

OREGON WINE



SYMPOSIUM

Rootstock Performance in Oregon

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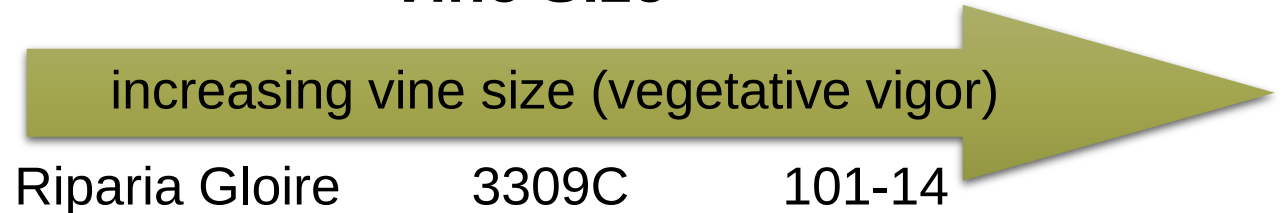
Common Rootstocks in Oregon

Top 3: 101-14, Riparia Gloire, 3309 C

Desired characteristics

- Phylloxera resistance
- Reduced vine vigor (WV)
- Advance maturity (WV)
- Conducive to deep, fertile soils
- Low drought tolerance

Vine Size



Time to maturity

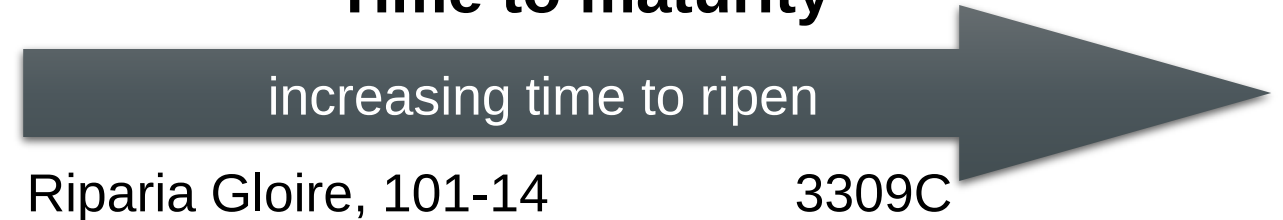


Table 1. Grapevine rootstock ratings.

Rootstock	Riparia Gloire	3309C	101-14 Mgt	Schwarzmann	420A Mgt	5BB	SO4	8B	5C	125AA	161-49C	99R	110R	1103P	140Ru	1616C	44-53 Malègue	Gravesac
Characteristic																		
Adaptability to shallow, dry, clay soil	1	3	2	1	3	2	1	—	3	3	1	2	4	3	3	1	2	2
Adaptability to deep silt or loam	1	1	1	2	1	1	1	—	3	2	1	3	3	3	3	2	3	3
Adaptability to deep, dry, sandy soil	2	2	2	3	2	1	1	—	1	1	2	2	3	3	4	2	2	3
Tolerance of water-logged soil	3	3	3	—	2	2	3	—	—	—	2	1	3	3	2	3	3	3
Tolerance of lime	1	1	1	—	3	3	2	2	2	4	3	2	2	2	2	1	1	3
Tolerance of acid soil	1	1	1	1	2	2	3	—	1	3	—	4	3	2	1	1	3	4
Nitrogen uptake	2	2	3	2	4	4	4	1	2	4	3	3	2	2	3	3	2	2
Vigor conveyed to vine	1	2	3	1	3	3	3	2	3	4	3	3	2	4	3	3	1	2
Drought tolerance	1	3	1	1	2	3	2	3	2	4	2	2	3	4	4	2	2	1
Resistance to ring nematode	2	1	4	2	4	2	2	2	2	—	—	2	3	1	2	—	2	1
Tendency to overbear	4	3	1	4	1	2	1	3	2	2	2	2	1	2	2	2	4	1
Vegetative cycle (time to ripening)	1	2	1	1	2	2	2	3	3	4	2	4	1	4	2	4	2	2

Rating Scale

1=lowest, 4=highest

Most drought-tolerant

- 125 AA
- 1103 P
- 140 Ru
- 110 R
- 3309 C
- 5 BB
- 8 B

Least drought-tolerant

- Riparia Gloire
- 101-14
- Schwarzmann
- Gravesac

Experimental Design

101-14
1103P
110R
125AA
140R
161-49
1616
3309C
420A
44-53
5BB
5CTE
8BTE
99R
Böerner
GRAV
own-rooted
Riparia Gloire
Schwarzmann
SO4



