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Characteristics of Rooting and Leaf Emergence Rate, Early Growth and Heading Date of Rice Seedlings with Different Plant Age in Leaf Number

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Abstract:
Eleven kinds of rice seedlings with different plant age in leaf unmber in the range 0-7.2 (counting the incomplete leaf as the first leaf), raised under the same condition, were grown in the phytotron-controlled day/night temperature (25/20 or 20/15°C) with natural light to clarify the characteristics of rooting and leaf emergence rate after transplanting, and also the difference of earfy growth and heading date. Both the number of new roots and total new root length at 7 days after transplanting (TP) were higher in the seedlings with more leaves due to the nodal position of emerged new roots. The reverse relation was observed in the leaf emergence rate during that period due to the difference in average leaf blade length. Transplanting injury, indicated by the leaf emergence rate during 3 days after TP, increased in proportion to the number of leaves of the seedling, and was not observed in the youngest seedling without foliage leaf. The number of new roots showed a highly significant negative or positive correlation with leaf emergence rate or leaf elongation rate from the leaf sheath, respectively. Each of the growth parameters at 21 days after TP was superior in proportion to the number of leaves of seedlings, but the difference of each parameter among the seedlings decreased in order of: (1) plant length and age in leaf number, (2) number of tillers and roots, and (3) dry weight over time after TP due to the faster growth rate of seedlings with fewer leaves. Although the number of leaves on the main culm was almost the same among the seedlings (range 15.6-16.5), the dates of flag leaf emergence and heading were delayed proportionally in the seedlings with fewer leaves.

Keywords:
Early growth, Heading date, Leaf, emergence rate, Rice plant, Rooting, Seedling age in leaf number, Transplanting, Transplanting injury

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