



BRANDT

Naturally Derived
Parasitic Nematode Control for Turf
Neo-Tec[®] S.O.

The background of the lower half of the page features a stylized illustration of grass roots in soil. The roots are depicted as a dense network of light brown, fibrous lines extending downwards from a dark brown soil surface. The soil is represented by a textured pattern of small, dark brown circles and dots.

Neo-Tec® S.O.

Naturally derived, no REI, minimal risk pesticide effective on parasitic nematodes

Nematodes

Each year, significant areas of turf come under threat of damage due to the activity of nematodes which are parasitic to turf grasses. Many turf samples assessed by diagnostic laboratories are showing the presence of one or more species of parasitic nematodes.

The major species include:

Belonolaimus spp. (Sting), Hoplolaimus galeatus (Lance)

Heterodera spp. (Cyst), Helicotylenchus spp. (Spiral)

Hemicycliophora spp. (Sheath), Macroposthonia spp. (Ring)

Meloidogyne spp. (Root-knot), Paratrichodorus spp. (Stubby-root)

Pratylenchus spp. (Lesion), Xiphinema spp. (Dagger)

Nematodes are microscopic, thread-like eel/worms which attack a wide range of plants. They prefer well drained sandy soil conditions, typical of those provided for highly maintained turf. Nematodes cause direct damage to the roots of target plants. With their piercing and sucking mouth parts, plant cells are damaged resulting in tissue breakdown and death of roots.

Low cut turf, by its nature, has a shortened root system, to which damage from nematodes becomes even more significant. A damaged root system decreases the ability of the plant to

“Our shallow rooted hot spots have decreased to a manageable amount and we will continue to incorporate it into our summer maintenance plan.”

Michael Bankert

Superintendent, Myrtle Beach National Golf Club

take up water and nutrients required for growth. Nematodes increase susceptibility to heat and drought stress, less resistance to insect attack, and the wounds caused by nematodes provide entry points for secondary fungal infections. The standard treatment in the turf industry for the control of nematodes has been the application of the chemical Fenamiphos, against which NEO-TEC S.O. has shown significant results.

Originally based on patented development work, both NEO-TEC S.O. and NEO-TEC G.S.O. are derived from extracts of hybrid sesame plants. The mode of action of NEO-TEC S.O. includes allelochemicals (nematotoxic or nemastatic effects), anoxic rhizospheres, disruption of nematode taxis to roots, and disruption of male taxis to females. These results account for the use of sesame for centuries in crop rotation for its residual nematicidal benefits to crops following sesame. Now those same benefits are available with safe and effective applications of NEO-TEC S.O.

Desiccation, Repellency and Immotility of Fatty Acids

NEO-TEC S.O. contains varying amounts of linoleic acid, alpha linoleic acid, oleic acid and other fatty acids. The linoleics, when incorporated into the soil, may be consumed or absorbed by the parasitic nematode, thus drying the nematode. This drying will stop both nematode feeding and the reproductive process, thus reducing or eliminating parasitic nematode populations in the soil. The linoleics and fatty acids also deter or repel most leaf damaging insects due to the unpleasant taste and aroma.

Versatile NEO-TEC products are effective on both Ectoparasitic and Endoparasitic nematodes. Ectoparasitic nematodes live outside the plant root, and feed only on materials they can reach, while endoparasitic nematodes spend at least part of their life cycle inside the roots of the plants on which they feed. NEO-TEC S.O. is effective on most parasitic nematodes including Lance, Sting, Root Knot and Cyst nematodes.

Typical nematode damage to turf roots



“Neo-Tec S.O. is by far the quickest, most effective and safest nematicide on the market. I will never use anything else again. I’m a believer!”

Eric Joy

Superintendent, S&S Management
Heritage Isles, Tampa, FL

Material	Active Constituent	Product Application Rate (oz/1000 sq. ft)
Neo-Tec S.O.	25% Sesame Oil formulation	3.25 oz.
Fenamifos	40% Fenamifos	3.75 oz.
Control	None	0 oz.

In 2002, trials were conducted to determine the efficacy of NEO-TEC S.O. compared to the industry standard Fenamifos, with each site set out in a randomized block design with four replicates, giving a total of 12 plots. Materials were applied at half label recommendations with a follow up irrigation.

Measurements

Soil samples were collected and submitted for laboratory analysis to determine the presence and number of any plant parasitic nematodes.

The initial sample was used to benchmark the population type and number at each site. Samples were then collected from each plot at 3, 6 and 12 weeks after treatment.

Neo-Tec S.O. vs. Fenamifos

Category	Neo-Tec S.O.	Fenamifos
Labeled as Poison	No	Yes
Application Limitations	No	Yes
Environmental Hazards	None	Toxic Fish, Wildlife
Safe for use in wetlands, human and wildlife exposure	Yes	No
Effect on Beneficial Microbes	Enhances	Kills
Container Disposal Restrictions	None	Triple Rinse
Personal Protection	Goggles	Protective Suit, Footwear, and Eyewear, Gloves, Chemical Headwear, Respirator
Leaches to Groundwater	No	Yes
Recommended for Tees, Greens and Newly Seeded Areas	Yes	No
Restricted application	No	Yes
Restricted use on residential lawns and public recreation areas	No	Yes

Analysis

At each site, each species of nematode identified was analyzed separately, with results for each measurement date being compared to the initial measurement. The actual and percentage variation was compared using Analysis of Variance for each measurement date.

