

2025 Report

Yearly updates



COLORADO STATE UNIVERSITY
EXTENSION

2025 Outreach

93 Interactions with 99 Individuals

- 17 counties in Colorado served, including 4 Western-region counties
- 44% of interactions occurred in Mesa county (80% of CO wine industry)
- 19% of interactions were in-vineyard visits
- 57% of interactions were with Colorado wine industry members
- 49% of interactions were with individuals who had previously interacted with CSU viticulture extension

Provided 4 workshops

- One professional workshop with the American Phytopathological Society
- Two pruning workshops (Canon City, and Grand Junction)
- Building Better Spray Programs
- Airblast Sprayer Calibration (canceled but followed with on-farm training)

Hosted 4 Webinars with EVEF

Provided 13 presentations outside of workshops

- 3 presentations at industry conferences (VinCO, NM Wine, CFVGA)
- 5 presentations at other industry workshops
- 3 presentations to the general public
- 2 Mastergardener training sessions

Continued a Grand Valley AVA mealybug monitoring network

Applied for two additional grants (American Vineyard Foundation, CDA SCBGP) but did not receive funding.

Outreach Overview (2022-Current)

244 Interactions with 277 Individuals

- 22 counties in Colorado served, including 9 Western-region counties
- 41% of interactions occurred in Mesa county (80% of CO wine industry)
- Visited vineyard sites in 9 different counties
- 29% of interactions were in-vineyard visits
- 64% of interactions were with Colorado wine industry members
- 57 individuals interacted more than once and in multiple years

Provided 27 in-person workshops

- 8 in collaboration with external partners or CSU collaborators
- 12 workshops for the Colorado wine Industry, 11 for the general public
- 418 total individuals participated in a workshop

16 webinars have been provided as interactive Zoom sessions

Sent 39 newsblasts - approximately one every 2-4 weeks (1.5 emails a month)

External Collaborations and Connections

- Currently serving as a Board member for American Society for Enology and Viticulture Eastern Section (ASEV-ES).
- Currently serving as a member of the organizing committee for the National Viticulture and Enology Extension Leadership Community.
- Collaborated with seven states in the Eastern Viticulture and Enology Forum (EVEF).



BUILDING BETTER SPRAY PROGRAMS

In collaboration with Dr. Jane Stewart from CSU Ag Bio, we held a small workshop to build powdery mildew spray programs for Mesa county orchards and vineyards. The event contained several short lectures about grape powdery mildew and apple powdery mildew biology, fungicide resistance, and stewardship. The rest of the event was a hands on activity where participants made a skeleton spray program for a theoretical orchard or vineyard in Mesa.

Participant Outcomes Participants left with an expanded chemical toolbox for powdery mildew management, a program skeleton, and a method to approach building a program next year.

Workshop reception On average, participants felt their knowledge was greatly increased and all participants stated they would apply what they learned in their own operation.

93

Individual interactions
since January 2025

50

Individuals with repeat
interactions

16%

of interactions
occurred in August

89

total workshop
participants this year

overview

Going Viral:

Creating a Grape Virus Education and Presence Mapping Program

Overview

Grapevine leafroll and Red blotch are a group of wine grape viruses known to cause profit loss both directly by reducing vine vigor and crop yield and indirectly by altering fruit composition, changing the resulting wine flavor. These viruses can lay dormant until vines are stressed and, once active, produce limited symptoms. The most obvious symptom is early reddening leaves, which are easily confused with fall color change and nutritional problems like magnesium deficiency. In Colorado, we have anecdotally known that Grapevine leafroll was in our vineyards for many years. Also, the first confirmed detection of Red blotch occurred recently in August 2022 but the status of testing vines prior is unknown. Before Colorado can begin to get a handle on controlling grape viruses, we need to increase the accessibility of viral testing and educate the industry on the importance of testing and mitigation techniques. Currently, Colorado State University Extension does not have readily accessible educational materials available for this problem and there are no in-state options for viral testing. The goal of this project is to establish these basic Colorado grape industry needs.

