

OREGON WINE



PORTLAND

SYMPOSIUM

# Impacts and Learning from the 2022 Frost Event

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Oregon State University  
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# Review of Early Spring 2022

- Warm March
  - 2022 = 42 GDD<sub>50</sub>, Mean = 28 GDD<sub>50</sub>
- Earlier bud break – first half of April
- Freeze event April 14-15, widespread statewide
- Phenology: bud swell to first leaves unfolded
- Highly variable impacts
  - Between and within vineyards of same area



March 31, 2022 (Pinot noir)

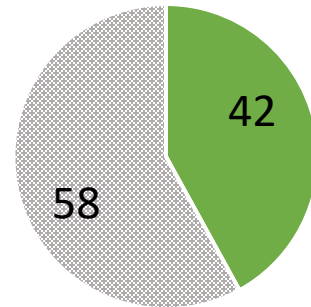


# Freeze Impact – Early Assessments



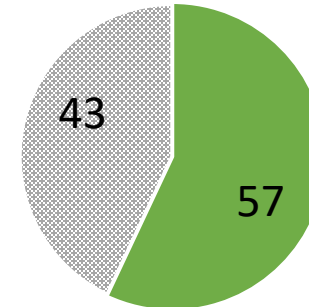
## Primary Bud Fate

AS01 Primary Buds



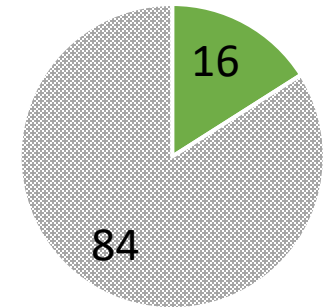
■ % Producing ■ % Dead

AS02 Primary Buds



■ % Producing ■ % Dead

AS03 Primary Buds



