

Biomass accumulation and energy conversion efficiency in aromatic rice genotypes

ABSTRACT

A field experiment was conducted to evaluate photosynthetic efficiency along with different growth parameters of aromatic rice genotypes. Forty genotypes including three non-aromatic checks exhibited enormous variations for leaf area index (LAI), crop growth rate (CGR), relative growth rate (RGR), net assimilation rate (NAR), grain yield, total dry matter, harvest index and photosynthetic efficiency or energy use efficiency (Emu) at panicle initiation and heading stages. Minimum LAI-value was 0.52 in Khazar at PI stage and maximum was 4.91 in Sakkor khora at heading stage. The CGR-value was in the range of 4.80-24.11 g m⁻² per day. The best yielder BR39 produced grain of 4.21 t ha⁻¹ and the worst yielder Khazar gave 1.42 t ha⁻¹. Total dry matter (TDM) yield varied from 4.04 to 12.26 t ha⁻¹ where genotypes proved their energy use efficiency a range between 0.58 to 1.65%. Emu showed a significant positive relation with TDM ($r=0.80(**)$), CGR ($r=0.72(**)$) and grain yield ($r=0.66(**)$). A negative correlation was established between TDM and harvest index and LAI and RGR. Path analysis result showed that NAR at heading stage exerted highest positive direct effect (0.70) on Emu.

Keyword: Aromatic rice; Photosynthetic efficiency; Net assimilation rate; Total dry matter; Path analysis