Objectives

Objective 1) Extension and Outreach: What practical tools or education do we need to do to reduce crop loss related to viral spread?

- Produce ready-to-use extension materials such as factsheets, recorded videos, and virus-focused workshops
- Provide in-field examples of sampling and scouting techniques

Objective 2) Detection: Which viruses are in Colorado and where are they?

- Increase accessibility of testing by establishing grape virus testing capabilities a CSU facility on the Western Slope.
- Begin mapping the presence of Grapevine Leafroll and Red Blotch viruses.

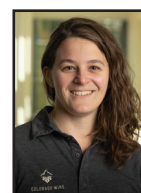
Hurdles

We have overcome the issues of Dr. Ana Christina Fulldolsa-Palma leaving by partnering with Dr. Brad Tonnessen at OARS-RM to gain access to a PCR machine. The current hurdle is finding time to finish troubleshooting the process to pass it off to a untrained technician or intern. We did receive a no cost extension to Sep. 2026 to complete testing.

Project Team



Dr. Ana Cristina Fulldolsa-Palma
Director and Diagnostician for CSU Plant Diagnostic Clinic



Dr. Charlotte Oliver
Regional Viticulture Extension Specialist

Project Timeline

Completed tasks are in orange

Research

Accept first round of samples

Adapt CSU facilities for testing

Accept second round of samples

Accept third round of samples

Add service to CSU options

Save samples for future testing

SUMMER 2024	FALL 2024	WINTER 2024	SPRING 2024	SUMMER 2025	FALL 2025	WINTER 2025	SPRING 2025	SUMMER 2026	FALL 2026	WINTER 2026
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West Slope scouting series

Release factsheet on virus biology/scouting

Front Range scouting series

Outreach

method summary and results

Going Viral:

Creating a Grape Virus Education and Presence Mapping Program



Colorado leaf symptoms of a suspected Red Blotch infected vine.



Colorado leaf symptoms of a confirmed Grapevine Leafroll-infected vine.

Sample Observations

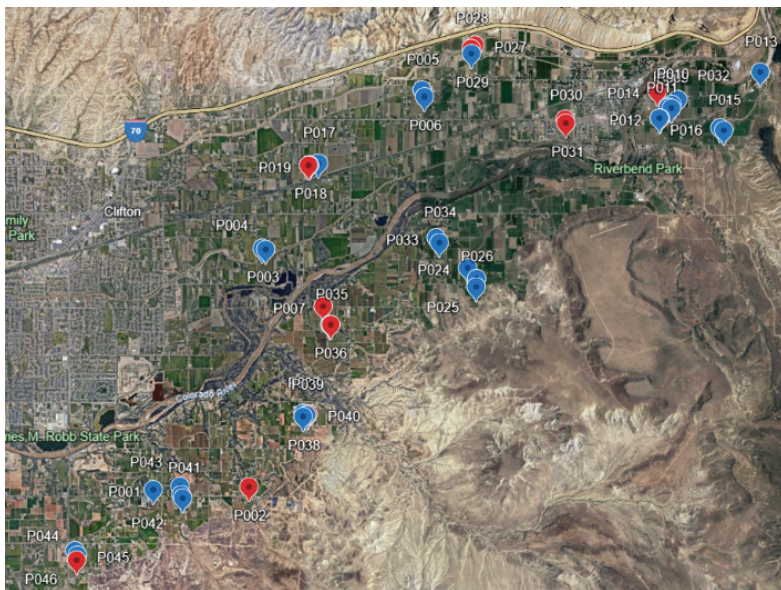
In the field, there were several different leaf symptoms observed. The most rare symptoms were the blotchy red patches expected from Red Blotch virus (left-hand image). The other two symptom types were the inter-veinal reddening like what is expected for Grapevine Leafroll virus (right-hand image) or a more “tiger striping” reddening that has an unknown origin.