Conclusions

NEO-TEC S.O. resulted in a significant decrease in nematode populations in 27 of 33 measurements compared with the control.

When compared to the industry standard treatment of Fenamifos, NEO-TEC S.O. resulted in a significant reduction in nematode populations in 11 measurements, and had an equal effect to Fenamifos in another 16 measurements.

The longevity of NEO-TEC S.O. treatment is shorter than that of Fenamifos when treating Lesion, Spiral and Sheath nematodes, but with Stubby-root, Dagger and Ring nematodes, NEO-TEC S.O. has similar or greater longevity.

A full copy of the report is available on written request.

“It’s safe, simple and it works!”

Chris Cartin
 Superintendent,
 Tusawilla Country Club and
 past President CFGCSA



Neo-Tec S.O.

Liquid Concentrate

Active Ingredient	
Sesame Oil	70.0%
Other Ingredients	
Lecithin	30.0%
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Total	100.0%

Application Instructions

NEO-TEC S.O. may be applied by drip or overhead irrigation systems. When delivered through irrigation systems, care should be taken to flush the system thoroughly for at least 30 minutes after application.

Start applications early in spring and continue until late fall depending on nematode pressure. Intermittant applications may be necessary based on the activity and damage caused by parasitic nematodes. Do not apply NEO-TEC S.O. when the soil has become saturated with water. Do not apply NEO-TEC S.O. in the middle of the day during thunderstorm season. (June - September/Florida). Product will be washed away and no control will be provided.

NEO-TEC S.O. should be injected to deliver 1 gallon of product per acre to be treated. When being applied by drip only, calculate the acreage under drip rather than the field. Do not store pre-mixed product. Irrigate thoroughly after application.

Turfgrasses, Golf Courses, Sports Fields and Recreational Turf
Use 3.5 oz. per 1000 sq. ft. or 1 gallon per acre. NEO-TEC S.O. should be sprayed at a minimum of 1/2 gallon of water per 1000 sq. ft. (20 gals/acre) so that uniform distribution is achieved in the soil profile.

Suggested Applications

For best results, NEO-TEC S.O. should be applied monthly from April through October. If conditions warrant, NEO-TEC S.O. may also be reapplied on an as needed basis. NEO-TEC S.O. should be washed off the leaf lightly by either rainfall or irrigation.

CAUTION

Due to the risk of phytotoxicity, apply NEO-TEC S.O. in the late afternoon or evening, particularly in warmer weather. NEO-TEC S.O. contains high concentrations of sesame oil, which is highly toxic to nematodes. Do not apply to areas where beneficial nematodes have been recently introduced.

Neo-Tec G.S.O.

Greens Grade Granules

Active Ingredient	
Sesame Oil	2.60%
Other Ingredients	
Lecithin	2.60%
Granulated paper fiber	94.80%
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Total	100.0%

Application Instructions

Golf Courses and Parks/Turf

Broadcast: Apply at the rate of 200 lbs. per acre (4.5 lbs/1,000 square ft). Immediately water treated area to work NEO-TEC G.S.O. into the soil. If possible, aerate the area to be treated and drag in the NEO-TEC G.S.O.

Pre-Planting Application

For best results apply before each growing season. Apply evenly over the entire area at a rate of 200 lbs/acre of treated soil (4.5 lbs/1,000 square ft). Incorporate NEO-TEC G.S.O. lightly into the soil to a depth of one to three inches by discing or other means, then plant as usual.

Post-Planting Application

Apply NEO-TEC G.S.O. as close to and around the plants as possible without damaging the plants at a rate of 200 lbs/acre of treated soil (4.5 lbs/1,000 square ft). Incorporate into the soil with suitable equipment as close as possible to the plants without injuring the roots.

Ornamentals and Trees

Boxwood, shrubs, azalea, dogwood, redbud, camellia, gardenia and magnolia: Apply approximately 1 tsp. in an 8-12 inch radius.

Individual and Containerized Application

Hand sprinkle NEO-TEC G.S.O. on top of soil around the plant and lightly work into the soil with a rake or other hand implement.

Suggested Applications

For best results, NEO-TEC G.S.O. should be applied monthly from April through October. If conditions warrant, NEO-TEC G.S.O. may also be reapplied on an as needed basis. NEO-TEC G.S.O. should be washed in lightly by either rainfall or irrigation.

FIFRA 25B Exempt Pesticide

This product has not been registered by the United States Environmental Protection Agency. It is exempt from registration under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA 25B) as a minimal risk, naturally derived pesticide. All active ingredients contained in these formulations are contained in 40 CFR 152.25, as well as list 4A of the Federal Register.

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