



# Grapevine Red Blotch Disease: an Update on Diagnosis and Management

Achala N. KC –Assistant Professor, Plant Pathology  
OSU-Southern Oregon Research and Extension Center  
OWRI Grape Day  
04/04/2023



**Oregon State**  
University

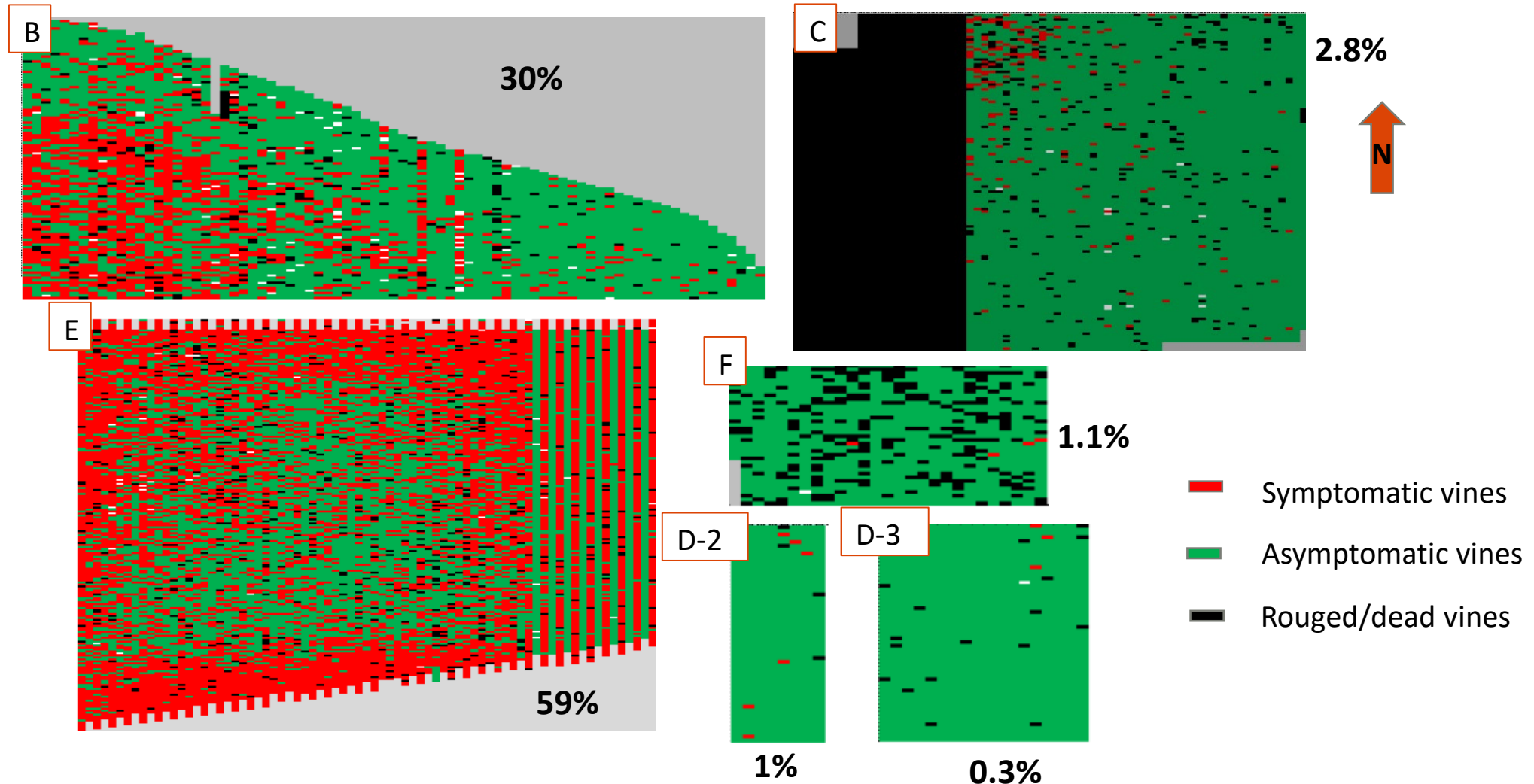
# Projects

- Understand the grapevine red blotch disease (GRBD) prevalence and spread in southern Oregon vineyards and effect of roguing practices on minimizing spread
- Comparative diagnosis of grapevine red blotch virus

