

ABSTRACT

Agronomic Studies of Forage Sorghums (Sorghum
bicolor (L.) Moench) in Barbados

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Three experiments were conducted at the Central Agronomic Research Station, at Graeme Hall in 1981. They compared the effects of stage of maturity, varying nitrogen and phosphorus fertilizer combinations, and plant population densities on the forage yield, chemical composition and nutritive value of two sorghum (Sorghum bicolor (L.) Moench) cultivars under prevailing soil and climatic conditions in Barbados. A grain bearing forage sorghum hybrid cultivar Pioneer 944 and a sorghum-sudangrass hybrid cv. Pioneer 988 were evaluated.

Experiment 1 was designed as a 2 x 3 factorial and compared the cultivars at the late vegetative, full bloom and dough stages of maturity. Experiment 2, a 2 x 3 x 2 factorial, compared the effects of 0, 84, and 168 kg N/ha and 0 and 92 kg P₂O₅/ha, and Experiment 3, a 2 x 4 factorial, investigated the effects of four plant population densities (50 000, 100 000, 150 000 and 200 000 plants/ha) on the yield, chemical composition and nutritive value index of the cultivars.

Yields of dry matter were 6.8 to 8.1 t/ha. NVI, CP, NDF, ADF and cellulose contents were significantly reduced when harvest-

ed at the dough stage; yield and quality were highest at the full bloom stage of maturity. Nitrogen fertilizer at 84 kg N/ha significantly increased yields of fresh and dry matter and crude protein content, but produced no further significant increases when applied at 168 kg N/ha. There was a significant V x N x P interaction for NVI. Phosphorus had no significant effect on yield or quality. Plant population density from 100 000 to 200 000 plants/ha significantly increased FM and DM yields, but reduced CP content.

It was concluded that nitrogen at 84 kg N/ha, and that a population density of 100 000 plants/ha were optimum levels of fertilizer and density; that apparently phosphorus application was too low to show response; and that a stage of maturity intermediate between full bloom and the dough stages of maturity might be optimum for harvest under the prevailing conditions in Barbados.