ECO-FRIENDLY COMPREHENSIVE MEASURES FOR CONTROL OF THE RENIFORM NEMATODE

BY

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B.Sc. Agric. Sci. (Pesticides), Fac. Agric., Cairo Univ., 2008
M.Sc. Agric. Sci. (Agricultural Zoology- Nematology), Fac. Agric., Cairo Univ., 2013

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APPROVAL SHEET

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Date: 6 / 5 / 2018

SUPERVISION SHEET

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ABSTRACT

The molecular identification carried out for the first time in Egypt, proved that our isolate of the reniform nematode was *R. reniformis* species by 99% and the nearest sister relationship was *R. macrosoma*. Also depending on the differential hosts cowpea, castor and cotton *R. reniformis* is rated as race A. Also *R. reniformis* is able to complete its life cycle on the three hosts in 7,14 and 21 days respectively.

The inter specific antinematic potentials of microbial agents were variable and dependent on microbial species. Our results indicate to enhancement in plant growth with the microbes capability in reducing *R. reniformis*. The commercial products were more effective against *R. reniformis* by increasing the nematode stress. The natural plant extracts enhanced growth of plants in addition to its nematicidal potency with different rates. The post mushroom substrate materials improved significantly cowpea growth criteria and were not effective in reducing the reniform counts in soil and on roots. Our results indicated that the commercial products organic and inorganic were nematoxic to *R. reniformis* development and reproduction and their effect different according to the compound nature and method of application however the foliar spray products were more effective than soil treatments. The systemic acquired resistance compounds recorded the best results in controlling *R. reniformis* and the cowpea growth response to SAR inducers reacted differently according to the material nature.

The total lipids, carbohydrates, K and Mg were decreased as a result of nematode infection, meanwhile total protein, phenols and Ca were increased. Most materials used restored variable deficiency accomplished by the nematode infection. The quantitative MDA &SOD activity have been studied in both shoots and roots. Reductions in levels of MDA in shoots were lesser than those of roots and differed according to the nature of treatment. The opposite was found with superoxide dismutase (SOD) where it increased with the nematode infection in both shoot and root.

In micro-plot and field experiments all the biotic and abiotic commercial products varied in their effectiveness against *R. reniformis*. However the pots results in many cases achieved higher results than micro-plot and field experiments. Yet the products of *Serratia marcescens*, Algeferet, IBA and Nemakill achieved the highest reduction in nematode populations in the field.

Key words: *R. reniformis*, cowpea, bioagents, post mushroom substrates, SAR.

DEDICATION

To the soul of my God father Prof. Dr. Ahmed Abd El-Salam Farahat.

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