

TURFGRASS NEMATODE CONTROL

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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. Aboveground symptoms of nematode infected turf include yellowing of leaves, dieback and break-down 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 annual grasses and 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 usually occur only in the presence of both stunt nematodes and the fungus Fusarium roseum. The stunt nematode renders this grass susceptible to the fungus and appears to be the dominant causal agent in 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 is usually necessary to determine if a nematode problem or potential problem exists. The M.S.U. Nematode Diagnostic Service Laboratory provides this service. Information on how to take and submit soil and root samples for nematode detection can be obtained from any County Extension Office (request Bulletin E-800 "Nematode Detection", M.S.U. Bulletin Office, P.O. Box 231, East Lansing, MI 48824).

Sod Farms

Sod farm acreage should be sampled for nematodes before seeding. It is much easier to prevent the occurrence of nematode problems than to alleviate them once present.

Pre-seeding Treatment.- If a site is infested with a detrimental plant parasitic nematode, pre-seeding treatment with an appropriate soil fumigant or nematicide is recommended. 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, Vidden-D), or 1,3-D plus chloropicrin (D-D-Pic, Terr-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. Soil fumigants should be injected to a soil depth of 6-8 inches, and applied at least 21 days before planting. The soil temperature should be between 50 and 80°F. Prior to seeding, the soil must be worked 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, it must be applied 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. The sod should not be harvested for at least 60 days after application. Fensulfothion and Phenamophos are for professional application only.

Commercial Turfs

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, it is best to 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, pre-plant treatment with an appropriate soil fumigant or nematicide is recommended. This type of control is generally more satisfactory than treatment at or after seeding or sodding.

Pre-plant soil fumigants such as DBCP (Fumazone, Nemagon), 1,3-D (D-D, Telone, Vidden-D), or 1,3-D plus chloropicrin (D-D-Pic, Terr-o-cide-D) are all suitable for nematode control in future commercial turf sites. They should be injected to a soil depth of 6-8 inches, and applied at least 21 days before seeding or sodding. The soil temperature should be between 50 and 80 F. Prior to seeding or sodding, the soil must be worked to release the fumigant.

Treatment of Established Commercial Turfs.- DBCP (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, it must be applied 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. These materials must be uniformly distributed over the turf and drenched immediately after application, using 1/2 to 1 inch of water.

Home Lawns

Sites to be used for the establishment of high quality home lawns should be sampled for nematodes before seeding or sodding. If sod is to be used, it is best to 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, pre-plant treatment with an appropriate soil fumigant is recommended. 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, or Vidden-D) can be used for nematode control. The chemicals should be injected by a professional applicator to a soil depth of 6-8 inches. The chemical should be applied when the soil temperature is between 50 and 80 F, and at least 21 days before seeding or sodding. Prior to planting, the soil must be worked 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.

Additional information about nematodes can be obtained from any County Extension Office (request Bulletin E-701, "The Hidden Enemy: Nematodes and their Control," M.S.U. Bulletin Office, P. O. Box 231, East Lansing, MI 48824.