

OREGON WINE



PORTLAND

SYMPOSIUM

OWB Funded Research Update: Soil Moisture & Rootstocks

Patty Skinkis, PhD, Professor & Viticulture Extension Specialist

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Soil Moisture Project (2020-2022)

PIs: Patty Skinkis and Paul Schreiner

Collaborators: Andy Gallagher and Chad Vargas

Objectives

1. Characterize soil moisture of 3 soil types
2. Monitor vine growth, water status, and berry development

Soil Series	Parent Material
Dupee	Sedimentary
Saum	Volcanic
Woodburn-Willamette	Glacial deposits



Location	Depth
Under-vine	18", 36"
Alleyway	18", 36"

What We Measured



- Shoot growth
- Leaf area
- Yield
- Pruning weight
- Vine nutrient status



- Leaf water potential
- Leaf gas exchange



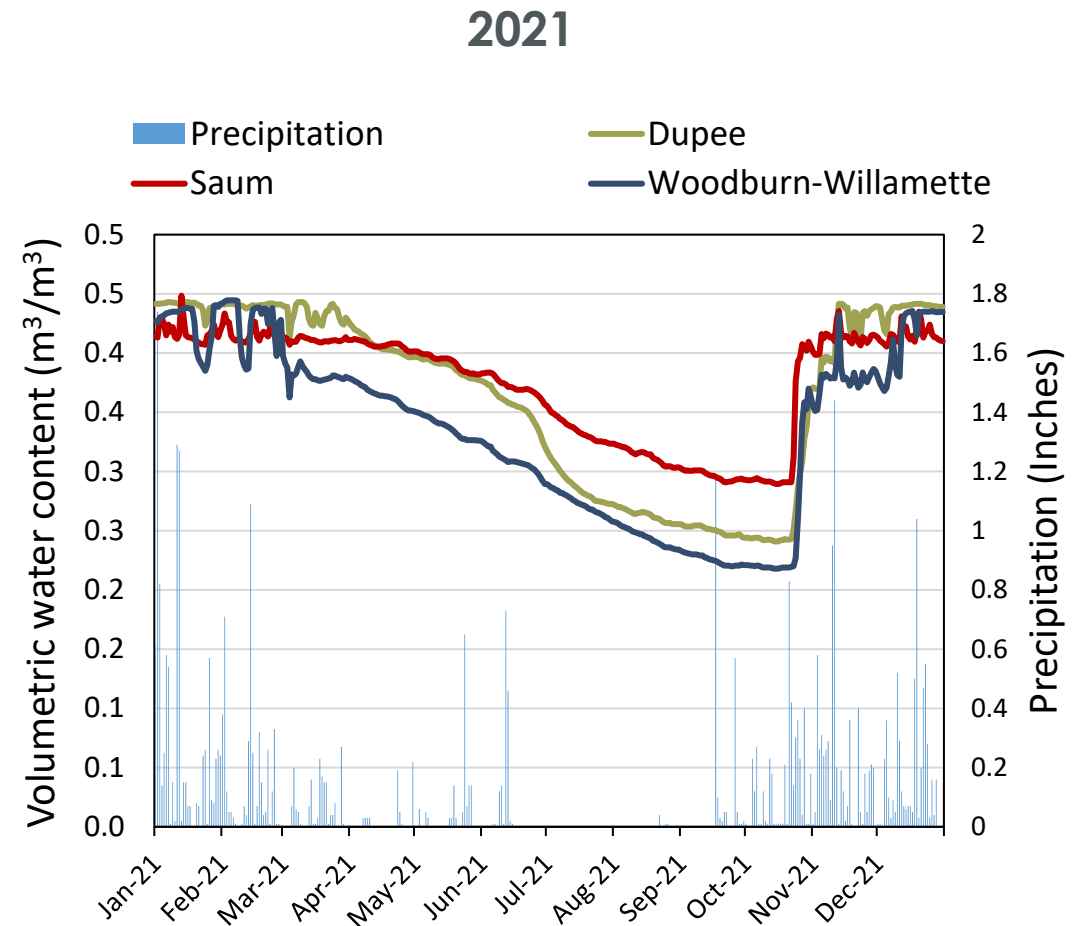
- Berry development curve
- Fruit composition

