Salinity stress effect on ion uptake and yield attributes in rice

ABSTRACT

The pot experiment was conducted under tropical condition (102012' N latitude and 101042' E longitudes) to evaluate salinity tolerance level of three rice cultivars viz., MR219, Binashail and IR20 during November 2012 to March 2013. Salinity levels were 0.34 (control), 4.2 and 8.8 dS/m. Salinity stress was evaluated in terms of ion uptake in plant straw (leaves & stems) and yield attributes. Sodium ion increased with increasing salinity levels whereas reverse trend was observed in potassium and calcium ions content in straw. However, among the cultivars, MR219 contained less sodium ions in straw. Sodium content was the highest in IR20. The number of effective tillers/hill, number of filled grains/panicle, 1000-grain weight and harvest index decreased with increasing salinity levels whereas reverse trend was observed in case of non-effective tillers/hill and unfilled grains/panicle. MR219 showed the best performance in terms of yield and yield attributes up to 8.8 dS/m soil followed by Binashail. The yield and yield attributes of IR20 drastically decreased with the increase of soil salinity. MR219 was found tolerant, Binashail was moderately tolerant and IR20 was susceptible to imposed moderate salinity.

Keyword: Rice; Salinity; Ion uptake; Yield