

Final Report

Project title: Evaluating viticultural characteristics of new disease-resistant cultivars for New York vineyards

Principal Investigator with contact info:

Hans Walter-Peterson
Senior Extension Associate
Finger Lakes Grape Program
417 Liberty Street, Penn Yan, NY 14527
(315) 536-6134
hcw5@cornell.edu

New Research **Continued Research**

Viticulture **Enology** **Business**

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Summary Impact Statement

Climate change and stricter regulations are starting to make New York grape growers reconsider the long-term feasibility of growing certain cultivars. At the same time, consumers are demanding more environmentally sustainable wine options. Grape breeding programs have released new cultivars in recent years that can help the industry respond to emerging environmental and market changes, but there has been a lack of practical information for vineyards and wineries about how these varieties perform in the field and their potential wine quality. This project developed information resources for the New York industry about several disease-resistant grape varieties that can help growers and winemakers make more informed decisions about incorporating them into their operations.

Project Objectives

1. Gather phenological and viticultural data on hybrid grape cultivars to provide growers with information on production characteristics such as timing of budbreak and bloom, yield and yield components, vegetative growth, and fruit chemistry.
2. Develop resources that summarize the phenological, production and other information collected about each variety in 2025 and previous years.
3. Produce small batches of wine for evaluation by industry members at events such as B.E.V. NY and other venues as appropriate.

Activities/Methods

The project was based at the Teaching & Demonstration Vineyard (TDV) near Dresden, NY. We evaluated five cultivars in this project:

- Itasca (MN)
- Regent (German)
- A loose-clustered clone of Vignoles (LC Vignoles) (NY)
- Aravelle (NY)
- Marquette (MN)

We originally planned to also evaluate Clarion (MN) and NY06 (Cornell), but growth was poor on these young vines in 2025 so we decided to remove the fruit before veraison to alleviate stress while they are still trying to get established.

We collected data from one panel of each of these cultivars (four vines in each panel) about phenology (dates of budbreak, bloom, veraison), yield (clusters per shoot and per vine, berries per cluster, berry weight, average cluster weight, yield per vine), growth (pruning weight), winter bud hardiness, and fruit chemistry during ripening (°Brix, pH, TA). We were unable to evaluate relative disease resistance of the cultivars this year due to the departure of one of our field staff, which reduced the resources we could devote to the project.

Fruit from three of the cultivars – Itasca, Regent, and Aravelle - was brought to the Vinification & Brewing Lab at Cornell AgriTech for winemaking. These wines are being used at industry events to give industry members a basic idea of their sensory properties and for other sensory trials.

Results/Progress

Evaluating viticultural characteristics

In 2025, we collected data regarding phenology on Itasca, Regent, LC Vignoles, Aravelle and Marquette (Table 1). We measured yield and yield components in all of these cultivars except LC Vignoles, which lost most of its crop to bird predation in the vineyard shortly before harvest (Table 2).

Cultivar	Budbreak		Bloom		Veraison	
	2025	Average	2025	Average	2025	Average
Aravelle	4/30	5/7 (10)	6/18	6/12 (10)	8/11	8/10 (10)
Itasca	4/28	4/25 (3)	6/11	6/6 (2)	7/31	7/27 (2)
Marquette	4/28	4/30 (10)	6/13	6/5 (10)	7/29	7/28 (10)
Regent	--	5/9 (7)	6/18	6/14 (7)	8/8	8/5 (7)
LC Vignoles	5/2	5/2 (3)	6/18	6/14 (2)	8/9	8/5 (2)

Table 1. Phenology dates for five cultivars at the TDV in 2025 compared to average dates. Numbers in parentheses after average dates represent the number of years the average is based on.

Cultivar	Yield/vine (lb)		Avg clusters/vine		Avg cluster wt (lb)	
	2025	Average	2025	Average	2025	Average
Aravelle	26.7	25.6	90.3	110.9	0.30	0.24
Itasca	3.1	--	33	--	0.10	--
Marquette (grafted)	32.1	30.6	224.5	150.0	0.14	0.20
Marquette (own rooted)	11.2	16.9	53.8	80.1	0.20	0.21
Regent	6.7	6.3	26.8	31.7	0.25	0.21

Table 2. Yield per vine, clusters/vine and cluster weight for four cultivars at the TDV in 2025 compared to averages. Berry number and size at harvest was only collected at harvest for Aravelle and Marquette and are not included here. No historical data available for Itasca, so no averages are available for comparison.

