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Formation of Crown Root Primordia in Unelongated Portions of the Main Stem and Tillers in Rice Plants

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Abstract:

Successive cross section of the unelongated portions of the main stem and tillers of five rice cultivars, with a plant age of 7.4-7.5 in leaf number, were investigated to clarify the varietal differences in the formation of crown root primordia(CRP) on the stem and tillers.(1)The numbers of CRP and emerged crown roots were the largest in the main stem followed by the 2nd- and 3rd-node tiller. This order coincided with the orders in the number of the 'units', the stem length and the area of peripheral cylinder of longitudinal vascular bundles. No differences were found in the diameter of the base of CRP (DCRP) among the main stem, 2nd- and 3rd-node tillers.(2)When the stem was divided into successive 'units' as previously reported, a significant positive correlation was found between CRP number and respective area of peripheral cylinder of longitudinal vascular bundles of the main stem, and 2nd- and 3rd-node tillers. The percentage of the CRP formation(PCRP) represented by the linear regression coefficient was higher in tillers than in the main stem, and cultivars with high PCRP in the main stem showed a high PCRP in the 2nd-node tiller. The differences of the PCRP among cultivars was larger than that between main stem and tillers in the same plant.(3)PCRP was higher and DCRP smaller in the lower portion of the unelongated stem than in upper portions in the main stem except for the case of IR 36. These differences were not found between upper and lower portions of the unelongated stems of tillers. This indicates that characteristics related to the formation of CRP are different between portions of the stem, and also closely related with DCRP.

Keywords:

Crown roots, Nodal plate, *Oryza sativa* L., Peripheral cylinder, Primordia, Rice, Unelongated stem, Vascular bundle

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