



## Grape Disease Management

**Program Leader:** Wayne Wilcox, Professor  
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### **Program Objectives:**

Improve grapevine disease management through research and education projects that help growers better understand:

- Pathogen biology (periods of activity, when intervention is needed, how cultural practices can favor or disrupt)
- Vine susceptibility factors (genetic, nutritional, seasonal stage of development)
- Activities of available fungicides and other disease management tools: efficacy, physical modes of action, resistance risk and management



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### **Program Summary:**

This program emphasizes applied research and the education of growers, advisors, industry support personnel, and government regulators on matters pertaining to fungal disease control. While focused on the NY industry, research results and educational materials are distributed and accessed regionally and nationally as well.

Applied research projects have three major themes: (i) Relative efficacies of new and traditional fungicide products against the five major fungal diseases in NY; (ii) Detailed studies of fungicide activities, including physical modes of action and resistance development within various pathogen populations; and (iii) Disease biology and integrated management programs.

Information from new research is presented to stakeholders and integrated with existing knowledge to provide a set of disease-management principles and a non-inclusive range of specific options, through a variety of communication vehicles. These include oral presentations at grower conferences and twilight meetings; disease management bulletins; published reference materials (fact sheets, production guides); and newsletter articles ranging from a few paragraphs to nearly 30 pages in length.



Black rot, a common fungal disease of grapes

### **Project Justification:**

The humid climate of NY favors numerous fungal diseases, and managing them effectively is essential for commercial production of this crop. The demand for high quality fruit produced through practices that are both environmentally and economically sustainable requires that disease management programs be not only effective but efficient. These are best developed when growers and advisors can make informed decisions based upon a broad understanding of individual disease biologies and the tools used for their management.

### **Impact to Industry:**

Over the past 5 years, an average of approximately 1000-1200 stakeholders in NY and a similar number in other states and foreign countries have been reached each year through oral presentations at workshops and industry conferences. Newsletters and reference materials are distributed regularly and widely through electronic and printed formats.

In addition to product efficacy trials, research of practical relevance to the industry has included:

- *Powdery mildew*: The role of relative humidity and sunlight exposure on disease biology and management; sulfur physical modes of action and use strategies to minimize potential off-aromas in wine; development of resistance to DMI and strobilurin fungicides and evaluation of resistance-management strategies.
- *Botrytis*: Time of infection; host/environment interactions influencing disease development; cultural management practices; fungicide physical modes of action
- *Black rot*: Time of infection; effect of berry age on disease susceptibility; inoculum reduction through sanitation; fungicide physical modes of action
- *Phomopsis*: Seasonal availability of inoculum; minimizing sprays for control; yield loss/gain from variable management programs
- *Downy mildew*: Physical modes of action of standard fungicides and phosphonates

### **Project Team Members:**

Judy Burr, Technician  
Nicole Landers, Technician  
Dave Combs, Research Support Specialist  
Seiya Saito, Postdoctoral Research Associate

### **Significant collaborators:**

D. Gadoury and R. Seem (PPPMB); J. Vanden Heuvel and T. Martinson (Horticulture); G. Sacks (Food Science); G. Grove (Washington State); M. Sosnowski and T. Wicks (South Australia R&D Inst.).



Judy Burr, Research Technician