■ % Producing ■ % Dead

Advanced wooly bud stage

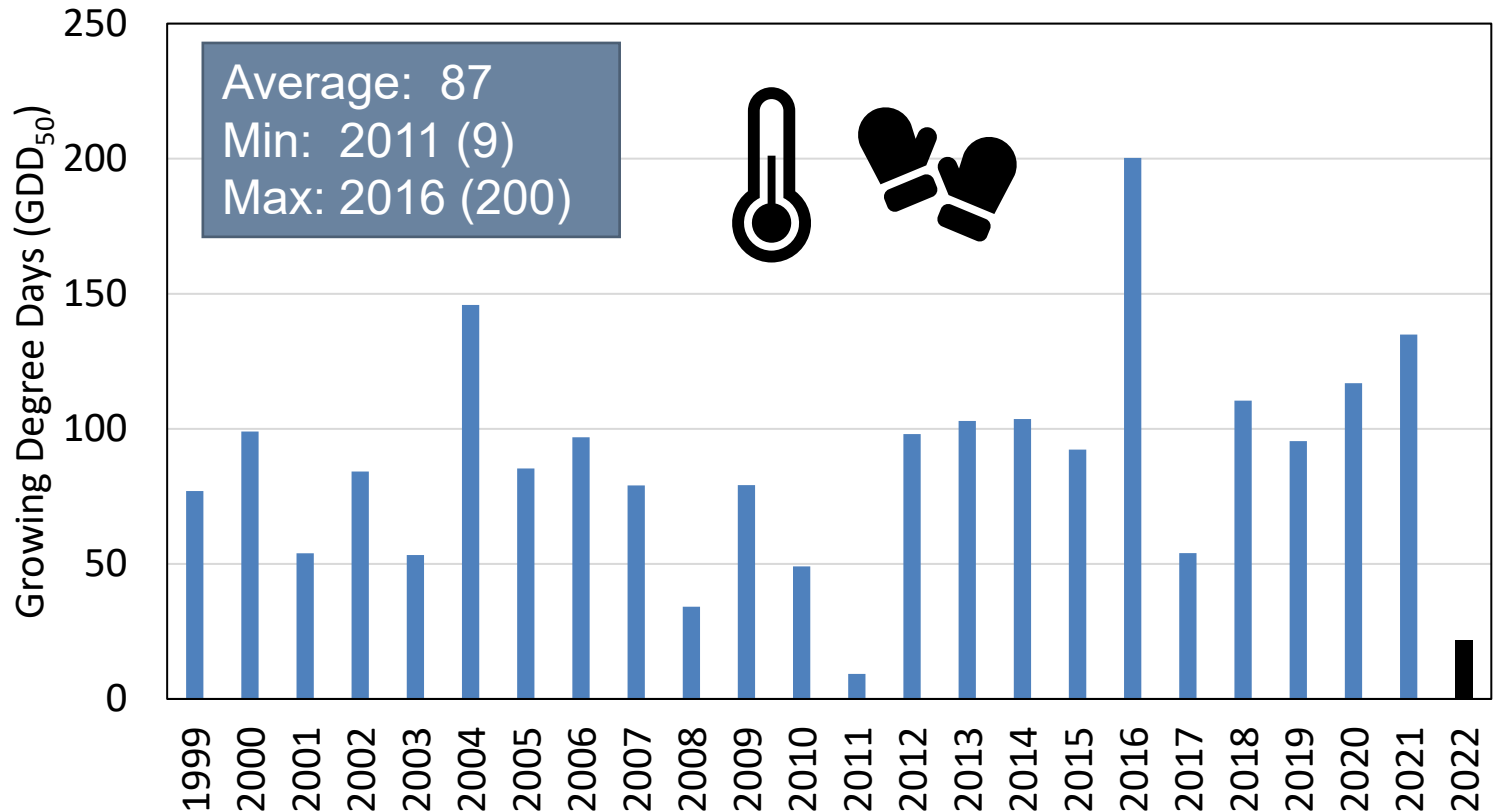
50% bud break

# Heat Units Lagged in April

Location	April
Aurora	22
Corvallis	16
Forest Grove	16
Woodhall	18
Hermiston	31
Hood River	8
Medford	20
Roseburg	33

Data source: [Agrimet, usbr.gov/pn/agrimet](https://www.usbr.gov/pn/agrimet/)

April Heat Units since 1999 - Aurora, OR



# Multiple Bud Break Dates

Pinot noir in Newberg, OR

**April 19**

*Initial freeze damage*



Bud break #1

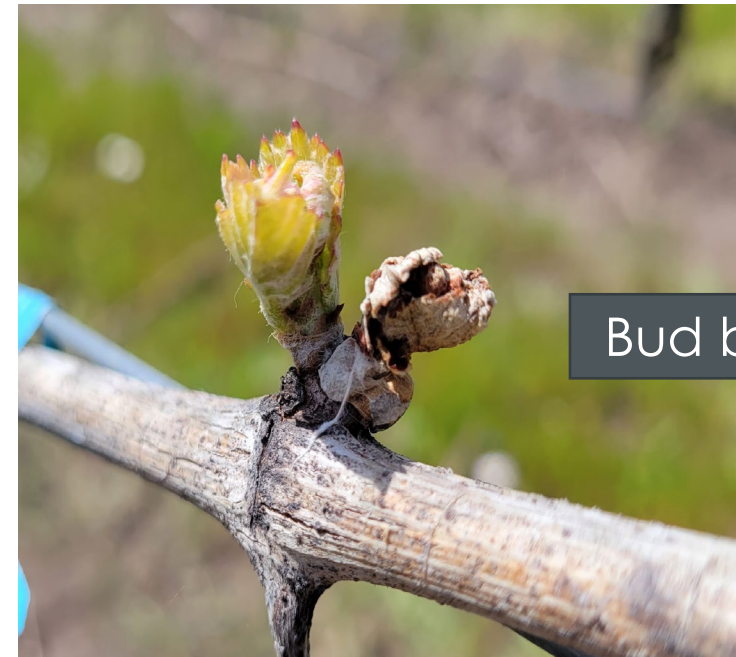
**April 26**

*No heat gain...*



**May 17**

*Growth resumed*



Bud break #2



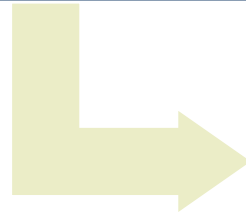




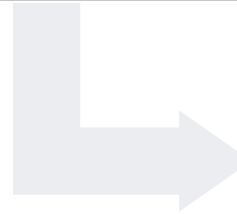
# Concerns in April and May



Major crop loss!



How manage vineyards?



Reduce management inputs



# What Actually Happened...

The vines grew...a lot!

