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PART I
ABSTRACTS OF PAPERS

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W. I. Bodhinayake
Sugarcane Research Institute,
- Vda Walawe

Section B

B-66 : EFFECT OF NITROGEN ON YIELD AND QUALITY OF SUGARCANE

*W L Bodhinayake, N Dharmawardene, M S K Suwandarachchi**

*Sugarcane Research Institute, Uda Walawe, *Hingurana Sugar Industries, Hingurana.*

Sugarcane yield is often limited more by the deficiency of nitrogen (N) than by any other nutrient element. Nitrogen favors tillering, increase the yield and promote succulence in sugarcane, while it has a detrimental effect on sucrose accumulation. Not much information is available on the N requirement of sugarcane grown on Non Calcic Brown (NCB) and Alluvial soils. Therefore, two field experiments were conducted to determine the effect of N on sugarcane yield and quality of juice.

The average total N levels in NCB and Alluvial soils were 0.042% and 0.094% respectively. In NCB soils, millable stalk count and cane and sugar yields were significantly affected by different N levels but had no effect on Pure Obtainable Cane Sugar (POCS). At the inherent N levels in the soils and the current prices of fertilizer and sugarcane, the optimum N requirement to NCB soils in Hingurana was 172 kg/ha which produced 130 tons of cane per hectare. This was under no moisture stress condition by following the normal cultural practices. Comparing the two soil groups, the Alluvial soils apparently had a higher mineralization than that of NCB soils. Therefore, the farmer could produce relatively high yield without applying any N fertilizer.

B-67 : SYMBIOTIC PERFORMANCE OF TWO VARIETIES OF COWPEA (*Vigna unguiculata* (L.) WALP)

E R S P Edirimanne, R Senaratne, Dept. of Agronomy, University of Ruhuna.

Bombay and Arlington are two cowpea varieties in Sri Lanka. Arlington is more responsive to fertilizer N than Bombay due to its less effective symbiotic association with indigenous bradyrhizobial population in fixing atmospheric N. However, hardly any quantitative information was available on their symbiotic performance under local conditions. Hence, N¹⁵-aided field studies were conducted at Hungama to ascertain the proportion and amount of atmospheric N derived by the above genotypes. *Setaria italica* L. was used as the reference crop. The variety Bombay showed a higher symbiotic potential deriving about 48% of its N yield from the atmosphere, but it was only 18% in Arlington. The amounts of N fixed by Bombay and Arlington were 54 and 18 kg N/ha respectively. Due to less effective N₂ fixation in Arlington, it delivered over 72% of its N content

(68 kg N/ha from soil while it was only 47% (49 kg N/ha) in Bombay. The total dry matter production and N yield in Bombay were 3996 and 111 as against 3855 and 95 kg/ha in Arlington respectively. Studies elsewhere indicate that cowpea could derive over 80% of its N requirement from the atmosphere fixing over 100-150 kg N/ha. Factors such as high diurnal soil temperatures, water stress, deficiencies of micro