World Academy of Science, Engineering and Technology
International Journal of Agricultural and Biosystems Engineering
Vol:11, No:11, 2017

Influence of Cucurbitacin-Containing Phytonematicides on Growth of Rough Lemon (Citrus jambhiri)

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Abstract : Occasional incidence of phytotoxicity in Nemarioc-BL and Nemafric-AL phytonematicides to crops raises credibility challenges that could negate their registration as commercial products. Responses of plants to phytonematicides are characterized by the existence of stimulation, neutral and inhibition phases, with the mid-point of the former being referred to as the Mean Concentration Stimulation Point (MSCP = Dm + Rh/2). The objective of this study was to determine the MCSP and the overall sensitivity (∑k) of Nemarioc-AL and Nemafric-BL phytonematicides to rough lemon seedling rootstocks using the Curve-fitting Allelochemical Response Dosage (CARD) computer-based model. Two parallel greenhouse experiments were initiated, with seven dilutions of each phytonematicide arranged in a randomised complete block design, replicated nine times. Six-month-old rough lemon seedlings were transplanted into 20-cm-diameter plastic pots, filled with steam-pasteurised river sand (300°C for 3 h) and Hygromix-T growing mixture. Treatments at 0, 2, 4, 8, 16, 32 and 164% dilutions were applied weekly at 300 ml/plant. At 84 days after the treatments, analysis of variance-significant plant variables was subjected to the CARD model to generate appropriate biological indices. Computed MCSP values for Nemarioc-AL and Nemafric-BL phytonematicides on rough lemon were 29 and 38%, respectively, whereas ∑k values were 1 and 0, respectively. At the applied concentrations, rough lemon seedlings were highly sensitive to Nemarioc-AL and Nemafric-BL phytonematicides.

Keywords : crude extracts, cucurbitacins, effective microbes, fruit extracts
Conference Title : ICSAEF 2017 : International Conference on Sustainable Agriculture, Environment and Forestry
Conference Location : Cape Town, South Africa
Conference Dates : November 02-03, 2017