

An allelopathic interaction between barnyardgrass and momilactone deficient mutant of rice
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The allelopathic interaction between rice and barnyard grass was investigated. When barnyard grass and rice seedlings were grown together at non-limiting nutrient conditions, the allelopathic activity of rice towards barnyard grass was increased. However, momilactone-deficient rice mutants showed no increase in allelopathic activity. Thus, momilactone production may be involved in barnyardgrass-induced rice allelopathy rather than nutrient competition between both species. Barnyard grass root exudates also increased, together with the increased rice allelopathic activity, including momilactone B production and its secretion by rice plants. Momilactone B possesses strong growth inhibitory activity against barnyard grass and plays a particularly critical role in rice allelopathy. Therefore, barnyard grass-induced rice allelopathy may be due to the increased momilactone B production and secretion from rice. Rice may be aware of the presence of neighbouring barnyard grass by detection of the key compound in barnyard grass root exudates, and this sensorial function may trigger a signal cascade resulting in increasing rice allelopathy through increased production of momilactone B in rice and secretion of momilactone B into the rhizosphere. Barnyard grass-induced allelopathy of rice may provide a competitive advantage for rice through suppression of the growth of barnyard grass.

Subject : : oral

Topics : Allelopathy in crops - Invited speakers

Keywords : Allelopathy ; Barnyardgrass ; Chemical interaction ; Momilactone ; Mutant