



Northern NY Agricultural Development Program 2015-2016 Project Report

Evaluation of Novel Cold-Hardy Grape Varieties for Production in Northern New York

Project Leader:

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Background:

Cold-hardy grape and wine production is a growing industry in northern New York with more than 500 acres of wine grapes and approximately 70% of vineyards planning to expand according to the "Grape Production in ENYCH Report for ENYCH AMG, 10/25/16," by Elizabeth Higgins. Despite this success, producers still face a number of challenges, among them finding cultivars suitable for the NNY climate. It is not uncommon for winter temperatures in northern New York to reach -20°F. In the winters of 2013 and 2014 many sites experienced -30°F lows, temperatures unsuitable for traditional French and French-American grape varieties.

A growing number of enthusiastic grape breeders are releasing cold-hardy varieties, most notably the University of Minnesota breeding program and, privately, followers of pioneering cold-hardy grape breeder Elmer Swenson. Many of the Minnesota varieties are currently under formal evaluation under the multi-state collaborative initiative known as NE1020. However, only limited number of cultivars have been rigorously tested in northern New York. Additionally, a grower advisory meetings in November 2014 and December 2015 in Clinton County identified 'investigating new varieties' as a top priority for the Northern New York grape industry.

A variety trial of cold-hardy grapes at the Cornell Willsboro Research Farm in Willsboro, NY, planted in 2005 tested 25 cultivars. After the collection of 7 years of data, a number of these varieties have been identified as good choices for the NNY region. However, new cultivars are actively being developed and released from breeding programs and require field testing in the NNY region to evaluate the potential for commercial use under the regional growing conditions.

In the 2015 growing season, funds from the farmer-driven Northern New York Agricultural Development Program were used to begin the removal of the existing wine grape variety trial at the Cornell Willsboro Research Farm, and to offer educational programs related to cold-climate grape production that reached more than 70 participants. The goal of the 2016 project was to continue this effort to test novel cold-climate varieties for use in the northern region of New York and continue to provide educational programs to this young and rapidly-growing industry.

Methods:

1. ***Identification of cultivars.*** Breeders of cold-climate grapes from both independent and public breeding programs including independent breeders Mark Hart and Tom Plocher; Bruce Reisch of the Cornell-USDA grape breeding program, and Matthew Clark and Jim Luby of the University of Minnesota Grape Breeding Program were contacted via phone and email requesting candidates from their program that they would like to see included in the new variety trial. A list of 25 candidate varieties was assembled.

Growers of cold-climate grapes in Northern NY were solicited for their suggestions of cultivars to include in the new variety trial via email surveys, newsletters, several educational meetings, an advisory committee meeting, phone calls, and farm visits.

2. ***Site evaluation and remediation.*** During the 2015 season, all vines at the existing research site were removed, excluding four varieties: Marquette, Frontenac, Frontenac gris, and La crescent of which all 4 replications of 3-vine panels (total 12 vines per variety) were maintained in order to produce a crop for use in enology research at Cornell. These vines were maintained for the 2016 growing season through harvest.

During the 2016 season, we continued to take out remnants of the removed vines. Fruit from the 4 wine varieties was transported to Cornell University for research. The remaining vines were removed following harvest.

Natural vegetation within rows (where vines were removed) was left in place and mowed throughout the season to prevent erosion of the site and maintain organic matter.

Soil samples were taken to evaluate nutritional needs of the site.

Results:

A list of prospective cultivars for replant was created based on the grower and breeder feedback. Two new things became clear during the search process:

- There is a strong interest in table grape production in this region. However, very little work has been done to evaluate these varieties under the conditions in NENY.
- In light of the increasing body of information on wine grape variety performance in cold-climate regions (Willsboro and elsewhere) and the increasing expertise of industry members, industry stakeholders and scientists would like to see research on horticultural topics in addition to evaluation of new varieties.

In addition, in January 2016, the ENYCHP received approval to hire a new grape specialist for the region. This person will likely be hired during the growing season of 2017, and will assume responsibility for the grape planting at the Cornell Willsboro Research Farm. In light of this, the 2017 planting will be postponed until this person is hired so that the new specialist can make the final decisions on the experimental design and varieties to include. In the meantime, the site will continue to be remediated during the 2017 season, old roots will be removed and a suitable cover crop will be put in place.

The proposed plan to be provided to the new specialist:

To reflect the needs identified by the growers, the planting plan for the vineyard at Willsboro was adjusted. Half of the site will be dedicated to a new variety trial. This planting will include only 3 replications instead of 4 as originally planned (see Willsboro Replant Plan 2017). The other half will be dedicated to a horticultural topic. A list of horticultural research topics was generated during the 2016 season through solicitation methods described in the methods above.

