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SYMPOSIUM

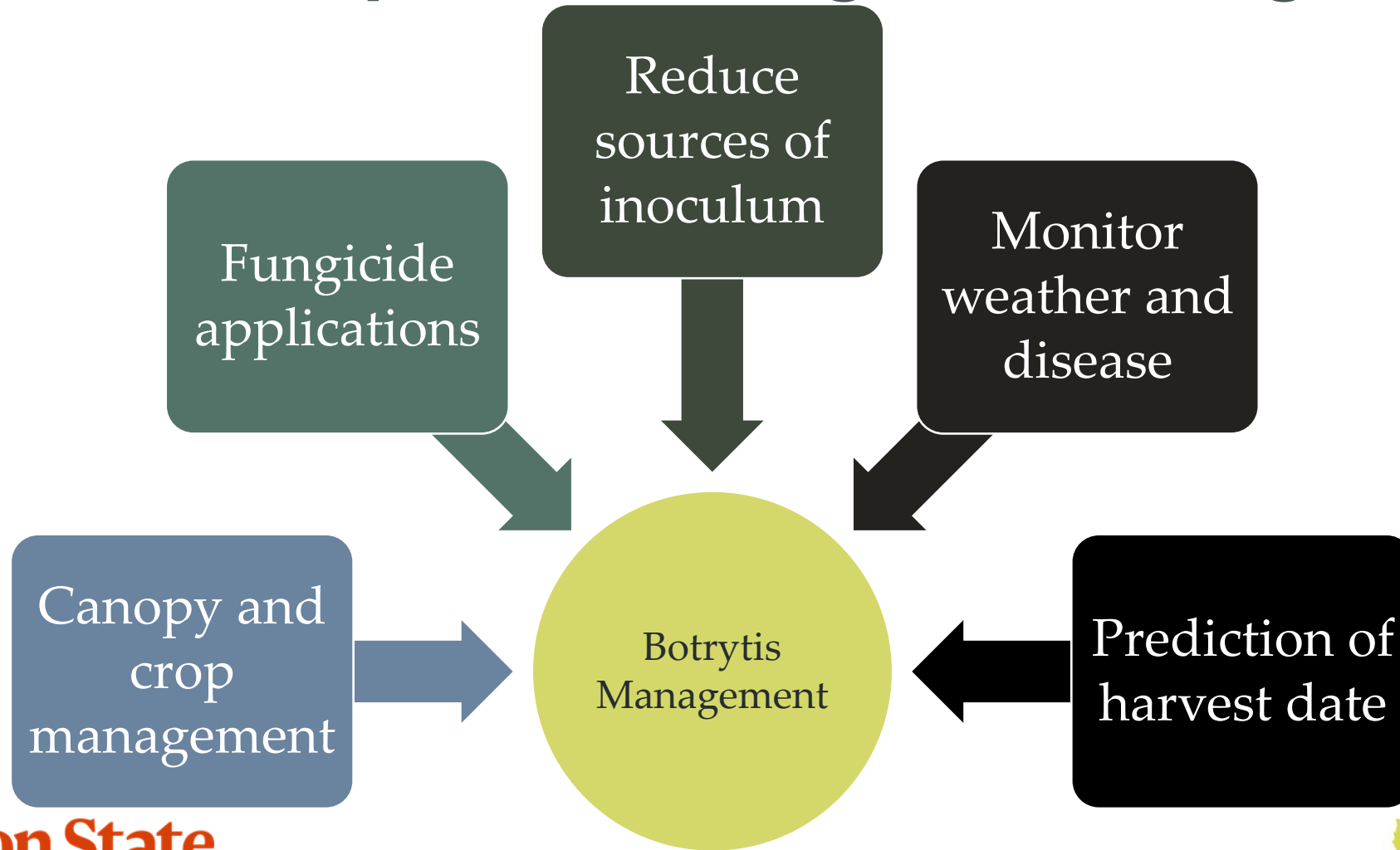
# Botrytis Bunch Rot: Who, Where, When and What to use?

Alexander Wong, Graduate Research Assistant



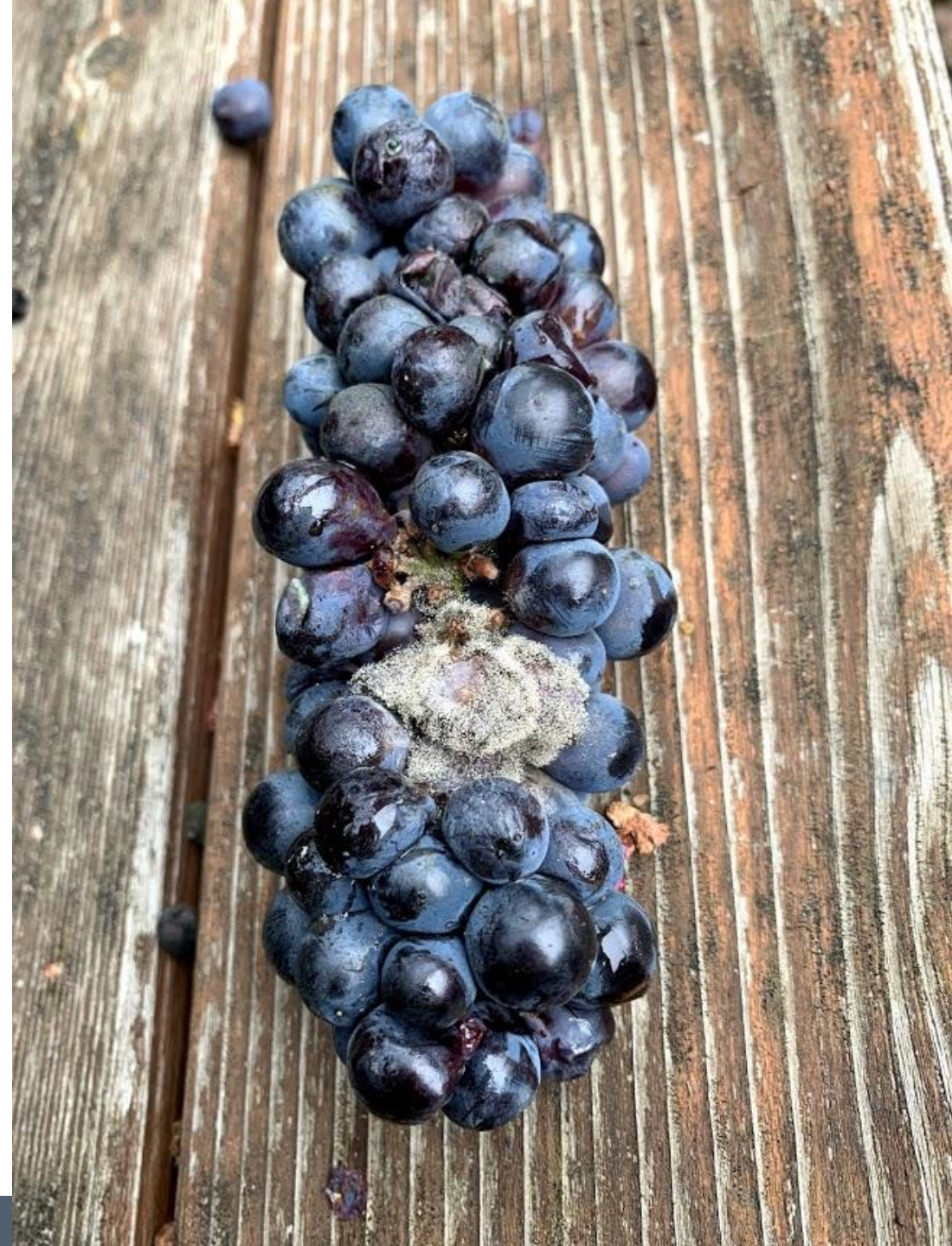
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# Minimize Botrytis risk, integrate strategies



