

Physio-Biochemical Responses of Maize Genotypes to Salinity Stress

Arpita Rani Roy, Prodipto Bishnu Angon

Faculty of Agriculture, Bangladesh Agricultural University, Mymensingh 2202, Bangladesh

Abstract

Global crop productivity, especially that of maize (*Zea mays* L.) is severely impacted by salinity, a significant abiotic stressor. Various physio-biochemical reactions are involved in how salinity affects maize genotypes. With an emphasis on some physiological and biochemical features, this study attempts to assess how salinity affects three genotypes of maize. This study examined the physio-biochemical characteristics of three maize varieties (BARI Hybrid Maize-9, BARI Hybrid Maize-12 and BARI Hybrid Maize-13) grown in the first phase of salinity in the grill house next to the Department of Crop Botany at BAU. NaCl was used to simulate the salinity stress (12ds/m), while no NaCl was applied to the control group. The pot experiment, which included four replications and 20L pots with 17kg of air-dried soil each, was conducted using the CRD method. On day 20, the plants were fully salted, and on day 30, they were harvested following ten days of intense stress. Different physiological (viz. stomatal conductance and photosynthesis rate) and biochemical (viz. carotenoids content, phenolics content and chlorophyll-b content) parameters were studied. From the study, it was found that the changes in stomatal conductance and photosynthesis rate were not that much significant but carotenoids, phenolics, and chlorophyll-b content were altered greatly by salinity stress. Based on a comprehensive analysis of all the parameters and overall performance, BARI Hybrid Maize-13 seems to be the most resistant variety to salinity stress because of its significant increase in chlorophyll-b and phenolics content, which are essential for photosynthetic effectiveness and adaptation to stress.

Key Words: Salinity, Maize, Physio-Biochemical, Crop production, Stress

