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Effect of Panicle Size on Grain Yield of IRRI-Released Indica Rice Cultivars in the Wet Season

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Abstract: Grain yield under wet season (WS) conditions has gradually received more attention due to looming scarcity of irrigation water, which limits the area for planting to flooded lowland rice in the dry season in the tropics. This study was conducted to determine (1) grain yield of IRRI (International Rice Research Institute)-released rice cultivars under WS conditions and (2) if panicle size (spikelet number per panicle) is an important trait that influences grain yield in the WS. Field experiments were conducted at the IRRI farm in the 2000 WS and 2001 WS using 14 IRRI-released conventional and two F_1 hybrid cultivars under irrigated lowland conditions. Grain yield and yield-related traits were measured at maturity. Grain yield of tested cultivars ranged from 4.5 to 7.0 t ha^{-1} in the 2000 WS and from 4.1 to 5.6 t ha^{-1} in the 2001 WS. Large differences in panicle number and panicle size were observed among cultivars. All cultivars had small to intermediate panicle size ranging from 63 to 114 spikelets per panicle. Among all the measured yield-related traits, panicle size had the most consistent and closest positive correlation with grain yield. These results suggest that it is possible to improve maximum attainable yield in WS by breeding cultivars with larger panicle size. However, whether other cultivar groups such as the tropical japonica with large panicles (150-200 spikelets per panicle) would confer high yield in WS remains to be studied.

Keywords: Grain yield, Panicle size, Solar radiation, Rice, Wet season

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