Aravelle and Riesling Sensory Comparison

While not originally part of the objectives of this project, we conducted a small sensory comparison between ‘Aravelle’ and one of its parents, ‘Riesling’. We wanted to get a sense of how harvesting these two varieties at different maturity levels would influence some basic sensory properties – fruitiness, sweetness, and aromatic intensity. The objective of the study was to see if Aravelle ‘mimics’ some of the sensory characteristics of its parent based on when it is harvested.

We harvest both varieties when they reached 18° Brix and 21° Brix, and had wines made from them at the Cornell AgriTech Vinification and Brewing Lab. All winemaking protocols were kept constant to ensure that any differences would only be due to qualities of the fruit.

The trial was conducted at the B.E.V. NY conference on March 3-4, 2026. Participants were industry members with varying levels of knowledge and experience with wine and its sensory properties. Sixty people participated in the trial. Each person was asked to smell and taste each wine, and then rate it for fruitiness, sweetness and aromatic intensity using

a 1-7 scale. Participants could record their responses using either a paper scoresheet or a mobile app.

Overall, the results suggest that harvest maturity had a stronger and more consistent effect on sensory ratings than varietal differences, with aromatic intensity emerging as the most consistently affected attribute. Aravelle harvested at 18° Brix was rated significantly higher than Riesling at 18° Brix in aromatic intensity only. Within Aravelle, increasing harvest maturity from 18° to 21° Brix produced significant increases in aromatic intensity and fruitiness, while within Riesling, increasing maturity from 18° to 21° Brix produced significant increases in sweetness and aromatic intensity. No significant differences were detected between Aravelle and Riesling harvested at 21° Brix (Table 3).

Table 3. Pairwise Comparisons of Sensory Characteristics Across Wine Treatments

Comparison	Attribute	Mean 1	Mean 2	Mean Diff	Holm p	Sig
Aravelle 18 vs Riesling 18	Sweetness	2.27	2.02	0.25	0.675	No
<i>Aravelle 18 vs Riesling 18</i>	<i>Aromatic Intensity</i>	3.0	2.45	0.55	0.019	Yes
Aravelle 18 vs Riesling 18	Fruitiness	3.18	3.07	0.12	0.703	No
Aravelle 21 vs Aravelle 18	Sweetness	2.5	2.27	0.23	0.703	No
<i>Aravelle 21 vs Aravelle 18</i>	<i>Aromatic Intensity</i>	3.72	3.0	0.72	0.021	Yes
<i>Aravelle 21 vs Aravelle 18</i>	<i>Fruitiness</i>	3.77	3.18	0.58	0.046	Yes
<i>Riesling 21 vs Riesling 18</i>	<i>Sweetness</i>	2.75	2.02	0.73	0.003	Yes
<i>Riesling 21 vs Riesling 18</i>	<i>Aromatic Intensity</i>	3.28	2.45	0.83	<0.001	Yes
Riesling 21 vs Riesling 18	Fruitiness	3.38	3.07	0.32	0.703	No
Aravelle 21 vs Riesling 21	Sweetness	2.5	2.75	-0.25	0.703	No
Aravelle 21 vs Riesling 21	Aromatic Intensity	3.72	3.28	0.43	0.401	No
Aravelle 21 vs Riesling 21	Fruitiness	3.77	3.38	0.38	0.675	No

Note. Mean 1 and Mean 2 correspond to the first and second wines listed in each comparison, respectively. Mean Diff = Mean 1 - Mean 2. Holm p-values are adjusted for the full family of 12 planned pairwise tests. 'Sig' indicates statistical significance at p<0.05 after Holm correction.

