

Biochemical responses of maize under drought conditions

Abstract

This study aims to assess the biochemical changes of maize during water stress condition. Methodologically, Yellow Super Sweet Corn (YSC) and Thai Super Sweet Corn (TSC) were conducted with water stress condition in different days of interval for watering. The leaves sample were collected and determined for biochemical parameters responses to drought stress. The finding shows that increasing water stress significantly reduced the biochemical parameters as compared to control treatment which is watering everyday. The experiment show that proline accumulated highest in YSC treated with T4 (3.8×10^{-3} mg mL⁻¹ in 200 mg of leaves) at day 65 and TSC which treated with T5 (0.08 mg mL⁻¹ in 200 mg of leaves) at day 40. Protein content in YSC treated with T2 (5.6×10^{-4} mg mL⁻¹) was no significant differences with control treatment but showed differences in TSC which treated with same treatment (3.3×10^{-4} mg mL⁻¹) at day 65. There was no significant differences in chlorophyll content between maize treated with T2 and control treatment. Accumulation of MDA content was highest in YSC treated with T3 and T4 which are 0.95 μ mol in 100 mg leaves and also in TSC treated with T3 which is 0.64 μ mol in 100 mg leaves at the day 65. MSI was reduced in water stress treatments such as YSC treated with T3 and T4 as well as TSC treated with T2 and T3 at day 65. This study found that the three days interval of watering (T2) had the similar result as compared to everyday watering treatment (T1) and be able to produce maize cob at the day 65.