

# **Evaluation of Winegrape Cultivars and Clones on Long Island**

*A progress report to the NY Wine & Grape Foundation*

## **Continuing Project**

### **Principal Investigator**

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**A Research and Extension project  
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**Summary:** In 2020, 40 winegrape varieties were evaluated at the Long Island Horticultural Research and Extension Center. Tannat, a classic red, was planted in May. Among newer selections, we harvested crops from Vermentino, Arneis, Itasca, Moscato Giallo, Saperavi, NY 81, Regent and Itasca. Due to warm, dry weather through most of the summer, fruit was able to fully ripen without major losses to cluster rot.

### **Objectives**

1. Vineyard evaluation of the core varieties – Evaluation of 9 Chardonnay clones and 6 Merlot clones.
2. Evaluate new vinifera cultivars and clones – Explore 33 new and less common varieties.
3. Screen disease resistant hybrids - Evaluate degree of disease resistance and fruit quality in 5 hybrids.

**Materials and Methods:** This 1.5-acre vineyard is located at LIHREC, Riverhead on a well-drained sandy loam soil. Vines are spaced 8x6 with VSP training and drip irrigation. Canopy management practices include shoot thinning to 4-5 shoots/ft. row, cluster zone leaf removal, crop adjustment and canopy hedging. Due to the extremely dry conditions, vines were drip irrigated 8-10 times over the season, significantly more than any prior season. The area under vines was maintained with a tractor-mounted mower; young vines were hand weeded. Mature vines still exhibiting drought stress were hand weeded and/or sprayed several times with organic herbicide. Each vine was harvested individually to determine cluster number, crop weight per vine and average cluster weight. From each variety/clone, 100 berries were randomly sampled to obtain average berry weight, Brix, titratable acidity and pH.

### **Results and Discussion**

**Weather** – April and May were cool while June through September was warmer than average. May, June and September were dry with only 0.73” falling in June. There were 3467 GDD, about average. Overall, the weather was reasonable this season with one exception. On August 4, Tropical Storm Isaias shredded leaves with winds up to 70 mph and deposited a layer of salt and soil on the west side of the canopy. Western rows and row ends were most affected. Fortunately, this occurred prior to veraison for most varieties. Subsequent rainfall washed off most of the grit. The LIHREC vineyard, 2 acres in the middle of hundreds of acres of sod and row crops, appeared to suffer more damage than most commercial vineyards.

**Planting, 2020:** In 2019, Mencía, a well-regarded Spanish red vinifera known for a range of wine styles, and Rkatsiteli, an aromatic white vinifera from Georgia (Europe), were planted. These 2<sup>nd</sup> year vines were hand weeded and all but a few clusters were removed. These clusters were shared with a few winemakers. Tannat, a red vinifera known for color, depth and tannin, was planted in May. Tannat is very popular in Uruguay. Two hybrids of Tocai Friulano from the Italian VCR nursery were planted. TF has good fruit quality but unacceptably low yields, 1-2 t/a. Hopefully the hybrids will produce economic yields of quality fruit.

**Pest management** – Downy mildew was minimal due to dry weather. Leafroll virus continued to manifest in previously asymptomatic vines. *Botrytis* bunch rot (BBR) was non-existent. Sour rot occurred only in Pinot Noir and Zweigelt. Fruit flies were not as problematic as in previous seasons. Overall, disease control in the vinifera was relatively easy. Hybrid vines were sprayed for phomopsis and black rot until fruit set. Subsequently, they received two sprays for powdery and downy mildew. Vines were clean at harvest.

### **Varieties removed in 2020**

A number of Merlot vines were removed due to leafroll. Despite efforts to control mealybugs, the virus vector, leaf roll continues to slowly spread in this vineyard. Removal of infected vines appears to be the more effective strategy.

**Harvest** – Harvest was based on ripeness and scheduling rather than advancing cluster rot or impending bad weather. Sugars were moderate to high, acids were moderate, fruit was clean and yields were average to above average. Like 2019, 2020 will be remembered as a very good harvest both in terms of yield and fruit quality.

## Results, 2020 season

**Chardonnay:** Yields were high in 2019 largely due to the high number of berries/cluster. Berries/cluster were much lower in 2020. This could be a result of the large crop in 2019 and/or the extended period of cloudy weather during bloom and fruit set in June, 2020. Berry size was not significantly different in most selections. Fruit was free from cluster rot at harvest.