# Botrytis Bunch Rot

- *Botrytis cinerea*
- Poor pathogen
- Excellent saprophyte
- Opportunist



# Botrytis Colonization and Infection

- Colonization of necrotic host tissue
- Wounded tissue infection

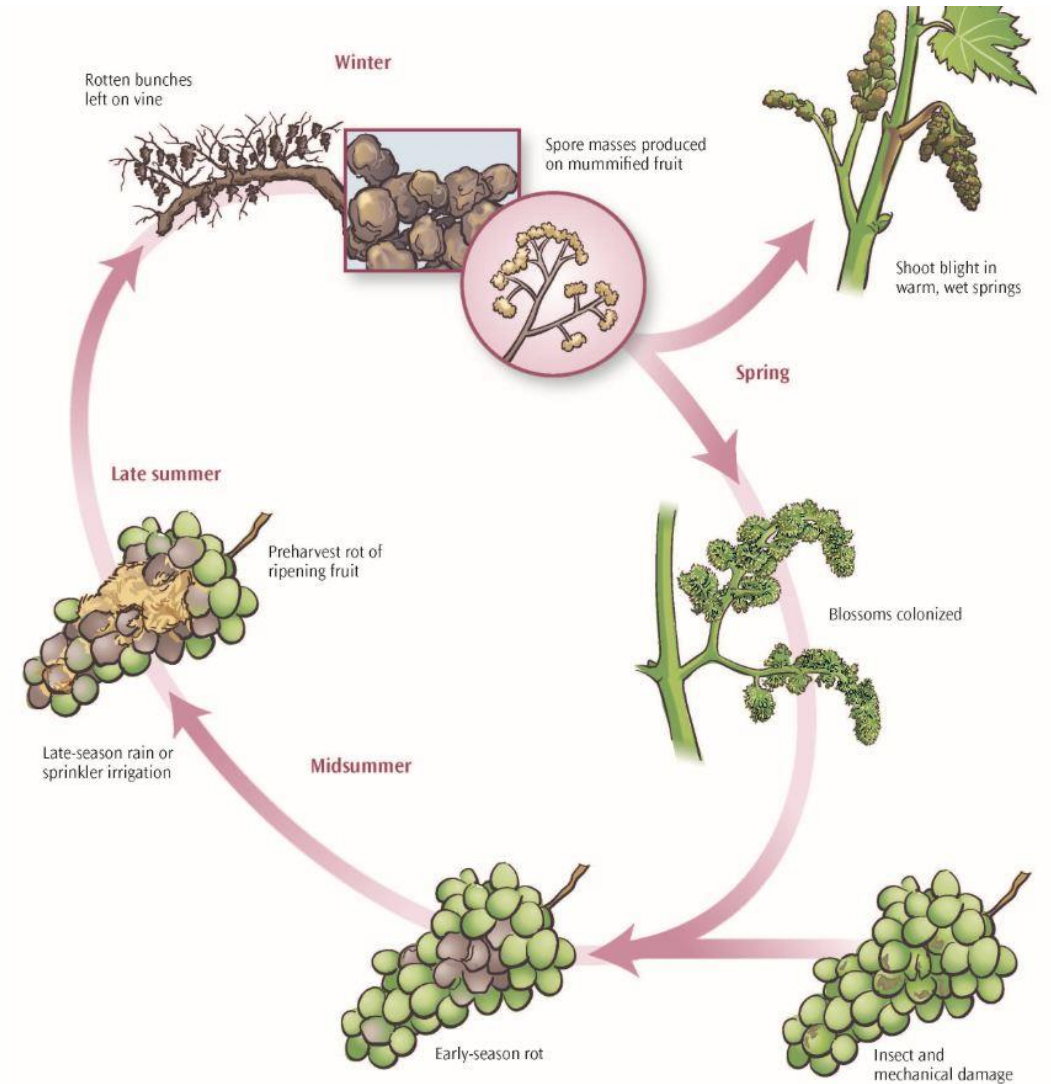


Image source: lodigrowers.com



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# Initial colonization

