1 shows the average forage yields of 14 oat varieties for 3 years.

Bledsoe wheat produced high yields of forage and held production at a high level despite severe and prolonged clipping.

Elbon and Gator rye gave higher forage yields than other varieties tested. Florida Black and Wren's Abruzzi rye produced excellent early forage but less forage later in the season. All rye varieties gave highly satisfactory forage production throughout the winter months at Tifton, Georgia. Table 2 gives the average forage yields for wheat and rye varieties.

Analysis of composite samples from several clipping dates indicated that small grain forage contained a high amount of protein. Protein content tended to be reduced slightly as the clipping season advanced. Table 3 gives the protein content of small grain forage sampled at various dates.

It should be kept in mind that these were maximum experiments and the yields were above average. For example, soil fumigation is not practical for low-income crops such as small grain forage. Likewise, irrigation and large amounts of fertilizer might not always give economical production of forage. Diseases and insects could also make forage production more difficult. Although these investigations were subject to the vagaries of weather, they do point out the fine potential of small grain forage, especially during mild winters. Pelleting of small grain forage will be feasible if consistently high yields can be obtained. Such tests also point out the best forage varieties for use in the Coastal Plain area.—DARRELL D. MOREY, Associate Agronomist, Coastal Plain Experiment Station, Tifton, Ga.

EFFECTS OF SEASON, NITROGEN FERTILIZATION, AND MANAGEMENT ON THE PRODUCTIVITY OF FIVE TROPICAL GRASSES

The effects of nitrogen fertilization, season of the year, and harvesting by cutting compared to simulated grazing on the productivity of guinea (Panicum maximum), napier (Pennisetum purpureum), para (Panicum purpurascens), pangola (Digitaria decumbens) and molasses (Melinis minutiflora) grasses under humid tropical conditions were determined.

Mean annual temperature was about 75° F. with a seasonal variation of less than 10° F., and the annual rainfall averaged 83 inches. The soil, a deep, well-drained, red, acid latosol, was limed to pH 6.5 and all plots provided with an abundance of phosphorus and potash.

Treatments consisted of cutting every 60 days and harvesting by simulated grazing every 40 days over a 2-year period.

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The data in the accompanying table show that molasses grass responded strongly to nitrogen applications of up to 400 pounds yearly with both systems of management. Yields of napier grasses showed response to nitrogen rates up to 800 pounds. Protein content of forage of all grasses increased with nitrogen rates.

Season of the year had a marked and very similar influence on yields of all grasses with lowest production in the cooler, shorter days and drier weather of December through March. Guinea, napier, para, and pangola grasses responded well to 200 pounds of nitrogen during the months of slow growth and up to at least the 400-pound rate during the remainder of the year. Seasonal variations in yield were increased by nitrogen fertilization with the protein content of the grasses was higher during the period of slow growth and vice versa.

The grasses had similar protein, phosphorus, calcium, magnesium, and lignin contents alike, except that guineagrass had a higher magnesium content than the others.—RUBEN Z. MOREY and JOSE VICENTE-CHANDLER, Cooperative Agronomist and Project Supervisor, respectively, of a cooperative project between the Soil and Water Conservation Research Division, ARS, USDA, and the Agricultural Experiment Station of the University of Puerto Rico.

CUTTING HEIGHT STRONGLY AFFECTS YIELDS OF TROPICAL GRASSES

The effects of fertilization, frequency of cutting versus cutting management, and of the age and composition of tropical grasses have been studied in Puerto Rico. Nineteen grasses were evaluated, from several European and American varieties from the coastal grasses (Pennisetum purpureum, sand grass (Panicum maximum), pangola (Digitaria decumbens), guinea (Panicum maximum), and molasses grass (Melinis minutiflora)).

Analysis of composite samples from several clipping dates indicated that small grain forage contained a high amount of protein. Protein content tended to be reduced slightly as the clipping season advanced. Table 3 gives the protein content of small grain forage sampled at various dates.

It should be kept in mind that these were maximum experiments and the yields were above average. For example, soil fumigation is not practical for low-income crops such as small grain forage. Likewise, irrigation and large amounts of fertilizer might not always give economical production of forage. Diseases and insects could also make forage production more difficult. Although these investigations were subject to the vagaries of weather, they do point out the fine potential of small grain forage, especially during mild winters. Pelleting of small grain forage will be feasible if consistently high yields can be obtained. Such tests also point out the best forage varieties for use in the Coastal Plain area.—DARRELL D. MOREY, Associate Agronomist, Coastal Plain Experiment Station, Tifton, Ga.