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TOP &gt; Journal List &gt; Available Issues &gt; Table of Contents &gt; Abstract

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**Characteristics of Dry Matter Production and Partitioning of Dry Matter to Panicles in High Yielding Semidwarf Indica and Japonica-Indica Hybrid Rice Varieties**

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**Abstract:**

A field experiment was carried out to investigate the dry matter production characteristics before and after heading, the partitioning of dry matter to panicles, and some related factors in high yielding semidwarf indica (SDI) and japonica-indica hybrid (JI) varieties in comparison with those of japonica panicle weight (JP) and panicle number (JN) type varieties transplanted in early and late cropping seasons (ET and LT). Leaf area indices (LAIs) of the JI and SDI varieties in both ET and LT were higher at full heading, but decreasing percentages were much more prevalent in these varieties after heading, which resulted in much lower LAIs than those of japonica varieties at maturity. Total top dry weights at full heading of SDI and JI varieties were higher than those of JP and JN varieties in ET and LT, except for Akenohoshi in LT. However, the difference in dry matter increment during the period from full heading to maturity (LIM) among the varieties were not found to be significant. Crop growth rates (CGR) during HN of SDI varieties both in ET and LT were the lowest among the varietal groups due to the highest decreasing percentage of LAIs and SPAD readings at the later grain filling stage. Panicle dry weights of SDI and JI varieties were about  $125 \sim 190 \text{ gm}^{-2}$  (20~31%) and  $105 \sim 115 \text{ gm}^{-2}$  (18~20%) higher than those of japonica varieties in ET and LT, respectively. Mean ratios of panicle dry weight to total top dry weight at maturity of the SDI and JI varieties in both ET and LT were about 56%, which were significantly superior to the corresponding mean ratios of JP and JN varieties (i.e., about 47%). These higher mean ratios resulted in panicle weight differences between the high yielding varieties and japonica varieties. The shoot dry matter partitioning percentages to panicles of SDI and JI varieties were more than two times higher in ET, and those of SDI varieties were about four times higher than those of the japonica varieties in LT. The panicle dry weight at full

heading (sink capacity) was found to be closely related to the panicle dry weight at maturity. When the sink capacity was high, the increment in top dry weights during HM tended to be lower. It was also observed that the partitioning ratios of the accumulated assimilates in shoot to panicles were closely related to the sink capacity.

**Keywords:**

Dry matter production, Harvest index, Japonica-indica hybrid variety, Panicle weight, Rice plant, Semidwarf indica variety, Translocation

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