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عنوان مقاله:

Differential Accumulation Patterns of Seed Proteins in Salt-Tolerant and Salt-Sensitive Rice Lines under Varying Salinity Levels

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خلاصه مقاله:

Salt-induced changes in the accumulation pattern of seed proteins were studied in salt-sensitive (MI-۴۸) and tolerant (CSR-۱۰) rice lines. An increase in seed protein content was observed with progress in seed development from ۴ to ۱۲ Days After Flowering (DAF) and up to maturity at each salinity level (۴, ۷, and ۱۰ dS m-۱). However, a ۱۰-۲۱, and ۱۴-۳۰% reduction in seed protein was noted when compared at a given developmental stage at all the salinity levels in ‘CSR-۱۰’ and ‘MI-۴۸,’ respectively. Among the four seed protein fractions, the proportion of glutelins revealed an increase (۵-۹%) in mature seeds of ‘CSR-۱۰’ with a decrease (۱۱-۱۳%) in ‘MI-۴۸’ under increasing salinity levels. Prolamins exhibited a reverse trend in both lines. Albumins and globulins revealed a decreased proportion in 'CSR-۱۰' but an increase in 'MI-۴۸' only at ۱۰ dS m-۱ at a given developmental stage. In ‘CSR-۱۰’, the accumulation pattern of the glutelin [Molecular weight (Mr.) ۳۶-۴۰.۵ and ۱۹-۲۱.۵ kDa] and prolamin (۱۳ kDa) polypeptides was seen similar at the control, ۴, and ۷ dS m-۱ except for the higher concentration of these at later two. At ۱۰ dSm-۱, a contradictory pattern of accumulation of these polypeptides was observed. In ‘MI-۴۸’, a completely different trend (earlier and faster accumulation) of the above-mentioned polypeptides was seen at ۴ and ۷ dS m-۱ in comparison to the control from early stages. Prolamin polypeptide (۱۳ kDa) showed a continuous decrease in its concentration at all the salinity levels; more pronounced at ۱۰ dSm-۱. Therefore, both lines revealed a different mechanism in response to a given .salinity condition

کلمات کلیدی:

.Glutelins, Oryza sativa, Prolamins, Seed storage proteins

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