As expected, the trial showed that people perceive differences in wines made from the same grapes but picked at different maturity levels. In Riesling, fruit harvested at a higher Brix level increased perceived sweetness and aromatic intensity, and in Aravelle, longer ripening increased aromatic intensity and fruitiness. When comparing between the two cultivars at similar maturity levels, Aravelle had more aromatic intensity than Riesling at lower maturity, but there were no perceived differences between them when harvested later.

These findings are a first step in understanding how Aravelle might be used by the industry as a complement to, or replacement of, Riesling in certain products. We are planning to

have a trained sensory panel analyze these wines to further understand how maturity levels can influence the perceptions of these cultivars.

Technology Transfer

The field data collected this year and in past years has been incorporated into fact sheets developed for distribution on the FLGP website. Sheets have been developed for Marquette, Regent, Aravelle and Itasca. Once these sheets are in final form, they will be posted to the FLGP's website and industry members will be notified of their availability through our Vineyard Update newsletter. Copies of each of these fact sheets are attached to this final report.

The results from the Aravelle and Riesling sensory trial will be reported to the industry through an article in our newsletter this spring. Once we have completed the analysis by the trained sensory panel, we will develop an article that will be submitted for publication in Appellation Cornell, which is distributed to more than 800 people across the country.

Section 3

Objectives & Why This Research Matters

Growing grapes in New York is getting harder. The climate is changing, and rules about pesticides are becoming stricter. At the same time, wine drinkers are asking for products that are better for the environment. One solution is to grow grape varieties that naturally resist diseases, which means farmers need fewer chemical sprays.

The problem is that growers and winemakers don't have much reliable information about how these newer grape varieties perform in the field. This project set out to fix that.

To do this, Cornell's Finger Lakes Grape Program evaluated five disease-resistant grape varieties at a research vineyard near Dresden, NY. The varieties tested were:

- Aravelle – developed in New York
- Itasca – developed in Minnesota
- Marquette – developed in Minnesota
- Regent – developed in Germany
- LC Vignoles – a loose-clustered version of Vignoles developed in New York

For each variety, researchers recorded important information like when the vines started budding and when they bloomed. They also measured how much fruit each vine produced and how ripe the grapes were.

What We Found

Most of the varieties performed close to what researchers expected based on past years. A few things stood out:

- Marquette vines that were grafted onto special rootstock produced far more grape clusters than usual — more than 200 clusters per vine, compared to an average of 150.
- LC Vignoles lost nearly its entire crop to birds just before harvest, so no yield data could be collected.
- Itasca is a newer variety at this site, so researchers don't yet have enough past data to make meaningful comparisons.

How Similar are Aravelle and Riesling Wines?

While it wasn't originally part of the project, we wanted to know how similar the taste and smell of wines made Aravelle and Riesling – one of Aravelle's parents - might be. Grapes from each variety were picked at two different ripeness levels (18° Brix and 21° Brix), and wines were made from all four combinations.

At the B.E.V. NY Conference in March 2026, 60 wine industry professionals tasted the wines and rated them for sweetness, fruitiness, and aroma. The results were interesting:

- When grapes were picked earlier (lower sugar), Aravelle wines had a noticeably stronger aroma than Riesling.
- When grapes were picked later (higher sugar), Aravelle and Riesling wines tasted nearly identical — tasters couldn't tell a significant difference between them.

This suggests that Aravelle could potentially replace Riesling in some wines without consumers noticing a major change. We will be doing some more sensory testing with a trained panel of tasters this spring to get more information about that possibility.