# Shoot Growth in Late May

Normal growth from primary or secondary shoots



Stunted primaries, likely partially damaged from freeze



# Shoot Growth in Late May



- Most severely affected block at OSU Woodhall Vineyard
- Mostly secondary shoot growth, lacking fruit

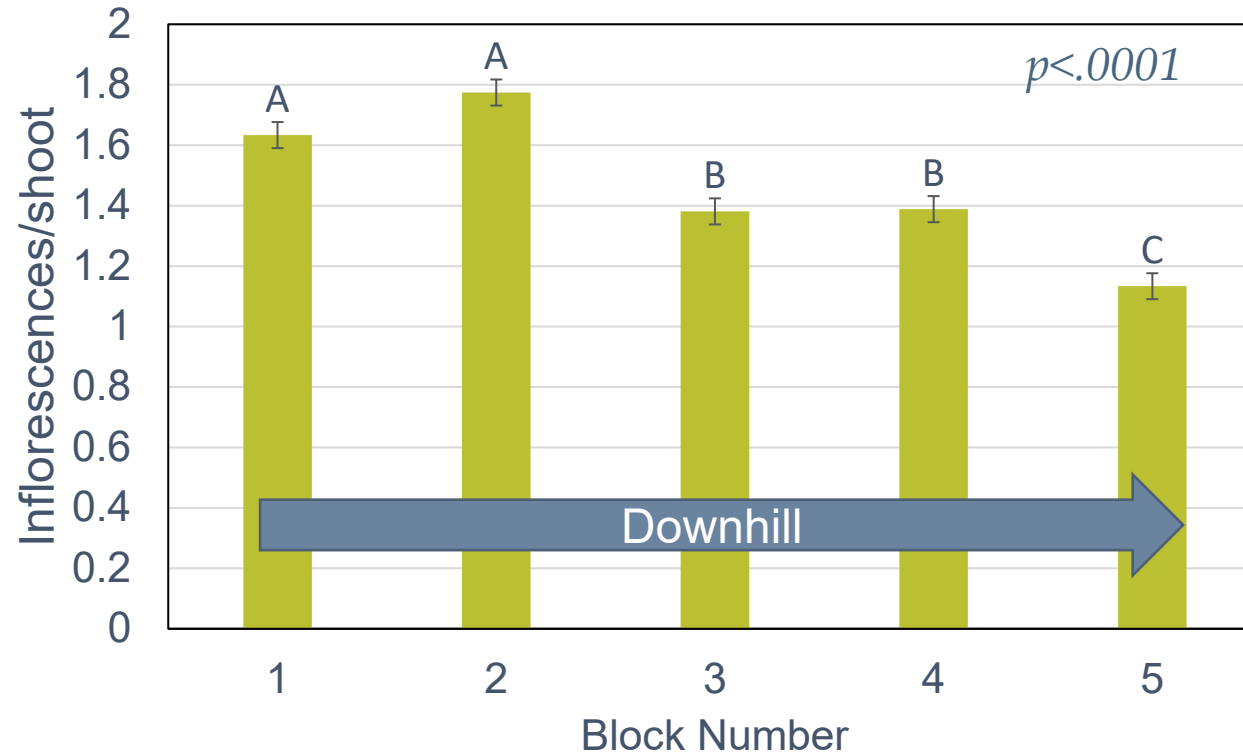
# Shoot Growth, Fruitfulness, and Bloom - JUNE



