

ABSTRACT

Three field experiments, lasting six to eight weeks each, were conducted on St. Augustine loam to determine recovery of added  $^{15}\text{N}$  by the soil-plant system during the dry and/or wet seasons of the year. Maize was used as the test crop and  $^{15}(\text{NH}_4)_2\text{SO}_4$  (100 kg N/ha) was added as the N fertiliser. The experiments were closely monitored to determine the loss pattern. Soil samples were taken at 0, 3, 7 days after N addition and once a week thereafter, rainfall permitting. Plant samples were taken at 7 days onwards.

It was found that soil sampling using an auger could lead to the added N being over estimated. Appreciable loss from the soil-plant system (28%) was only found in the dry season. This was attributed to volatilisation and/or denitrification. The added N not utilised by the crop or lost to the atmosphere remained in the top 0-15 cm soil layer. The effect of mulching and added N fertilizer on plant yield was dependent on the season.

Uptake of added N by the plant ranged from 75% to 3% and was dependent on the season, the stage of growth of the crop and the use of mulching material. Recovery by the soil-plant system was 144 and 108% in the wet-dry season (November-January) for the unmulched and mulched treatments, respectively. Similarly for the dry-wet season (May-July) 95 and 100%, and in the dry season (March-May), 72% for both the unmulched and mulched treatments.