

GROWTH TRAITS OF TRADITIONAL AND NEW IMPROVED RICE VARIETIES UNDER SEVERE COMPETITION

K.A.A. Nishan and W.C.P. Egodawatta

Department of Plant Sciences, Faculty of Agriculture, Rajarata University of Sri Lanka, Puliyankulama, Anuradhapura.

Shoot and root growth traits of nine rice varieties grown under inter- and intra-specific competitive conditions were analyzed to quantify varietal differences and to identify most effective traits under inter and intra-specific competition. Study included six traditional; i.e. *Rathkadha*, *Kalu-heenati*, *Kurulu-thuda*, *Pachcha-perumal*, *Raththambiliya* and *Suwandel* and three new improved i.e. *Bg 300*, *Bg358* and *Bg 359* varieties. Single rice plants were grown in pots surrounded by six plants of either barnyard grass (*Echinochloa crus-galli*) in Trials 1 and 2, or rice plants in Trial 3. Growth traits were measured weekly and destructive samplings were done at 21 and 48 days after sowing. Results highlighted, higher performances of growth traits such as plant height, leaf area and shoot and root dry weight in traditional varieties in contrast to the new improved varieties. Variety neighbours showed a better growth than *E.crus-galli* neighbours in growth traits reconfirming the negative influence of weeds. Mean plant height of traditional varieties was significantly higher than new improved, where differences between traditional and new improved were 14.1 cm in Trial 2 and 13 cm in Trial 3. Tiller number was not significantly different ($p>0.05$) among varieties, although higher tiller number was observed under intra-specific conditions. Similarly, leaf area, shoot dry weight and root dry weight of traditional varieties showed significantly higher values in contrast to new improved varieties. *Pachcha-perumal* and *Kurulu-thuda* showed highest ability of biomass production within a short duration. However, variety *Raththambiliya* and *Suwandel* showed quantitatively higher, despite statistically non-significant growth traits in contrast to new improved varieties. These two varieties have traits similar to modern ideal plant types at early growth stages. Therefore, screening lines in standard nurseries for competitiveness against *E. crus-galli* seems possible using non-destructive traits such as seedling heights, leaf area, leaf number, tillering ability, shoot and root dry weights that is altogether a measure of early vigour.

Key words: Competitiveness, *Echinochloa crus-galli*, Growth traits, New improved, Traditional varieties