Biology and Management of Soilborne Diseases on Horticultural Crops

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Evaluation of Nematode-Resistant Grape Rootstocks for Managing *Mesocriconema xenoplax*

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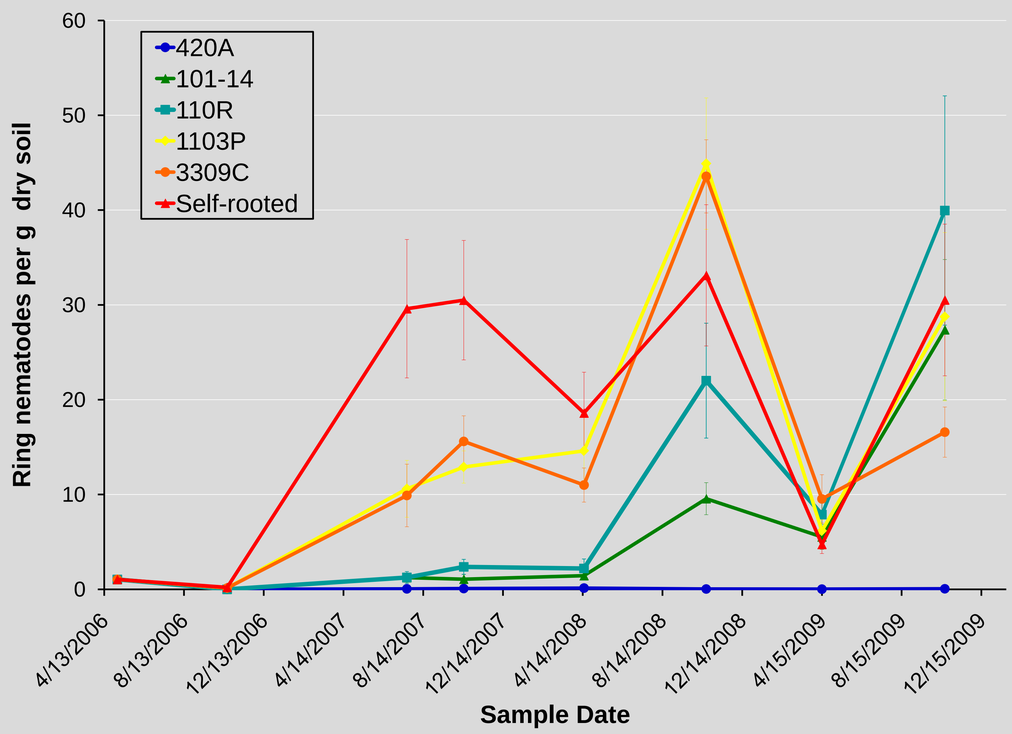
Figure 1. Ring nematodes feeding on a root

The ring nematode (*Mesocriconema xenoplax*) (*Fig. 1*) is a common vineyard pest worldwide, where it can reduce vine establishment and crop yields. The most cost-effective means to maintain vine productivity in nematode-infested soils is to plant vines on nematode-resistant rootstocks. ARS scientists at Corvallis, Oregon showed that ring nematodes eventually reached high populations on root systems of vines grafted onto two rootstocks (101-14, 110R) (*Fig. 2*) that were previously found to be resistant in greenhouse trials. Of 6 rootstocks tested, only 420A remained highly resistant to ring nematode after four years in field microplots. These findings are particularly important for viticulturists in the Pacific Northwest, since 101-14 is a common rootstock used in the region.

Figure 2. Ring nematode population dynamics in different rootstocks over a 3-year period



Effects of *Meloidogyne hapla* Population Densities on Grapevine Establishment

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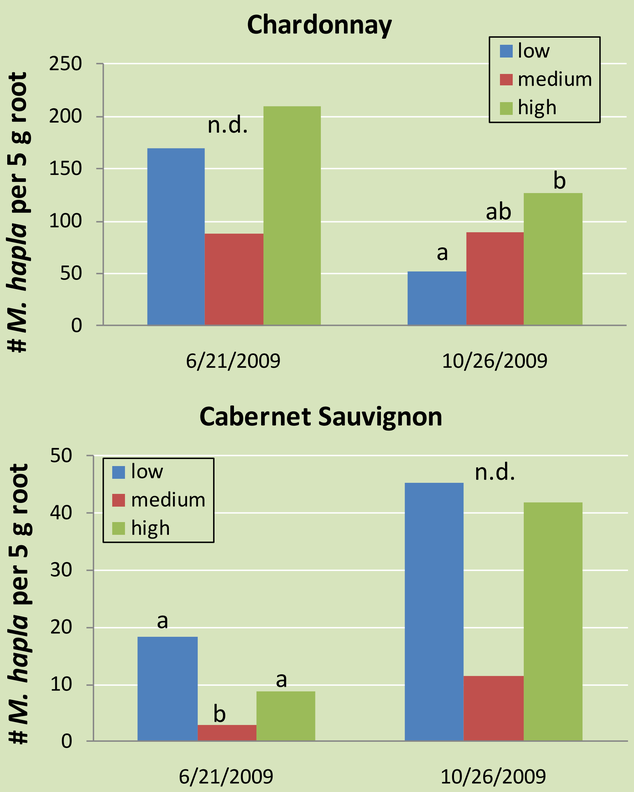

Figure 3. Northern root-knot nematode population dynamics in own-rooted vines

The northern root-knot nematode (*Meloidogyne hapla*) was detected at moderate to high population densities in 75% of eastern Washington vineyards surveyed. The impact of this nematode on vine establishment and productivity is unknown. Two years after inoculation of own-rooted Chardonnay and Cabernet Sauvignon with the northern root-knot nematode, ARS and Washington State University scientists showed that Chardonnay was a better host for this nematode (*Fig. 3*); populations of root-knot nematode were 3x higher on Chardonnay compared to Cabernet Sauvignon. There was no difference in pruning weights between nematode-inoculated and control vines (*Fig. 4*). However, there was a trend for lower pruning weight of Chardonnay vines that were infected with the nematode compared to the control. These findings are important to Washington grape growers and may direct planting material selection in replant sites that have high northern root-knot nematode populations.

Figure 4. Example of a microplot used in this study, Prosser, WA