

CRAVE 2015
November 4, 2015
ILR Conference Center

Session 1

- 8:30 Cost of Establishment and Production of Cold-Hardy Grapes in the Thousand Islands Region of New York, 2015. [Dayea Ho, Sogol Kananizadeh, and Miguel I. Gómez \(Dyson School of Applied Economics & Management\)](#)
- 8:45 Economic impact of Grapevine Red-blotch Disease in California, New York and Washington: optimizing management strategies. [Miguel Gómez, Katie Ricketts \(Dyson School\), Marc Fuchs \(Plant Pathology Section, SIPS, NYSAES\)](#)
- 9:00 Epidemiology of Grapevine red blotch associated virus. [Elizabeth Cieniewicz \(PhD Student\), Marc Fuchs \(Plant Pathology, School of Integrative Plant Science\)](#)
- 9:15 Impact of Winter Injury and Frost Damage on Frontenac and Marquette Grapes in Clayton, NY. [Chrislyn A. Particka and Timothy E. Martinson, \(Horticulture Section, NYSAES\)](#)
- 9:30 SCRI Project on Spatial Vineyard Management: The Beginning [Terry Bates, Cornell Lake Erie Research and Extension Laboratory](#)
- 9:45 Inheritance of black rot disease resistance in grapevine. [Elizabeth Takacs \(Horticulture Section, NYSAES\)](#)
- 10:00 Break

Session 2

- 10:30 Grape Rootworm – Managing the reemergence of an old pest in the Lake Erie Region. [Tim Weigle \(NYS IPM Program/Lake Erie Regional Grape Program \) and Greg Loeb \(Entomology, NYSAES\)](#)
- 10:45 Floor management impacts on microbial communities in a Riesling vineyard and wines. [Ming-Yi Chou \(Horticulture Section, Ithaca\), Anna Katharine Mansfield \(Food Science, Geneva\), Jenny Kao-Kniffin and Justine Vanden Heuvel \(Horticulture Section\)](#)
- 11:00 Bulk Grape Production: Assessment and Action. [Kevin Martin \(Lake Erie Regional Grape Program, Penn State University\)](#)
- 11:15 Mechanical Thinning and its effect on return crop [\(Luke Haggerty, Lake Erie Regional Grape Program\)](#)
- 11:30 Limits to Tannin Extraction and Retention, and Measuring Latent Precursors of Sulfurous Off Aromas. [Gavin Sacks, Lindsay Springer \(Food Science, Ithaca\), Yi Chen \(Food Science, Nanchung University\) and Jill Jastrzembski \(Food Science, Ithaca\)](#)
- 11:45 Adjusting air volume while spraying as a function of the canopy density and air turbulence. [Tomas Palleja and Andrew Landers. Cornell University, Barton Laboratory, Geneva, NY 14456, USA](#)
- 12:00 Lunch - [Elizabeth Garrett, President, Cornell University Keynote Speaker](#) (preregistration)

Session 3

- 14:00 The Littlest Winemakers: The contradictory tale of microbial terroir, [Anna Katharine Mansfield \(Food Science, NYSAES & Ithaca\)](#)
- 14:15 Understanding Sour Rot Etiology and Developing Management Techniques. [Megan Hall \(Plant Pathology Section, NYSAES\); Gregory Loeb, \(Entomology, NYSAES\); Wayne Wilcox, \(Plant Pathology Section, NYSAES\).](#)
- 14:30 Investigating YAN requirements for Riesling in Spontaneous and Inoculated Fermentations. [Camila Tahim and; Anna Katharine Mansfield, \(Food Science, NYSAES\)](#)
- 14:45 Data mined from the past five years of Veraison to Harvest [Chris Gerling, Food Science, Tim Martinson, SIPS](#)
- 15:00 How far can we push it: Modifying cluster compactness in Riesling by leaf removal and shoot-tipping at bloom. [Tim Martinson and Chrislyn Particka, \(Horticulture Section, SIPS, NYSAES\)](#)

