NITROGEN TRANSFORMATION AND MOVEMENT IN A RED YELLOW PODZOLIC SOIL

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Soil solution composition at depths 20, 40, 60, 80 and 100 cm were monitored by using suction soil solution samplers, periodically after application of fertilizer mixtures containing sulphate of ammonia and potassium chloride in the form of broadcasts at levels of K O and 125 l/b acre/year and N 100, 200 and 300 lb/acre/year.

Nitrification rate was very high at K_0 level and gave rise to very high soil solution nitrate concentrations, left very little exchangeable ammonium in soil after a two month period whereas at K_2 level nitrification was practically inhibited. After 52 days of wet weather a large amount of NH_4^+ remained in the top 20 cm layer of soil in exchangeable form.

In cases where profuse nitrification occurred, large amounts of divalent cations like Ca^{++} and Mg^{++} were released into the soil solution probably by the lowering of pH, releasing some of the divalent cations from soil exchange complex, and also by the release of Ca^{++} from Ca^{++} containing minerals, by the H-ions produced during nitrification.

At high levels of N there was considerable movement of NO_3 below the 30 cm depth where practically most of the feeder roots are found.