- Pinot noir x 19 Rootstocks + own-rooted
- Planted 1997
- Randomized complete block design
- 5 reps
- Spacing 7' x 4'
- Dry-farmed
- No-till

Project Objectives

1. Determine phenology, vine growth, and fruit productivity
2. Determine rootstock impact on fruit composition

*Under dry-farmed conditions
3 seasons: 2020-2022*

Vine Growth Measures

Fruitfulness

Shoot growth

Leaf area, LAI

Yield, cluster morphology

Pruning weight

Fruit Composition

TSS, pH, TA

YAN

Total anthocyanin

Total phenolics

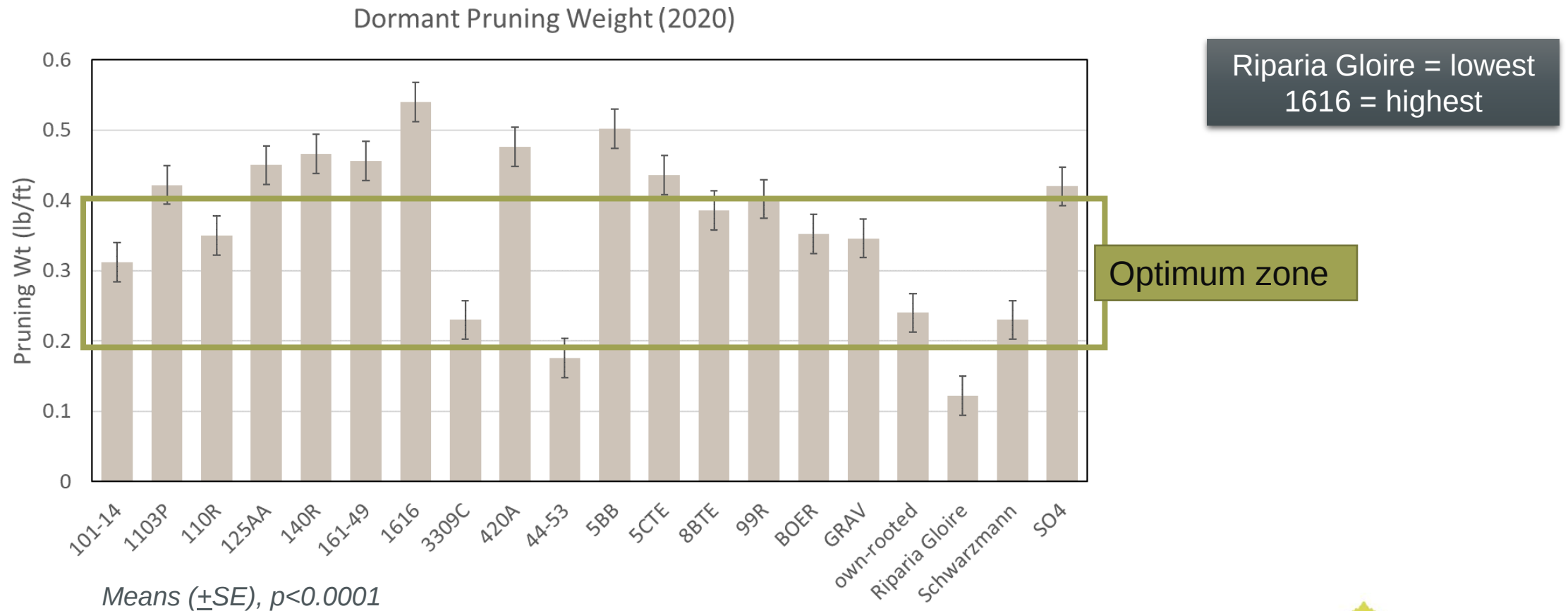
