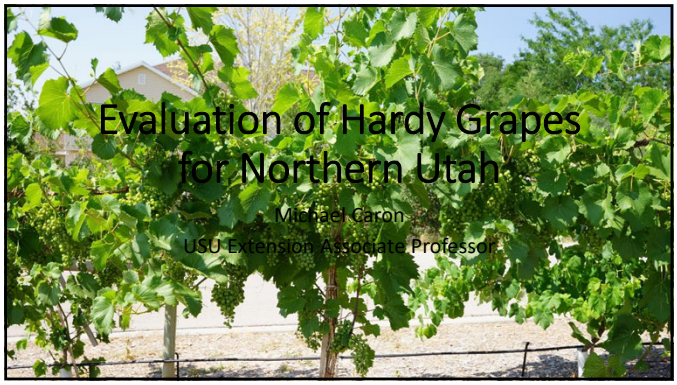

Evaluation of Hardy Grapes for Northern Utah

Michael Caron
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Rationale for a Grape Variety Trial

- Increasing grower interest in grapes
  - Wine
  - Table
  - Juice
- Specialty Crop
  - Limited commercial acreage in Utah
  - Potential for small producers
  - Market sales
- Many hardy cultivars available
  - Untested in Utah

Methods

- Evaluate winter survival in the northern Utah Climate (Zones 5-7)
- Determine fruit yield potential
- Determine relative harvest window
- Identify susceptibility to pests and diseases

Grapes: Types

Vitis vinifera

- European wine and table grape
- Characteristics
  - Semi-Hardy
  - Non-slip skin (clingskin)
- Popular varieties
  - 'Thompson Seedless'
  - 'Black Corinth'
  - 'Zinfandel'
  - 'Tokay'
  - 'Chardonnay'
  - 'Reisling'

Thompson Seedless grape. Picture by Julie Knittel

Grapes: Types

Vitis labrusca

- American bunch grape
- Characteristics
  - Hardy
  - Slip skin
- Popular varieties
  - 'Concord'
  - 'Delaware'
  - 'Himrod'
  - 'Niagara'

Concord grape. Picture by Julie Knittel

Grapes: Types

French/American Hybrids

- *V. vinifera* x American species
- Characteristics
  - Hardy
  - Insect/disease resistant
  - Some are slip skin
- Popular varieties
  - Reliance
  - Jupiter
  - Vanessa
  - Valiant
  - Canadice

'Jupiter'

Hardy (Hybrid) Wine Grapes

- AKA non-vinifera wines
  - Some have some vinifera genetics
- Black sheep of wine
- Crossings of different grape species
  - *V. labrusca, V. riparia, V. rupestris, V. aestivalis*
- Used for their hardiness and phylloxera resistance
- Can make good wines
  - marketing

Frontenac grape. Picture by Julie Knittel

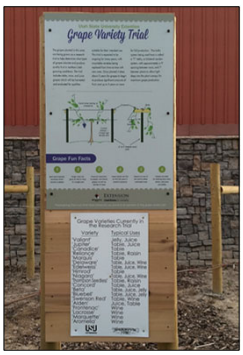
Hardy (Hybrid) Wine Grapes

- Examples:
  - Marquette – 2006 Minnesota
  - Frontenac – 1996 Minnesota
  - La Crosse – 1983 Swenson
  - Brianna – 1983 Swenson
  - Aromella – 2014 Cornell
  - Enchantment – 2016 Arkansas
  - Opportunity – 2016 Arkansas
- Breeding programs
  - University of Minnesota
  - Cornell University
  - University of Arkansas
  - Elmer Swenson (Wisconsin)

LaCrosse grape. Picture by Julie Knittel

Methods

- Partnership with Thanksgiving Point Institute
- Collective ½ acre around show barn
  - Highly visible area
- Fun, educational signage is used on all sides of the Barn



