

Category	: International Rice Research Conference
Select Theme	: Systems physiology
Keyword 1	: Drought tolerance
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Title of Entry	: Vapor pressure deficit and soil moisture interactions on rice drought response
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: Environmental conditions can have large effects on plant growth, and rice is cultivated across a large range of soil environments and climatic conditions. Although decreasing soil moisture levels have been well-documented to affect the growth of rice plants, varying vapor pressure deficit (VPD) levels may interact with plant response to drought. To adequately investigate these interactions, multi-environment or multi-season data are necessary to provide a range of soil moisture and VPD levels. We have examined the soil moisture x VPD interactions across field study environments/ seasons at IRRI and in a Rice Drought Breeding Network across Bangladesh, India, and Nepal. Several traits have been measured among these studies including flag leaf length and width, stomatal density, xylem sap bleeding rate, and root growth at depth. Initial results suggest the flag leaf dimensions to be more sensitive to VPD than to soil moisture levels during reproductive stage. In contrast, stomatal density, xylem sap bleeding rate, and root growth at depth appeared to be more responsive to soil moisture levels. For each trait evaluated, genotypic variation also played a role in the soil moisture x VPD responses observed. These results have implications for understanding G x E interactions that affect drought screening trials, and highlight the importance of environmental characterization in multi-environment testing.

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