# GRBD survey in southern Oregon

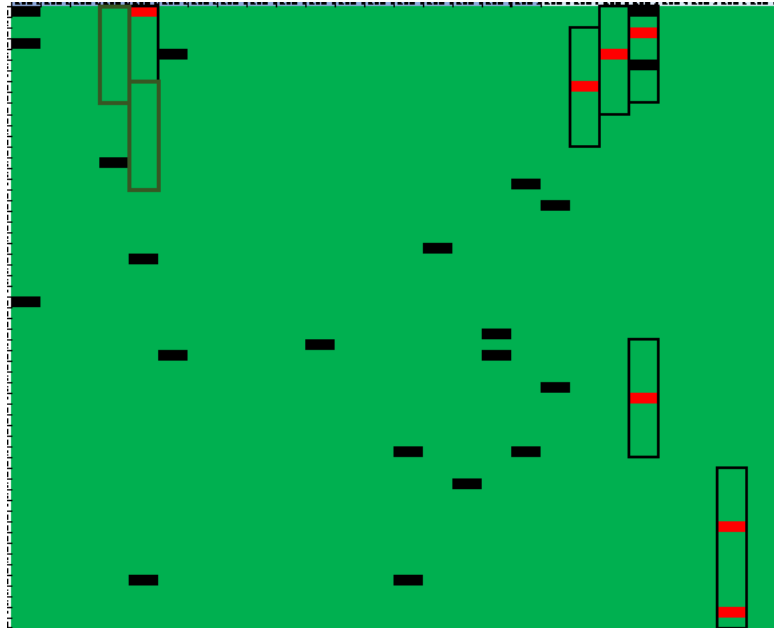
Sites	City	Planted Year	Survey year	Number of vines surveyed	GRBD Management
A	Jacksonville	2009	<del>2016, 2017, and 2018</del>	9,450	No roguing
B	Eagle Point	2013	2017, 2018, and 2020	5,090	No roguing
C	Talent	2015	2017, 2018, and 2020	8,290	Monitoring and Roguing
D-1	Medford	2009	<del>2017, and 2018</del>	3,887	No roguing
D-2	Medford	2017	2020	600	Monitoring and roguing
D-3	Medford	2017	2020	1,026	Monitoring and roguing
E	Medford	2010	2020	12,222	No roguing
F	Central Point	2017	2020	361	No roguing

