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Nitrogen Content of Leaves Affects the Nodal Position of the Last Visible Primary Tiller on Main Stems of Rice Plants Grown at Various Plant Densities

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Abstract: The nitrogen content of leaves in rice plants at various planting densities in the field and under high and low levels of nitrogen in pots were comparatively examined, and thereby the effect of the nitrogen content of leaves on the nodal positions of the last visible primary tiller on the main stem was clarified. The nodal positions of the last visible primary tiller, which determine the potential number of cumulative tillers, were negatively correlated with the planting density. However, critical nitrogen contents of leaves for tillering on a leaf-area basis (N_A), and those on a dry-weight basis (N_w) were estimated as 1.4–1.6 g m⁻², and 3.8–4.5%, respectively, at the time when the last visible primary tiller emerged, even when the planting densities varied from 24 to 197 plants m⁻². The critical N_A for tillering of rice plants grown under high and low levels of nitrogen fertilization was also nearly the same at the time when the primary tiller ceased to emerge. Therefore, the higher nodal position of the last visible primary tiller caused by lower plant density was attributable to the delayed canopy development and delayed competition for soil nitrogen resources. Suppression of the emergence of the primary tiller when the N_A was less than 1.6 g m⁻² by an insufficient supply of nitrogen was explained satisfactorily by assuming an insufficient supply of assimilates from leaves to a primary tiller bud.

Keywords: [Direct sowing](#), [Last visible primary tiller](#), [Leaf nitrogen content](#), [Nodal position](#), [Plant density](#), [Rice](#)

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