2007 ARS/NGWI Field Tour

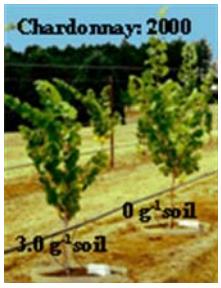
Grape Disease Management: Nematodes and Viruses

Grape Nematodes

Plant-parasitic nematodes are major pathogens of grapes worldwide. However, the distribution and impact of nematodes in wine grape production was unknown in the Northwest region. USDA-ARS, WSU, OSU, and AgCanada scientists have been collaborating to determine economic impacts and to develop sustainable management strategies for plant-parasitic nematodes.

Vineyard surveys determined that the same nematode genera occur in vineyards throughout the region and that high population densities often are not associated with depressed yields in established vineyards (USDA-ARS, OSU, WSU).

Vineyard establishment. USDA-ARS, WSU, and AgCanada scientists are conducting microplot and vineyard trials to determine the effects of several species of nematodes on the survival and growth of newly planted vines.



Nematode management. USDA-ARS and WSU scientists are conducting vineyard trials to evaluate synthetic and biological-based nematicides and rotational cover crops to suppress nematode populations.

Nematode resistant rootstock. USDA-ARS and OSU scientists identified rootstocks with resistance to ring nematode. Research on resistance and tolerance of grape cultivars to other nematodes is ongoing.

Vine physiology. USDA-ARS and AgCanada scientists are investigating the effects of plant-parasitic nematodes on whole vine physiology and on mycorrhizal development.

Grapevine Viruses

The rapid expansion of the wine grape industry over the past two decades has increased the exposure of vineyards in the Northwest to economically important virus diseases. USDA-ARS and WSU scientists are conducting fundamental and applied research to develop solutions for several debilitating virus diseases and to help maintain the sustainability of wine grape industry.

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USDA-ARS, WSU and WSDA (Washington State Dept. of Agriculture) scientists work together to develop fundamental information about virus diseases that are prevalent in the region. Knowledge generated in this collaborative endeavor is being use to focus subsequent research, outreach and service activities.

Intensive new planting of different cultivars and different training and management systems may alter populations of insects that can transmit viruses. USDA-ARS and WSU scientists are making concerted efforts to understand the changing dynamics of insect vector populations.

Efforts of USDA-ARS, WSU and WSDA working together were instrumental in revitalizing the Northwest Grape Foundation Service (NWGFS) program that insures 'clean' material is made available to stakeholders in the region. WSU and WSDA ensure that growers have access to reliable planting material through certified nurseries.

Improved diagnostic methods are being developed that will discriminate between different grapevine viruses and their molecular variants in order to maintain the sanitary status of vineyards in the region and to increase the reliability of plant material that forms the backbone of the NWGFS.

USDA-ARS and WSU scientists are taking proactive approaches in tackling new or emerging virus disease problems relating to changing viticultural practices in the region and in recommending appropriate scion and rootstock cultivars suitable for conditions in the Northwest. In collaboration with growers and industry stakeholders, scientists are conducting research to illuminate the negative impact of viruses on wine grape quality and to enhance the competitive advantage of wine grape industry in domestic and international markets.

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