# Symptoms distribution in vineyards in 2020

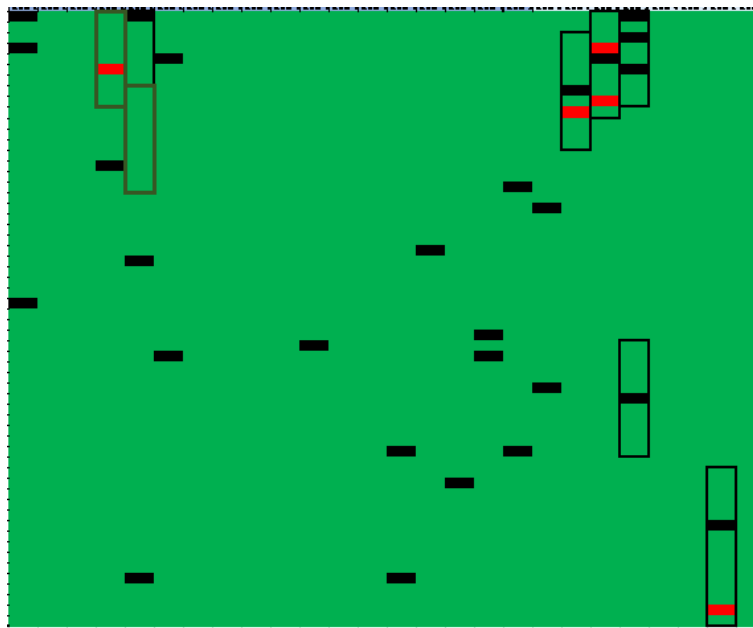


# Infection status changes over time - Example 1:

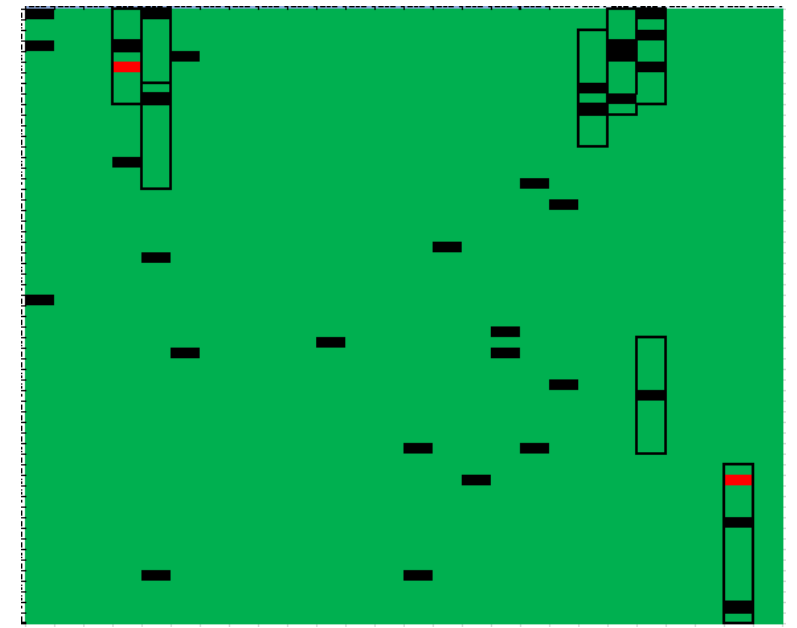
2020: 7/80 infected vines (9%)



2021: 5/72 infected vines (7%)



2022: 2/67 infected vines (0.03%)