# Fruitfulness Impacts – *Hillside Effect*



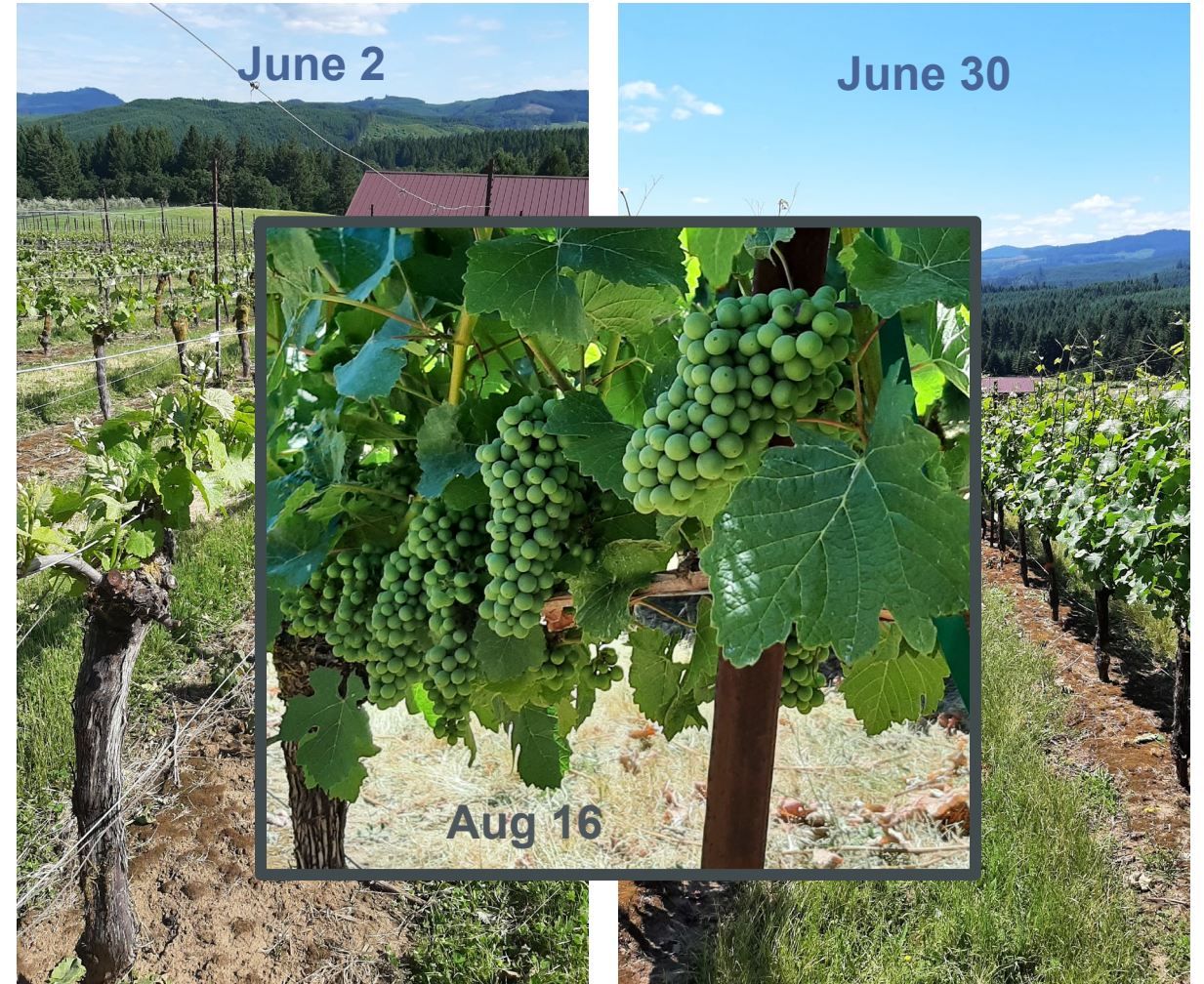
2022 Fruitfulness by Block (Rootstock Trial)



Block	Inflorescences /shoot
1	1.6
2	1.8
3	1.4
4	1.4
5	1.1

# Pre-Bloom to Lag

- Shoots grew rapidly
- Canopies filled in
- High canopy vigor
  - Wet spring and high soil moisture
- Bloom began late June, early July
  - Ideal weather conditions
  - Good set
- Plenty of fruit, large clusters



# Challenge: Maintaining Canopies



- Got behind on
  - Shoot thinning
  - Shoot positioning
  - Weed control



- Powdery mildew issues
  - Dense canopies
  - Poor spray coverage
  - High pressure
  - Late July heat spike

# Lesson Learned: Maintain Canopies on Time!



- Grapevines will grow
- In frost year, shoot thin anyway
- Do not delay!
- Maintain typical shoot density
  - ~3-5 shoots/foot
- Weigh the costs
  - Crop loss
  - Disease culling

# Challenge: Managing Heavy Crop in Late Year



## What caused it?

- ↓ shoot thinning = ↑ shoots/vine
- Greater fruitfulness than expected
- Late bloom = good weather = ↑ fruit set
- Climate and Physiological impacts from 2020 and 2021

# What Yielded? Primary, Secondary or Adventitious Shoots





Head of trunk



Base of trunk

## Adventitious buds with inflorescences

# Frost Impacted Chardonnay



# Frost Impacted Chardonnay



# Challenge: Managing Heavy Crop in Late Year



## How to deal with it?

- Estimate early
- Trust grapevine phenology
- Berries reach lag phase ~50 days post bloom
- Use increase factor model available for Pinot noir



Scan this



# Lesson Learned: Estimate Early

- Follow crop estimation protocols
- Estimation can begin ~30 days post bloom
- Recognize that cluster size varies by season
- Focus on obtaining good data
  - Enough counts
  - Measure whole cluster weights
  - Sample across variable areas
- Frost years will require more attention to variation



# Lesson Learned: Thin Crop to Balance

- Estimate yield → know what is there!
- Adjust based on vine size
  - Refer to vine growth/vigor
    - Visual observation
    - Dormant pruning weights from winter
    - Long-term performance
- Consider impacts of
  - Virus, voles, powdery mildew, botrytis
  - Competition from weeds/vegetation
- Thin before canopy collapse



# Lesson Learned: Thin Crop to Balance

Is there a target yield threshold?

Pinot noir, assuming ripeness at ~23 Brix...

