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**Mechanism of resistance of some pepper cultivars to root knot
nematodes by using resistance inducers**

BY

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6. Summary

Plant- parasitic nematode especially root- knot nematode *Meloidogyne* spp. of pepper plant is consider one of the dangerous pests which cause the large shortage and quality in yield all over the world. This nematode is widely distributed and wide host range.

The present study was conducted to exploit the nature's biological potency to have biocontrol against root-knot nematode with no toxic residues, no risks and safe to healthy human. This study is including on the important points as:-

1) Susceptibility of some pepper cultivars to root knot nematode species *Meloidogyne javanica* and *M. incognita* results indicated that The results showed that all cultivars were affected by root-knot nematode but with different degrees and classified into three groups according According to **Hadisoaganda and sasser (1982):**

A.)M. javanica under greenhouse condition were:

1- very resistant (V.R) : Zedinca, Eigman, 52-03RZ, Nourdine and CCA-4758

2-slightly resistance(S.R.): Godion, Bonbony, Kabia, Top star, Toranto and Tan Tan(No:12G076)

3-susceptible (S): Desko, Venesia, Dolma and Toranto

B-) *M. incognita* under green house condition were:

1-very resistant (V.R): zedinca, Eigman, 52-03RZ, Nourdine and CCA- 4758

2-slightly resistance(S.R.): Dolma, Bonbony, kabia and Top star

3-susceptible (S): Desco, venesi, Godion, Toranto1, Read 35/114 and California wonder

C-) *M. incognita* under filed condition were:

1- very resistant (V.R) : Nourdine.

2-) slightly resistance (SR): Dolma, Bonbony, kabia zedinca, Eigman, 52-03RZ ,CCA-4758, and Top star

3-) susceptible (S): Desco, venesi, Godion, Toranto1, Read 35/114 and California wonder.

2) Effect of biotic fungal and bacterial to root-knot nematode *Meloidogyne incognita*

a) Under laboratory condition Effect of biotic on activity of second stage juveniles of the root knot nematode *M. incognita*

b) Under green house conditions The fungal and bacterial filtrates and cells decreased significantly on nematode parameters compared with nematode alone.

3-) Induction resistance system by certain abiotic inducers i.e. (SA, IAA, JA, Eth and Bio). in laboratory conditions Result showed that, both

concentrations had significant decreased of egg-hatching, immobility and death of second stage juveniles.

4-) Induction resistance system by certain abiotic inducers i.e. (SA, IAA, JA, Eth and Bio) in greenhouse conditions, all concentration reduced nematode galling on the root system and inhibited the nematode reproduction on pepper, the third concentration of Eth. was the highest one.

5-) Impact of certain a biotic a gents as resistance inducers i.e. (SA, IAA, JA, Eth and Bio) in split-root assay. results indicated that, significant decreased in number of galls, rate of egg-masses.

6-) All mentioned obvious forms were effective in increasing the activities of antioxidant enzymes i.e. polyphenoloxidase and peroxidase, total sugars, total phenols and proline content in nematode infected pepper plants compared to untreated plants.

7-) Histological changes in pepper plant infected with root knot nematode *M. incognita* as affected by the addition of some electors i.e. (SA, JA, IAA, Eth. and Bio). Resulted showed that, In this concentration it can be noticed, pepper plants infected with nematode and treated with Eth. at 300 μ M not only after 30 days but also after 60 days , did not recorded any giant cells ,but root section almost nearest the control healthy plant.

From this work and study we can recommended that:-

1) Zedinca, Eigman, 52-03RZ, Nourdine and CCA-4758 are highly resistant to infection it can be used as commercial varieties in soil contaminated with root-knot nematode in areas where pepper cultivation in Egypt.

2) The best treatment of microorganisms in the rhizosphere, fungus and bacteria is the cells of *Pseudomonas* bacteria against root-knot nematodes.

3) 300 μ M of all inducers is the best concentration to controlling root knot nematode, non-formation of giant cells, it is similar to the pesticide and also increase the content of sugars, phenols, enzymes activity and proline.

4) The best concentration of the used inducers in the split-root system has an effective role in controlling root-knot nematodes.

5-) Ethelyen could be effective in control of *Meloidogyne incognita* in pepper plant.

6-) Outcomes of the study will be useful in formulating *Pseudomonas* sp. isolates for control of *Meloidogyne incognita*.