Hybrid Variety Fact Sheet

ARAVELLE

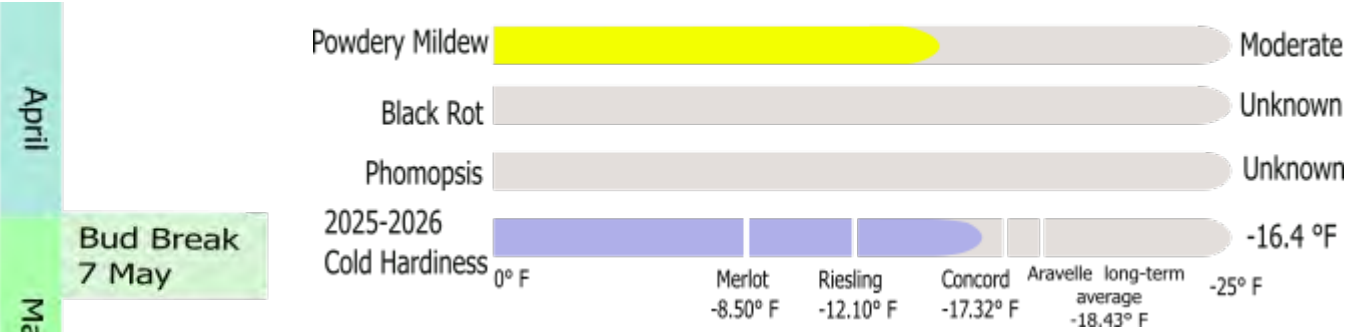
Aravelle is a white wine variety.

Aravelle is a cross between Cayuga White and Riesling. Bred to have similar wine characteristics to Riesling, but with better resistance to bunch rot, downy mildew and powdery mildew.

Two rows of Aravelle were planted at the Finger Lakes Teaching and Demonstration Vineyard in 2012

Disease Resistance and Cold Hardiness:

Phenology:

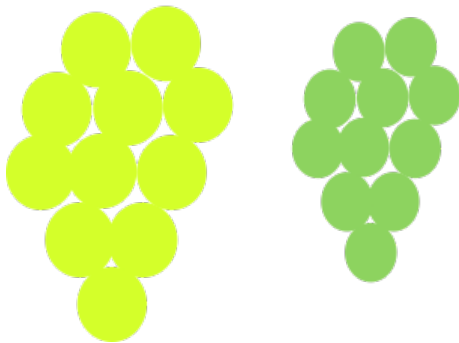


April
May
June
July
August
September
October

Bud Break
7 May

Average Cluster Weight:

Aravelle: 0.24 lbs Riesling: 0.15 lbs



Yearly Cluster Weight:

Year	Weight (lbs.)	Year	Weight (lbs.)
2025	0.3	2020	0.24
2024	0.29	2019	0.23
2023	0.23	2018	0.19
2022	0.20	2017	0.24
2021	0.34	2016	0.16

2025 Berry Weight:

Aravelle: 1.6 g

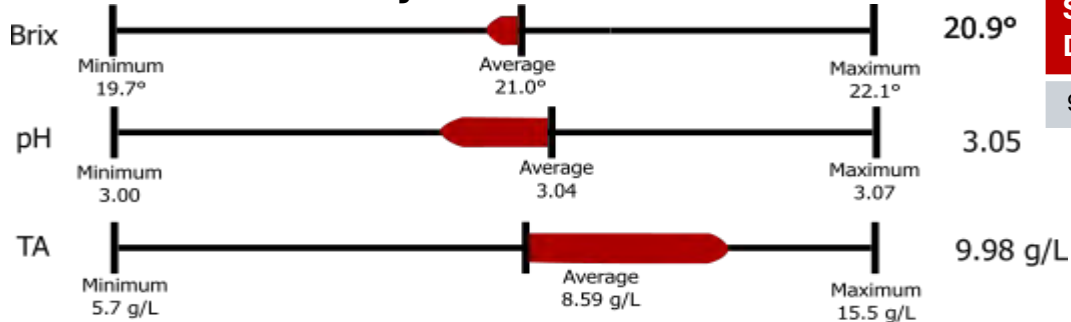


Riesling: 1.4 g



Bloom
12 June

2025 Juice Chemistry:



Sample Date	YAN
9/22/2025	119

Veraison
8 August

Harvest
24 September

Grower Notes:

Aravelle is a high vigor hybrid variety that exhibits good foliar and cluster disease resistance. Has been moderately susceptible to potato leaf hopper (Cayuga White parentage). Ripens for mid-season harvest but tolerates delayed harvest. High-wire umbrella works well for this variety as it produces long canes with good internode spacing.