- Botrytis colonization of necrotic host tissues
- Saprophytic growth

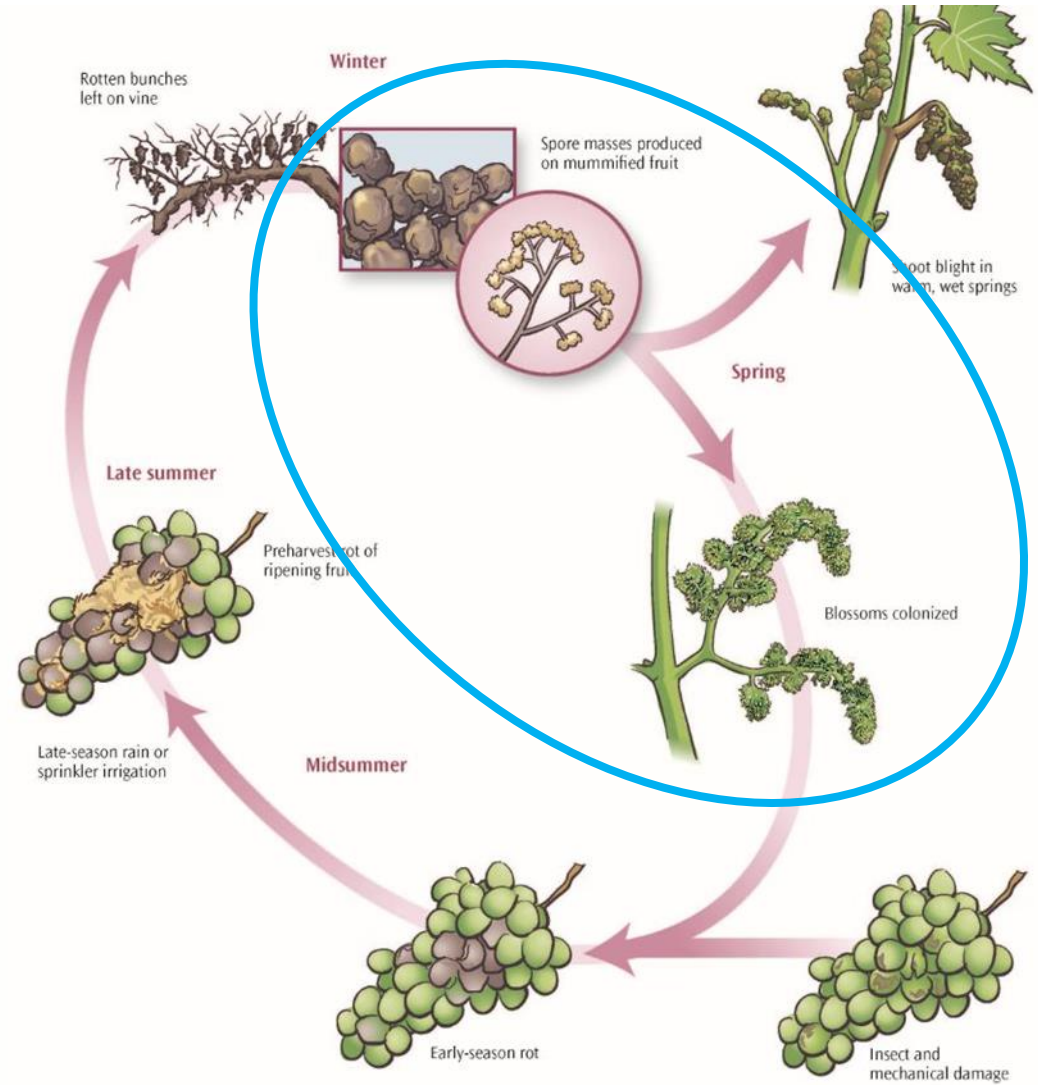


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# Disease development

- Favorable conditions
- Host age/composition
- Pathogenic growth

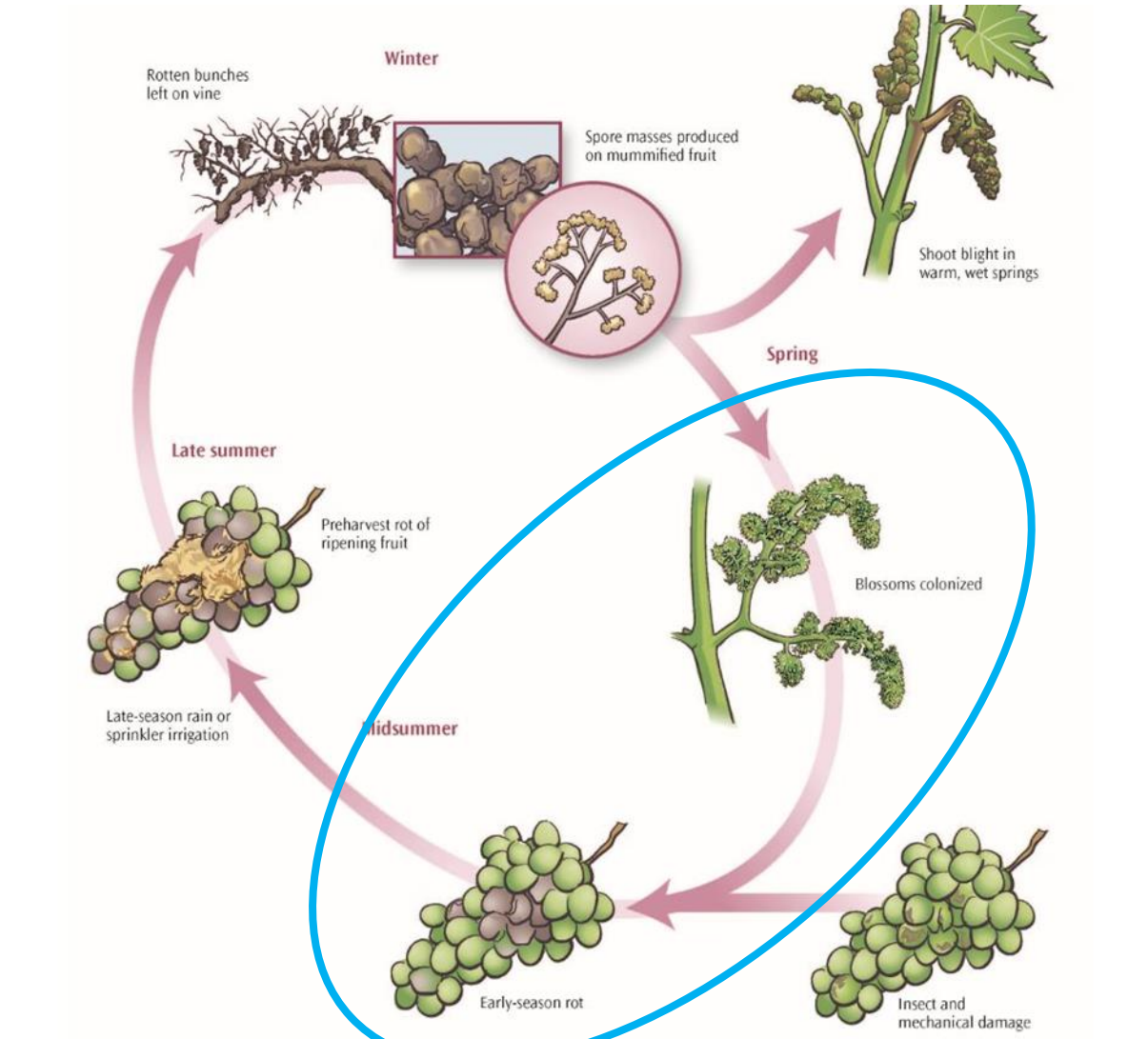


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# Senescent or necrotic tissue infection

