

## ABSTRACT

The study examined the effect of time to first harvest and subsequent regrowth harvest on the forage productivity and nutritive value of cassava (*Manihot esculenta*) and leucaena (*Leucaena leucocephala*) on an acid (pH-4.5) Ultisol in Trinidad during the dry season. The study further examined the nitrogen utilisation of cassava, leucaena and soybean meal in growing dairy cattle fed sugarcane-molasses based diets.

The leucaena forage productivity studies showed that the maximum total dry matter and crude protein (CP) yields of 3892 and 798 kg/ha, respectively, were obtained with first harvest at four months after planting and second harvest three months later. For cassava, however, yields were not significantly ( $p > 0.05$ ) affected by the different combinations of different ages at first and second harvest. Simulated forage harvesting models suggested that both forage crops had the potential of yielding approximately 6t/ha/annum of forage CP.

In the nitrogen utilisation studies the rumen degradable protein of cassava, leucaena, and soybean meal were observed to be 40, 42 and 60%, respectively, using the nylon bag technique. These protein sources were used also as protein supplements and compared in sugarcane-molasses based diets in a nitrogen balance study. Dry matter and organic matter digestibilities and average daily gains, using either soybean meal and/or leucaena as the CP supplement, were found to be inversely related to the acid detergent fibre content of the diets. It was estimated that post ruminal digestion of CP was 0, 28, and 26% for cassava, leucaena, and soybean meal, respectively, and the apparent total digestible CP was calculated to be 40, 70, and 86%, respectively.

Results of two Grade Holstein growth studies conducted feeding leucaena forage protein in sugarcane-molasses based diets suggested that estimated CP intakes were in close agreement with the recommendations of the NRC (1978) and that those of the ARC (1980) tended to be generally lower. Estimated digestible energy intakes generally agreed with both recommendations.