*Cold hardiness:

Analyzed for Aravelle January 20, 2026, at TDV. Analyzed for Merlot and Riesling January 22, 2026, in Geneva. Long-term Aravelle analyzed in Geneva. Analyzed for Concord on February 3, 2026, at CLEREL

Hybrid Variety Fact Sheet

ITASCA

Itasca is a white wine variety.

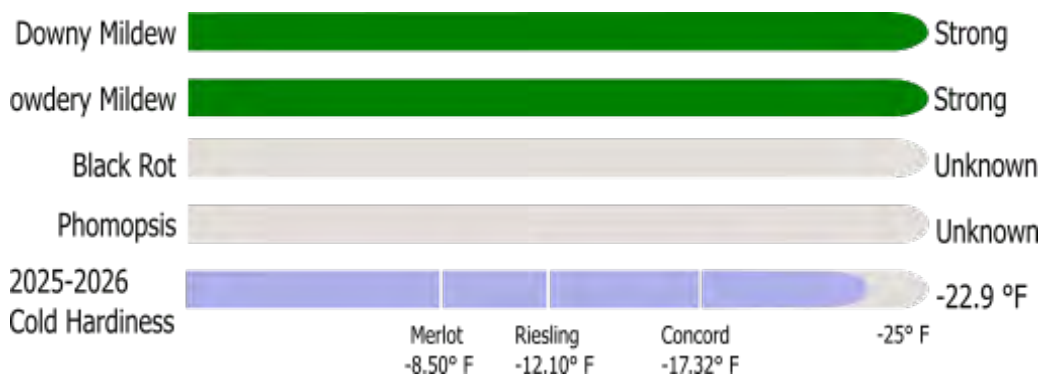
Bred for cold hardiness, disease resistance and wine characteristics. It is a University of Minnesota cross between Frontenac Gris and MN1243.

Two rows of Itasca were planted at the Finger Lakes Teaching and Demonstration Vineyard in 2022. Only one crop has been harvested.

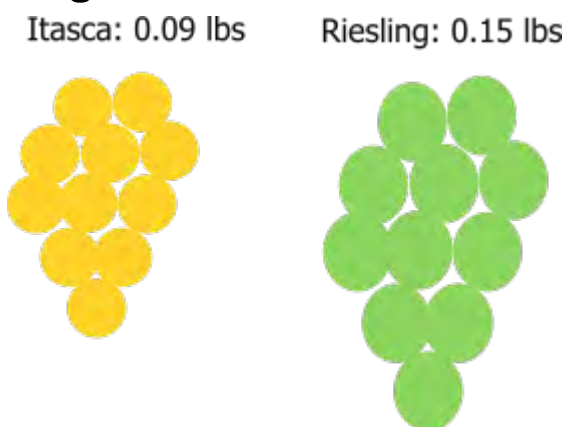
Phenology:



Disease Resistance and Cold Hardiness:



2025 Cluster Weight:



Sample Date	Brix	pH	TA	YAN
9/23/2025	24.8°	3.19	9.8 g/L	94 ppm

Grower Notes:

TDV vines are planted on 6x9 foot spacing on high-wire umbrella. These vines are just reaching maturity, thus vine vigor is currently low to medium. Although a full crop would not be expected at this point persistent, bird predation has severely impacted yield in two successive years. Despite over-the-row netting, placed on both rows at veraison in 2025, Itasca had more predation than near-by un-netted rows of both white or red varieties.

Cold hardiness:

Analyzed for Itasca January 20, 2026, at TDV. Analyzed for Merlot and Riesling January 22, 2026, in Geneva. Analyzed for Concord on February 3, 2026, at CLEREL

