

## **Can higher grain yield be achieved in irrigated rice fields through desirable nursery management?**

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### Abstract

Nursery management in irrigated rice systems is expected to impact on grain yield since transplanting is commonly reported to increase crop growth efficiency and decrease tiller abortion over direct seeding. Field experiments with the popular variety IR72 were set up in the Philippines in 2003 and 2004 to quantify the impact of seed rate in the nursery from 500 to 40,000 plants m<sup>-2</sup> and seedling age at transplanting from 7 to 35 days on crop development and grain yield. During a late wet season, and for 3,000 seeds m<sup>-2</sup> upward, leaf and tiller emergence were highly delayed as soon as 10 days after sowing while growing in the nursery. Whatever the seed rates used, the observed rates of leaf and tiller emergence before transplanting were similar to those observed right after transplanting, supporting the absence of any transplanting shock. High tiller production was, reported for all treatments a few days after transplanting as a result of the main field plant density (25 plants m<sup>-2</sup>). The rate of tiller production after transplanting was also similar whatever the transplanting age 7, 21 or 35 days. Under more favorable conditions, 7-day transplanting, compared with 14- and 21-day transplanting, also generated higher plant vigor, through earlier and higher tiller and leaf area production, and subsequently higher grain yield of up to 1 t ha<sup>-1</sup>. High seedling competition in the nursery, rather than transplanting shock, was confirmed to be critical for achieving high leaf area production and high grain yield in irrigated rice fields.

Keywords: transplanted rice, seed rate, transplanting age, transplanting shock, leaf emergence, tiller emergence