PATHOLOGICAL EFFECTS OF THE ROOT-KNOT NEMATODE *MELOIDOGYNY* SPP ON SUGARBEET AND ITS CONTROL IN NUBARYA

BY

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ABSTRACT

Restrictions on the use of chemical nematicides in Egypt have increased, hence it needed to discover new control methods for managing root- knot nematodes. Therefore, establishing alternative control programed to combat root- knot nematode in sugarbeet in Egypt remarkably is significant. In this study, evaluation some sugarbeet varieties for their susceptibility/ resistance, nematicidal activity of some aromatic and medicinal plant amount and split nitrogen fertilizer, irrigation system, deficit irrigation water and nematicidal activity of commercial bioproducts against root- knot nematode *M. incognita* and on sugarbeet productivity was investigated as alternative control methods in comparison with chemical nematicides:

The obtained results can be summarized as follow:

The results revealed that the two sugarbeet varieties, Sible and Heba were as tolerant host. The water extracts of Demssisa, Camphor lemon and Thyme plants were the highly toxic against J_{2s} and egg hatching. Also, the leaves powders of Demssisa, Camphor lemon (at the dosage rates of 10 or 15 g/ 1 Kg soil) and Thyme (at the rate of 15 g/ 1 Kg soil) gave pronounced nematode elimination and sugarbeet productivity promotion. Application of ammonium nitrate at the rate of 150 Kg/ fed. In four equal dosages can be effective source for nematode management. Sprinkler irrigation system and deficit irrigation to achieve 75% of requirement can be used for the management of nematode without any negative impact on sugarbeet yield under field conditions. Commercial bioproducts, Bioarc, Bionematon and Biozeid as well as nematicide, Vydate L. 24% were highly toxic against J_{2s} in vitro test. However, bioproduct, Biozeid and nematicide, Rugby 10% G. have approximately similar effect on J_{2s} in soil. Likewise, similar results were obtained for effect of Biozeid and Vydate 10% G. on final population and reproduction factor under field conditions. It could be concluded that nematicides can be replaced by some aromatic & medicinal plants and bioproducts specially those used in this study as safely alternative nematode control methods, or application of these nematicides with ammonium nitrate or sprinkler or deficit irrigation (as cultural nematode control methods) as items of integrated control program might provide an effective control of this pest on sugarbeet.

Key words: Aromatic, Medicinal plants, Bioproducts, nematicides, Nitrogen fertilizer, Deficit irrigation, Irrigation systems, *Meloidogyne incognita*, Sugarbeet.

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CONTENTS

LIST OF TABLES