Results

- Field capacity reached by November
 - Maintained through budbreak and spring
- Start of moisture decline varied by year

2020	2021	2022
Mid-June	April	Mid-June

- Vines responded to differences
 - Largest vines in deepest soil
 - Smallest vines in restricted layer soil
 - Ripeness impacted





Dupee



0.31

Saum



0.23

Woodburn-Willamette

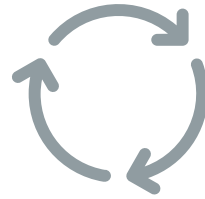


0.54

Pruning weight (lb/ft)

Summary of Results

- Soil moisture sufficient at depth for growth and ripening, even in dry year
- Soil impacts vine growth
 - N availability/cycling
 - Soil depth/root depth
- Soil impacts vine water status
 - Water holding capacity
 - Vine root depth
 - Vine size



Mature Pinot Noir Rootstock Project (2020-2022)



Photo by Jeremy Schuster, OSU

Pinot noir (FPS 2A) on
19 Rootstocks +Own-rooted vines

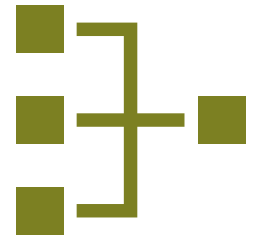
Vineyard details:

- Randomized complete block design
- 5 reps, 100 plots total
- Spacing: 7' x 4'
- Dry-farmed, no till
- South Willamette Valley
- Planted 1997



Rootstock	Species crosses
101-14	<i>V. riparia</i> x <i>V. rupestris</i>
3309 C	<i>V. riparia</i> (tomentose) x <i>V. rupestris</i> cv. Martin
Schwarzman n	<i>V. riparia</i> cv. Michaux x <i>V. rupestris</i> cv. Scheele
Riparia Gloire	<i>V. riparia</i> cv. Michaux
5BB	
5C	
8B	
125AA	<i>V. berlandieri</i> x <i>V. riparia</i>
420A	
SO4	
161-49	<i>V. riparia</i> x <i>V. berlandieri</i>
44-53	<i>V. riparia</i> x Grand glabre x 144 Malègue (<i>V. cordifolia</i> x <i>V. rupestris</i>)
99R	<i>V. berlandieri</i> cv. Las Sorres x <i>V. rupestris</i> cv. Lot
110R	<i>V. berlandieri</i> cv. Ressayguier n°2 x <i>V. rupestris</i> cv. Martin
140Ru	
1103P	<i>V. berlandieri</i> cv. Ressayguier n°2 x <i>V. rupestris</i> cv. Lot
1616C	<i>V. longii</i> x <i>V. riparia</i>
Borner	<i>V. riparia</i> cv. 183 GM x <i>V. cinerea</i> cv. Arnold
Gravesac	161-49 Couderc x 3309 Couderc

Rootstock Parentage



Objectives & Methods

- Determine differences in
 - Phenology, growth and yield
 - Fruit ripeness and composition
 - Drought response

Vine Growth Measures

Fruitfulness

Shoot growth

Leaf area

Yield

Pruning weight

Fruit Composition

TSS, pH, TA

YAN

Total anthocyanin

Total phenolics

Total tannins



Photo by Jeremy Schuster, OSU

Results: Vine Growth

Dormant Pruning Weights, 4-Year Average (2019-2022)

