

actosol proven more effective than Vydat; nematicide chemical, in controlling survival & reproduction of Pathogenic Nematodes (*Meloidogyne incognita*) in tomato plants (1).

The root-knot nematode, *Meloidogyne incognita*, is the most pathogenic nematode parasite of tomato. Nematode infection results in about 80% yield loss in several infested tomato fields (2). Recently, the use of organic acids have been shown to affect nematode reproduction on their host plants by affecting the biochemical defense mechanisms of plants by increasing proteins and fatty acids in root tissues. Such an increase may be involved in synthesizing bioactive compounds able to oppose nematode development and reproductions (3).

Objective:

actosol humic acid supplemented with NPK and/or micronutrients (Fe, Mc & Cu) were tested against the root-knot nematode (*Meloidogyne incognita*) in vitro and in vivo on tomato plants and compared with a commercial nematicide, Vydate.

Treatments:

In vitro Treatments:

10 egg masses + 15 mL of from each of the following stock solutions:

1. Water
2. 2 mL **actosol** in 1 liter water (low concentration)
3. 4 mL **actosol** in 1 liter water (high concentration)
4. 2 mL **actosol** + NPK in 1 liter water (low concentration)
5. 4 mL **actosol** + NPK in 1 liter water (high concentration)
6. 2 mL **actosol** + Micro nutrient (Fe + Mn + Cu) in 1 liter water (low concentration)
7. 4 mL **actosol** + Micro nutrient (Fe + Mn + Cu) in 1 liter water (high concentration)
8. 2 mL Nematicide (Vydate) in 1 Liter water (low concentration)
9. 4 mL Nematicide (Vydate) in 1 Liter water (high concentration)

In vivo Treatments:

One-month old tomato seedlings cv. Castle Rock were planted into 15 cm diameter clay pots filled with 3 types of soil including Sandy, Sandy Loam and Clay Soils. The seedlings were inoculated with 2000 Juveniles of *M. incognita*/pot by pipetting the

inoculum in three holes around the root system. One week after inoculation, each soil received 200 ml from each of the following stock solutions:

1. water
2. 10 mL **actosol** in 1 liter water
3. 10 mL **actosol** + NPK in 1 liter water
4. 10 mL **actosol** + Micro nutrient (Fe + Mn + Cu) in 1 liter water
5. 10 mL Nematicide (vydate) in 1 liter water

Plants were then arranged in a fully randomized design in green house at 32 + 5°C and all received similar horticulture treatments.

Results:

1. **actosol** supplemented with micronutrients (Fe, Mn + Zn) gave the best results in vitro and in vivo. The treatment gave the greatest reduction in hatching, Juveniles survival and root penetration and reproduction of *Meloidogyne incognita* hatching on tomato.
2. **actosol** has proven more effective than Vydate, nematicide chemical, in controlling survival and reproduction of Nematodes (*Meloidogyne incognita*) in tomato plants.
3. The added benefit of application of **actosol** alone or supplemented with NPK and/or micronutrients results in significant improvement in the growth of tomato plants. **actosol** enhances root growth, enhances nutrient uptake, enhances moisture retention, and increased stress tolerance of tomato plants to nematodes infection.

Reference:

1. Hosny H. Kesba & Mona E. M. Al-shalaby (2008), Survival and reproduction of *Meloidogyne incognita* on tomato as affected by humic acid. Nematology, Vol. 10 (2), 243-249, 2008
2. Barker, K.R., Shoemaker, P.B. & Nelson, L.A. (1976), Relationships of initial population densities of *Meloidogyne incognita* and *Meloidogyne hapla* to yield tomato. Journal of Nematology 8, 232-239.
3. Zaki, M. J, Javad, S., Abid. M., Khan, H. and Moinuddin, M (2004), Evaluation of some chemicals against root-knot nematode *Meloidogyne incognita*. International Journal of Biology and Biotechnology 1, 613-618.