The list of new cultivar candidates narrowed down to 20 varieties must be further focused to 16 total varieties to fit the space available, and selected on reported cold tolerance as observed in other regions, and growth characteristics and flavor attributes (Table 1). These varieties will be planted in Spring 2018, and evaluated in following years for their performance.

Table 1. Cold-climate grape cultivars: Candidates for Willsboro cold-climate grape nursery variety trial replant.

Variety	Accession No.	Breeder	Program	Color
Wine Grapes				
L'Acadie Blanc	V 53261	Bradt	Ontario	white
(unnamed)	MAVO 07.36.01	Hart	(Private)	white
Marquette	MN1211	Luby	University of MN	red
Frontenac	MN1047	Luby	University of MN	red
Frontenac blanc		Luby	University of MN	white
(unnamed)	MN1251	Luby	University of MN	
Itasca	MN1285	Luby	University of MN	
Petite Pearl	TP 2-1-24	Plocher	(Private)	red
Crimson Pearl	TP 2-1-17	Plocher	(Private)	red
Verona	TP 1-1-34	Plocher	(Private)	red
(unnamed)	TP 1-1-12	Plocher	(Private)	
(unnamed)	TP 2-3-51	Plocher	(Private)	
Brianna	ES 7-4-76	Swenson	(Private)	white
Table Grapes				
Somerset seedless	ES 12-7-98	Swenson	(Private)	red
Vanessa	Vineland 65164	Bradt	Ontario	red
Reliance	Arkansas 1163	Moore	University of Arkansas	red
Thomcord	A29-67	Ramming	USDA ARS California	black
Marquis	NY 64.029.01	Reisch	Cornell University	white
(unnamed)		Clarke	UMN	
(unnamed)		Clarke	UMN	

Conclusions/Outcomes/Impacts:

Twenty cold-climate grape varieties were identified as candidates for cold-climate grape and wine production in northern NY. A list of research topics was generated for investigation at the cold-hardy grape nursery at the Willsboro Research Farm. A plan created for replanting the Willsboro site will be shared with the new regional ENYCHP grape specialist when hired to transition responsibility of the research vineyard to the new position.

Outreach:

Advisory committee meeting. A grower advisory committee meeting for the northern region of the ENYCHP was held on January 4, 2017, for grape producers in NENY. Fourteen grape producers were informed of the progress made on site remediation and variety selection for this project and were asked for input on future workshops and varieties.

Newsletters. Articles summarizing plans for new variety trial at the Willsboro Research Farm and requesting feedback on varieties to include in the new trial were included in ENYCHP Grape Newsletter, Northern Grapes Project newsletters (*News You Can Use*), and Northern Grapes Project reports.

E-alerts. This season, ENY specialists Anna Wallis and Jim O'Connell initiated weekly 'e-alert' notifications through which current information on vineyard management was provided to enrolled members of the ENYCHP grape email list. These e-alerts covered such topics as vine training and pruning, pest management considerations, and upcoming events. Stakeholders reported that this was an excellent alternative to field meetings which are difficult to attend during the growing season. They appreciated 'knowing what was happening in the region' and receiving educational information about the vineyard practices they use.

2016 NENY & VT Winter Grape School. On March 17, 2016, a first-ever winter grape school was held in NENY and VT to provide educational information about cold-climate grape production to existing and prospective grape growers and wine makers in the region with 60 participants. A summary of the progress made on this project was given at the meeting and participants were solicited for input on varieties to include in the new variety trial. The meeting was extremely well received and a second annual event is planned for March 9, 2017.

Next Steps

In the 2017 season, site remediation will continue in the form of vine root removal, planting of a cover crop in herbicide strips, and soil remediation in accordance with soil analyses. Vines are currently being propagated and grown by breeders and Northeastern Vine Supply. Workshops will be held around these activities, as appropriate, for growers to see the progress and learn site establishment and replant. The replanting of the site will be conducted by a new ENYCHP grape specialist who will assume responsibility of the research vineyard.

Acknowledgments:

The existing cold-climate grape variety trial at the Willsboro Research Farm (planted in 2005) was originally supported by Northern New York Agricultural Development Program funds. It has since been supported by the USDA SCRI-funded Northern Grapes Project (NGP). This funding concluded on August 31, 2016. NGP Team members have submitted a new SCRI proposal to fund 'NGP II' to continue research and outreach to support the cold-climate grape industry.

Reports and/or articles in which results of this project have been published.

Information from the original variety trial and future trials will be published in newsletters such as the ENYCHP Grape Newsletter, *Appellation Cornell*, and Northern Grapes Project reports.

For more information:

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