

Category	: International Rice Research Conference
Select Theme	: Genetics of Abiotic interactions: Stress tolerance and Mitigation
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Genetics of Abiotic interactions Stress tolerance and Mitigation Keyword 1	: Drought
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Title of Entry	: Rapid accumulation of Jasmonates in response to osmotic stress in rice contributes to stress tolerance
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Abstract : Plants have the ability to alleviate the harmful effect caused by abiotic and biotic stress. Phytohormones play a very important role in the adaptation to these stresses. To study the role of jasmonate in the adaptation to osmotic stress, a jasmonic acid (JA) biosynthesis mutant (cpm2) of rice which is impaired in the function of ALLENE OXIDE CYCLASE (AOC) and its wild type (WT) were employed to investigate their responses after polyethylene glycol (PEG) 6000 treatment. WT showed tolerance to osmotic stress, which induced a transient increase of JA and JA-isoleucine (JA-Ile) prior to an increase in abscisic acid (ABA) in shoots. In roots the pattern of hormonal increase was similar, but the response appeared to be faster. In cpm2 plants, however, extreme low levels of 12-oxophytodienoic acid (OPDA), JA, and JA-Ile were detected, no matter they were treated with PEG 6000 or not. In cpm2 shoots, ABA increased less than in WT when exposed to osmotic stress, while ABA levels were slightly higher in roots. This suggests that jasmonates participate in the regulation of ABA biosynthesis in response to osmotic stress in leaves. A model is proposed suggesting that roots may act as a controlling or sensor unit which perceives the stress in order to prepare shoots for the pending osmotic stress.

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