Newest European Technology for Control Parasitic Nematode
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One might think of soil as a safe environment, there are many soil visible threats to the viability of your crop, but to a microscopic nematode it is a hostile world filled with danger, the worst enemy can be locking in the soil unseen spend their lives in the soil or within plant roots, Nematode is the most destructive group of plant pathogenfeed on crops roots, reducing the plant ability to uptake water and nutrients and responsible for heavy yield crop loses in fruits and vegetables all over the globe and their control is extremely challenging. They parasite a large variety of crops through worldwide and their impact on yield losses has been estimated to a billion of euros annually.

Plant parasitic nematodes attack theirs host by using a wide range of strategies. They can be ectoparasites, that feed on the outer plant tissues or endoparasitic that feed and live inside the plant tissues. Injuries resulting from Nematode actions invited further invasion by pathogens like fungus and bacteria causing more damage and ultimately reducing the quality and quantity of your crop.

Historically, management of nematode-induced crop damage has been achieved with the utilization of plant resistance, crop rotation and other cultural practices, or chemical nematicides.

The development of new nematicides is a difficult task. Because most plant-parasitic nematode species spend their lives in the soil or within plant roots, the target of any chemical nematicide often resides at a fair distance away from the site of application of the chemical. Moreover, the nematode cuticle and other surface structures are impermeable to many organic molecules. Consequently, most nematicides have tended to be rather toxic or volatile, with poor target specificity and less-than-perfect human or environmental safety, such as groundwater contamination or atmospheric ozone depletion.

Therefore, only a few chemical nematicides remain, and many of these lack broad-spectrum activity or efficacy of the same magnitude as that of soil fumigants.
Let’s look at general characteristics of Plant-Parasitic Nematodes:

- Are microscopic roundworms unseen to the lignite.
- Survive in soil and plant tissue.
- Feed on plant tissue and damage root systems.
- Strategies of attacking their host can be Ectoparasites “external feeding” or Endoparasitic “Internal feeding”.
- Reduce the ability of plants to obtain water and nutrients.
- Need to be properly identified before treating.
- Require a season-long approach for control.

Symptoms and signs of attacked the Nematode:

Above Ground Symptoms Nematodes that feed on the roots cause above ground symptoms that are similar to those resulting from many kinds of root injury. Foliage loses its luster and wilts. Prolonged root stress caused by nematodes may result in yellowing and eventual loss of foliage. New flushes of growth are stunted and weak, with fewer and smaller leaves than healthy plants. Plants tend to wilt more readily during low water or drought conditions than non-infested plants. The damage is usually distributed irregularly, since nematodes are rarely distributed evenly in the soil.

Root Symptoms:

Root symptoms vary widely. Some kinds of nematodes cause tissues on which they feed to grow strangely (root-knot and some foliar nematodes, for instance); some stop the growth of the roots; others kill the cells on which they feed as they move through the roots, leaving patches of dead tissue as they move on. Depending on the kinds of nematodes involved, damage may include galls, stunting, and decay of roots; infested roots are often darker in color than healthy roots. Fungi and bacteria which cause root rots, wilt, and other plant diseases often infect nematode-damaged roots earlier and more severely than uninjured roots. Some viruses can also be transmitted by nematodes.
Chemical controls

Most chemicals that have historically been used for nematode control or suppression are highly toxic and have very limited uses usually involving soil sterilization before planting. In addition, these chemicals have often been recommended only for crop production or other commercial uses, and had few if any applications in landscape plantings. Such chemicals will kill nematodes and plants and can be used to fumigate soil when renovating lawns or prior to planting landscape beds. However, this is a toxic material that can be harmful to beneficial soil organisms, and alternatives should be carefully considered before use.

In the past 20 years, several nematicides have been withdrawn from the market because of health and environmental problems associated with their production and use. As a result of this, and increasing public concern over the use of pesticides in food production.
Biological control:

Biological control is more inconsistent, less effective and slower acting than control normally achieved with chemicals. It has proved difficult to develop a biological control agent that is effective worldwide for any soil-borne disease. Current experience suggests that biological control agents will not replace the use of nematicides but, integrated with other control measures including chemicals, they could play an important role in the development of integrated control strategies in both developed and developing agriculture.

Crop IQ Technologies is pleased to announce NEMA-DEAD, a triple action curative and preventive natural nematocide. The novel product consists of a unique blend of five essential Natural oil extracts which contain nematocidal compounds, unsaturated fatty acids, green chemicals and bio stimulants. It is the first novel Nematocide on the globe combining the advantages of chemicals and natural products in one formulation with ZERO residuals, No wait and No PHI.

**NEMA-DEAD’s active ingredient:**

- Unsaturated fatty acids
- Natural plant extracted oils
- (Sesame Oil, Paraffin Oil, Soybeans oil, Coconut oil and Pine oil)
- Trade secret ingredient
- Inert ingredients
NEMA-DEAD mode of action:

1. Suppresses Nematode Cholesterol Biosynthesis and Inhibit Root Knot Nematode Development.

2. NEMA-DEAD has essential natural oils which contain highly toxic nematocidal compounds that lead to inhibition of Nematode eggs hatching.

3. NEMA-DEAD produces specific enzyme which destroys the eggs and prevents larvae from hatching and infecting new roots.

4. Some unique compounds in NEMA-DEAD when metabolized produce ammonia which is toxic to adult nematodes.

5. NEMA-DEAD catalyzes plant roots to produce wide range of biologically active chemicals, secondary metabolites, which are involved in plant defense against Abiotec and Biotec stress.

