

NEMATODE PROBLEMS OF TURFGRASSES

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Plant parasitic nematodes are microscopic worms that usually feed on the roots of plants. In Michigan, they can be severe pests of turfgrasses. Above-ground symptoms of nematode-infected turf include yellowing of leaves, dieback and breakdown of young foliage and a tendency to wilt during periods of high temperature and low moisture. Grass cover generally becomes thin and growth during the summer months is poor. Severely affected areas may become bare and in turn infested by weedy grasses and broadleaf weeds. In addition to causing direct damage to root systems, feeding by some plant parasitic nematodes increases susceptibility of certain turfgrasses to diseases caused by other organisms.

Some nematodes live and feed within the roots of turfgrasses. Other live in the soil and feed on the root surface. Both types migrate through the soil from root to root and can be moved longer distances in sod, irrigation water or in soil on mechanical equipment.

Stunt, stubby-root, root-knot and cyst nematodes are the four most important nematode pests of Michigan turfgrasses. High population densities of the stunt nematode appear to be very commonly associated with Michigan turfgrasses. Spiral, ring and sheath nematodes are also frequently recovered in high numbers from Michigan turfgrasses; however, their overall influence on plant growth and development is unknown.

In Michigan, typical symptoms of Fusarium Blight of Merion Kentucky Bluegrass frequently occur only in the presence of both stunt nematodes and the fungi Fusarium roseum and F. tricinctum. The stunt nematode increases susceptibility to the fungi and appears to be the predisposing agent for this disease complex.

Nematode Detection

Because nematodes are microscopic and the damage they cause is very similar to that resulting from other factors, a laboratory analysis of soil and root tissue is usually necessary for diagnosis of plant-parasitic nematode problems. In Michigan, this service is provided by the Michigan State University Nematode Diagnostic Service Laboratory, which is operated under the direction of the Michigan Cooperative Extension Service.

Sod Farm

Pre-seeding Treatment -- If a site is infested with a detrimental plant parasitic nematode, treat with an appropriate soil fumigant or nematicide before seeding. This type of nematode control is generally more satisfactory than treatment at or after seeding. Pre-plant soil fumigants such as DBCP (Nemagon, Fumazone), 1,3-D (D-D, Telone II), or 1,3-D plus chloropicrin (D-DPic, Telone C, Ter-o-cide D) are all suitable for nematode control. The amount of chemical required in organic soil is usually approximately twice that needed for mineral soil. Inject soil fumigants to a depth of 6-8 inches, and apply at least 21 days before planting. The soil temperature should be between 50 and 80°F. Prior

to seeding, work soil to release the fumigant.

Treatment of Established Sod -- DBCP (Nemagon, Fumazone) is the only soil fumigant that can be used for nematode control in established sod. To insure good penetration of the chemical, apply as a drench.

The granular nematicides Fensulfothion (Dasanit) and Phenamophos (Nemacur) can be used to control nematodes in established sod. They must be uniformly distributed over the area to be treated and drenched immediately after application, using 1/2 to 1 inch of water. Do not harvest the sod for at least 60 days after application. Fensulfothion and Phenamophos are for professional application only.

Commercial Turf

Sites to be used for the establishment of high quality commercial turfs should be sampled for nematodes before seeding or sodding. If sod is to be used, obtain a high quality product grown in nematode-free, nematicide-treated or fumigated soil. This precaution, however, will be of little value unless the soil where the sod is to be used is nematode-free, nematicide-treated or fumigated.

Pre-plant Treatment -- If a site is infested with a detrimental plant-parasitic nematode, treat pre-plant with an appropriate soil fumigant or nematicide. This type of control is generally more satisfactory than treatment at or after seeding or sodding.

Pre-plant soil fumigants such as DRCP (Fumazone, Nemagon), 1,3-D (D-D, Telone II), or 1,3-D plus chloropicrin (D-D-Pic, Telone C, Ter-o-cide D) are all suitable for nematode control in future commercial turf sites. Inject to a soil depth of 6-8 inches, and apply at least 21 days before seeding or sodding. The soil temperature should be between 50 and 80°F. Prior to seeding or sodding, work the soil to release the fumigant.

Treatment of Established Commercial Turfs -- DRCP (Fumazone, Nemagon) is the only soil fumigant that can be used for nematode control in established commercial turfs. To insure good penetration of the chemical, apply as a drench.

The granular nematicides Fensulfothion (Dasanit) and Phenamophos (Nemacur) can be used to control nematodes in many established commercial turfs. They are for professional application only, and may not be suitable for use in certain situations, such as football fields and playgrounds. These materials must be uniformly distributed over the turf and drenched immediately after application, using 1/2 to 1 inch of water.

Home Lawn

Sites to be used for the establishment of very high quality home lawns may be sampled for nematodes before seeding or sodding. If sod is to be used, obtain a high-quality product grown in nematode-free, nematicide-treated, or fumigated soil. Again, the soil where the sod is to be used must be nematode-free, nematicide-treated or fumigated.

Pre-plant Treatment -- If a site is infested with a detrimental plant parasitic nematode, treat pre-plant with an appropriate soil fumigant. This type of control is generally more satisfactory than treatment at or after seeding or sodding.

Pre-plant treatment with soil fumigants such as DBCP (Nemagon, Fumazone) or 1,3-D (D-D, Telone II) can be used for nematode control. The chemicals should be injected by a professional applicator to a soil depth of 6-8 inches. Apply the chemical when the soil temperature is between 50 and 80°F, and at least 21 days before seeding or sodding. Prior to planting, work the soil to release the fumigant.

Treatment of Established Home Lawns -- DBCP (Nemagon, Fumazone) is the only compound recommended for nematode control in established home lawns. It must be applied by a professional applicator, and to insure good chemical penetration, it should be used as a drench.