Talk Summaries
CRAVE 2015
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Session 1

8:30 Cost of Establishment and Production of Cold-Hardy Grapes in the Thousand Islands Region of New York, 2015. Dayea Ho, Sogol Kananizadeh, and Miguel I. Gómez (Dyson School of Applied Economics & Management)

The objective of this study is to determine the cost of producing cold hardy grapes in the Thousand Islands region in a commercial size operation. Estimates of the total investment in land, machinery, vineyard establishment and development costs, and annual operating costs were developed. These estimates can guide growers and potential investors to compute and analyze the costs and profit potential for their own situations. Sensitivity analysis to identify breakeven prices and yields were conducted.

8:45 Economic impact of Grapevine Red-blotch Disease in California, New York and Washington: optimizing management strategies. Miguel Gómez, Katie Ricketts (Dyson School), Marc Fuchs (Plant Pathology Section, SIPS, NYSAES)

Grapevine red blotch-associated virus (GRBaV) is a newly identified virus of grapevines found in numerous *Vitis vinifera* growing regions across the United States. We employ a Net Present Value approach to evaluate the optimal disease management strategies. This will help managers identify a threshold for changing management strategies under specific disease scenarios in order to reduce or minimize economic losses.

9:00 Epidemiology of Grapevine red blotch associated virus. Elizabeth Cieniewicz (PhD Student), Marc Fuchs (Plant Pathology, School of Integrative Plant Science)

Grapevine red blotch disease (GRBD) is an emerging viral disease of *Vitis* spp. The causative agent, Grapevine red blotch associated virus (GRBaV), harbors a 3.2 Kb genome comprised of single stranded, circular DNA. GRBaV is graft transmissible, which likely explains its detection throughout the major grape-growing areas of the US. Although there is evidence of vine to vine spread in some western vineyards, it is not determined whether short distance spread of GRBaV can occur. The objective of my research is to evaluate short-distance dispersal of GRBaV and determine the insect vector associated with GRBaV.

9:15 Impact of Winter Injury and Frost Damage on Frontenac and Marquette Grapes in Clayton, NY. Chrislyn A. Particka and Timothy E. Martinson, (Horticulture Section, NYSAES)

The Northern Grapes Project is funded through the USDA-NIFA Specialty Crops Research Initiative. As part of this project, training system studies were established in a commercial vineyard in Clayton, NY in 2012. The goal of this specific project is to determine if training system can affect yield and fruit chemistry. However, the past two years have been impacted by extreme cold in the winter (2013-2014 growing season) and a late spring frost (2014-2015 growing season). This presentation will discuss the impacts of these events on both cultivars.

9:30 SCRI Project on Spatial Vineyard Management: The Beginning Terry Bates, Cornell Lake Erie Research and Extension Laboratory

Terry Bates (Cornell) and Steve Nuske (Carnegie Mellon) have been conducting a NGWI funded project on soil, canopy, and crop sensors for the spatial measurement of commercial vineyard characteristics. In Fall 2015, this research will expand into a larger SCRI project on variable rate vineyard measurement and management. The presentation will give an overview of the proposed project including: results from the pilot study, project goals and objectives, the project team, and expected outcomes.

9:45 Inheritance of black rot disease resistance in grapevine. Elizabeth Takacs (Horticulture Section, NYSAES)

The hemibiotrophic fungus *Guignardia bidwellii*, native to North America, causes black rot in grapevine. In warm, humid climates, black rot thrives on grapevines not treated with fungicides. The European species *Vitis vinifera*, which evolved independently of black rot, is more susceptible to infection than wild North American *Vitis* species. Exploiting the differences in resistance between these species, we aim to better understand the mechanism and to determine the inheritance of black rot resistance. Our long-term goal is to enable marker-assisted breeding for the development of black rot resistant cultivars.

