



Research Update: Seedless Table Grape Variety & Training System Evaluation, 2019

Our objectives were to identify seedless table grape varieties adapted to NH and to identify the optimum training system for these varieties.

Methods/Details.

The research vineyard was planted in May 2015. We planted eight cultivars (chosen based on the results of the [SARE farmer grant FNE10-692](#)), in each of twelve rows. The trellis installation was completed in February 2016. The vineyard map is shown to the right (top is closest to the high tunnels).

Our varieties:

Canadice, Reliance, Vanessa – red
Concord Seedless, Mars, Thomcord – blue
Lakemont, Marquis - white

Training systems:

VSP = vertical shoot positioning
MM = modified munson. (MM.1 rows began as a different system, and were converted to MM in 2019).

ROW	towards high tunnels								
1	Lakemont	Vanessa	ConcordSdls	Marquis	Canadice	Mars	Thomcord	Reliance	VSP
2	ConcordSdls	Canadice	Lakemont	Mars	Reliance	Vanessa	Thomcord	Marquis	MM
3	Reliance	Mars	ConcordSdls	Canadice	Marquis	Thomcord	Vanessa	Lakemont	MM.1
4	Canadice	ConcordSdls	Mars	Lakemont	Vanessa	Reliance	Marquis	Thomcord	MM.1
5	Marquis	ConcordSdls	Thomcord	Reliance	Mars	Lakemont	Canadice	Vanessa	VSP
6	Marquis	Reliance	Mars	Thomcord	ConcordSdls	Vanessa	Lakemont	Canadice	MM
7	Reliance	Mars	Vanessa	Canadice	Thomcord	ConcordSdls	Lakemont	Marquis	MM.1
8	Thomcord	Lakemont	Marquis	Vanessa	Reliance	Canadice	Mars	ConcordSdls	VSP
9	ConcordSdls	Reliance	Canadice	Thomcord	Lakemont	Marquis	Vanessa	Mars	MM
10	Canadice	Vanessa	ConcordSdls	Mars	Thomcord	Lakemont	Marquis	Reliance	MM.1
11	Thomcord	Marquis	Vanessa	ConcordSdls	Lakemont	Mars	Reliance	Canadice	VSP
12	Mars	Reliance	Thomcord	Lakemont	Vanessa	Marquis	ConcordSdls	Canadice	MM

towards road

towards K field (brussels sprouts)

Spacing, Fertilization, and Weed Management

Vines are spaced 8' apart within rows that are spaced 10' apart. Each plot contains 3 vines. Poles are placed between each plot, every 24' apart. Vines were fertilized with 0.1 oz actual nitrogen (N) per vine in 2016, 0.2 oz actual N in 2017, and 0.4 oz actual N in 2019. In Sept 2017, aisles were tilled and fescue was seeded to establish permanent sod aisles. In general, weed management was accomplished mechanically, and through occasional shielded applications of glyphosate or paraquat.

Data Collection

Winter injury and vigor were evaluated annually. Whenever possible, we rated Anthracnose, Downy Mildew, Powdery Mildew, and Black Rot. Yield was measured for all fruiting vines.

Disease Observations & Pest Management

2016: mancozeb and kresoxim-methyl (15 sept) – **downy mildew, powdery mildew, anthracnose were observed and rated.**

2017: mancozeb (12 june), and kresoxim-methyl (29 june) – **anthracnose was observed**

2018: lime sulfur (1 may), mancozeb (21 may), myclobutanil & Bacillus mycoides (20 july) – **anthracnose and very severe downy mildew were present late season; defoliated susceptible varieties and prevented crop ripening.**

2019: lime sulfur (26 april), mancozeb (24 may, 4 june, 12 june), ziram & metrafenone (28 june), kresoxim-methyl (9 july), carbaryl (25 july), kresoxim-methyl (7 august), mono- and di-potassium salts of phosphorous acid (18 aug) – **anthracnose present, moderate downy mildew was present late season and defoliated susceptible varieties. Small amount of black rot.**



What we have learned.

