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Biological control of root-knot nematode *Meloidogyne incognita* on Tomato cv. castle rock under field conditions using biotic culture system

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The root-knot nematodes; *Meloidogyne* spp. are economically the most limiting plant pathogens causing damage in tomato production in Egypt. Chemical nematicides have been the primary management tool, but their applications are associated with myriads of problems. Recently, efforts have been driven to produce food free from chemical residues by the application of such microorganisms involved in the biocontrol and biofertilizer process. A field experiment was designated in a complete randomized block to evaluate the integration between certain commercial bioproducts (biofertilizers and bionematicides) against *Meloidogyne incognita* infecting tomato cv. Castel Rock in the naturally infested field. The commercial bioproducts under investigation were Microbien containing *Pseudomonas* spp. and *Bacillus megatherium*, Potassiumag containing the potassium solubilizing bacteria *Bacillus circulanes*, Phosphorine containing the phosphorus solubilizing bacteria *Bacillus megatherium*, Kelpak containing the seaweed *Ekclonia maxima*, Green alga containing the green alga *Scendesmus* spp., the Stanes Bio-nematon containing the egg pathogenic fungus *Paecilomyces lilacinus*, the Stanes Symbion VAM Plus containing the vascular arbuscular mycorrhiza *Glomus fasciculatum* and the Stanes Sting containing the rhizobacteria *Bacillus subtilis*. The designed integrated treatments were as follow: (1) The three biofertilizers only (Microbien, Phosphorine, Potassiumag) (2) Microbien + stanes Symbion + Potassiumag (3) The three biofertilizers + Kelpak (4) The three biofertilizers + Green alga + Stanes Bionematone (5) The three biofertilizers + Green alga + Stanes Sting. Data at harvest time showed that all the tested combinations reduced *Meloidogyne incognita* j2 both in soil and roots as well as females, developmental stages, root galling, egg masses, nematode fecundity and increased tomato yield production as compared to untreated control treatment. The highest increased in tomato production (63.3% over control) resulted from the application of the three biofertilizers + Stanes Sting and the treatment containing the three biofertilizers + the Green Alga. However, integrating several microorganisms with different modes of action could be an excellent model for controlling plant-parasitic nematodes and improved yield production free from chemical residues under biotic culture conditions.

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