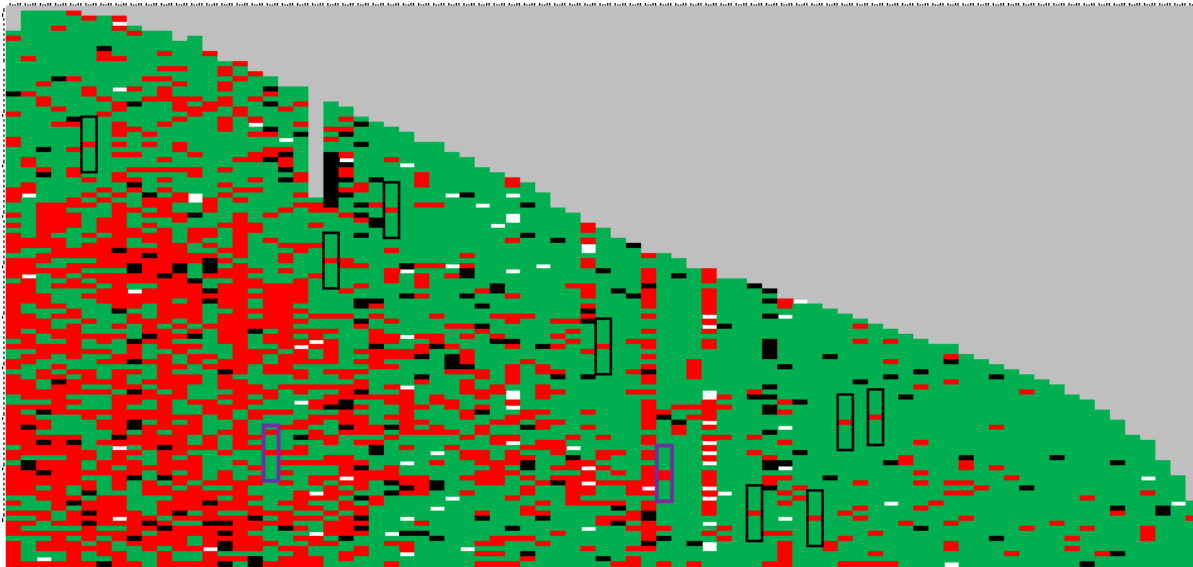
2020: 1.3% symptomatic vines

2021: 1.2% symptomatic vines

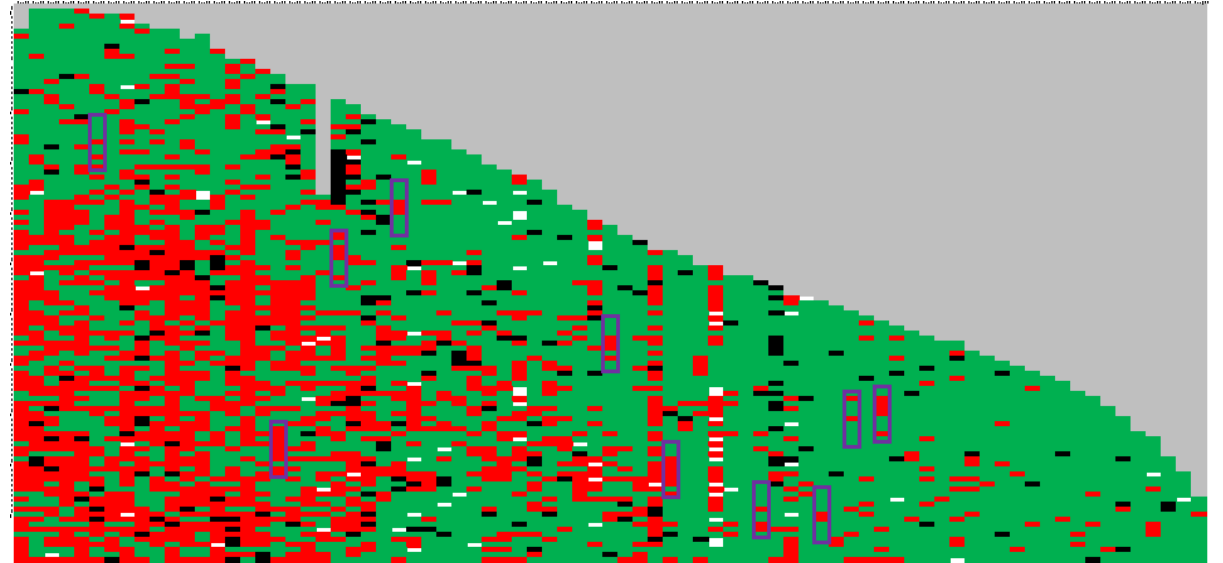
2022: 0.7% symptomatic vines

# Infection status changes over time - Example 2:

2020: 12/110 vines infected (11%)



2021: 41/110 vines infected (37%)



Disease incidence increased from 0.5% in 2017 to 30% 2020

# Summary

- Grapevine red blotch disease is prevalent in southern Oregon vineyards with disease progressing by more than 30—fold in areas where no active vine roguing has been applied
  - In areas where vines are aggressively rouged the disease progression has been limited to less than 10%
  - Roguing of adjacent asymptomatic vines are not necessary to limit the GRBV spread as long as the vines are regularly monitored for symptoms
  - Surrounding cultivars, vegetation, and potential vector could play significant roles in disease epidemics. This should be considered if the rate of disease spread remains high despite regular scouting and roguing efforts.