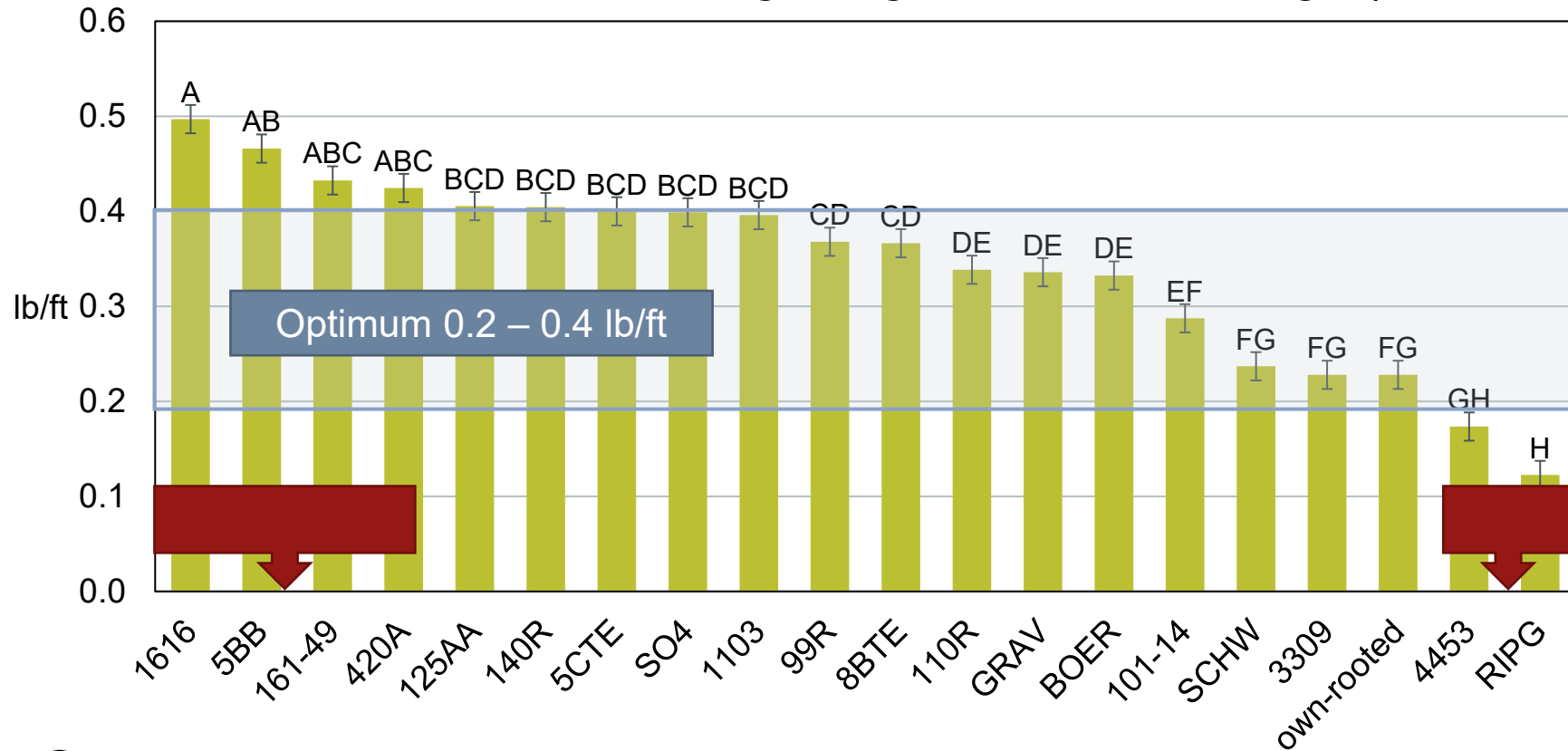
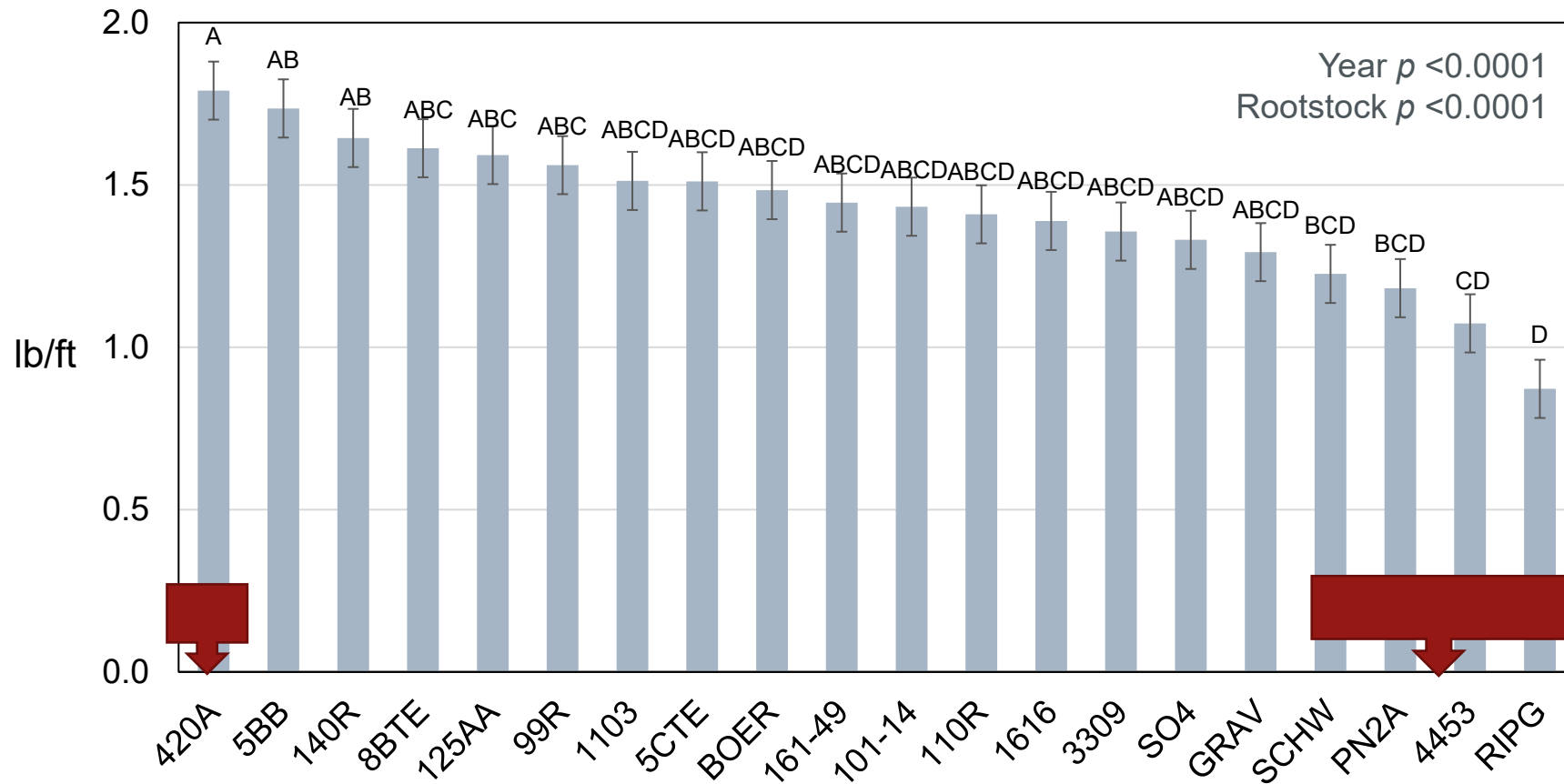


Photo by Mathew Lange, OSU

Results: Yield – 4 Year Average



Results: Water Stress



Rootstocks Evaluated

1616

1103 P

140 R

SO4

Own-rooted

110 R

3309

101-14

Riparia Gloire

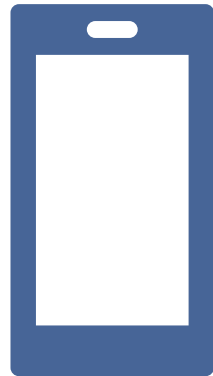
Most
drought
tolerant

Least
drought
tolerant



Project Summary

- Greatest impact on vine growth and yield
- More drought tolerant = more growth
- Impact on ripeness with high crop + late season

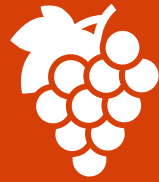


Scan for video!





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2023 GRAPE DAY

April 4, 2023 | 9 AM to 3 PM
Corvallis, Oregon

Registration now open!