Table 1. Yield components of Chardonnay clones by rootstock, LIHREC vineyard, 2020

Clone	Harvest Date	Clusters/vine			Crop weight, lbs./vine <sup>3</sup>			Cluster wt., lbs./cluster			
		3309	101-14	Own	3309	101-14	Own	3309 2019	3309 2020	101-14 2020	Own 2020
5	Oct.6	17.3	17.3	16.8	7.3	7.0	7.7	0.60	0.43	0.41	0.46
15	Oct.1	22.4	21.8	20.6	6.5	5.6	5.1	0.36	0.30	0.27	0.25
17	Oct.6	23.1	21.8	17.4	6.1	5.9	4.2	0.35	0.27	0.27	0.24
75	Oct.6	20.0	▪	20.4	5.3	▪	6.4	0.37	0.26	▪	0.32
76	Oct.1	23.6	▪	▪	6.6	▪	▪	0.34	0.28	▪	▪
78	“	24.4	▪	23.0	7.2	▪	5.6	0.37	0.30	▪	0.24
95	“	21.0	▪	21.3	5.9	▪	6.0	0.34	0.28	▪	0.28
95-RB <sup>1</sup>	“	17.5	▪	▪	3.4	▪	▪	0.26	0.18	▪	▪
96	“	21.4	▪	22.8	7.8	▪	8.2	0.41	0.37	▪	0.37
GS <sup>2</sup>	“	▪	19.1	▪	▪	3.7	▪	0.31 <sup>4</sup>	▪	0.19	▪

1 – Confirmed red blotch infected vines. 2 – GS (grower selection) vines are replicated on 101-14 rootstock only.

3 - 7 lbs/vine is equivalent to ~ 3.2 tons/acre. 4 – GS is grafted onto 101-14. ▪ Indicates vines not replicated on that rootstock.

Table 2. Yield components of Chardonnay clones by rootstock, LIHREC vineyard, 2020

Clone	Berries/cluster				Berry weight – grams			
	2019	2020			2019	2020		
	3309	3309	101-14	own	3309	3309	101-14	own
5	170.2	125.8	127.2	141.4	1.93	1.71	▪	▪
15	130.0	93.6	95.6	80.7	1.59	1.73	1.57	1.56
17	117.5	76.9	81.2	89.1	1.82	1.84	▪	▪
75	146.8	87.2	▪	101.4	1.63	1.53	▪	1.60
76	119.7	81.0	▪	▪	1.75	1.74	▪	▪
78	133.9	97.4	▪	85.4	1.71	1.68	▪	1.66
95	109.2	92.0	▪	87.2	1.83	1.88	▪	1.69
95-RB <sup>1</sup>	80.8	49.4	▪	▪	1.85	1.77	▪	▪
96	135.5	97.7	▪	114.4	1.86	1.81	▪	1.70
GS <sup>2</sup>	123.7 <sup>3</sup>	▪	78.7	▪	1.69 <sup>3</sup>	▪	1.52	▪

1 – confirmed red blotch infected vines. 2 – GS vines are replicated on 101-14 rootstock only. 3 - GS is grafted onto 101-14.

▪ Indicates vines not replicated on that rootstock.

Table 3. Fruit ripening, Chardonnay clones /3309, LIHREC vineyard, 2019-2020

Clone	°Brix		TA, g/l		pH	
	2019	2020	2019	2020	2019	2020
5	22.6	22.3	8.9	10.8	3.26	3.13
15	22.3	22.5	5.6	7.35	3.44	3.16
17	21.6	22.3	5.4	8.25	3.38	3.23
75	23.1	21.3	6.9	7.5	3.37	3.16
76	22.3	21.7	7.4	7.65	3.39	3.13
78	22.3	21.4	7.5	7.35	3.32	3.14
95	22.6	21.8	7.2	7.2	3.35	3.16
96	21.4	21.4	7.5	7.5	3.38	3.15
GS <sup>1</sup>	22.4	21.3	7.4	6.45	3.41	3.18

1 – GS vines are grafted onto 101-14 rootstock only.

**White varieties other than Chardonnay:** Many businesses have diversified their plantings beyond Chardonnay. During field tours, growers were most impressed with flavors of Verdejo, Vermentino and Albariño. At harvest, minimal field cleaning was necessary as fruit was clean. As with Chardonnay, cluster weight was lower in 2020 compared to 2019 due to a reduction in berry set. The newest variety is Itasca, a cold hardy hybrid from MN with mildew and phylloxera resistance. It is intended for dry, white wines, has pear, floral and mineral notes.