10:00 Break

Session 2

10:30 Grape Rootworm – Managing the reemergence of an old pest in the Lake Erie Region. Tim Weigle (NYS IPM Program/Lake Erie Regional Grape Program) and Greg Loeb (Entomology, NYSAES)

Grape rootworm was once considered to the primary pest of grapes east of the Rockies. The introduction of DDT combined with successful research and extension efforts helped to diminish the effects of grape rootworm while Grape berry moth has risen to the ranks of number one insect pest in the Lake Erie grape growing region. A concentrated research and extension effort has drastically reduced the number, and timings, of insecticide applications for grape berry moth since 1989 when the grape berry moth risk assessment protocol was introduced. These changes are seen as being at least partly responsible for the reemergence of grape rootworm as a primary pest of grapes in an increasing number of vineyards. This project is looking at pest biology, spray materials and timings, and the use of entomopathogenic nematodes for effectively managing this old pest in new ways.

10:45 Floor management impacts on microbial communities in a Riesling vineyard and wines. Ming-Yi Chou (Horticulture Section, Ithaca), Anna Katharine Mansfield (Food Science, Geneva), Jenny Kao-Kniffin and Justine Vanden Heuvel (Horticulture Section)

The use of under-vine vegetation has gained interest as a potential practice to control excessive vine vigor through increased root zone water and nutrient competition. Additionally, recent research has indicated that fruit microbiome may play a significant role in determining sensorial characteristics of a wine. In our study, floor management practices of herbicide (glyphosate), cultivation, and native vegetation under the trellis were established in RCBD with four replications in a mature, vigorous Riesling vineyard in Ovid, NY in 2014. The microbial community composition of soil, grape and wine will be profiled with Illumina sequencing. Finished wines were evaluated sensorially by 97 panelists. This study will enable a more comprehensive understanding of under-vine floor management interactions with fruit and fermentation microbiome.

11:00 Bulk Grape Production: Assessment and Action. Kevin Martin (Lake Erie Regional Grape Program, Penn State University)

Bulk Grape and Wine Production were presented with an unprecedented number of business challenges related to marketing and weather. These developments began behind the scenes in early 2014. Persistently low bulk prices look to extend these challenges into 2018. With back to back years of winter damage growers are reassessing their site selections, varieties and businesses entirely. We are helping growers with a market manage their businesses in these conditions for the medium term. We are also assisting growers without markets in their transitional period.

11:15 Mechanical Thinning and its effect on return crop Luke Haggerty (Lake Erie Regional Grape Program, Cornell University)

In 2013, grape growers in the Lake Erie region made an effort to thin off a portion of grapes from the extremely heavy crop. These efforts resulted in mechanical crop thinning of 40% of the 30,000 acres of Concord in the region. Although there were mixed results and feedback from the thinning that took place, 2013 and 2014 yield data from 18 commercial vineyards showed that there was a benefit from the thinning. Vineyards that were thinned in 2013 experienced a yield

increase in 2014. As expected, un-thinned vineyards saw a decrease in yield in 2014. However, the two year average between the thinned and un-thinned vineyards showed that thinning increase yield 0.6 tons/acre.

11:30 Limits to Tannin Extraction and Retention, and Measuring Latent Precursors of Sulfurous Off Aromas. Gavin Sacks, Lindsay Springer (Food Science, Ithaca), Yi Chen (Food Science, Nanchung University) and Jill Jastrzembki (Food Science, Ithaca)

Two topics under investigation in the Sacks lab will be discussed. 1) We present further evidence that grape-derived proteins can limit tannin extraction and retention in red wines, particularly those produced from hybrid grapes. We also discuss new approaches to remove proteins during winemaking. 2) Recent reports suggest that copper-sulfur complexes in wine may serve as a key source of latent sulfurous off-aroma compounds during bottle storage. The recent literature will be reviewed, and a novel and simple approach to quantifying these precursors will be discussed

11:45 Adjusting air volume while spraying as a function of the canopy density and air turbulence. Tomas Palleja and Andrew Landers. Cornell University, Barton Laboratory, Geneva, NY 14456, USA

This work proposes two electronic systems to estimate canopy density and in-canopy air turbulence. The main objective is to adjust the sprayer air volume in real time according to the current canopy density with the aim to improve deposition and reduce drift.

