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Vineyard Preparation for Nematode and Virus Disease Control
Michigan State University
Cooperative Extension Service
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Plant-parasitic nematodes are microscopic worms that feed on the roots of grape vines and result in diseased vines of low productivity. Some nematodes live and feed within roots. Others live in soil and feed on the surface of roots. Both types migrate through soil from root to root and can be moved longer distances in rootstocks, irrigation water, or on equipment. Plant-parasitic nematodes damage vines by feeding on the roots and inhibiting normal growth and development of root systems. This prevents absorption of water and nutrients required to maintain healthy and productive vines. Nematodes can also be vectors of viruses that cause diseases of grape vines. Nematode problems of grapes can be associated with vine propagation, new vineyard sites, replanted vineyards or individual vine replant sites. In Michigan, particular precaution should be taken when old tree fruit land is to be used for the establishment of new vineyards.

Root-lesion, dagger, root-knot, and lance nematodes are four plant-parasitic types frequently found in Michigan vineyards and potential vineyard sites. The presence of these nematodes is known to be detrimental to grapevines. The dagger nematode is the only one capable of being a vector of virus diseases of grapes. Spiral and ring nematodes are frequently found in vineyards; however, their overall influence on the growth and development of grapevines is unknown.

SYMPTOMS CAUSED BY NEMATODES

Poor growth of vines is the most obvious symptom. Above-ground parts of plants are stunted, have poor cane growth and small leaves. Root systems are small, discolored and have poorly developed feeder roots. Vines may die after the first or second growing season, or may remain in a severely stunted condition for many years. In some cases, surviving vines may improve with age and grow well during the next few growing seasons. Plant-parasitic nematodes can cause decline of individual vines or large areas of a vineyard.



Figure 1. — Peach Rosette Mosaic Virus infection symptoms in 'Concord' grape. (Top) typical umbrella-like growth habit of an infected vine. (Middle) crooked short internodal growth and deformed leaves. (Bottom) berry cluster shelling and reduced yield.