# Projects

- Comparative diagnosis of grapevine red blotch virus



# 2020 and 2021 Field Trial



**Fruit set**



**Veraison**



**Harvest**

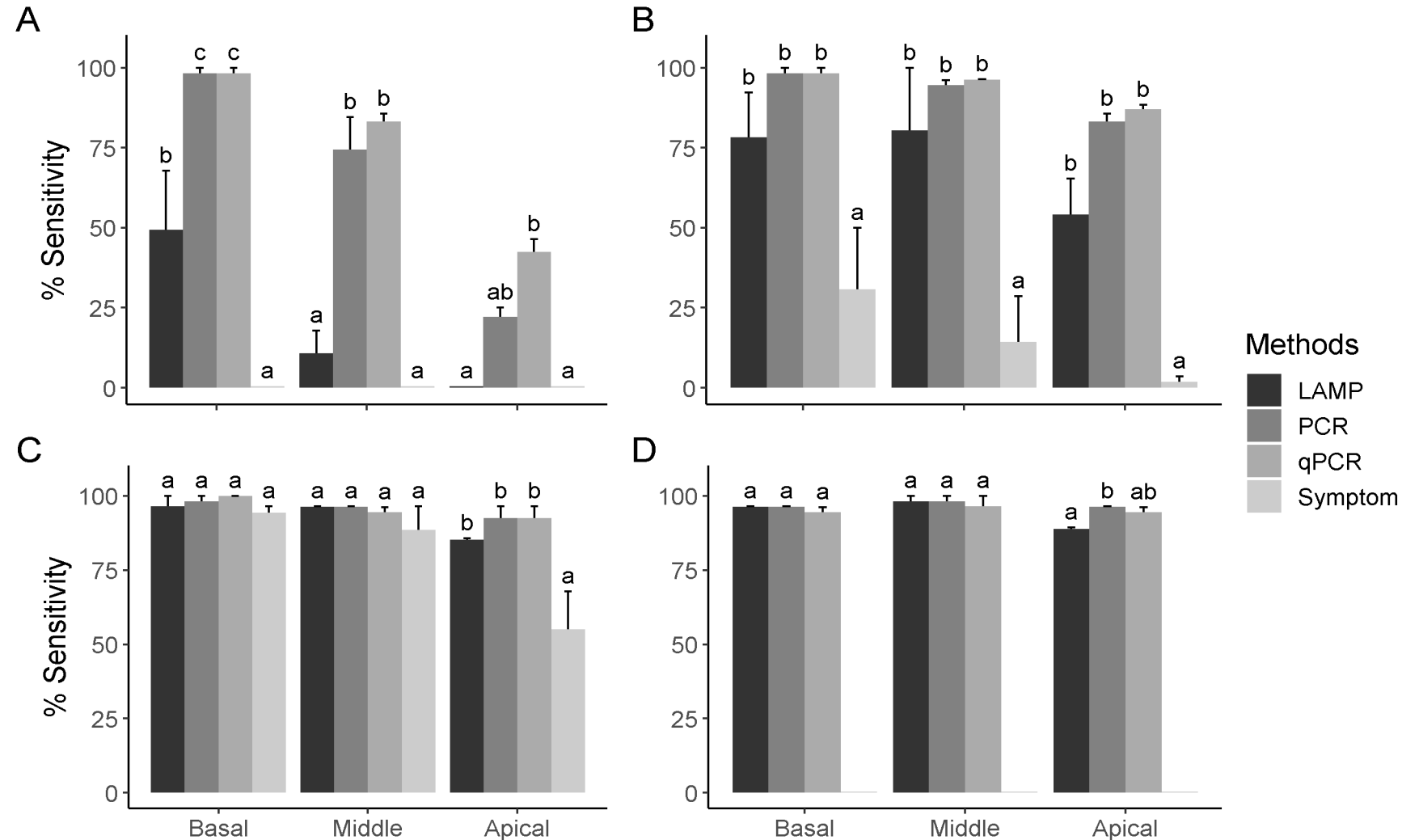


**Dormant canes**

- 20 GRBV positive and negative vines (identified from 2019 virus testing)
- Four stages
- Three canopy levels
- Four detection methods
  - Conventional PCR
  - Quantitative PCR (qPCR)
  - LAMP
  - Symptoms