12:00 Lunch - Elizabeth Garrett, President, Cornell University Keynote Speaker (preregistration)

Session 3

14:00 The Littlest Winemakers: The contradictory tale of microbial terroir, Anna Katharine Mansfield (Food Science, NYSAES & Ithaca)

Recent advances in yeast and bacteria identification have led to increased interest in the microorganisms found in vineyards and fermentations, and even arguments over the authenticity of a producer's microbial terroir. This review of current literature represents an attempt to translate recent research in wine micro to probable impacts on wine production and sensory characteristics. Does wine yeast occur in the wild? Can microbial terroir exist in regions without a history of wine production? And how much do wild yeasts contribute to spontaneous fermentation? We'll take a stab at these questions and more...

14:15 Understanding Sour Rot Etiology and Developing Management Techniques. Megan Hall (Plant Pathology Section, NYSAES); Gregory Loeb, (Entomology, NYSAES); Wayne Wilcox, (Plant Pathology Section, NYSAES).

Sour rot, a disease affecting grapes near harvest, has been observed in the field for years with only limited research into its biological control or etiology. The disease is characterized by the discoloration and rotting of grapes on the vine accompanied by the smell of acetic acid. Sour rot is routinely associated with the presence of *Drosophila* (fruit fly) species. We have successfully produced the symptoms of sour rot in the lab by wounding a healthy berry, inoculating it with *Saccharomyces cerevisiae* and *Acetobacter aceti* and simultaneously exposing the berry to *Drosophila melanogaster*. Field trials in a commercial vineyard block of interspecific hybrid *Vitis vinifera* cv. Vignoles have revealed a significant difference in the incidence and severity of sour rot symptoms by training system. In 2015, spray trials using antimicrobial and insecticide sprays demonstrated a significant reduction in sour rot symptoms with the application of both an insecticide and antimicrobial spray, suggesting a synergistic effect of control of both microflora and insects.

14:30 Investigating YAN requirements for Riesling in Spontaneous and Inoculated Fermentations. Camila Tahim and; Anna Katharine Mansfield, (Food Science, NYSAES)

An adequate concentration of Yeast Assimilable Nitrogen (YAN) is critical for a successful wine fermentation, but most research in this area has been done in warmer climates. Therefore, our work focused in investigating YAN requirements for fermentations of the Finger Lake's flagship variety – Riesling. Controlled supplementation experiments were executed to determine the optimum YAN concentration for aroma expression in this variety. We also looked at five

spontaneous fermentations of Riesling in the Finger Lakes area, to assess the microbial diversity present, as well as the nitrogen requirements of those fermentations.

14:45 Data mined from the past five years of Veraison to Harvest. [Chris Gerling, Food Science](#), [Tim Martinson, SIPS](#)

Veraison to Harvest is a project where grape samples from across New York are collected weekly during the harvest season. The data collected includes berry weight, soluble solids, pH, titratable acidity (TA) and yeast assimilable nitrogen (YAN). The project now contains information for common cultivars and sites over five or more years in some cases, and this presentation will focus on trends we notice when comparing across seasons.

How far can we push it: Modifying cluster compactness in Riesling by leaf removal and shoot-tipping at bloom. [Tim Martinson and Chrislyn Particka. \(Horticulture Section, SIPS, NYSAES\)](#)

Early leaf removal at trace bloom reduces fruit set, resulting in less compact grape clusters. Removing active shoot tip meristems at bloom increases fruit set, presumably resulting in more compact clusters. Finally, cluster-zone leaf removal increases sunlight interception, resulting in faster drying – which should reduce the incidence and spread of fruit rots. We applied 8 treatment combinations of shoot tipping and early or late (August) leaf removal and rated the fruit for both fruit rot incidence/severity and cluster compactness (weight/rachis length).