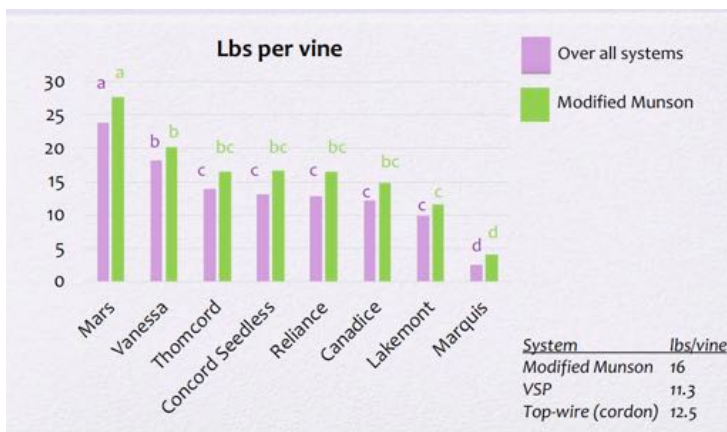
Mortality. Most varieties had 100% winter survival and showed good vigor throughout the trial. The highest mortality and lowest vigor were observed for **Thomcord**, while **Lakemont** and **Marquis** had intermediate mortality and vigor. All dead vines in fall 2016 were replaced in spring 2017. More vines died during the winter of 2018-19, possibly because they were weakened by severe anthracnose and downy mildew in 2018.

Diseases. Very low levels of **black rot** have been observed in the vineyard, with no significant differences between cultivars. Moderate levels of **anthracnose** have been observed for the cultivars **Marquis**, **Thomcord** and **Reliance**. **Downy mildew** has been by far the most damaging disease present; and the cultivars **Lakemont**, **Marquis** and **Thomcord** showed more symptoms than other varieties. **Powdery mildew** was also present in 2016; the cultivar **Marquis** showed significantly more symptoms than most cultivars, and the cultivars **Canadice**, **Concord Seedless** and **Mars** remained nearly symptom-free.

Levels of diseases observed on seedless table grape cultivars in Durham NH from 2016-2019.

CULTIVAR	Anthraco- nose (low-high)	Downy Mildew (low-high)	Powdery Mildew (low-high)	Vigor (low-high)
Canadice	Low	Low	Low	High
ConcordSdls	Low	Low	Low	High
Lakemont	Med	High	High	Med
Marquis	High	High	Med	Low
Mars	Low	Med	Low	High
Reliance	High	Med	High	High
Thomcord	High	High	High	Low
Vanessa	Low	High	High	High

Fruit. In 2017-2019, vines produced marketable yields. Fruit were harvested over a period of 3 weeks, from Sept 4-20 (2017), Sept 12-Oct 11 (2018) and Sept 15-Oct 4 (2019). We measured brix (soluble solids content, SSC) to determine harvest maturity, and began harvesting at 18° brix. While there was quite a lot of variability in maturity between rows, Reliance, Thomcord, Vanessa and Lakemont were the earliest to mature, with Mars and Marquis among the last to mature.



2017: Canadice, Mars, Lakemont and Reliance produced the highest yields; 8-12 lbs per vine.

2018: Mars produced higher yields than all other varieties (see above); 22-27 lbs per vine.

2019 preliminary results: Mars and Canadice produced more **marketable** fruit than all other varieties.

While the VSP system fruited one year earlier than the MM system, MM yields appear to be higher once they reach production.



