

eco-nemguard™

ORGANIC* LIQUID NEMATOCIDE

ACTIVE CONSTITUENT: 1280 g/L GARLIC EXTRACT
CONTAINING A MINIMUM 26 g/L TOTAL POLYSULFIDES

ORGANIC* GRANULAR NEMATOCIDE

ACTIVE CONSTITUENT: 450 g/kg GARLIC EXTRACT
CONTAINING A MINIMUM 9 g/kg TOTAL POLYSULFIDES

- NOVEL ACTIVE BASED ON EXTRACTION & STABILISATION OF DIALLYL POLYSULFIDES (DAS) FROM GARLIC
- NEW MODE OF ACTION TO ASSIST WITH NEMATOCIDE RESISTANCE MANAGEMENT
- DAS MOLECULES KILL NEMATODES ON CONTACT BY CAUSING IRREVERSIBLE OXIDATIVE STRESS
- DEGRADES NATURALLY IN THE SOIL, HAVING MINIMAL IMPACT ON OTHER SOIL BIOLOGY
- EASY TO APPLY ANY TIME AS A LIQUID OR GRANULE

THE BIOLOGY OF NEMATODES PARASITIC TO TURF

All parasitic nematodes feed by insertion of a needle like tube into root tissue. Ecto-parasitic nematodes feed with the body outside the plant and in soil samples will be present at all stages in the life cycle i.e. mature adults, immature adults, juveniles, immature juveniles and eggs. Ecto-parasitic nematodes are therefore generally vulnerable to a contact nematicide and high levels of population reduction of these nematodes can be achieved by 1-3 sequential treatments with eco-nemguard.

Endo-parasitic nematodes feed by progressive invasion of the plant tissue becoming embedded well into root cortex or specialised feeding sites formed by the nematode in the root mass. The invasive stage of the life cycle in Endo-parasitic nematodes is a second instar juvenile (J2) recently emerged from an egg. Time from emergence from the egg to invasion of the root is usually a matter of a few days (up to 2 weeks) for most Endo-parasitic nematodes. Once attached to the root, Endo-parasitic nematodes are difficult to detect by normal extraction and filtration techniques.

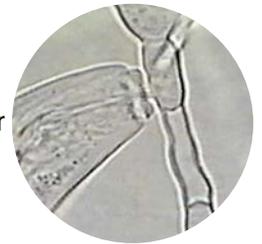


NEMATODE DAMAGE TO TURF

Symptoms of nematode damage in turf can be easily confused with other causative agents such as fungal disease, compaction, poor drainage, lack of irrigation and poor nutrition. Symptoms may be most obvious during periods of stress including high temperatures and drought. It is essential that soil samples that include root mass are taken from affected areas of turf in order to determine nematode populations and species type. Absence of, or low numbers of potentially damaging nematodes in soil samples from affected areas should not automatically be interpreted as

absence of nematode risk, due to nematode population cycling.

Several soil samples taken from the same area at different times and under different environmental conditions should be considered if initial samples indicate low parasitic nematode numbers and other causes of damage are not apparent.



Microscopic view of a nematode taken from an infected root system.

APPLICATIONS OF ECO-NEMGUARD TO TURF

Due primarily to irregularities in the uniformity of egg hatch and dynamics of infection, at least three sequential applications of eco-nemguard are usually required to significantly reduce numbers of endo-parasitic nematodes, irrespective of the presence of ecto-parasitic nematodes as the primary target. If endo-parasitic nematodes are the primary target, applications of eco-nemguard must coincide with emergence and migration of J2 nematodes throughout the root zone.

If ecto-parasitic nematodes are the only target, applications of eco-nemguard can be initiated at any time during favourable environmental conditions. It is recommended that three sequential applications of eco-nemguard are applied to significantly reduce populations of ecto-parasitic nematodes, although substantial reductions in populations can be achieved by a single application.

CONDITIONS AT TIME OF APPLICATION OF ECO-NEMGUARD TO TURF

It is essential that turf condition will allow percolation of eco-nemguard through the root zone to a depth of at least 10 cm. Irrigate between 5-10 mm immediately after application depending on conditions at the time. When mixed with water this product will give off a strong garlic odour which can be used to communicate to players that you are applying a safe and effective biological nematicide. Eco-nemguard is a fully biodegradable insecticidal material, breaking down naturally in the soil without leaving residues.