- Dying, or wounded plant tissues
- Infections move berry to berry
- Cluster to cluster

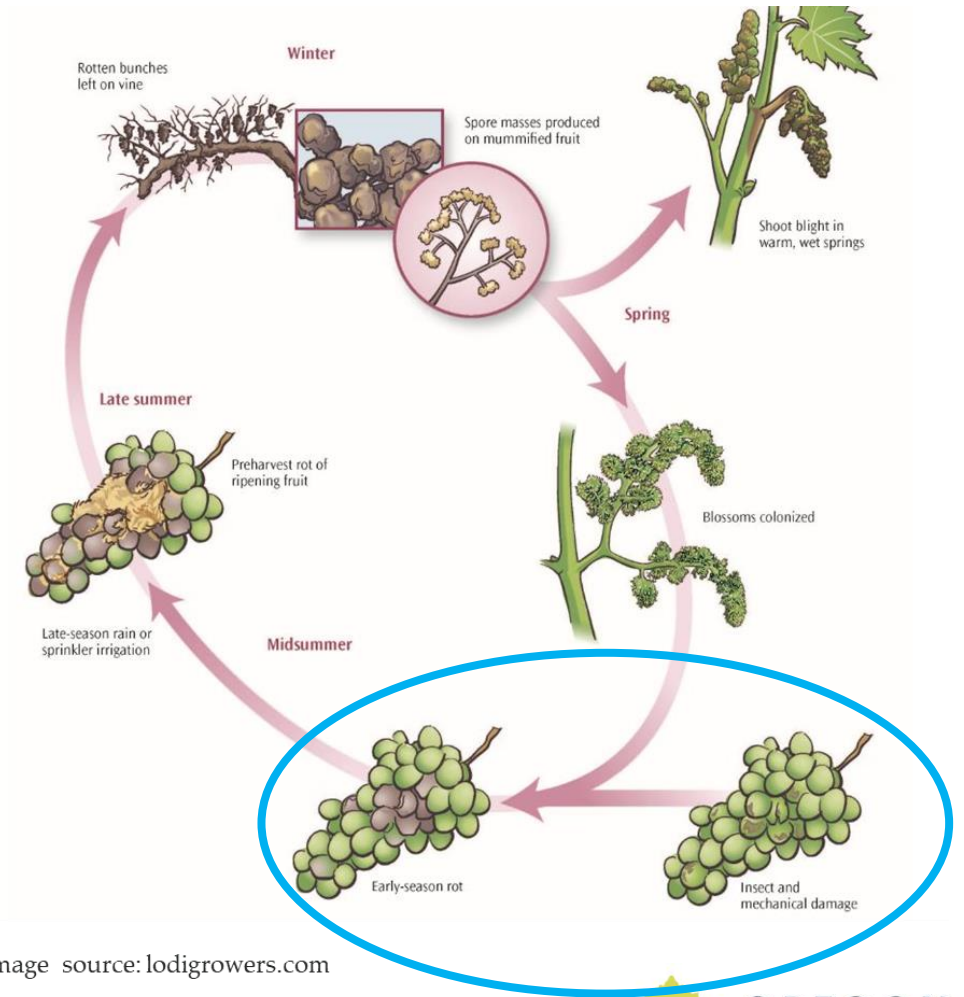


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# Sources of inoculum

