

Response of non-flooded rice to nitrogen rate

ABSTRACT

Nitrogen and water supply are important factors that influence rice growth and yield. The grain yield response to N application rate was significantly quadratic in nature irrespective of water management practices. A higher yield response to N application rate was observed under flooded as compared to non-flooded (NF)- saturated and non-flooded (NF)-field capacity conditions. The estimated N rates for maximum yield were 99, 105 and 126 kg/ha for flooded, NF-saturated and NF-field capacity conditions, respectively. The higher amount of N needed for maximum rice yield under NF-field capacity conditions was probably due to greater N losses as a result of alternate wetting and drying of soil as well as the reduced root system. However, the optimum N rate for maximum yield did not differ very much between flooded and NF-saturated conditions indicating the close similarity in N requirement under both water management practices. The dry shoot biomass response to N rate was quadratic but it was not significant under flooded and NF-saturated conditions. However, a significant quadratic response was observed for dry root biomass under flooded and NF-saturated conditions. The dry shoot and root biomass response to N rate was significantly linear under NF-field capacity conditions.

Keyword: Non-flooded rice; Nitrogen rate; Water management; Growth; Yield