Growth of horned melon (Cucumis metuliferus) under different levels of Trichoderma-based bio-fertilizer

Moses Mutetwa, Tuarira Mtaita, Wonder Ngezimana, Paul Chaibva

Abstract

Implementing practices such as organic agriculture, sustainable agriculture, or ecological agriculture can greatly reduce and eliminate the harmful effects of synthetic fertilizers on both human health and the environment. In efforts to promote a more environmentally friendly approach, this study was conducted at the Department of Horticulture and Agronomy, Midlands State University in Zimbabwe. The focus was on the use of Trichoderma bio-fertilizer at various levels to determine its impact on the growth of horned melon (Cucumis metuliferus) in a greenhouse setting. The experiment followed a Complete Randomized Design (CRD) and included four different Trichoderma-based biofertilizer treatments, as well as a control treatment [0 g/pot (control), 0.1 g/pot, 0.2 g/pot, 0.3 g/pot, and 0.4 g/pot], all replicated four times. The research findings indicate that the biofertilizer utilized had a significant impact ($p \leq 0.05$) on vine length, number of leaves, and branches for growth characteristics. However, the biofertilizer did not have a significant effect ($p \geq 0.05$) on stem girth, chlorophyll content, or branching pattern. This study reveals that the horned melon plants treated with the Trichoderma-based biofertilizer exhibited noticeable changes in their vegetative growth, flowering patterns, and fruiting features at different application levels. Further investigation is required to fully understand the potential benefits of using Trichoderma-based biofertilizer in horned melon cultivation.

Keywords: Cucumis metuliferus; Trichoderma spp.; biofertilizer; inoculation; growth morphology; sustainable agriculture