Methods

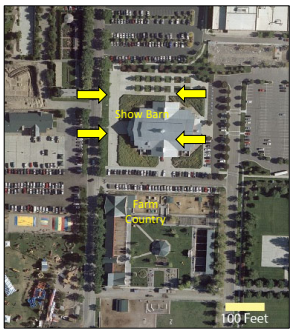
- Individual signs are also used for each plant

Methods

- Trellis installed 2014
  - 6’ high
  - 8’ spacing between plants
  - 9’ spacing between rows
- Irrigation runs on low wire

Methods

- Randomized block design
  - Between 8 and 14 plants of each cultivar
  - Distributed among 4 areas around the barn



Methods

- Plants installed spring 2015
  - 17 cultivars were bare-root
- Double A Vineyards
- Grafted Grapevine Nursery
- Own-rooted

Installation

- Thompson Seedless and Swensen Red were only available as cuttings
  - Added in 2016

Methods

- 19 cultivars
- More added since then
  - Compassion
  - Thomcord
  - Alborz
  - Persian Gulf
  - Itasca

Results

Cultivar	# Planted	# Surviving Plants	Percent Survival
Alden	12	9	75
Aromella	9	8	89
Beta	14	14	100
Bluebell	15	12	80
Canadice	15	14	93
Concord	12	12	100
Delaware	14	7	50
Edelweiss	13	8	62
Frontenac	12	10	83
Himrod	13	12	92
Jupiter	14	14	100
La Crosse	10	10	100
Marquette	8	4	50
Marquis	16	16	100
Niagara	18	18	100
Reliance	15	14	93
Swenson Red	14	9	64
Thompson Seedless	11	8	73
Valiant	14	14	100

Results

Grape harvest data and characteristics summary. Harvest dates can be plus or minus up to 2 weeks from the average date due to seasonal variations.

Cultivar	Avg. Harvest Date	Crop load range (lbs/plant)			Estimated yields (lbs/acre)[1]	Fruit size (grams/ berry)	Sugar content (°Brix)
		High	Low	Avg.			
Alden	Aug. 29	13.1	8.6	10.9	7,400	4.1	17.1
Aromella	Sept. 9	24.0	8.6	15.9	10,800	0.8	21.7
Beta	Sept. 1	13.6	12.6	13.1	8,900	1.2	25.2
Bluebell	Aug. 30	11.3	12	11.7	8,000	3.0	21.1
Canadice	Sept. 1	11.0	12.5	11.7	8,000	1.6	25.9
Concord	Sept. 22	16.2	10	12.9	8,800	2.9	22.5
Delaware	Sept. 6	9.3	12.3	10.8	7,400	1.0	24.7
Edelweiss	Sept. 1	8.9	7.4	8.1	5,500	1.9	19.2
Frontenac	Sept. 3	17.2	15.3	16.2	11,000	0.8	26.9
Himrod	Aug. 22	32.3	19.1	23.8	16,200	2.4	22.9
Jupiter	Sept. 9	25.3	15.3	21.0	14,300	3.8	23.3
La Crosse	Sept. 1	8.2	16	12.7	8,600	1.2	23.6
Marquette	Sept. 5	15.0	15.0	15.0	10,200	-	27.6
Marquis	Sept. 6	38.3	18.9	31.1	21,200	3.7	19.1
Niagara	Sept. 6	14.1	8.4	12.5	8,500	1.2	17.7
Reliance	Sept. 1	15.0	12.0	13.3	9,100	2.0	21.8
Swenson Red	Sept. 1	12.6	10	11.5	7,800	1.8	23.6
Thompson Seedless	Sept. 6	14.1	8.4	12.2	8,300	1.4	23.4
Valiant	Sept. 1	24.3	13.5	19.3	13,100	1.2	23.3

April 2021

Evaluation of Cold-Hardy Grapes on the Wasatch Front

Michael Caron, Tavn Bedders, Mike Pace, and Brent Black

Introduction

Grapes can be an excellent addition to home gardens and a revenue opportunity for small-acreage farms. Utah's Wasatch Front region, along with portions of Cache Valley, are well suited to grow grapes, particularly the more cold-hardy cultivars. Many new cold-hardy cultivars have been introduced over the last few decades, including both wine and table types. However, many of these newer cultivars have not been adequately tested in Utah's unique climate. Utah State University Extension conducted a grape cultivar comparison planting in Lehi, Utah, with the following objectives:

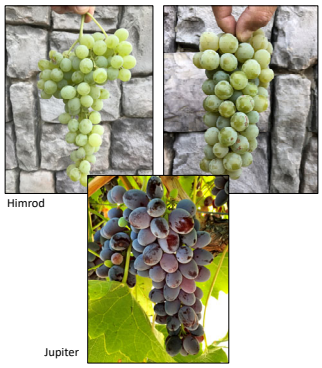
1. Evaluate winter survival in the northern Utah climate (USDA Zone 6b and 7a).
2. Determine fruit yield potential and the relative harvest window.
3. Identify potential susceptibility to pests and diseases common to the area.

(i.e., un-grafted). The evaluation planting, located around the Show Barn at Thanksgiving Point Institute in Lehi, Utah, consisted of randomized, replicated plots where each cultivar was planted in 3–4 replicate plots with 3–4 vines per plot. Individual vines were spaced 8 feet apart in the row, with about 8 feet between rows. All vines were trained to a spur-pruned bilateral cordon system. For more information on grape pruning and trellising, see the Utah State University (USU) fact sheet, Grape Trellising and Training Basics. For more information on general grapevine care, see the USU fact sheet, Grape Vine Management.

Plants were drip-irrigated twice weekly during the growing season. Soils in the planting areas consisted of compacted loam or sandy clay loam, with pH ranging from 7.5 to 7.9, and salinity ranging from 1.39 to 2.82 dS/m. Although typical for Utah, the pH is considered high and the soil salinity is higher than optimal for fruit

Top Producers

- Seedless Cultivars
  - Marquis – 31 lbs.
  - Himrod – 24 lbs.
  - Jupiter – 21 lbs.
  - Marquis and Himrod would be good replacements for Thompson Seedless as they are hardier and more productive
  - Jupiter is the overall favorite



Top producers

- Seeded Cultivars
  - Aromella – 16 lbs.
  - Frontenac – 16 lbs.
  - Valiant – 19 lbs.

Didn't do so well

- Alden, Beta, Bluebell
  - Most problems with iron chlorosis
    - Bluebell was the worst
  - But had pretty good survival
- Swenson red
  - Five plants rapidly died during growing 2019 growing season
- Marquette, Delaware, and Edelweiss
  - Poor establishment and survival
  - 50%, 50%, and 62% respectively

Lowest Yields

- Alden – noted to be a vigorous plant
- Delaware – low vigor plant
- Edelweiss – noted to be a vigorous plant
- Swenson Red – noted to be a vigorous plant
- Not necessarily a problem, but they were for us
  - Increase/decrease vigor
  - Increase plant density?
  - Grow in better soil

Delaware grape cluster

Future Grape Trials

- Seeking grant funds
- Establish grower trials
  - 2-4 growers
- Objectives
  - Marketability
  - Pricing
  - Consumer preferences – taste testing
  - Increase hybrid wine grape cultivar evaluations

Problems

- Powdery Mildew
- Western Grape Leafhopper

Problems

- Birds
- Plant collapse
- Iron Chlorosis

Sharing the Information

- Publications through USU Extension
  - Evaluation of Cold-Hardy Grapes on the Wasatch Front
  - Grape Varieties for Utah
  - Grape Field Day

Sales potential

- Have done limited testing at 2 farmers markets
  - Only tried selling seedless table grapes
  - Grapes in crates
    - About 20 pounds/crate
  - Were able to get about $5 per pound

Bird Netting

- Birds are the most destructive pest we have
  - Deer are second
- We found bird netting most effective
  - Can be reused for several years

Iron Deficiency

- Usually caused by
  - Compacted soil
  - Waterlogged soil
  - SOMETIMES by low iron in soil
- Herbicide injury can also make this worse