Season	Threshold
Cool, late year	1.0 to 1.2 lb/ft
Warm season	1.8 lb/ft

Evaluate yield on a linear basis

Adjust based on vineyard capacity, vine health



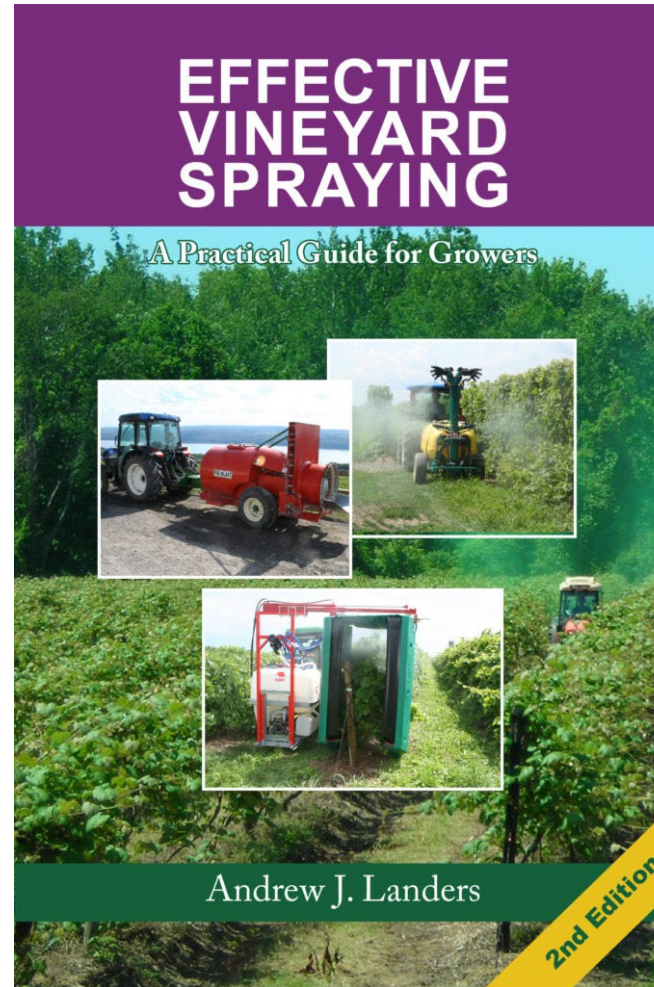
# Major Take-Aways

- Learn from 2022
- Direct impacts are unknown for 2023
- Monitor early and stay on top of management
  - Shoot growth, shoot thinning
  - Inflorescence counts pre-bloom
- Evaluate 2022 spray program
- Adjust spray program for 2023
- Calibrate your sprayer!

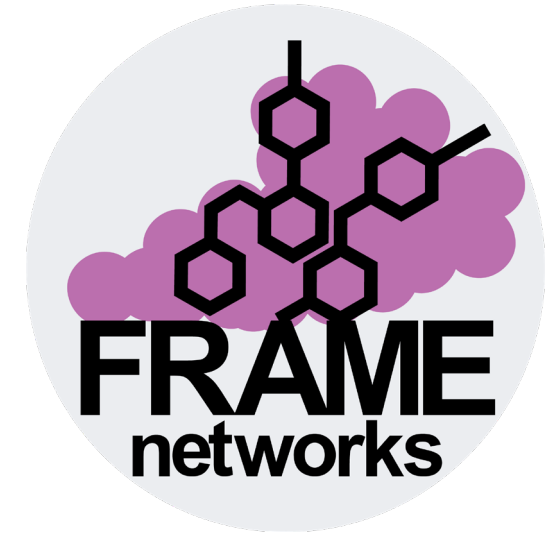


# Improving your Spray Program

- Starts with your sprayer!
- Improve your spray efficacy
- Understand fungicide resistance
- Use Extension resources



<https://effectivespraying.com/>



<https://framenetworks.wsu.edu/>

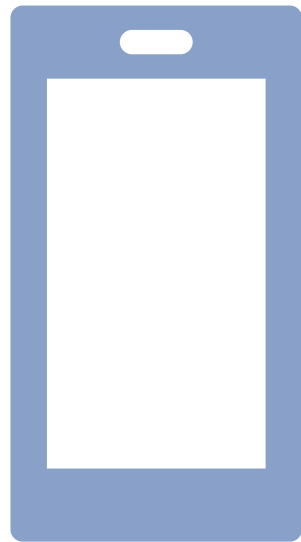
# Think Happy Thoughts for 2023!

But be prepared!



# Questions?

I need your input on this presentation



Scan the QR code

