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**ENHANCING SALT TOLERANCE ABILITY OF SELECTED RICE
VARIETIES USING ASCORBIC ACID AND NICOTINAMIDE**

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Abstract

Total agricultural land of the globe becomes insufficient due to the progressive nature of primary and secondary salinity. High salt content in the irrigation water or soil is a serious restriction factor to the cultivation of many crops. Salinity has significant influence in maintaining the balance nature of osmosis, the availability of water and nutrients, and the formation of free radicals specially in rice plant since it's a staple food in many Asian countries. This study was carried out to determine the effect of ascorbic acid (vitamin C; 100 mg/l) and Nicotinamide (Vitamin B3; 250mg/l) on enhancing of salt tolerance ability of selected rice varieties (moderately salt tolerance rice varieties; At401, Bw400, Bg400-1, Bg369, a salt sensitive variety Bg310) at different salinity levels (0 dS/m, 3 dS/m, 5 dS/m, 7 dS/m, 10 dS/m) under greenhouse conditions at temperature 30°C. Two week old seedlings were transplanted into a simple hydroponic system which had the particular saline level that was induced by adding sodium chloride. Then ascorbic acid (100 mg/l) and nicotinamide (250mg/l) were added to the hydroponic solution separately. After a week of induced salinity, the highest leaf area (18.22 cm²), plant height (18.59 cm), chlorophyll content (0.33 mg/ g fresh weight) and proline content (18.46 µg/g fresh weight) were observed in At401 in the presence of ascorbic acid and nicotinamide at 7dS/m. However, the lowest value for the all above parameters were observed in Bg 400-1 at the lowest salinity (0 dS/m). In contrast, the highest sugar content was recorded in Bg400-1 (9.41 mg/g fresh weight) at 3 dS/m in the absence of both ascorbic acid and nicotinamide, whereas, At401 had the lowest sugar content (8.71 mg/g FW) at 0 dS/m in the presence of ascorbic acid. It was observed that both vitamins ascorbic acid and nicotinamide enhance the performance of At401 rice variety under high salinity compared to all other varieties of similar type.

Keywords: *ascorbic acid, nicotinamide, rice varieties, salt tolerance*