



## **Northern NY Agricultural Development Program 2014-2015 Project Report**

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

#### **Project Leader(s):**

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#### **Cooperating Producers:**

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#### **Background:**

Cold-hardy grape and wine production is an emerging industry in cold climate areas such as the Northeast and northern Mid-West facilitated by the introduction of cold climate varieties from breeding programs such as University of Minnesota in the 1990s. The northeastern NY grape industry has rapidly grown in recent years, yet producers still face a number of challenges, among them finding cultivars suitable for the northern NY (NNY) climate. In the winter it is not uncommon for temperatures to reach -20°F, and in January and February 2014 many sites experienced -30°F lows, temperatures unsuitable for traditional French and French-American varieties. A growing number of enthusiastic breeders are releasing cold-hardy varieties, most notably the Minnesota University grape breeding program, Cornell-Geneva grape breeding program, and many enthusiastic followers of Elmer Swenson, a grape-breeding pioneer who essentially revolutionized grape production in the Upper Midwest with his introduction of cold- and short-season grape cultivars. Many of the Minnesota varieties are currently under formal evaluation per the regional initiative NE1020: Multi-State Evaluation of Winegrape Cultivars and Clones overseen by North Dakota State University. However, only a limited number of cold-climate cultivars have been rigorously tested in NNY. Investigating new varieties is a top priority for the industry. The goal of this project was to test new cultivars being released from cold-climate grape breeding programs. Our plan was to test cultivars at the Cornell Willsboro Research Farm in NNY, utilizing existing infrastructure by replanting

at the original variety trial site, and to test top-performing varieties at colder ‘satellite sites’ on cooperating grower vineyards.

### **Methods:**

1. **Identification of cultivars.** The performance of the 25 varieties in the existing variety trial at the Willsboro Research Farm (planted 2005) was evaluated using eight years of data on growth, yield, and cold damage, primarily collected through the Specialty Crop Research Initiative-funded Northern Grapes Project. Growers of cold-climate grapes in NNY were solicited for their suggestions of cultivars to include in the new variety trial via multiple email surveys, newsletters, an online forum, at several educational meetings, an advisory committee meeting, and through phone calls and farm visits. Breeders of cold-climate grapes from both private and public breeding programs including the Mark Hart, Tom Plocher, Bruce Reisch (Cornell-USDA grape breeding program), and Matthew Clark and Jim Luby (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.
2. **Site Selection.** This project originally planned to include 2-4 ‘satellite sites’ for variety trials in addition to the Willsboro Research Farm. The Willsboro site is an ideal vineyard planting site, close to Lake Champlain with well drained soils, excellent sun exposure, and very good air drainage. Other vineyard sites in the region experience harsher microclimates with more shade, less air and soil drainage and are farther from the lake, so they get less temperature moderation. Therefore, growing varieties at ‘satellite sites’ on commercial vineyards would be a better test of their appropriateness for the region. However, in conversations with breeders, it became evident that it will not be possible to establish ‘satellite sites’ as the majority of varieties released by both public and private breeding programs are now protected by licensing and patents, creating legitimate concern about named and unnamed materials being grown on private land for research purposes.
3. **Site remediation.** During the 2015 season, all vines at the existing research site were removed, excluding all four varieties: Marquette, Frontenac, Frontenac gris, and La crescent maintained in order to produce a crop for use in enology research at Cornell. All 4 replications of 3-vine panels (total 12 vines per variety) were maintained.
4. **Purchase new vines and infrastructure.** Communication with the breeders and Northeastern Vine Supply (a nursery producing cold-climate grape vines) has enabled production of appropriate plant material for replant at the Willsboro Research Farm. Vines will be purchased for planting in 2017.

### **Results:**

A list of prospective cultivars for replant was created based on the grower and breeder feedback. The comprehensive list was narrowed to 21 cultivars based on reported cold

tolerance as observed in other regions, and desirable growth characteristics and flavor attributes (Table 1). These varieties will be planted in Spring 2017, and evaluated in following years for their performance.

**Table 1. Cold climate grape cultivars identified as candidates for Willsboro variety trial replanting in 2017.**

Variety	#	Breeder	Program	Type
L'Acadie Blanc	V 53261	Bradt	Ontario	wine
(unnamed)	MAVO 07.36.01	Hart	(Private)	wine
Marquette	MN1211	Luby	University of MN	wine
Frontenac	MN1047	Luby	University of MN	wine
Frontenac gris	MN1187	Luby	University of MN	wine
La Crescent	MN1166	Luby	University of MN	wine
Frontenac blanc	n/a	Luby	University of MN	wine
(unnamed)	MN1251	Luby	University of MN	wine
(unnamed)	MN1285	Luby	University of MN	wine
Petite Pearl	TP 2-1-24	Plocher	(Private)	wine
Crimson Pearl	TP 2-1-17	Plocher	(Private)	wine
Verona	TP 1-1-34	Plocher	(Private)	wine
(unnamed)	TP 1-1-12	Plocher	(Private)	wine
(unnamed)	TP 2-3-51	Plocher	(Private)	wine
(unnamed)	Cornell 81	Reisch	Cornell University	wine
Trollhaugen	ES 3-24-7	Swenson	(Private)	wine
Brianna	ES 7-4-76	Swenson	(Private)	wine
Somerset seedless	ES 12-7-98	Swenson	(Private)	table
Vanessa	Vineland 65164	Bradt	Ontario	table
Lakemont	New York 15305	Einset	Cornell University	table
Reliance	Arkansas 1163	Moore	University of Arkansas	table
Thomcord	A29-67	Ramming	USDA ARS California	table
Marquis	NY 64.029.01	Reisch	Cornell University	table

**Conclusions/Outcomes/Impacts:**

Twenty-one new varieties were identified as candidates for cold-climate grape and wine production in NNY. The varieties selected for replant will be planted at the Willsboro Research Farm in Spring 2017. The performance of these vines will be evaluated in the following years on qualities such as vine vigor, survival, yield, and fruit quality.

**Outreach:**

A grower advisory committee meeting for the northern region of the Eastern NY Commercial Horticulture Program (ENYCHP) was held on December 6, 2015, for grape, apple, vegetable, and berry producers. Grape producers in attendance (7) 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. Articles summarizing plans for the 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. In spring 2015, seven workshops attended by 76 participants were offered on vineyard management topics including vine training and pruning, pest management, site evaluation and establishment, and business management and marketing. Workshops were offered at the Willsboro Research Farm, commercial vineyards, and Cornell extension offices. Growers with existing vineyards were very enthusiastic about the skills they learned and planned to implement them in the upcoming season. Prospective growers left equipped with knowledge, tools, and industry contacts that they planned to use in their future plantings.

On March 17, 2016, a **first-ever winter grape school** was held at sites in northeastern NY and Vermont to provide educational information about cold-climate grape production to existing and prospective grape growers and wine makers. A summary of the progress of this NNYADP-funded project was given at the meeting and participants were solicited for suggestions of vines to include in the new variety trial. Growers were also informed about the project and about the barriers for creating ‘satellite plantings.’

#### **Next Steps:**

In the 2016 season, site remediation at the Willsboro Research Farm will continue in the form of vine 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 for purchase and planting in spring 2017. Workshops will be held around these activities, as appropriate, for growers to see the progress and learn about site establishment and replanting practices.

#### **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). NGP funding concludes August 31, 2016. NGP Team members are currently looking for future sources of funding 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 on the original variety trial and future trials will be published in future newsletters (ENYCHP Grape Newsletter, *Appellation Cornell*, and NGP).

#### **For More Information:**

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