- Vineyard debris

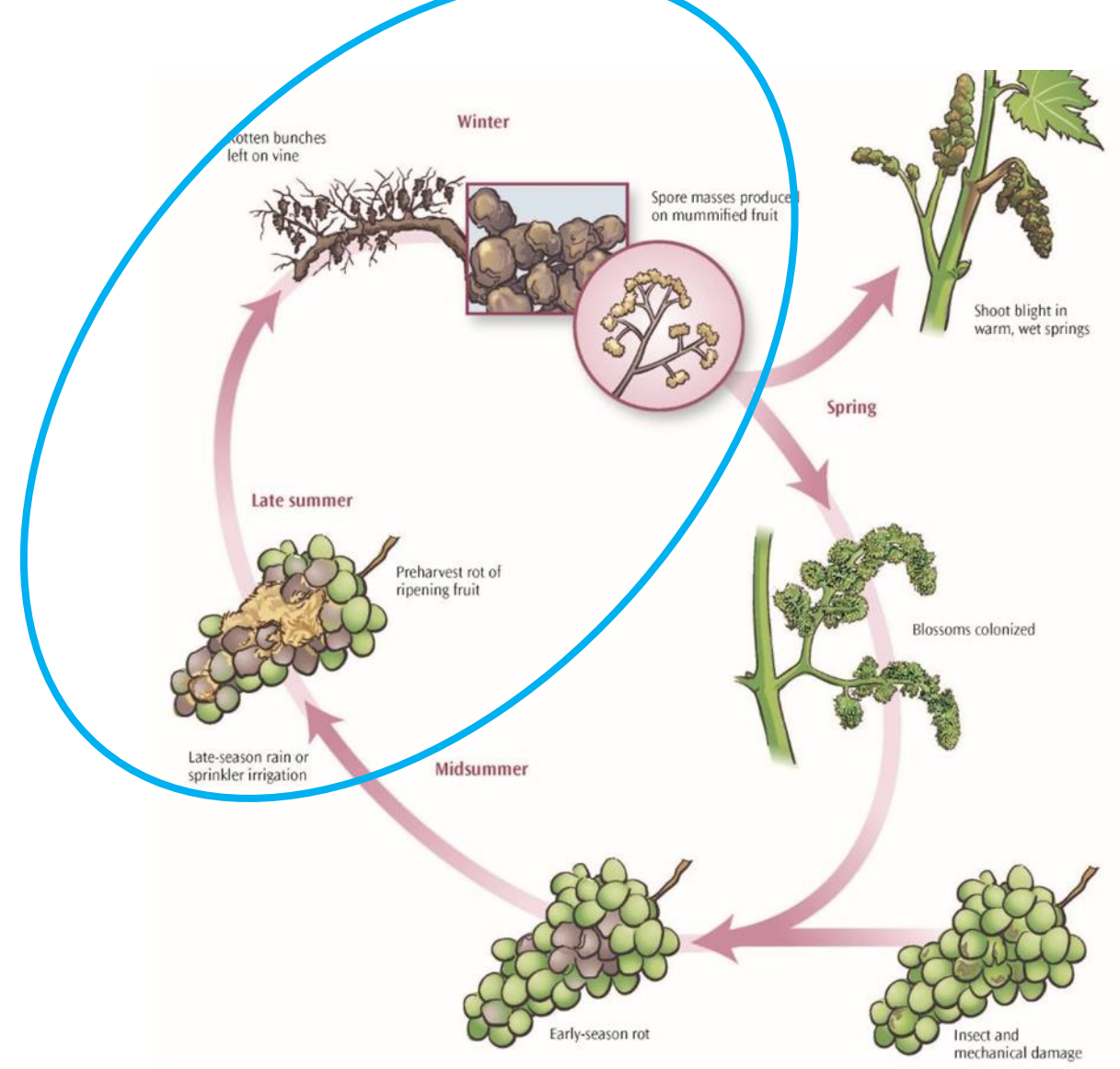


Image source: lodigrowers.com



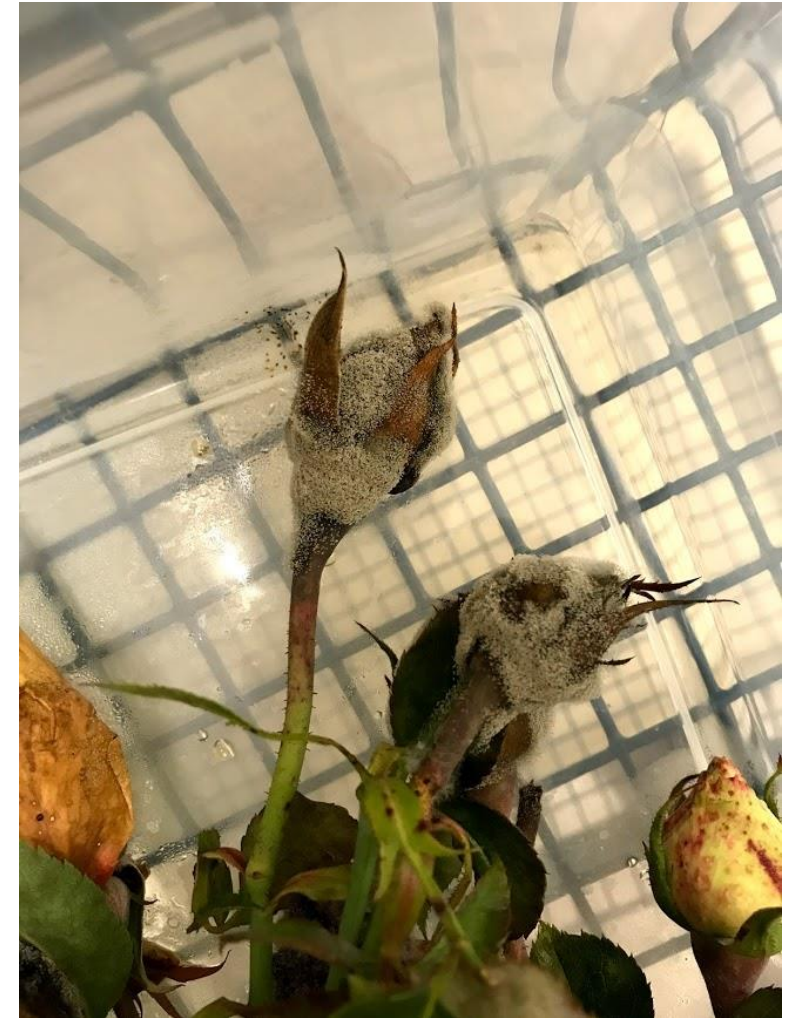
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# External sources of Inoculum