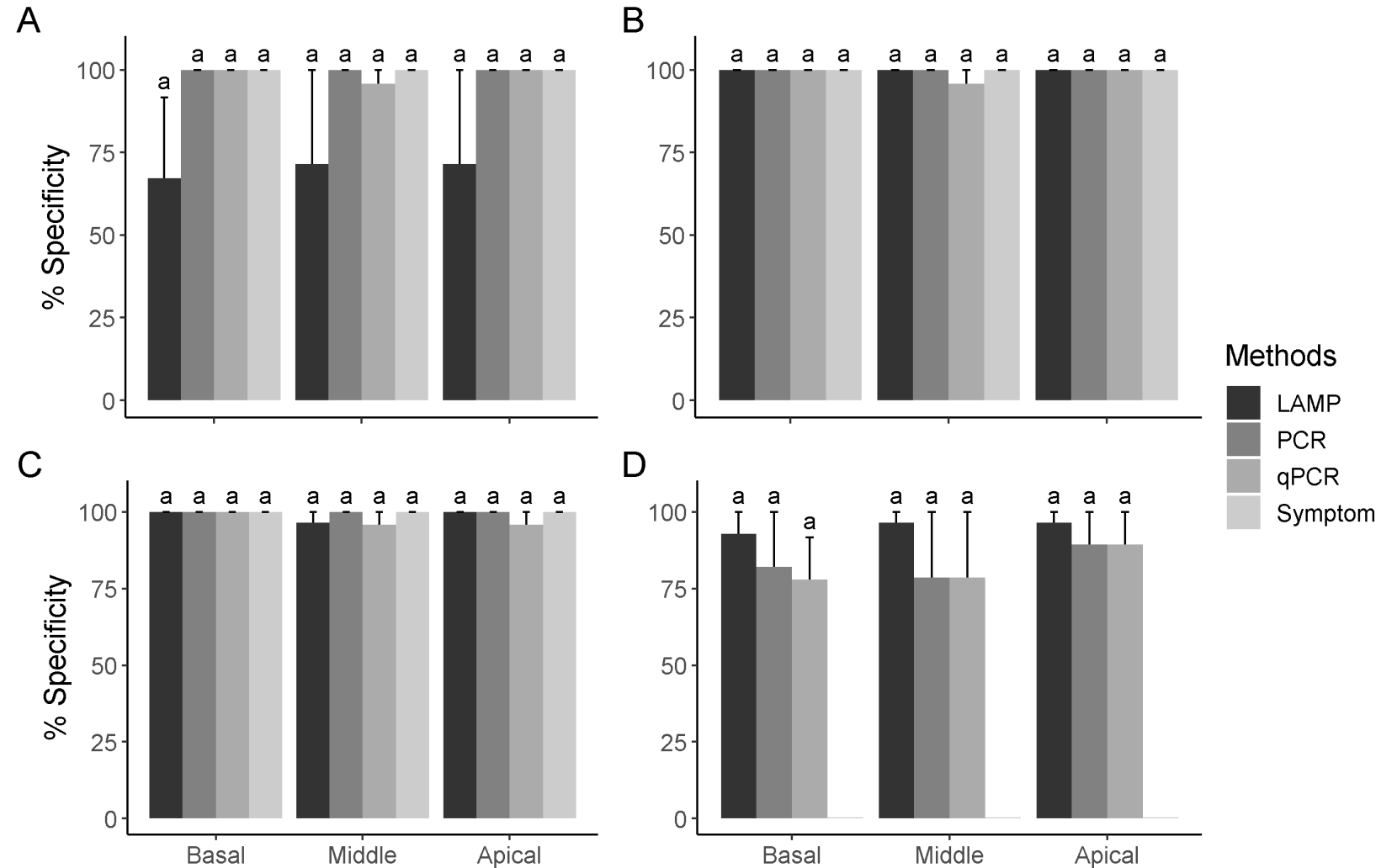
# Comparative analysis of GRBV detection (Positive vines)

