

Effects of Different Concentrations of Banana Male Bud Tonic on the Growth and Yield of Salad Cucumber under Polyunnel Conditions

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Plant-based biostimulants are increasingly recognized as sustainable inputs for enhancing crop growth and productivity under protected vegetable cultivation. However, information on optimal application rates under polytunnel conditions remains limited. Banana male bud tonic is a plant-derived biostimulant rich in bioactive compounds that can stimulate plant growth and improve yield performance. This study evaluated the effects of different concentrations of banana male bud tonic, applied as soil drench at 10-day intervals during the vegetative phase, on the growth, flowering, and yield of salad cucumber (*Cucumis sativus* L. 'Bonafide F1') grown under polytunnel conditions at the Faculty of Agriculture, Rajarata University of Sri Lanka. The experiment was carried out in completely randomized design (CRD) with four treatments; T1 - Albert's solution only (control); T2 - Albert's solution + banana male bud tonic (1:5); T3 - Albert's solution + banana male bud tonic (1:10) and T4 - Albert's solution + banana male bud tonic (1:15) and replicated four times. Data were analyzed using one-way analysis of variance, and treatment means were separated using the Dunnett's test at the 5% probability level. Plant height increased over time, but the height was not significantly influenced by banana male bud tonic applications up to first flowering ($p > 0.05$). Soil drench application of banana male bud tonic significantly increased yield per plant ($p < 0.05$), with the highest yield recorded in T3 (792.45 ± 45.83 g plant⁻¹), followed by T4 (672.20 ± 50.50 g plant⁻¹). These treatments increased yield by approximately 97% and 67%, respectively, over the control (401.75 ± 50.88 g plant⁻¹). Fruit length and diameter were not significantly affected by treatments. In conclusion, soil application of banana male bud tonic at a 1:10 concentration effectively enhances salad cucumber yield under protected cultivation, highlighting its potential as a sustainable biostimulant for vegetable production.

Keywords: *Cucumis sativus*, Plant biostimulant, Protected cultivation, Soil drench