- Blackberries – flowers and fruits
- Other flowering plants



# Objectives

1

Identify sources of inoculum that should be managed

2

Predict when management should be targeted

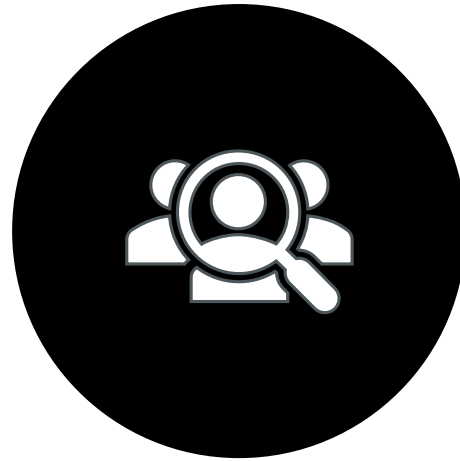
3

Monitor Botrytis fungicide tolerance

# Sampling in the Willamette Valley 2021



ELEVEN TOTAL VINEYARDS SAMPLED  
FROM NINE UNIQUE SITES IN 2021



INFLORESCENCES OR CLUSTERS,  
RACHIS DEBRIS, AND BLACKBERRIES



BOTRYTIS WAS SAMPLED AND  
CULTURED

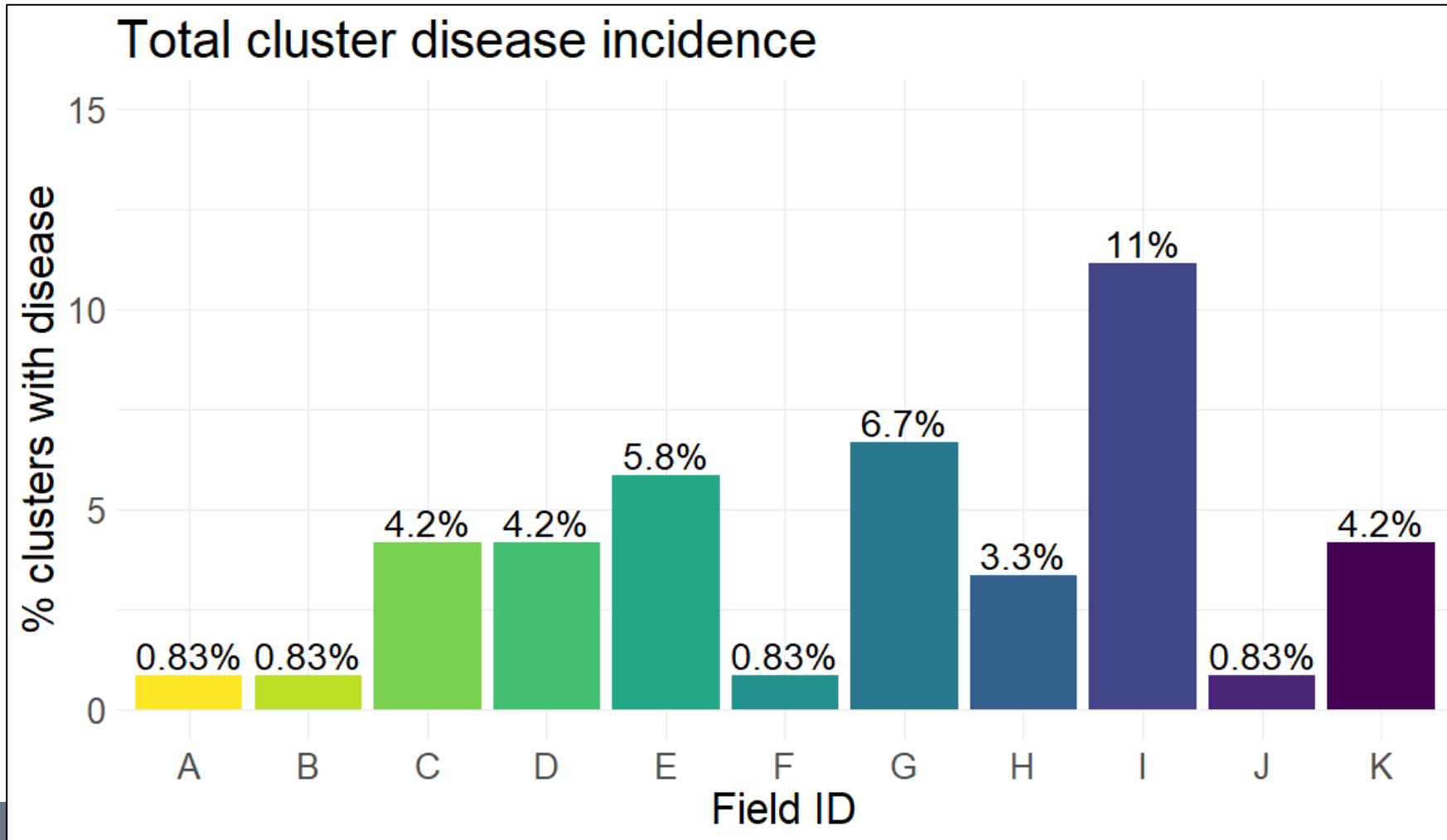
# Sampling

- Clusters, debris and blackberries were sampled at each time point
- Bloom to Harvest
- Incubated in humid growth chamber
- Rated for Botrytis
- Botrytis conidia sampled and cultured