Table 4. Performance of white winegrape varieties, LIHREC vineyard, 2020

Variety	Harvest date	Clust. no./vine	Crop wt. lbs./vine	Cluster wt. lbs./cluster	Berries/cluster	Berry wt.- g.	°Brix	TA, g/l	pH
Albariño/14 <sup>1</sup>	Sept.29	24.9	5.2	0.21	78.2	1.36	22.7	8.1	3.05
Aligoté 1/09	Sept.28	14.5	9.5	0.66	160.1	1.92	19.5	7.2	3.13
Arneis/14	Sept.29	11.8	6.7	0.57	136.4	1.81	22.8	6.6	3.24
Auxerrois 45/14	Sept.17	17.2	8.2	0.48	114.8	2.04	20.0	6.9	3.30
Gewürztraminer 1/09	Sept.21	24.0	5.1	0.22	98.9	1.70	21.3	6.3	3.26
Gewürztraminer 3/09	"	27.3	7.4	0.27	94.4	1.66	21.0	6.0	3.22
Grüner Veltliner/14	Sept.28	9.7	8.3	0.86	208.0	1.81	23.2	5.55	3.33
Itasca/own (3 yrs old)	Sept.3	29.2	3.5	0.12	51.7	1.39	23.9	7.8	3.11
Malvasia Bianca/09	Sept.21	9.0	7.7	0.85	132.5	2.99	21.3	6.15	3.22
Moscato Giallo/09	Sept.28	9.5	5.7	0.60	92.3	2.81	19.8	7.2	3.26
Muscat Ottonel 1/09	Sept.21	28.5	6.8	0.24	61.8	2.53	20.9	5.85	3.26
NY 81 /09 <sup>2</sup>	Sept.24	20.0	6.5	0.33	75.6	1.93	22.5	8.1	2.86
Petit Manseng/14	Oct.20	19.2	5.5	0.29	136.0	1.21	27.4	10.5	2.71
Pinot Gris 146/09	Sept.21	20.0	6.5	0.33	117.6	1.59	20.8	6.9	3.17
Pinot Gris 152/09	"	22.3	7.7	0.35	112.3	1.62	20.9	6.9	3.07
Sauv.Blanc 1/09	Sept.28	23.6	6.8	0.29	102.7	1.68	23.7	7.5	3.11
Sauv.Blanc 376/14	"	24.9	7.5	0.30	100.7	1.59	23.3	6.9	3.12
Sauv.Blanc 530/14	"	25.2	6.6	0.26	99.8	1.44	23.9	6.3	3.13
Semillon 2/09	"	17.3	7.4	0.43	125.7	1.93	na	na	na
Semillon 3/09	"	14.0	6.6	0.49	115.9	2.29	21.2	7.8	3.12
Tocai Friulano 1/14	"	14.8	4.4	0.30	102.0	1.55	22.3	5.4	3.35
Verdejo/09	"	14.6	5.7	0.39	84.2	2.30	21.3	7.8	3.26
Vermentino/5BB	"	11.0	9.5	0.86	123.8	3.36	22.8	12.6 <sup>3</sup>	3.18

1–Leaf roll infected vines. 2 - Riesling x Cayuga White hybrid. 3 – this TA was run twice. 7 lbs/vine = ~3.2 tons/a. na – data not collected.

**Merlot:** Berries/cluster and cluster weight were similar in 2019 and 2020. Clones 1 & 3 are widely planted and are consistently good performers in yield and quality. Clone 6 consistently requires heavy cluster thinning. If high production is the goal, clone 6 is a good choice. Many growers like the fruit quality of clone 181. Clones 181 and 314 have large clusters and require careful thinning. Detailed yield component and ripening data may be found in the Appendix or by contacting the Principal Investigator.

**Red varieties other than Merlot:** In 2020, red variety clusters were generally similar in berry number and weight compared to 2019. Pinot Noir and Zweigelt were the only two varieties in the vineyard with moderate sour rot at harvest. Otherwise, the red viniferas had little or no cluster rot, even larger clustered varieties such as Sangiovese. Due to the sunny, dry weather, it was a good year for ripening red vinifera. Detailed yield component and ripening data may be found in the Appendix or by contacting the Principal Investigator.

