

Effects of water management on nitrogen fertiliser uptake and recovery efficiency in rice

ABSTRACT

A planthouse experiment was carried out to determine the uptake and recovery efficiency of nitrogen fertilizer applied to rice varieties, MR 84 and Siam, grown under flooded, non-flooded (NF)-saturated and NF-field capacity water management conditions. The total nitrogen uptake and nitrogen fertilizer uptake of rice were higher under flooded and NF-saturated than under NF-field capacity condition irrespective of rice varieties. On average, the recovery efficiency of applied nitrogen fertilizer was 47.7, 43.2 and 30.4% under flooded, NF-saturated and NF-field capacity conditions, respectively. Recovery efficiency of applied nitrogen fertilizer was higher for MR 84 than Siam regardless of water management treatments. Recovery efficiency of nitrogen fertilizer from soil was 26.1, 26.9 and 18.5% for flooded, NF-saturated and NF-field capacity conditions, respectively. On the contrary, under NF-field capacity condition, the amount of nitrogen fertilizer losses from the plant-soil system was the highest (51.1%), followed by NF-saturated condition (29.9%) and flooded condition (26.2%).

Keyword: Water management; Nitrogen fertilizer; Nitrogen uptake; Nitrogen recovery efficiency; Rice