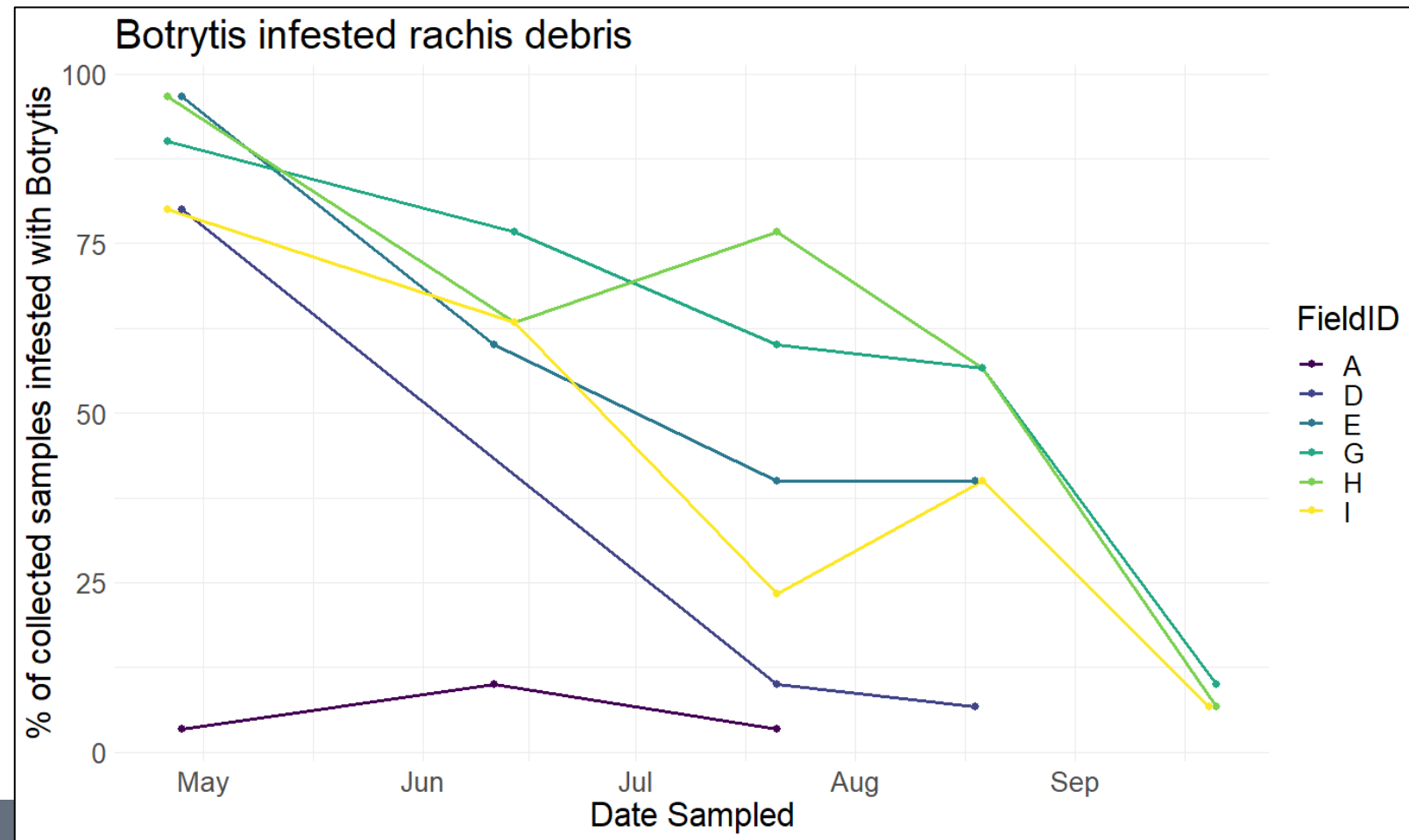
# Bunch rot incidence 2021

- 120 total clusters per site (except site I)
- Cluster incidence was much lower in 2021 than 2020



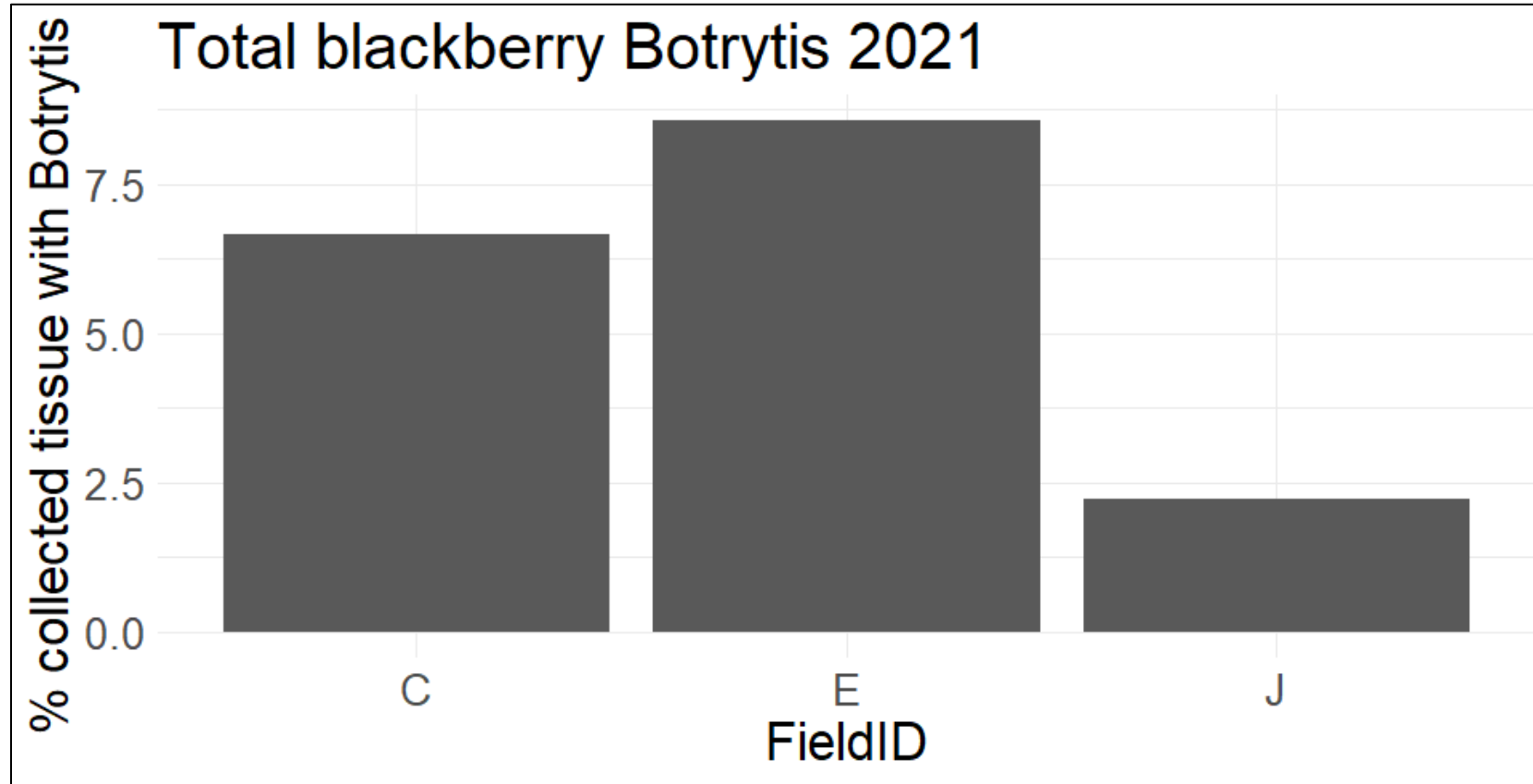
# Rachis Debris Botrytis 2021

- Botrytis infected debris incidence still high even with low disease pressure
- Decreases as the year progresses

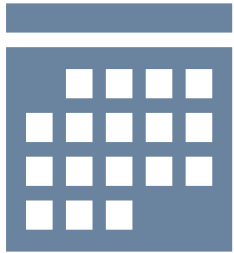


# Blackberries 2021

- Some inoculum found on adjacent blackberries



# Who, When and Where?



BLOOM TO BERRY TOUCH  
IS CRITICAL



VINEYARD DEBRIS SHOULD  
BE MANAGED EARLY



ALTERNATE HOSTS COULD  
BE CONTRIBUTING TO  
DISEASE



IDENTIFICATION OF HIGH-  
RISK AREAS AND TIMES

# Fungicide tolerance testing 2021

- 96 well microtiter plate assay
- 12 chemistries from 8 modes of action

Brand name	Fungicide	FRAC code
Benlate	Benomyl	1
Rovral	Iprodione	2
Rally	Myclobutanil	3
Inspire	Difenoconazole	3
Toledo	Tebuconazole	3
Endura	Boscalid	7
Luna	Fluopyram	7
Vangaurd	Cyprodinil	9
Abound	Azoxystrobin	11
Flint	Trifloxystrobin	11
Elevate	Fenhexamid	17
Ph-D	Polyoxin-D	19