Take-home messages & preliminary conclusions

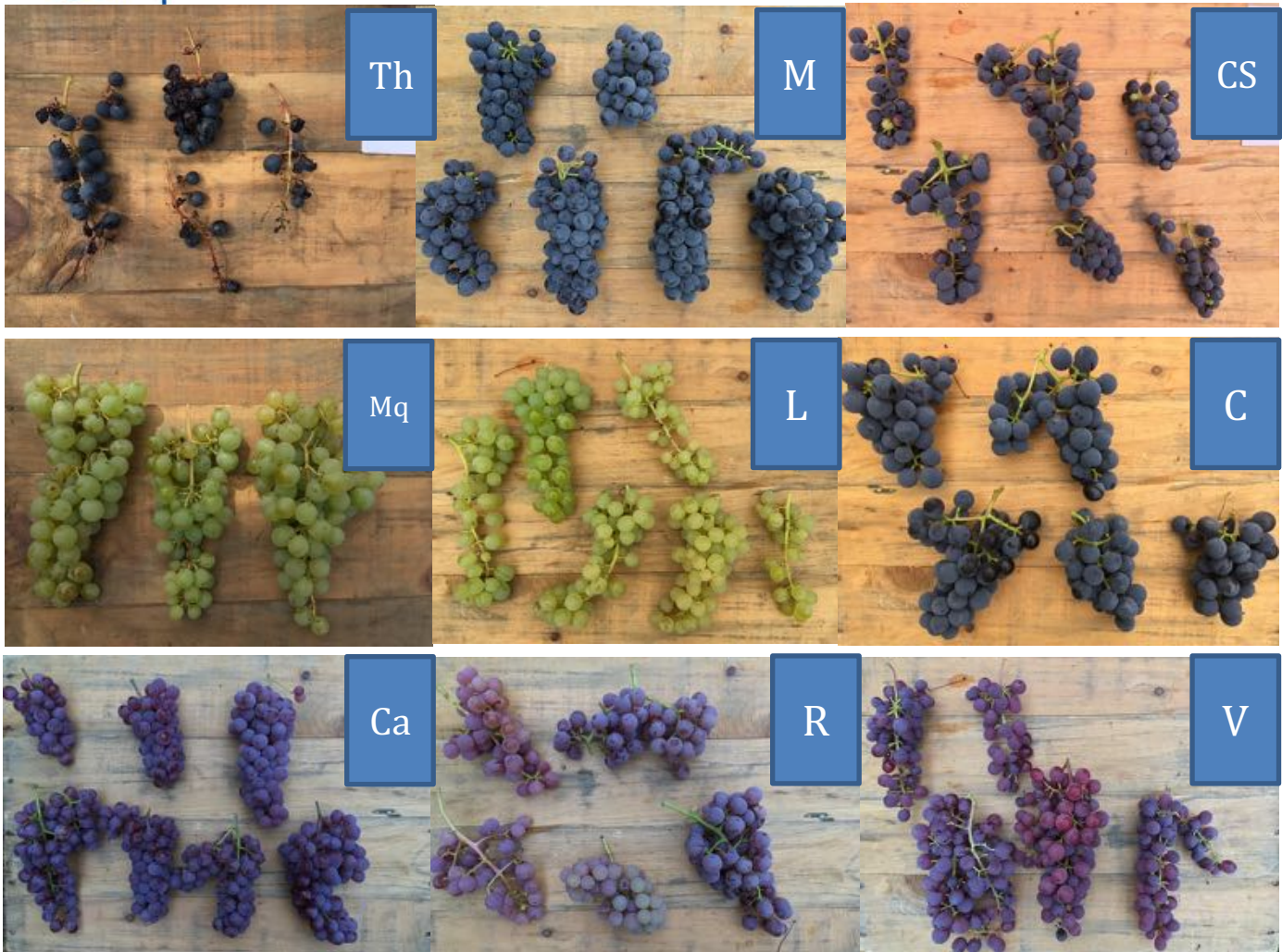
Our preliminary conclusions are that **Mars** and **Canadice** seem most promising for commercial production of seedless table grapes in the region. **Vanessa** and **Lakemont** also produced very high quality fruit, but limitations for these varieties were susceptibility to downy and powdery mildews. Photos of representative clusters of each variety and preliminary notes about fruit and cluster quality, are shown on the next page.

	<i>Pros</i>	<i>Cons</i>
**Canadice	Fruit appearance, flavor, disease resistance	
Concord Seedless	Disease resistance, vigor	Fruit splitting, variable maturity
*Lakemont	Fruit appearance	Vigor, PM, DM, skins tough
Marquis	Fruit size	PM, DM, Anth, vigor, skins tough
**Mars	Fruit appearance, disease resistance, yield	Skins 'firm' and sometimes tart
Reliance	Hardy, vigorous	Uneven color, shattering, Anth, DM
Thomcord	Fruit appearance, flavor	PM, DM, Anth, vigor
*Vanessa	Fruit appearance, texture, flavor	DM, PM

For more info, please contact Becky Sideman (becky.sideman@unh.edu, 603-862-3203).

Acknowledgements. This work was supported by the NH Agricultural Experiment Station and the NH Department of Agriculture, Markets & Food through NH Specialty Crop Block Grant **14-SCBGP-NH-0033**.

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Blue varieties:

**** Mars (M)** - Tight, very attractive and uniform clusters.

Thomcord (Th) – Poor fruit set, leading to uneven clusters. Some bird damage due to minimal canopy cover.

Concord Seedless (CS) – Small clusters with some variability in fruit size. Prone to cracking. Early maturing.

Concord (C) – Accidental seeded Concord vines produce fruit that is larger, later, and more uniform than CS.

Red varieties:

**** Canadice (Ca)** – Tight, very attractive and uniform clusters.

Reliance (R) – Somewhat loose clusters; inconsistent ripening and color development. Prone to shattering.

*** Vanessa (V)** – Loose clusters of oval-shaped berries. Fruit are firm and crisp, with excellent flavor.

Green varieties:

*** Lakemont (L)** – Moderately loose clusters of uniform golden-green fruit, with nice flavor.

Marquis (Mq) – The latest to mature of these cultivars. Beautiful clusters of large fruit, skin somewhat tough.