Newer reds include Saperavi and the hybrid Regent. Regent, planted in 2017, is a cross with Chambourcin, Müller-Thurgau and Silvaner parentage. It is widely planted in Germany. Regent is purportedly winter-sensitive thus limiting its appeal for some eastern regions. Saperavi vines, planted in 2015, finally achieved trellis fill in 2020. Some of the vines annually develop pronounced leaf reddening post-veraison. Virus tests have been negative.

**Winemakers and winemaking:** There has been a definite uptick in interest from local winemakers in the last several years. Tours of the vineyard held twice in 2019 were well attended. Several winemakers on the tour had never seen the vineyard. Fruit was given to local winemakers, resulting in the following 2019 wines: Arneis, Auxerrois, Grüner Veltliner, Moscato Giallo, NY 81, Petit Manseng, Regent, Saperavi, Vermentino, Zweigelt. Due to pandemic rules, wine tastings are unlikely until perhaps 2022. Therefore, these wines are gradually being distributed to winemakers for individual tasting and evaluation.

**Conclusion:** Evaluation of winegrape varieties and clones has been a long-term project on Long Island. With steep planting costs for vineyards, >\$20,000/acre, it is essential to choose varieties carefully. The goals of this work are to determine fruit quality potential, disease susceptibility and economic viability. Traditional varieties such as Chardonnay and Merlot continue to play an important role due to their reliability and versatility in the winery. However, growers are also interested in diversifying their wine portfolio so that continued exploration of uncommon varieties is important. Inclusion of disease resistant hybrids in this planting furthers the industry goals of improving environmental stewardship. Hybrids address economic viability through their productivity and early harvest (hanging fruit throughout the fall is economically risky). For this reason, hybrids may play a larger role in future industry plantings, particularly with the release of interesting, new selections by breeding programs worldwide.

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## Appendix

### Evaluation of Winegrape Cultivars and Clones on Long Island Progress Report, Jan., 2021

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**Impact Statement** – The installation of one acre of winegrapes ranges from \$20-30,000; consequently, a poorly performing variety can be a costly mistake. In a grower survey, 90% of respondents indicated they had used information from this vineyard in their planting decisions. This has included plantings of Albarino, Auxerrois, Malvasia, Muscat Ottonel and Verdejo. Disease resistant hybrids were successfully managed with <50% reduction in fungicide use. Several growers have expressed interest in planting hybrids.

**Publications and presentations** –Three presentations on this trial were given in 2020: Hershey, PA in January (60 attendees), Charlottesville, VA in February (200+ attendees) and CRAVE (Cornell virtual meeting) on December 10 (44 attendees). A planned presentation on Long Island in April,2020 was canceled. Vineyard tours were not permitted in 2020. Observations and data from this vineyard appeared or will appear in the following:

- Long Island Fruit & Vegetable Update newsletter (circ.218, weekly)
- Suffolk County Ag News (circ.330, monthly) – Feb.20, Dec.20, Jan.21 and Feb.21.
- Veraison to Harvest weekly newsletters (circ.800+)
- Long Island Vineyard Manager List Serv (115 members)
- LIHREC 2020 Annual Report. This report is produced every winter; however, it has not been posted on-line in recent years due to concerns over ADA compliance.
- CCE grape program website (>3200 website hits, 2020) – A PowerPoint presentation on the trial was posted to the website, January, 2021. This was announced on the industry list serv (115 members). The site includes two recently revised articles, Alternative White Winegrape Varieties and Alternative Red Winegrape Varieties. An article on the trial was posted to Appellation Cornell (circ.1200) April, 2015; reprinted June 2015 in Wines and Vines trade magazine (circ. 9193).

<http://grapesandwine.cals.cornell.edu/sites/grapesandwine.cals.cornell.edu/files/shared/Research%20Focus%202015-2.pdf>.

### Tables and Graphs (continued from Progress report)

Table 5. Yield components of Merlot clones by rootstock, LIHREC vineyard, 2020

Clone	Harvest date	Clusters/vine			Crop weight, lbs./vine			Cluster wt., lbs./cluster			
		3309	101-14	Own	3309	101-14	Own	3309 2019	3309 2020	101-14 2020	Own 2020
1	Oct.20	13.1	14.0	13.7	6.2	6.1	6.9	0.46	0.48	0.44	0.50
3	"	12.7	14.5	13.6	6.1	6.8	6.4	0.44	0.49	0.47	0.47
6	"	14.1	▪	▪	6.7	▪	▪	0.45	0.48	▪	▪
8	"	15.9	14.5	15.6	6.1	4.6	5.2	0.37	0.39	0.32	0.34
181	"	11.6	▪	▪	6.4	▪	▪	0.56	0.55	▪	▪
314	"	10.7	▪	▪	6.0	▪	▪	0.56	0.57	▪	▪

▪ Indicates vines not replicated on that rootstock. 7 lbs/vine is equivalent to ~ 3.2 tons/acre.