# Botrytis tolerance 2021 isolates

- Multi fungicide tolerance in about 18% of the tested isolates from 2021

Tolerance to FRAC group(s)	Number of Isolates	Percent of total
None	25	52.08%
One	14	29.17%
Two	6	12.50%
Three	1	2.08%
>3	2	4.17%
Total	48	100.00%

See full results here



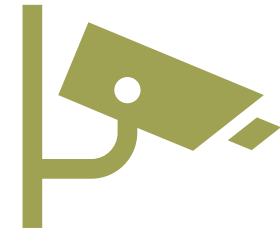
# Botrytis Fungicide Tolerance



SOME LEVEL OF TOLERANCE IN  
EACH FUNGICIDE CHEMISTRY



MULTI-FUNGICIDE TOLERANCE  
IN ~18% OF 2021 ISOLATES

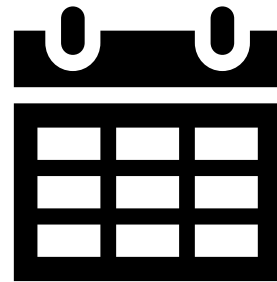


CONTINUED TOLERANCE  
MONITORING IS NEEDED

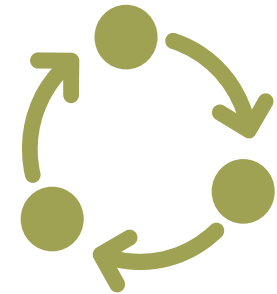
# What to use?



POTENTIAL ISSUES WITH  
ALL MODES OF ACTION

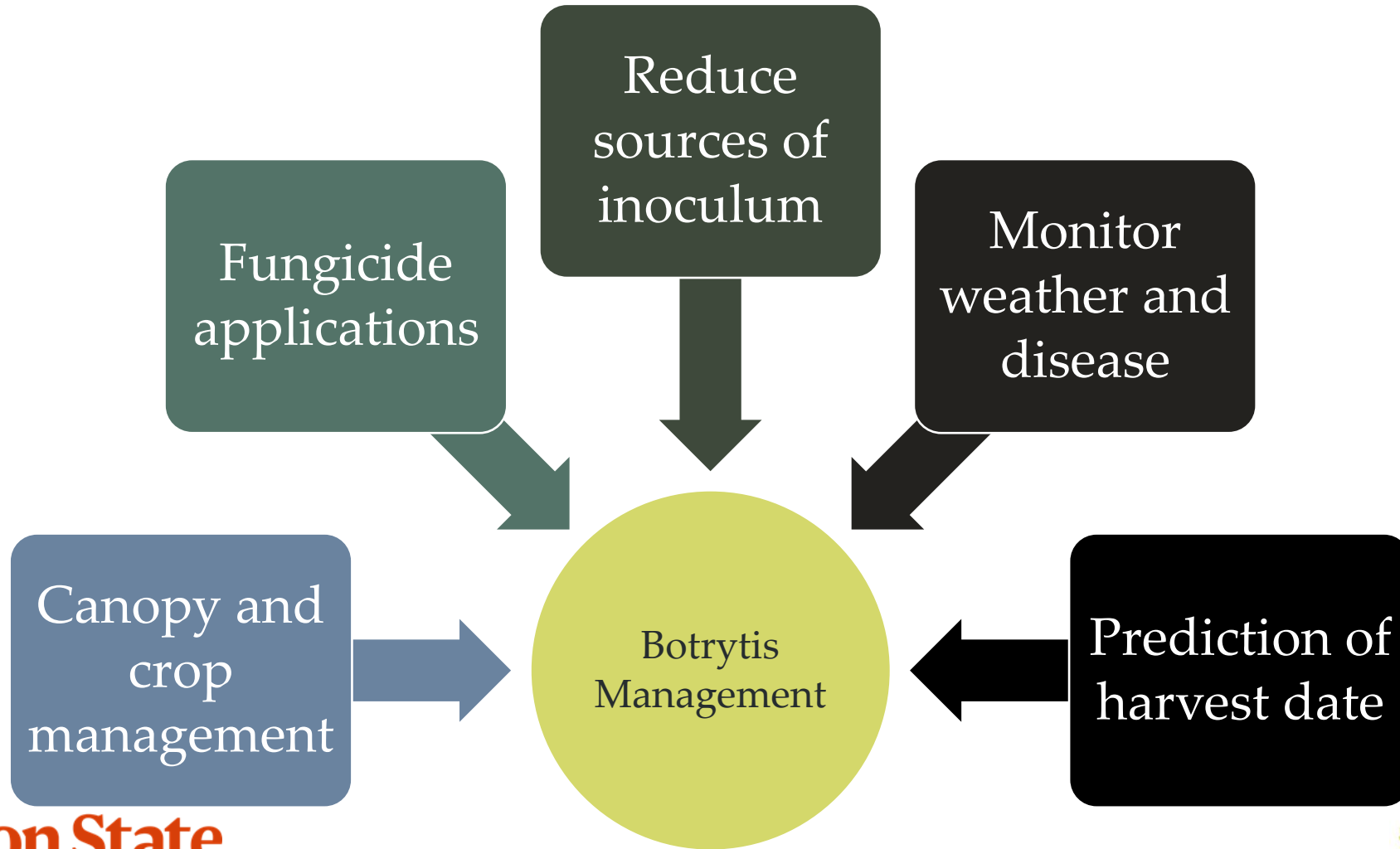


APPLY AT THE MOST  
CRITICAL TIMES



ROTATE CHEMISTRIES

# Minimize risk, integrate strategies



# Scan QR code to see full results

URL: [gall-id.cgrb.oregonstate.edu:3838/grunwald/wonga4/](http://gall-id.cgrb.oregonstate.edu:3838/grunwald/wonga4/)

- 2020 and 2021 results
- Field results
- Fungicide tolerance
- Will be continually updated



# Acknowledgements

- Oregon Wine Board for funding this project
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