

Influence of water stress in association with application of brassinolide and minerals on growth, physiological and biochemical changes of banana (*Musa acuminata* cv. Berangan)

ABSTRACT

Water stress or synonymy referring to the drought season is the major abiotic stress which affect growth, physiology and biochemical activity in plant and cause major losses to agriculture production sector. This study was aimed to determine the effects of exogenous application of brassinolide (BR) and combination of minerals on growth performance, physiological and biochemical changes of banana plantlets (*Musa acuminata* cv. Berangan) under water stress condition. The leaves of the whole plantlets were foliar sprayed for every two weeks interval with three treatments; (i) BR as control, (ii) magnesium carbonate ($MgCO_3$) + calcium carbonate ($CaCO_3$) and (iii) combination of BR + $MgCO_3$ + $CaCO_3$. The plants were also subjected to water stress treatments: 50%, 75% and 100% of the field capacity. The treatments were assigned as split-plot design in randomized complete block design (RCBD) arrangement. Water stress had significantly reduced major growth parameters (plant height, pseudo-stem diameter and total leaf area) but enhanced accumulation of proline and malondialdehyde content in leaves tissue. These findings also provided profound new insights and water stress by regulating the changes on stomata conductance and vapour pressure deficit under severe water stress condition.

Keyword: Water stress; Banana; Brassinolide; Physiological indices; Minerals