Effect of salinity and alleviating role of gibberellic acid (GA3) for improving the morphological, physiological and yield traits of rice varieties

ABSTRACT

An experiment was conducted in pots at the glasshouse of the Universiti Putra Malaysia during 2010 - 2011 to determine the salinity tolerance of two rice varieties exposed to GA3. One internationally recognised salt tolerant rice variety (Pokkali) and one Malaysian well-cultivated rice variety were studied under five salinity levels with GA3. The results revealed that the studied morphological traits such as plant height, tillers plant-1, leaves plant-1, leaf length and plant dry and the physiological attributes, chlorophyll a, b, total chlorophyll contents, photosynthetic rates, stomatal conductance and transpiration rate were reduced significantly with increasing saline condition in both of varieties. The transpiration rate was also reduced in both varieties, which showed less intercellular CO2 at higher salinity. Identical findings were also noted for the vapour pressure deficit in leaves (VPDL). MR219 showed more slat affected than Pokkali in some parameters but the saline effects alleviated when GA3applied. The present study concludes that GA3, a safe plant growth regulator, could be effectively sprayed on rice variety MR219 in saline belts as it adequately proved its unique salinity alleviating role.

Keyword: Gibberellic Acid; Malaysia; Rice; Salinity