



Cool
Climate
Oenology &
Viticulture
Institute

Brock University

Mapping new potential for premium wine

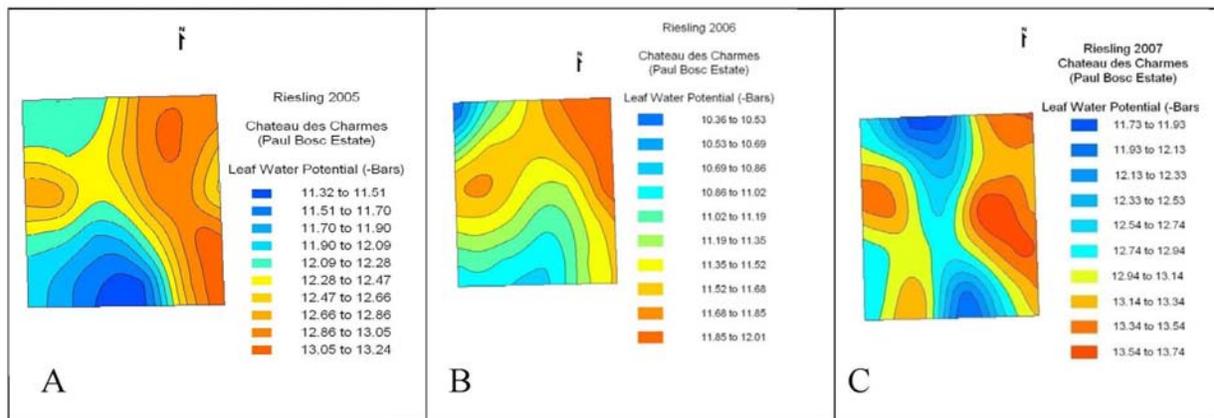


Introduction to the Innovation

The application of GPS and Geographical Information System (GIS) technology to grape growing in Niagara's wine country is a novel idea. This innovation involves creating terroir maps of vineyards by collecting and analysing data, from the ground and from above, on such factors as soil characteristics, water status, vine nutrition, yield, vigor and fruit composition. The goal is to correlate the information to identify meaningful relationships as a means of adding precision to growing grapes. With this type of information, wine producers are able to pinpoint blocks within vineyards - specific small lots of vines - from which high quality fruit can be harvested for unique and premium wines. Research on the development of a commercial application for the technology is underway.

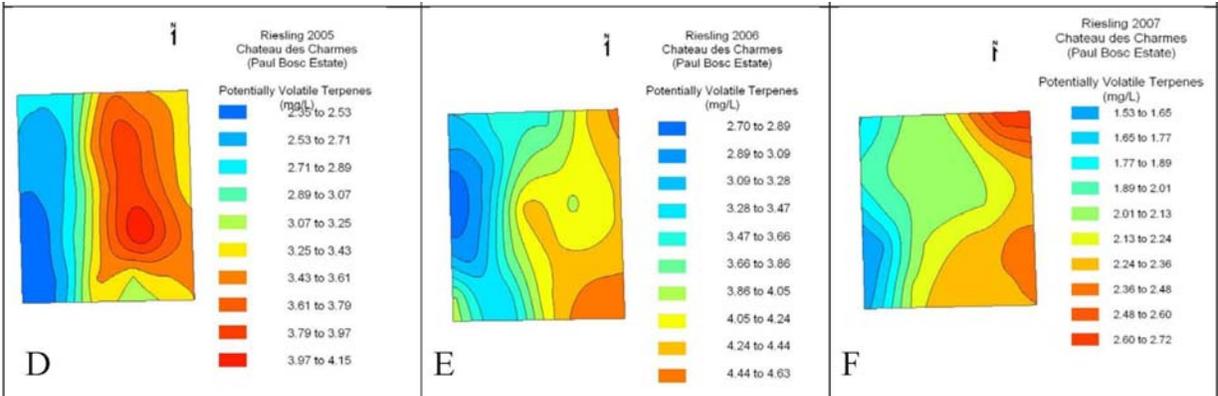
Results to date

Results indicate that differences in vine and soil water status within a sous-terroir show up year after year and in many ways explain the differing wine characteristics that result from small lots of Riesling produced and bottled separately from these zones.



The figures above are GIS-derived maps of the Riesling block on the Paul Bosc Estate, St. Davids, Ontario, 2005-2007.

Fig. A to C: Leaf water potential, 2005, 2006, and 2007, respectively.



The figures above are GIS-derived maps of the Riesling block on the Paul Bosc Estate, St. Davids, Ontario, 2005-2007.

Fig. D to F: Potentially-volatile terpenes (PVT), 2005, 2006, and 2007, respectively. Note how: (a) Spatial variation in both leaf water potential (see previous page for figures) and PVT are temporally stable across the three seasons; (b) The patterns of leaf water potential and PVT are very similar spatially. These observations suggest that high flavour zones in vineyards are temporally stable, and that they are related to vine water status. Maps are courtesy of Graduate Research Assistant Jim Willwerth.

Application

In the Reynolds Thirty Bench project, a 25-acre vineyard of Riesling located in Beamsville, Ontario was split into six parcels (sous-terroirs) based mostly on vine vigor as perceived by airborne imagery. This resulted into 520 vines being geolocated and mapped. These vines were then used to make wines from different water status zones within each sous-terroir. The success of this project has seen an interest by other wineries to adopt this innovation when crafting their wines.

Contact information

Andrew Reynolds, PhD
 CCOVI Researcher; Professor, Biological Sciences, Brock University
 areynolds@brocku.ca
 905 688 5550 x3131

Acknowledgements

Funding from: NSERC-CRD program, Wine Council of Ontario, Ontario Centres of Excellence.

In kind contributions from: Glenlake Vineyards, Lambert Farms, Hernder Vineyards, Reif Estate Winery, Coyotes Run Winery, Lowrey Vineyards, Chateau des Charmes, Henry of Pelham, Paragon Vineyards, Harbour Estate Winery, George Vineyards, Myers Vineyards, Flat Rock Cellars, Morrison Vineyard, Cave Spring Cellars, Vieni Estate Vineyards, Andrew Peller Ltd. (Thirty Bench)