

Cold Climate Viticulture in Vermont

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New England Fruit Conference
Manchester, NH
December 15, 2005

Cold Climate Grape Production Website: <http://pss.uvm.edu/grape/>

Winegrapes are a 'new' crop in the diversification of agriculture in cold climates. Vermont and other locations in the Northeast are participating in the emerging cold climate winegrape industry which has exciting value-added and agri-tourism economic opportunities for farms and rural communities.

In the past, commercial winegrape production was not recommended in the colder regions of New England because of problems with winter survival of the vines. However, 'new' winegrape cultivars such as Frontenac, St. Croix, La Crescent, etc., which survive -29°F to -34°F temperatures are being planted on newly created farms or as an alternative crop on existing farms. Since 1997, it is estimated that approximately 12 vineyards have been planted in Vermont. These vineyards are in varying phases of establishment and more vineyards are in the planning stage. Vermont growers have become part of the "early adopters," the leaders and pioneers of the emerging cold climate grape industry in the region to whom other prospective growers are contacting for information, insights, and advice.

Cultivars planted -- Over the brief history of Vermont's winegrape industry, cultivars have already changed based on cultivar performance at various vineyards, and will continue to change as experience is gained in matching the best cultivar with a specific site. Table 1 lists the cultivars which have been planted around the state based on an informal survey of Vermont growers. The list includes cultivars developed by the University of Minnesota, Elmer Swenson's breeding program in Wisconsin and by Cornell's breeding program; other interspecific hybrids; and *Vitis vinifera*. In terms of cold hardiness, the winegrape cultivars from MN and WI are the most "promising". Descriptions of the characteristics of these cold climate winegrape cultivars can be found in the websites listed at the end of this article.

In addition to being cold hardy, the MN/Swenson winegrape cultivars have been bred for disease and insect resistance and potentially can be grown with significantly reduced pesticide use compared to the classic European *Vitis vinifera* cultivars and the French-American hybrids that are planted in southern New England and in other warmer growing areas. For example, *V. vinifera* and French-American hybrids may require 8-11 fungicide sprays in some grape growing regions; however, the new cold climate winegrape cultivars may require only 3 or 4 biologically-timed fungicide applications.

To what degree the intrinsic resistance of the cold climate winegrape cultivars to major grape diseases and insect pests can impact pesticide reduction in northern New England has yet to be determined. An EPA Pesticide Environmental Stewardship grant (“Reducing Pesticide Risks in Cold Climate Wine Grape Production - an Emerging New Crop in Northern New England”) was recently awarded to the University of Vermont to assess the disease and arthropod susceptibility of the cold climate grape cultivars being planted and to develop a Relative Susceptibility Table of Cold Climate Wine Grape Cultivars. We are in the process of collecting data on disease incidence and insect damage in specific vineyards in Vermont. An example of differences in disease incidence of two major grape diseases on non-sprayed winegrape cultivars in 2004 is illustrated in Table 2. Currently, data from 2005 are being analyzed.

At the University of Vermont, we are in the process of developing a research and extension program to address the specific needs of the developing cold climate winegrape industry. We will be establishing a research and demonstration trial of the “most promising” winegrape cultivars to characterize and evaluate their viticultural characteristics. Also, through research, we plan to develop cold climate winegrape IPM strategies that incorporate the intrinsic disease and arthropod resistance of the new cultivars, reduced-risk alternatives, and pesticide resistance management practices to reduce any health, environmental, and economic risks and prevent unnecessary use of pesticides in this emerging new crop. A Cold Climate Grape Production website is under construction at <http://pss.uvm.edu/grape/> as an outlet for extension information and for research results.

The importance of cold climate winegrape production as an emerging new agricultural crop has been acknowledged by the USDA and EPA who have provided funds to start to develop research and educational programs. In conclusion, it is both an exciting and critical time in the development of the cold climate winegrape industry in Vermont and the region with growers and prospective growers expressing much enthusiasm and dedication to a successful future.

Table 1. Partial list of winegrape cultivars currently planted in Vermont.

Arctic Riesling	Prairie Star
Baco Noir	Riesling
Bianca	Sabrevois
Cayuga White	Seyval
Frontenac	St. Croix
Frontenac Gris	St. Pepin
LaCrescent	Swenson Red
LaCrosse	Swenson White
Leon Millot	Traminette
Louise Swenson	Vidal blanc
Marechal Foch	Vignoles
Marquette (formerly MN 1211)	Zweigelt

Table 2. Comparison of disease incidence among four non-sprayed winegrape cultivars in 2004.

	% Incidence on Leaves*	
	Powdery mildew	Downy mildew
Cultivar		
Frontenac	66.0 b	2.0 c
Leon Millot	79.0 b	99.0 a
Riesling	100.0 a	70.0 b
St. Croix	27.0 c	0.0 c

*Means followed by the same letters within columns are not significantly different according to Tukey's Studentized Range (HSD) Test ($P \leq 0.05$). [From: Berkett, L.P., Garcia, M.E., Eddy, M.E., Kingsley-Richards, S.L., and T.L. Bradshaw. 2005. Evaluation of disease susceptibility of two 'new' cold-hardy wine grapes. Biological and Cultural Tests for Control of Plant Disease. Vol. 20: N002]

On-Line Resources:

- University of Vermont - Cold Climate Grape Production: <http://pss.uvm.edu/grape/>
- University of Minnesota - Commercial Fruit Production in Minnesota - Grapes: <http://fruit.coafes.umn.edu/grape/index.htm>
- Cornell University - The Less Risky Varieties, Old and New: <http://www.nysaes.cornell.edu/hort/faculty/reisch/winehandout.html>
- Minnesota Grape Growers Association - Varieties: <http://www.mngrapes.org/varieties.html>

Acknowledgement of Funding for University of Vermont Cold Climate Grape Program:

- The University of Vermont Extension System
- The University of Vermont Agricultural Experiment Station
- USDA Northeast Region SARE 'Partnership' Grant
- EPA Pesticide Environmental Stewardship Grant