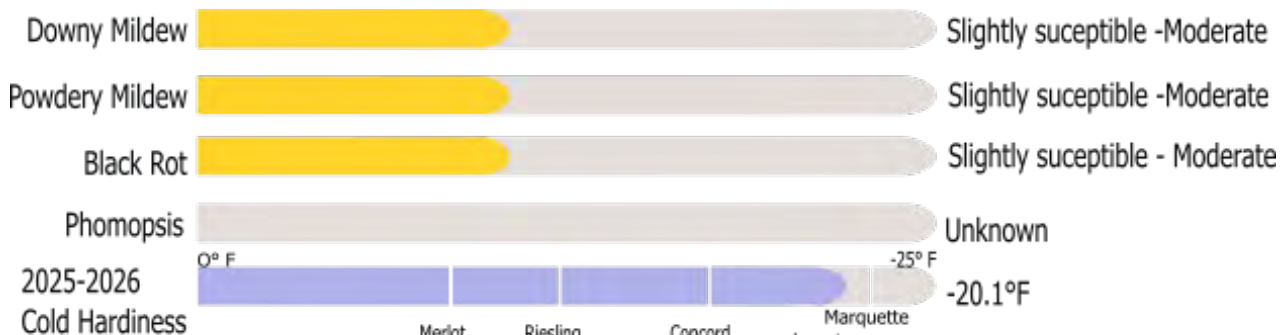
Hybrid Variety Fact Sheet

MARQUETTE

Marquette is a red wine variety bred in Minnesota for disease resistance and cold hardiness.

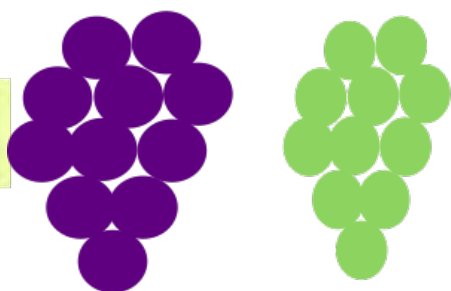
Two rows of Marquette were planted at the Finger Lakes Teaching and Demonstration Vineyard in 2012. One row was converted from 3309 to own rooted in 2018, by layering.

Disease Resistance and Cold Hardiness:



Average Cluster Weight:

Marquette: 0.20 lbs Riesling: 0.15 lbs



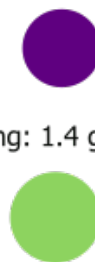
Yearly Cluster Weight:

Year	Weight (lbs.)	Year	Weight (lbs.)
2025	0.17	2019	0.16
2024	0.26	2018	0.21
2022	0.26	2017	0.09
2021	0.23	2015	0.22

Average Berry Weight:

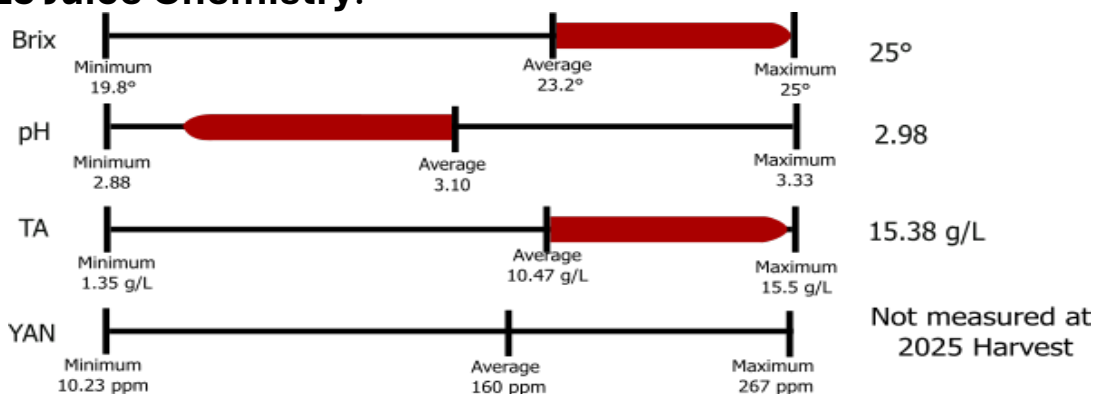
Marquette: 1.2 g

Riesling: 1.4 g



Bloom
5 June

2025 Juice Chemistry:



Veraison
28 July

Harvest
10 September

Grower Notes:

Marquette is a high vigor, cold hardy variety with fair disease resistance and excellent cold hardiness. It is grown in the TDV on 3309 rootstock on 12-foot spacing, high-wire cordon and own-rooted 6-foot spacing, on high-wire umbrella. It is less vigorous on own-rooted. Both rows are netted after veraison to control bird predation. Typically, first variety to break bud and be harvested at our site. Harvest is generally based on waiting for acid to drop rather than sugar accumulation. Delayed harvest is susceptible to rot – can be somewhat mitigated with early season shoot thinning or leaf removal to reduce canopy humidity.