6. NEMA-DEAD has compounds that serve as low molecular weight flower pigments, antibiotics, UV protectants, insect-repellants and take part in the wound and defense responses of plants.
7. NEMA-DEAD Stimulates the plant to produce others natural compounds that are involved in induction of resistance in various plants. Moreover, it increases plant growth in terms of shoot length, shoot weight and root length as compared to the inoculated untreated plants.

8. NEMA-DEAD has superior technology to create prevention entry barriers surrounding the root hair for very long period.

9. NEMA-DEAD has fungicidal action so it could be applied as a pre-plant soil treatment to control or to aid in reducing the damaging effects of soil borne diseases: bacterial wilt, verticillium wilt, pink root; plant parasitic nematodes, symphylans (garden centipedes) and wireworms.

10. Apply NEMA-DEAD and harvest, no wait time and not required PHI. The healthy root system promotes good plant growth with high yield production. Whatever your crop and soil type NEMA-DEAD will enhance your productivity with the latest SAFEST and EFFECTIVE GLOBAL solution for Nematodes.

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**Key Targets parasitic Nematodes:**

- Root - Knot Nematodes
  - Meloidogyne spp. Tylenchus, Pratylenchus, Xiphinema, Criconemoides, Hoplolaimus, Belonolaimus, Helicotylenchus and Paratylenchus
- Lesion Nematodes.
TARGETED CROPS:

NEMA-DEAD may be used for nematode for many crops including but not limited to:
- Bulb, Cole & Leafy Vegetables: Broccoli, Cabbage, Cauliflower, Cucumbers, Lettuce and Onions.
- Root & Tuber Vegetables: Carrots, Potatoes, Radishes, Turnips and Sweet Potatoes.
- Herbs & Spices: Anise, Basil, Dill, Mint, Peppermint, Thyme and Oregano.
- Small Fruits & Berries: Strawberries, Blackberries, Blueberries and Cranberries.
- Nuts: Almonds, Cashews, Pecans, Pistachios and Walnuts.
- Field Crops: Alfalfa, Cotton, Tobacco, Soybeans and Corn.
- Ornamental Crops: Flowers, shrubs, small trees, etc.
- Grasses: Grown for seed or sod.

Method of the application: General Application Instructions:

May be applied by ground spray applications, drip irrigation, overhead irrigation systems or fertigation systems. For best results NEMA-DEAD should be applied once transplanting with rate 5-6 liters/hectare and reapplied the second application after 15 days from the first. If conditions warrant, NEMA-DEAD can be reapplied on an as-needed basis, so please for the technical support contact technical team of CIQ or our national distributor in your country.
can be applied with NPK starter fertilizer early in the growing season or just prior to planting. NEMDA-DEAD may also be applied with Nitrogen products to promote top growth if desired. Do not apply NEMA-DEAD when the soil has become saturated with water. For best results do not tank mix with soil wetter/surfactant chemistries, this can cause the active ingredient to be pushed below the root zone.
Large Area Application Instructions:-

For large area applications where ground spray equipment or overhead irrigation may sufficiently spray the underlying soil around the plants root zone apply monthly at a rate of 5-6lt/hectare. For plants with deeper root system (ie. trees, shrubs, etc.) an increased application rate and spray volume may be beneficial to push the product throughout the entire root zone. Additional applications can be made as needed if heavy nematode infestation is present, heavy or persistent rainfalls occur, or during heavy irrigation cycles with soil wetter/surfactant chemistries are being applied.

Small Area Application Instructions:-

Apply 2.5lt/Acre and apply at the base of the plant(s) and the surrounding area (at least 2’ diameter beyond the plant base). Spray soil until soil or ground cover is moist, do not over saturate. Monthly applications are recommended, bi-weekly applications may be made as needed. For plants with deeper root system (ie. trees, shrubs, etc.) an increased application rate and spray volume may be beneficial to push the product throughout the entire root zone.

Irrigation Systems:

NEMA-DEAD may be applied through micro sprinkler or drip irrigation systems. NEMA-DEAD should be injected to deliver 3.5 fl. oz. per 1,000 sq. ft. every 2 to 4 weeks depending on nematode pressure. Apply at the end of the irrigation cycle to allow product stay in root zone as long as possible. For plants with deeper root system (ie. trees, shrubs, etc.) an increased application rate and spray volume may be beneficial to push the product throughout the entire root zone. Flush lines with just enough water to remove all product. Excessive irrigation after application may wash product below the root zone resulting in poor efficacy. When being applied by drip only, calculate the acreage under drip rather than the field. Do not store premixed product.
MIXING INSTRUCTIONS:

SHAKE WELL BEFORE USING. Fill the spray tank 1/2 full and start the recirculation or agitation system. Add fertilizer if desired. Add the desired amount of NEMA-DEAD and the remaining amount of water and allow to mix thoroughly. Apply spray solution in properly maintained and calibrated equipment capable of delivering the desired volumes. NEMA-DEAD is compatible with most NPK fertilizer solutions and pesticides targeting the same target root zone. Avoid mixing with soil wetter/surfactant chemistries and with pesticides and chemistries that require excessive watering in, this may cause the active ingredient to be pushed below the root zone. A jar test is a good field practice for evaluating compatibility of multiple chemical mixtures.

STORAGE AND DISPOSAL:

Do not contaminate water, food, or feed by storage or disposal.

STORAGE:

Store in a cool, dry, locked area out of reach of children. Protect from excessive heat. Keep container tightly closed in storage to prevent entry of water.

PESTICIDE DISPOSAL:

Waste resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

CONTAINER DISPOSAL:

Triple rinse (or equivalent). Then offer for recycling or reconditioning, or puncture and dispose of in a sanitary landfill, or by incineration, or if allowed by state and local authorities, by open burning.