eco-nemguard™

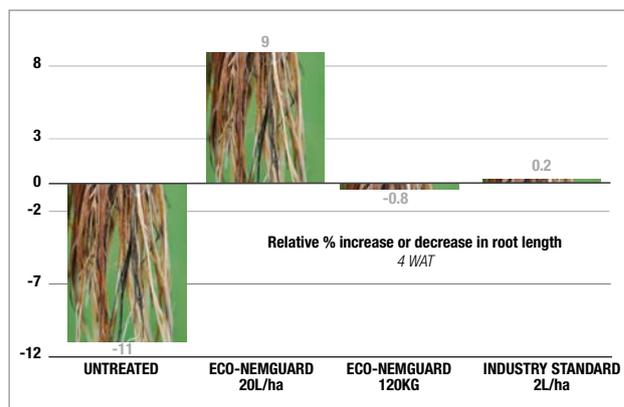
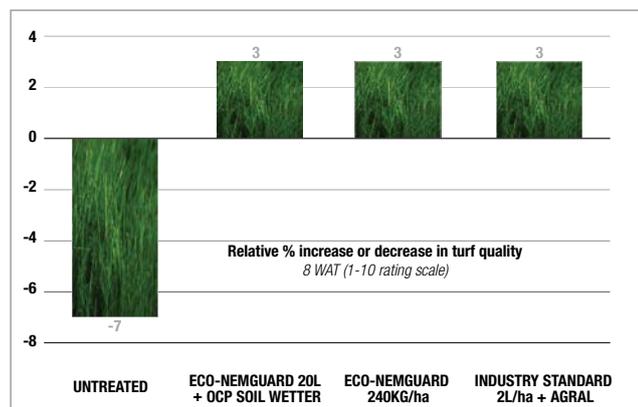
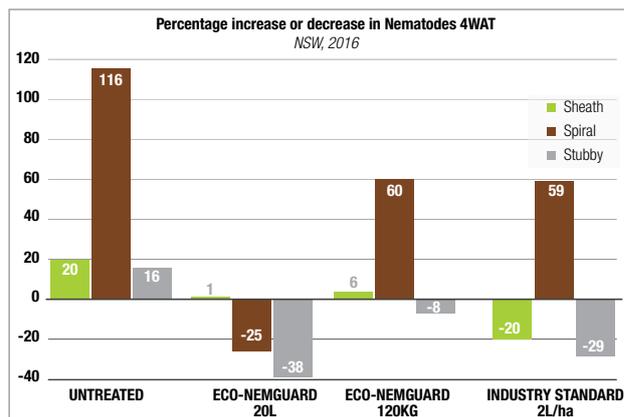
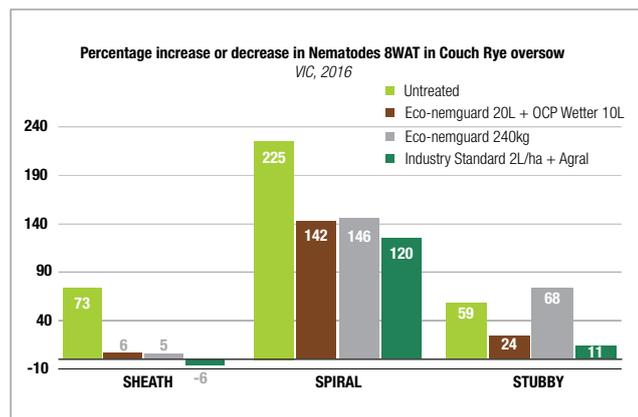
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TRIAL RESULTS IN TURF



DIRECTIONS FOR USE

LIQUID	CRITICAL COMMENTS
As a patch treatment mix 40ml/L and apply to affected areas. Apply to larger areas via boom sprayer @ 20L/ha. A tank mix with a quality soil wetter like HydraSoil® is recommended.	It is recommended that the liquid is drenched into the surface of the grass where nematode induced damage is apparent, or nematode populations in the soil are at risk thresholds. If in doubt seek expert advice prior to treatment. Liquid applications can be made between 7 and 14-day intervals. It is recommended that no more than three applications are linked in any treatment sequence. See comments below regarding soil moisture levels during application.
GRANULES	CRITICAL COMMENTS
Apply through standard drop spreader or similar greens spreader @ 240kg/ha as single application in spring or split 120kg/ha spring and autumn renovation.	Where nematode populations are high and at damaging thresholds an application of 24g/m ² (240 kg/ha) is recommended with follow-up liquid applications through the late spring - summer period. The rate of 12g/m ² (120kg/ha) is applied as a standard treatment at renovation for population management in combination with 1-2 liquid application through the late spring - summer months. The upper soil horizon should be moist and freely draining with percolation expected to reach 10cm in depth following eco-nemguard application. If soil conditions are dry, irrigate prior to application with between 5-10 mm immediately after applying eco-nemguard depending on conditions. Irrigation may not be necessary if a similar amount of rain is imminent.