Table 6. Yield components of Merlot clones by rootstock, LIHREC vineyard, 2020

Clone	Berries/cluster				Berry weight – grams			
	2019	2020	2020	2020	2019	2020	2020	2020
	3309	3309	101-14	own	3309	3309	101-14	own
1	117.0	135.8	109.4	121.5	2.01	2.08	▪	▪
3	118.9	114.2	118.2	121.2	1.86	2.05	▪	▪
6	120.3	119.2	▪	▪	1.96	2.01	▪	▪
8	98.3	94.4	87.6	95.3	2.14	2.16	▪	▪
181	170.4	145.8	▪	▪	1.79	2.13	▪	▪
314	159.4	159.6	▪	▪	1.80	2.03	▪	▪

▪ Indicates vines not replicated on that rootstock. 7 lbs/vine is equivalent to ~ 3.2 tons/acre.  
1 – several M.1/101-14 vines had very large clusters.

Table 7. Fruit ripening, Merlot clones/C3309, LIHREC vineyard, 2019-2020

Clone	°Brix		TA, g/l		pH	
	2019	2020	2019	2020	2019	2020
1	23.1	21.9	5.3	5.55	3.50	3.38
3	23.4	22.2	5.4	5.40	3.52	3.36
6	22.3	22.3	5.0	5.55	3.55	3.40
8	23.3	22.8	5.1	5.40	3.53	3.49
181	23.8	22.9	5.3	4.80	3.52	3.37
314	23.4	22.8	5.1	5.10	3.47	3.28

Table 8. Performance of red winegrape varieties, LIHREC vineyard, 2020

Variety/clone	Harvest date	Clusters/vine	Crop wt. lbs./vine	Cluster wt. lbs./cluster	Berries/cluster	Berry wt.-g.	°Brix	TA, g/l	pH
Barbera 2/09	Oct.15	14.0	9.3	0.68	107.4	3.64	23.9	10.5	2.98
Cab.Franc 1/09	Oct.15	18.3	6.1	0.34	90.7	1.81	22.4	6.3	3.32
Cab.Franc 332/09	“	15.6	6.4	0.42	119.6	1.78	22.5	6.0	3.30
Cab.Sauv.7/09	Oct.20	20.4	5.3	0.26	85.4	1.64	21.3	6.0	3.21
Cab.Sauv.8/14	“	19.0	5.0	0.26	92.9	na	na	na	na
Cab.Sauv.11/09	“	18.8	4.5	0.24	81.4	1.34	21.6	6.0	3.17
Cab.Sauv.21/09	“	20.8	4.9	0.24	75.4	1.59	21.9	6.0	3.28
Dornfelder/09	Sept.21	15.8	7.3	0.46	89.5	3.09	18.9	6.3	3.21
Lemberger/09	Oct.6	14.0	6.9	0.49	120.2	2.27	21.8	7.95	3.10
Malbec 4/09	Oct.15	21.3	8.8	0.42	105.4	2.22	22.1	6.75	3.31
Malbec 6/09	“	21.3	7.6	0.36	83.7	2.13	20.9	7.05	3.20
Petit Verdot 2/09	Oct.20	23.0	5.5	0.24	112.7	1.05	24.6	9.6	2.96
Pinot Noir 4/09	Sept.21	18.6	6.7	0.36	132.0	1.48	23.0	6.0	3.22
Regent/14	Oct.6	14.2	5.9	0.42	86.6	2.34	23.5	6.45	3.34
Sangiovese2/09	Oct.15	12.5	7.9	0.63	130.6	2.27	22.5	7.8	3.11
Saperavi/09	Sept.28	11.0	6.9	0.63	138.5	2.13	22.8	8.7	3.18
Syrah 1/09	Oct.15	16.5	6.8	0.41	115.1	1.91	21.0	7.2	3.21
Syrah 3/09	“	16.0	6.8	0.43	114.3	2.01	20.8	6.9	3.21
Zweigelt/14	Sept.17	12.0	7.2	0.60	154.6	2.00	19.5	6.9	3.08

7 lbs/vine is equivalent to ~ 3.2 tons/acre. na - Indicates data not collected.