

A B S T R A C T

N transformation and availability studies were conducted in four Trinidad soils, three of them being acid i.e. (1) Piarco Fine Sand (pH 5.0), (2) Talparo Clay (pH 4.0), (3) Las Lomas Fine Sandy Loam (pH 5.4) and one alkaline soil i.e. Princes Town Clay (pH 7.2).

In the laboratory, nitrification of added N was evident and uniform on the alkaline soil irrespective of the source of N, but was more noticeable in the presence of lime on three acid soils. Nitrite accumulated where the soil pH approached neutrality. On the fine sandy loam in the presence of three sources, Sulphur Coated Urea (S.C.U.) nitrified best.

In the Princes Town Clay, the nitrification inhibitor 2-amino-4 chloro-6 methyl pyrimidine (Toyokoatsu "AM") inhibited nitrification irrespective of the source of added N, but was only effective on the three acid soils where the N source, urea, increased soil pH.

Studies involving the effective life of the inhibitor revealed that on soils with low nitrifying capacities (acid soils), once nitrification was inhibited, resumption of the process was quite slow.

Greenhouse studies with Las Lomas Fine Sandy Loam showed that N sources boosting pH towards neutrality were more favourable in the absence of lime. [At 11.94 tons/hectare Ca CO_3 , a greater yield response with Sudan grass observed for ammonium sulphate over the ureas was attributed to low hydrolysis of organic N at this pH level, coupled with possible N losses through NH_3 volatilization and elemental N through reduction.

The inhibitor "AM" inhibited the production and accumulation of $\text{NO}_3\text{-N}$ on soil under Sudan grass, red kidney bean and pangola grass in the greenhouse, but gave no significant yield response over the untreated soils. High concentrations of the inhibitor appeared to have exerted a low order toxicity on the N fixing organisms.

In the field the nitrification and downward movement of the fertilizer N was found to be negligible.

With one N source - S.C.U., yield and N uptake correlated well with N fertilization. At 224 and 448 kg/hectare applied N, the inhibitor "AM" increased yields over untreated plots. Beneficial effects of liming were attributed to increases in soil Ca levels.