

THE EFFECT OF FARMYARD MANURE AND NITROGEN FERTILIZER
APPLICATION ON NITROGEN LEACHING

By

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ABSTRACT

A major fertility management problem of the permeable Red-Yellow latosols in the north and north west of Sri Lanka is the rapid loss of nitrogen in drainage water. A lysimeter experiment (maha) and a field experiment (yala) at Kilinochchi investigated the fate of nitrogen applied as fertilizer and farmyard manure. In the lysimeter experiment (465 mm drainage over 56 days), sulphate of ammonia and urea applied at the rate of 40, 80 and 120 kg N/ha in five split applications produced losses up to 28 kg N/ha compared with about 2 kg N/ha for plots without fertilizer. The losses as nitrate-N were ten times greater than as ammonium-N. The total nitrogen losses were similar for the two fertilizers although slightly more were lost as nitrate-N and ammonium-N with sulphate of ammonia. Farmyard manure application resulted in slightly greater losses of nitrate and total-N but not of ammonium-N.

In the field experiment drainage amounting to 106 mm was determined by a water balance using a neutron probe. Total-N losses in drainage increased with rates of fertilizer application; they were more for plots with farmyard manure than for those without. Ammonium-N losses were a third of nitrate-N losses. No difference was observed in the pattern of losses between applications in six top dressings compared with 12. Fertilizer additions resulted in continual buildup of nitrogen in the soil over 81 days and varied with fertilizer rate, soil depth and the presence or absence of the chilli crop. Chilli yields increased with fertilizer N rate, but there were no significant differences for applications in 12 top dressings compared with 6 top dressings, or between plots with and without 12.5 t/ha farmyard manure.