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Morphological Studies on the Regularity of Shoot Development in Rice Plants : VII. The mechanism to control the start of internodal elongation and the regular distribution of elongated internodes on stems

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Abstract:

The distribution of elongated internodes on stems in each plant was compared among the main shoots and tillers, and GA_3 was applied to the plant to determine the primordial internodes which are sensitive to growth substances. The results were as follows: 1)The main shoots had five or six elongated internodes. The total leaf number was one less on shoots with five internodes than on shoots with six internodes. 2)The position of the lowest elongated internode was the same on each tiller and the main shoot, or it was one internode lower on tillers than on the main shoot. 3)The number of elongated internodes on each tiller was five or six. 4)The time lag between the first bract (b_1) initiation on the main shoot and the fourth tiller was estimated to be about 10 days. 5)Primordia of GA_3 sensitive internodes were positioned in the main shoots under the leaf which was newly emerging at the time of GA_3 treatment. Nroreover, at the first bract initiation stage, there are two young leaves and two leaf primordia (including b_1) inside the newly emerging leaf. Hence, it was concluded that because growth substances affect the tissues of the sensitive primordial internode between the initiation stages for the flag leaf and the first bract, the number of internodes elongated consecutively on the stems in each plant is either five or six.

Keywords:

Anatomy, Elongation, Internode, Mechanism, Morphogenesis, Oryza sativa L., Rice plant, Tiller

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