

Effect of nitrogen fertilizer to growth, biomass and grain yield of paddy

ABSTRACT

Nitrogen (N) fertilizer is an important plant nutrient for plant growth and yield. This study was conducted with four levels of N i.e., 0, 85, 170 and 250 kg ha⁻¹ using two rice cultivars i.e., 'MR219' and 'MR220'. The experiment was carried out in a factorial design with four replications and grown under flooded condition. The study focused on analysing the effect of N fertilizer level and cultivar to growth, biomass and grain yield. Statistical results showed that N significantly affected the plant height, SPAD reading, biomass and yield but did not affect the varieties. The interaction effect between the N level and cultivars also does not show significant difference. With the increment in N application, all parameters were also increased significantly. Maximum plant height (70.46 cm), SPAD reading (39.13), biomass (927.29 g m⁻²) and yield (830.99 g m⁻²) were obtained from 250 kg ha⁻¹ nitrogen application. Correlation and regression analysis between plant heights, SPAD reading, biomass and grain yield exhibited a strong and positive relationship. The result also indicate that plant height is a better indicator to estimate biomass ($R=0.794$, $R^2=0.630$) and grain yield ($R=0.634$, $R^2=0.397$) compared to SPAD reading.

Keyword: Nitrogen; Growth; Biomass; Grain yield; Paddy