A: Fruit set  
B: Veraison  
C: Harvest  
D: Dormant canes

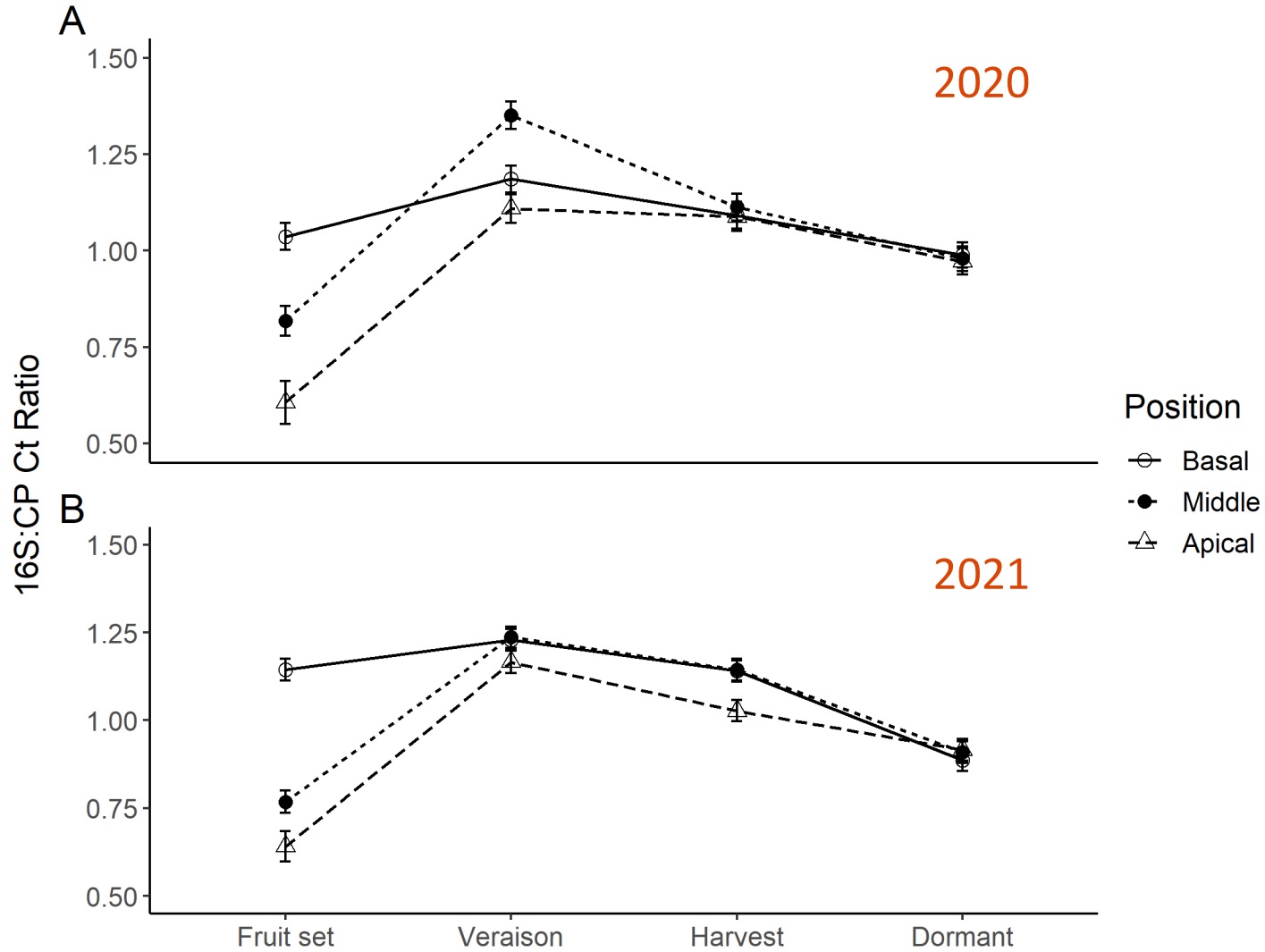


# Comparative analysis of GRBV detection (Negative vines)

A: Fruit set  
B: Veraison  
C: Harvest  
D: Dormant canes



# Relative quantity of GRBV over time



# Summary

- Detectability of GRBV by various methods depend on tissue type and vine phenology
  - If earlier detections are desired, more sensitive methods such as PCR based diagnosis should be used while using basal tissue samples
  - Symptoms based diagnosis is more reliable during harvest. At least 90% of the infected vines showed symptoms at older leaves at the base of vine canopy
  - LAMP tests are more reliable on harvest and dormant cane samples on basal and middle canopy samples

# Thank you!

## SOREC Red Blotch Team

- Dr. Alexander Levin
- Richard Hilton
- Joseph DeShields
- Cody Copp
- Ricky Clark
- Mariana Stowasser



United States Department of Agriculture  
National Institute of Food and Agriculture



**Oregon State University**  
Oregon Wine  
Research Institute



**Oregon State University**  
Southern Oregon Research  
and Extension Center



**Oregon**  
Department  
of Agriculture



**OREGON**  
WINE  
BOARD