Total tannins

Results – Vine growth & productivity

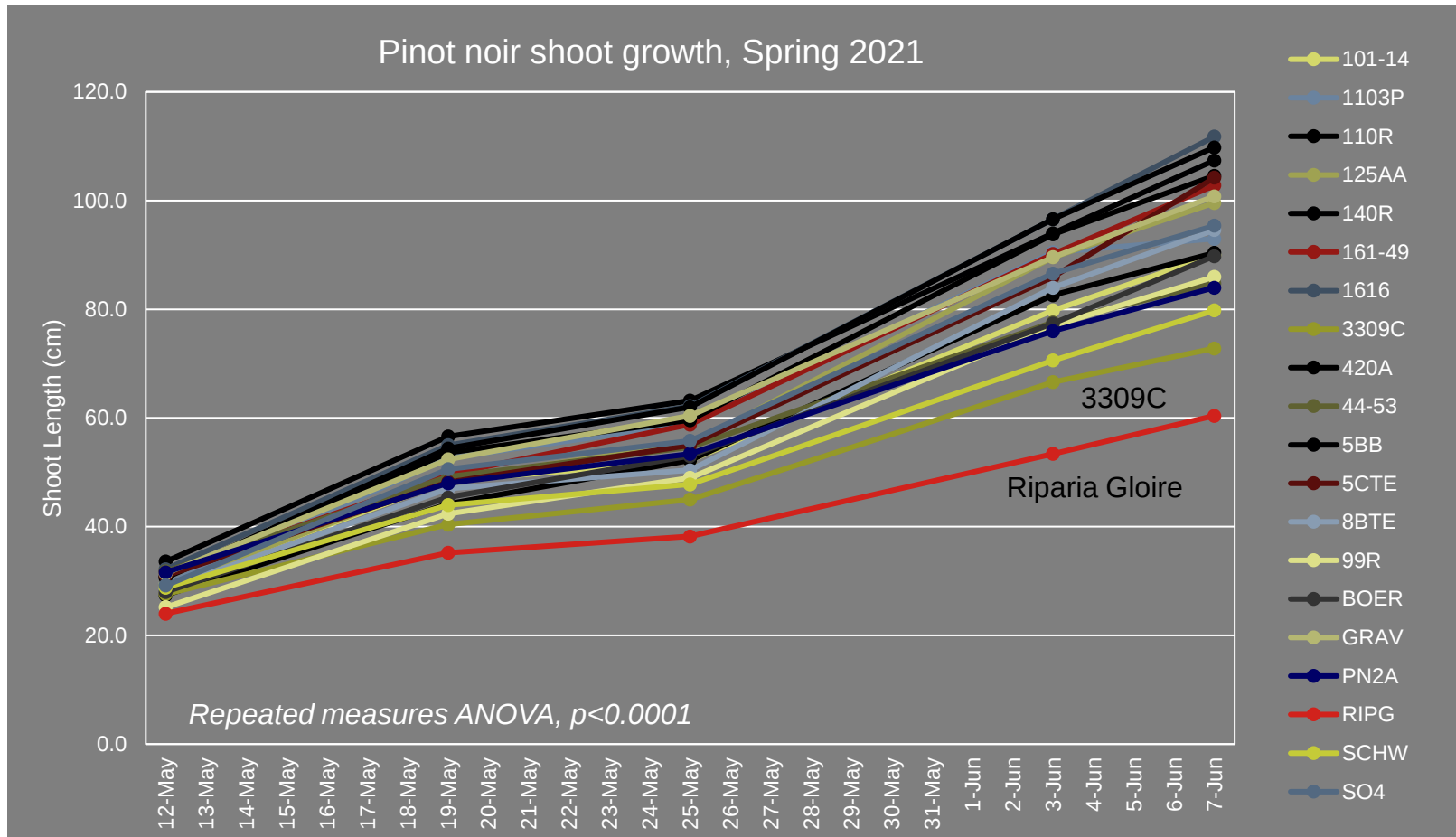
- Phenology
 - no differences at bud break or bloom
- Shoot length
 - **Lowest:** Riparia Gloire and 3309C
 - **Highest:** 1616, 5BB, 5CTE, 140R, 125AA
- Leaf area
 - Visible differences by early summer
- Fruitfulness
 - Greatest in SO4 (1.7/shoot)
 - Lowest in Riparia Gloire and own-rooted (1.4/shoot)



Results – Dormant Pruning Weight



Results - Spring Shoot Growth



Least shoot growth:

- Riparia Gloire
- 3309C

Most shoot growth:

- 1616
- 5BB
- 420A
- 140R
- 5CTE



Visible Canopy Differences – July

1616C

Riparia Gloire



420A



Riparia Gloire

**Harvest
Sept 2021**



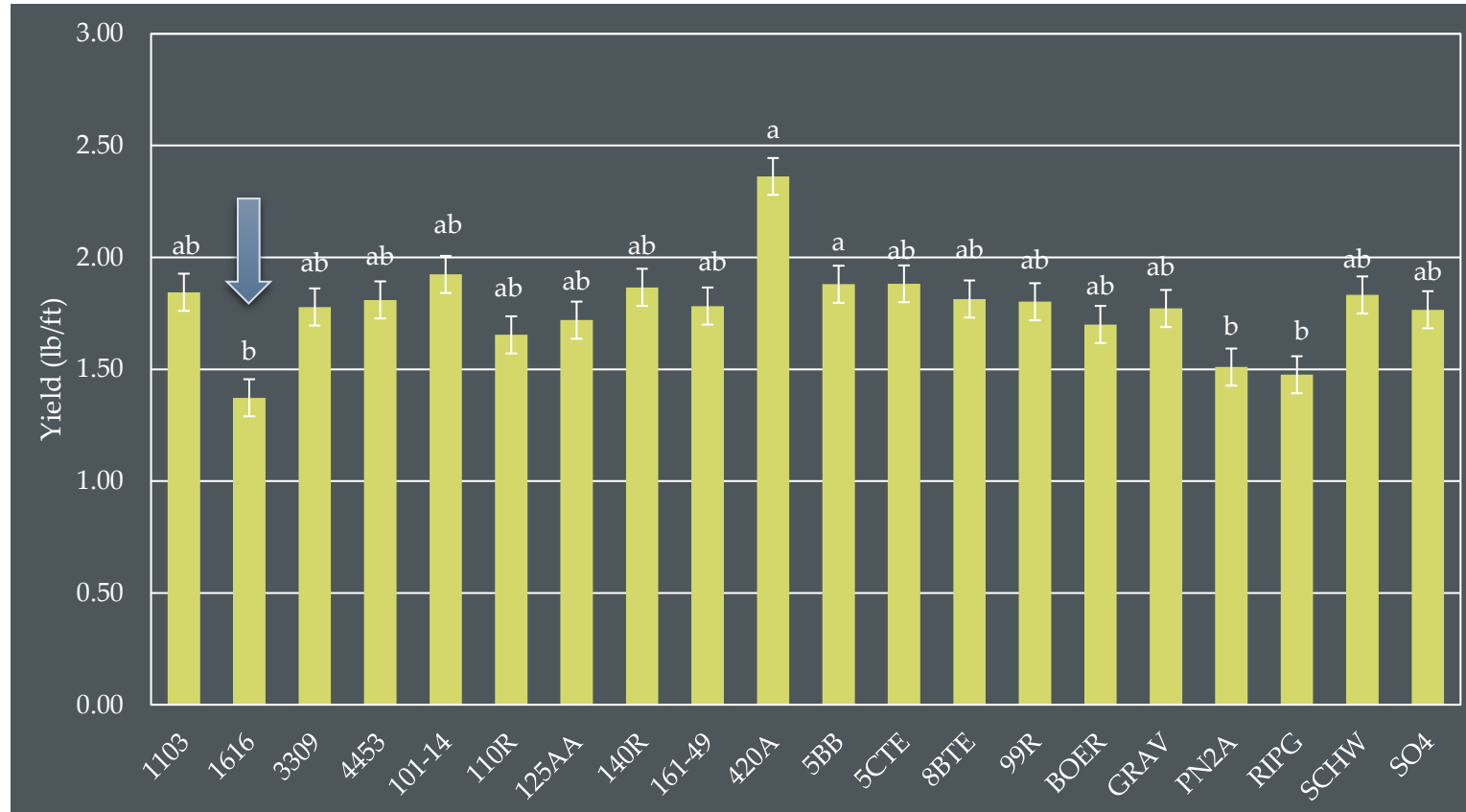
1616

Harvest
Sept 2021



Riparia Gloire

Results – Yields 2021

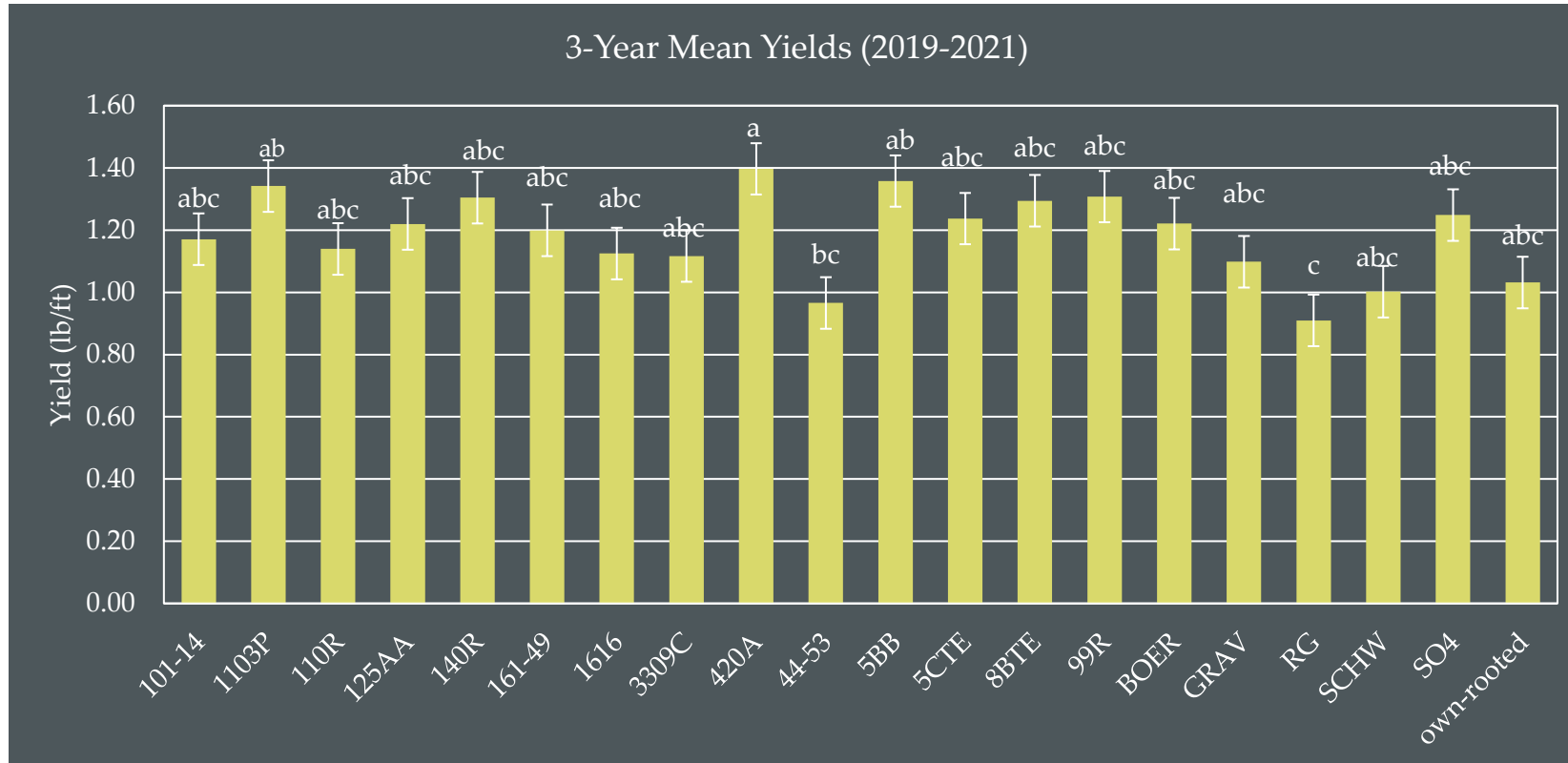


Lowest – 1616, Riparia Gloire, own-rooted

Yield differences due to cluster weight



Results – 3 Year Average Yield



Lowest – Riparia Gloire, 44-53
Yield potential range: 0.9 – 1.4 lb/ft



Results – *Fruit Composition*

- Minimal differences in primary ripeness
 - 1.6°Brix difference at most
 - Schwarzmann = highest TSS, pH, lowest TA
 - Riparia Gloire = lowest TA
- Berry Phenolics
 - No differences by rootstock for any total concentrations (or content)
 - anthocyanin, phenolics, or tannins
- Rootstock affect on yeast assimilable nitrogen (YAN)

Harvest Average	
TSS (°Brix)	23.6
pH	3.16
TA (g/L)	8.6



Summary

- Greatest impact on vine growth and yield
- Limited impact on fruit ripeness and phenolics
- Mature vines are balancing growth and yield
- Continued analyses from 2021...
 - Vine drought response
 - Stomatal conductance
 - Stem water potential
 - Soil moisture



Thank you!

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Skinkis Lab

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