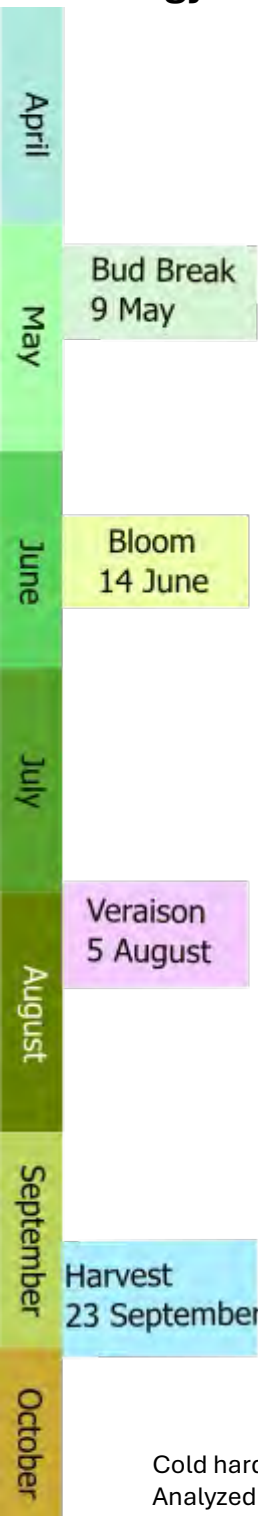
Cold hardiness:

Analyzed for Regent January 20, 2026, at TDV. Analyzed for Merlot and Riesling January 22, 2026, in Geneva. Analyzed for Concord on February 3, 2026, at CLEREL. Long-term average for Marquette analyzed in Geneva.

Regent is a red wine, PIWI variety, bred in Germany as a cross between Diana (a cross of Silvaner and Müller-Thurgau) and Chambourcin. Bred for disease resistance and cold hardiness.

Two rows of Regent were planted at the Finger Lakes Teaching and Demonstration Vineyard in 2018.

Phenology:

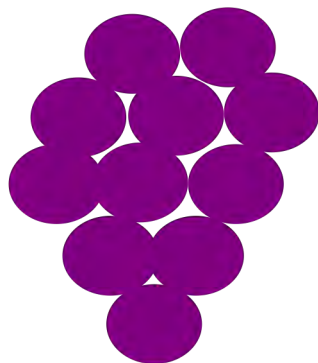


Disease Resistance and Cold Hardiness:

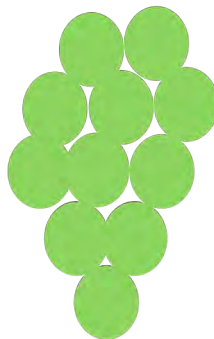


Average Cluster Weight:

Regent: 0.22 lbs



Riesling: 0.15 lbs



Yearly Cluster Weights:

Year	Weight (lbs.)
2025	0.25
2024	0.17
2023	0.18
2022	0.15
2021	0.26
2020	0.28

Juice Chemistry:

Sample Date	Brix	pH	TA	YAN
9/23/2025	23.4°	3.31	5.8 g/L	79 ppm

Grower Notes:

Regent is a high-vigor, moderate yielding variety that produces deep blue fruit. Grown at the TDV on cane-pruned VSP with side-curtain bird-netting. Lateral growth habit and high vigor requires vigilant shoot positioning on VSP. Moderate bird predation on un-netted fruit. Future plans include evaluation on high wire umbrella. Possible candidate for Scott-Henry training.

Cold hardiness:

Analyzed for Regent January 20, 2026, at TDV. Analyzed for Merlot and Riesling January 22, 2026, in Geneva. Analyzed for Concord on February 3, 2026, at CLEREL