alfalfa row spacings were increased to 27 inches (Fig. 1). Total forage dry matter remained constant (right Y axis, Fig. 1). Low yields reflect the abnormally dry growing season.

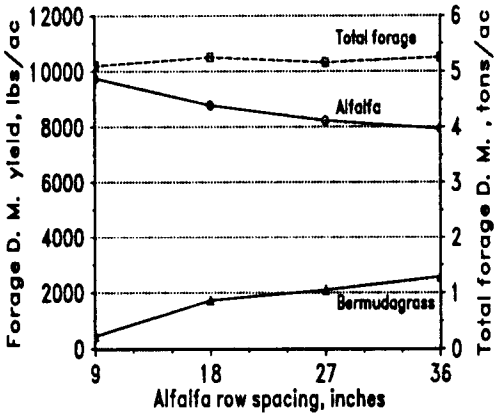

Fig. 1. Effect of alfalfa row spacing on 'Alfagraze' alfalfa and 'Coastal' bermudagrass dry matter yields.

Alfalfa yield decreased after the third harvest (Fig. 2). Alfalfa drilled in 9-inch rows produced

the largest amount of dry matter. Alfalfa yields were significantly higher in the 9-inch rows only in the first harvest. Except at the June 4th harvest, yields of bermudagrass at the 27- and 36-inch row spacings were higher than at the two narrower spacings (Fig. 3). Coastal bermudagrass growth for the 9-inch row spacings decreased dramatically compared to the first harvest of 1991. The regrowth vigor of the alfalfa shaded the bermudagrass causing stand thinning.

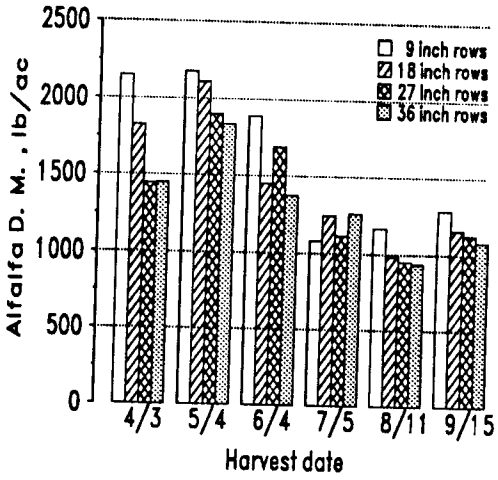

Fig. 2. Alfalfa dry matter yield by harvest date and row spacing in Coastal bermudagrass.

Application. Results from the second year of this study demonstrate that alfalfa can be maintained in a Coastal bermudagrass sod. The alfalfa was seeded October 5, 1991 and established quickly, aided by excellent fall conditions. Although this alfalfa variety has a high level of winter dormancy, it has stayed green through three winters and showed excellent cold tolerance. The early spring vigor of alfalfa allowed it to produce good yields in early April and in May and June. The months of April and May are traditionally the most climatically favorable for cool-season forage growth. Alfalfa has a higher crude protein content than bermudagrass in this study. With the addition of alfalfa to a grass stand, quality of the mixed forage should be improved over that of grass alone. The alfalfa variety Alfagraze was developed as a dual purpose forage (grazing and hay production). The row spacings used in this study are being tested in a system that approximates hay production. In this experiment, the 27-inch row spacing appeared to be most suitable for Coastal bermudagrass growth. At this row spacing, yield of alfalfa was reduced from 5 tons/ac to 4 tons/ac.

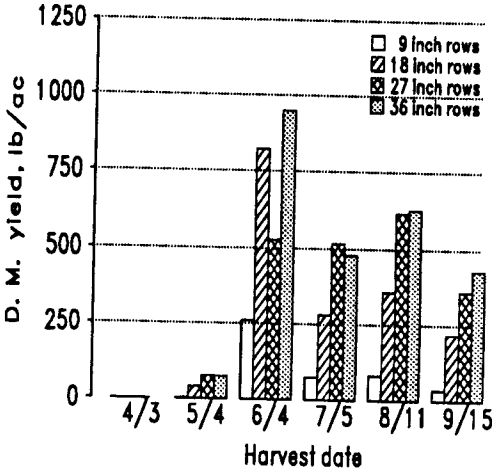

Fig. 3. Coastal bermudagrass response by harvest date in alfalfa interseeded at 4 row spacings.

Research to evaluate growth response of Alfagraze alfalfa interseeded into Coastal bermudagrass under grazing conditions will begin in the spring of 1993. Under grazing conditions, a 4:1 ratio of alfalfa to bermudagrass should be adequate for excellent forage quality.