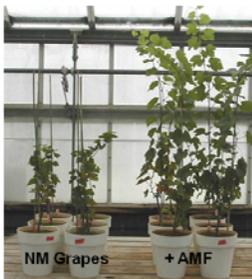
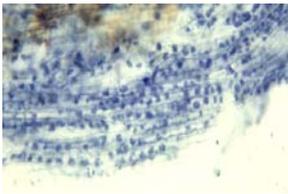




University of Idaho



2007 ARS/NGWI Field Tour

Roots and Soil: The World Beneath Your Feet

Like all plants, grape roots extract nutrients from soil solution to sustain life. Production of economically viable, high quality grapes requires understanding the plant's nutrient needs, the ability of the soil to provide the nutrients, the root system's ability to obtain the supply, and appropriate nutrient supplementation. Our research efforts focus on the underground portion of the plant-soil-water system, with pertinent outreach to the grower community.

Paul Schreiner's research focus is on the nutritional requirements of grapevines and the factors that control root and mycorrhiza function (growth, nutrient and water uptake, nutrient storage) in small fruit production systems. An improved understanding of the nutrient requirements needed to produce high quality fruit, and the factors that affect the ability of roots to supply those needs will lead to more sustainable production systems.

- Whole vine nutrient uptake/partitioning in Pinot noir in a red-hill soil.
- Competition between alleyway cover crops and grapevines in Willamette Valley vineyards.
- Diversity of arbuscular mycorrhizal fungi (AMF) in vineyards and impact of AMF on grapevine nutrient uptake in different soils.
- Understanding physiological interactions between ring nematodes and AMF in grapevine roots.
- Defining optimal nutrient supply and tissue standards based on fruit quality.
- Impact of late season water supply on nutrient partitioning and fruit quality.
- Assessing physiological function of various, indigenous AMF species.
- Understanding impact of soil management practices on roots and AMF.

Joan Davenport's research focus is on how water and nutrient management can be optimized for uniform production of high quality grapes. Her work integrates understanding of plant nutrient demand and soil nutrient supply, with a focus on exploring aspects of spatial and temporal variability to optimize high quality production. This encompasses conventional and alternative approaches to nutrient management.

- Use of leguminous cover crops as organic nitrogen sources in vineyards.

2007 ARS/NGWI Field Tour

- Identifying edaphic and/or nutritional factors causing grape chlorosis.
- Water and nutrient distribution in deficit irrigated vineyard soils.
- Spatial and temporal variability of nutrients in juice grape systems.
- Assessing the potential use of non-destructive soil and plant nutrient monitoring techniques.
- Defining optimal tissue nutrient concentration standards based on fruit quality.
- Whole vine nutrient partitioning in Concord grape in the irrigated inland Pacific Northwest.
- Nitrogen rates and timing for juice and wine grape production.
- Evaluating the use of chelated iron to alleviate grape chlorosis.



Team Members:

Paul Schreiner, USDA-ARS, Corvallis, OR,
schreiner@science.oregonstate.edu, 541-738-4084

Joan Davenport, WSU, Irrigated Agriculture Research and Extension Center, Prosser, WA,
jdavenport@wsu.edu, 509-786-9384

