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Effect of Sodium Chloride on the Panicle and Spikelet Morphogenesis in Rice : II. Developmental morphology of the panicle

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Abstract:
To provide new information on salt stress in rice plant based on developmental morphology, structural changes of panicle and spikelet were investigated. As the salt concentration increased, growth and development of the rachilet was progressively reduced. This resulted in a decrease in the number of primary and secondary rachilets and also decreased grain numbers in the panicle. Additionally, the percentage of fully ripened grains decreased as the salt concentration increased. Salt treatment caused morphological variations in rachilla, spikelet and leaf structures. Degenerated primary rachilets were decreased in size or abruptly reduced, although there was a wide range of variations in degree of the degeneration among different cultivars. These morphological changes in panicle and spikelet in rice plants under salt stress conditions are compared with those under other environmental stresses. There are many similarities in morphological variations under different stresses, which finally led to the inhibition of growth of rice plants. The common processes in morphogenesis of panicle and spikelet in response to these environments was discussed together with the previous knowledge.

Keywords:
Degenerated rachilet, Developmental morphology, Environmental stress, Glume, Panicle, Rice, Salinity, Spikelet

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