B41 STUDIES ON NITROGEN FERTILIZATION OF MAIZE (*ZEA MAYS* L) IN THE MAHAWELI C AREA

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Nitrogen fertilization experiments with maize (*Zea Mays* L) were conducted during Maha 1984 and Yala 1985 at Girandurukotte in the Mahaweli System C area to investigate the effects of planting dates, fertilizer nitrogen rates and cattle manure on yield of maize, and the uptake of nitrogen on a well - drained and an imperfectly drained Alfisol (Reddish brown earth) in the first experiment: a factorial combination of three planting dates and four nitrogen rates 0, 30, 60 and 90 kg N ha^{-1} as urea combined with and without cattle manure at the rate of 5t/ha for cattle manure treatments. In the experiment (Yala 1985) the effect of irrigation, fertilizer nitrogen rates and cattle manure on yield of maize and

uptake of nitrogen were studied on well drained alfisol. In the Yala, split - split plot design was used, Cattle manure as main plot treatment at the same rate as for Maha, three irrigation levels of 10%, 50% and 75% depletion of available water in the root Zone as sub - plot treatment and four nitrogen rates as for Maha as sub-sub plot treatment.

There were significant differences in maize yields due to drainage planting date, cattle manure fertilizer application rate, yields from the first planting, on September 24, 1984 were highest on well drained plots ranging from 4.57 - 5.953 t/ha with significant response to fertilizer N. In contrast the imperfectly - drained plots gave much lower yield from1.08 to 2.14 t/ha.

There was no significant response to fertilizer N at these lower yields, but there was significant response to cattle manure and planting date. Highest yield recorded was from the first planting date. Maize planted in the late Maha, yielded between 0.157-3.59 t/ha. There yields under drier conditions, show less yield gap between well-drained and imperfectly drained plots compared to first and second planting date.

There was a linear relationship to fertilizer N rate for 1st planting date in well drained plots. This was not observed for second and third planting in well drained plots.

Yields in Yala were lower than those in Maha ranging from 0.303 - 2.5 t/ha. There were significant responses to irrigation and nitrogen application rate, but no significant response to cattle manure. Highest yield recorded were from 50% depletion level and 90kg N/ha, in both with and without cattle manure plots.

There were apparent differences in nitrogen % in ear-leaf due to drainage, planting date fertilizer application rate, and irrigation. Highest ear leaf nitrogen % was recorded on the well drained conditions at first planting date, inMaha and 50% moisture depletion level in Yala