# RECOVERY AND TURN OVER OF FERTILIZER NITROGEN BY RICE IN FLOODED SOILS

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## ABSTRACT

A substantial amount of fertilizer N ($NH_4^+$, UREA) is immediately recovered in the exchangeable soil fraction. This fraction is easily depleted by N uptake of the crop during 40 days after transplanting. The level of exchangeable $NH_4^+$ at the beginning of the season is a reliable indicator for the amount of available N in the soil and may be used as a basis for N fertilizer recommendation. About 5 to 15% of the fertilizer N was quickly incorporated into the biomass form of amide-N and hexoseamine N. This nitrogen was released in the later stage of rice growth. About 10 - 15% of the fertilizer N was found in the fraction of hydrolyzable organic N, of which, the N proved to be stable for most soils and thus contributed only to a small degree to rice nutrition. In one soil (Maligaya) rich in vermiculite substantial amounts of fertilizer N were fixed as $NH_4^+$ in the interlayer and later slowly released during crop development.

Fertilizer N losses resulted mainly from losses of volatile $NH_3$ after broadcast application of fertilizer N ($NH_4^+$, urea). Losses appeared predominantly during the first weeks after transplanting. An application technique - injection of dissolved urea into the upper soil layer - was developed by which N fertilizer losses were drastically reduced.