



Amenity Forum Guidance Document

Biological Control

The Amenity sector will grow stronger through the people working within it, when they are trained, qualified and practising Continual Professional Development to improve their skills. These Key Points set out the requirements and guidelines for training, qualifications, CPD and other industry requirements in the Amenity sector and further guidance is available at www.amenityforum.co.uk

Entomopathogenic Nematodes

Chafer grub and leatherjacket infestations cause damage to turf by feeding on the grass plants root system. Further damage is caused by predators lifting the turf to feed on the chafer grubs and leatherjackets. Entomopathogenic nematodes are an effective method of controlling chafer grubs and leatherjackets.

Storage

Entomopathogenic nematodes should be used as soon as possible upon delivery, ground weather conditions permitting, and used before the expiry date stated on their packaging. If the product needs to be stored, the following points should be considered,

- Do not expose or store in direct sunlight.
- Do not freeze or subject to temperatures above 30°C.
- Do not store in temperatures above 8°C.
- Take the packs out of the box they were delivered in, and loosely store the packs in a fridge at a temperature between 4-8°C.

Application Timing

- The application of entomopathogenic nematodes should coincide with egg hatch as the emerging juvenile grubs or larvae (1st and 2nd instar stage of growth) are most susceptible to entomopathogenic nematodes.
- Monitor adult activity to identify the optimum timing of application. Chafer beetle species are typically active between mid-May and late June. The European Crane Fly (*Tipula paludosa*) is usually active between late August and early October, whereas the Common Crane Fly (*Tipula oleracea*) can have several generations throughout the year. The adults will be laying eggs in the turf throughout their period of activity.
- Apply entomopathogenic nematodes 3-4 weeks after the peak of adult activity, this will ensure that most eggs have hatched, and the grubs or larvae are still in a juvenile stage.
- For areas with very high infestations, two applications, with a two-week interval between the applications, can be considered.

Environmental Conditions for Application

- Applications of granular fertilisers are best avoided for two weeks prior to and post nematode application. Moderate organic fertilisers may be applied 3-4 days before or after the application of nematodes.
- Excessive thatch within the turf sward will inhibit the nematodes passage into the rootzone, if possible, carry out scarification to reduce thatch levels prior to applying the nematodes.
- Aerate the turf prior to application with a sarel roller, or other light aeration method such as micro or needle tines, to help the nematodes move down into the rootzone where the grubs or larvae are present.
- Nematodes are susceptible to desiccation and therefore need moisture in the rootzone, the moisture will also aid their movement through the rootzone. Irrigate the day before the application to ensure there is adequate moisture in the rootzone.
- Apply the nematodes when the rootzone temperatures are warm (above 12°C) for at least several hours per day.
- Do not apply prior to, or during, periods of heavy rain, as nematodes may be washed away from the root zone.

- Nematodes are very susceptible to ultraviolet light. Avoid application in direct sunlight. Apply the nematodes in early morning, late evening, shade or overcast conditions.

Application Method

- Ensure that the sprayer is completely clean and does not contain any pesticide residues
- Remove all filters from the sprayer, these include the main filter, the top hat filters at the nozzles, filter bowls within pipes away from the pump, or if using a hand lance, within the lance handle itself.
- Refer to the manufacturer's instructions for the correct application rate. Typical application rates for a 500 million pack of nematodes are:
 - 1,000 m² = 1 x 500 million pack in 200 litres water
 - 1 hectare = 10 x 500 million pack in 2,000 litres water
- Half fill the sprayer with clean water.
- Switch on the sprayer tank agitation system if present to circulate water and aid distribution of nematodes in the spray solution.
- For turf applications a wetting agent may not be necessary. If a wetting agent is used, use one that is compatible with entomopathogenic nematodes.
- For applications where you want the nematodes to remain on the foliage, such as ornamental plant pest control, a surfactant should be used.

Small Capacity Tank

If using a small capacity spray tank (less than 150 litres), pre-mix the nematode solution in a clean bucket or other such similar receptacle,

- Put the contents of the pack into a bucket containing 5-10 litres of water. Use a whole pack in one go, as the distribution of nematodes in the pack is not homogenous
- Rinse the pack as nematodes often cling to the packaging
- Stir the solution until all lumps are dissolved
- Pour the entire solution into the spray tank
- Top up the water in the spray tank until the required amount of solution is in the tank

Large Capacity Tank

If using a sprayer with a larger tank capacity (more than 150 litres),

- Add the contents of the pack directly into the spray tank, use whole packs, not a portion of a pack, as the distribution of nematodes in the pack is not homogenous
- Rinse the pack as nematodes often cling to the packaging
- Top up the water in the spray tank until the required amount of solution is in the tank

All sprayers applicators

- Nematodes can be tank mixed if required. Refer to the manufacturer for compatible products
- Use nozzles that produce a coarse droplet, such as a flat fan nozzle. Coarse droplets will ensure that the spray droplets bounce and roll off the turf leaf and transport the nematodes to the rootzone.
- Nematodes can withstand high pressures, but to protect your spray equipment sprayer pressure should not exceed 5 Bar / 75 p.s.i.
- Spray immediately after preparation
- Lightly irrigate treated area within 30 minutes after the application, to wash any nematodes remaining on the turfgrass leaves into the rootzone.
- The rootzone should be kept moist for a period of two weeks, this will help the nematodes to move deeper into the rootzone. Care should be taken not to soak the area as excessive irrigation could lead to drowning the nematodes; nematodes require air as well as water.

Amenity Forum

If you are an organisation involved in the amenity sector, consider becoming a member of the Amenity Forum, and help us to drive up standards. For further information, contact the Forum Secretary, admin@amenityforum.net