Sample Collection

In 2024, 46 samples from 17 separate farms were collected in September. Samples were comprised of 35 to 50 leaves with attached petioles and collected from whole rows to create a composite sample. A Google Earth pin was dropped in the middle of the row where the sample was collected to provide an approximate location for future mapping. Samples were transported back to the CSU Western Campus on ice, were cataloged, leaves removed, and petioles were stored at 0°F for future processing.

In 2025, 7 additional samples from 4 separate vineyards were collected in the same manner as those in 2024.

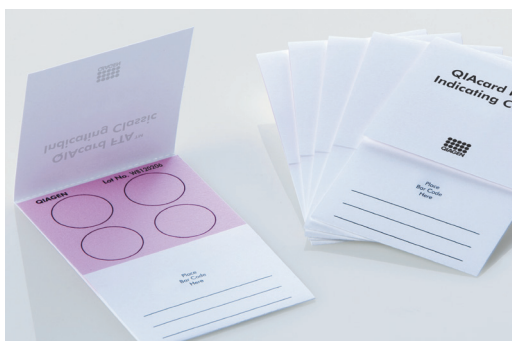
Altogether, 53 petiole samples have been collected, all but one are from the Grand Valley AVA. Samples came from 25 different varieties, including 5 modern varieties (Cayuga white, Itasca, Marquette, Petit Pearl, and St. Vincent) and 2 table grapes (Fantasy and Jupiter).



Map of sample collection Google pins in the Grand Valley. Red pins correspond with samples with obvious symptoms (reddening, rolling leaves). Blue pins are all other samples.

Molecular Methods

A total DNA and RNA samples will be extracted using the QIAcard FTA (Qiagen, Hilden Germany) method, a shelf-stable membrane card, to allow for additional future viral testing. These extractions will be used in Real-time PCR and Reverse Transcriptase (RT)-PCR reactions to amplify viral particles for Grapevine red blotch and Grapevine leafroll 1 and 3, respectively. This will provide confirmation of presence or absence of viruses in our samples.



Qiagen FTA cards for molecular extraction.

Mesa Grapes:

Table grapes as an alternative crop in Western Colorado

Overview

Table grapes are a niche crop in the United States, accounting for 36% of all grape production. Nationally, there is increasing producer interest and consumer demand for local table grape production, especially certified organic. Based on exploratory surveys, table grapes can fetch a high price per pound and, depending on the variety, can perform well in our high elevation environment. This suggests it could be a viable alternative crop for this region for both economic and agronomic reasons. Producers are now asking for support for selection of the best varieties for both environmental conditions and consumer preference. Additionally, with cooperation from our participant producers, we will measure plant health, crop yield, cold tolerance, and consumer taste preferences on using established vineyards. This project will help to expand the options for producers in our unique climate and inform the public on best organic practices for table grape production.

Objectives

- Objective 1)** *Evaluate table grape varieties at WCRC-RM and record management methods on participant producers' vineyards.*
- Establish a new table grape variety trial at WCRC-RM containing new table grape varieties from NY and MN.
 - Collect season-long data on vine survival, phenology, diseases, pests, and management methods.
- Objective 2)** *Collect consumer preference data through hosting taste tests at public and CSU-led events.*
- Perform taste tests at public events that are both community-organized or led by CSU. We will provide several varieties to taste and ask attendants to rate each variety by voting using poker chips for Love, Like, or Dislike.
- Objective 3)** *Create and distribute research results, training modules, and educational seminars via social media, fact sheets, workshops, videos, and conferences.*
- Produce materials for two audiences, the commercial producer and the homeowner.

Current Progress

We have completed two years of data collection and have streamlined our approaches to the season. Additionally, we have successfully planted 7 commercial varieties of table grapes in our research block at WCRC-RM and did a partial planting of 3 self-rooted new varieties from the breeding program at University of Minnesota. We also were able to complete 3 more consumer preference tests on fresh fruit, primarily at the Paonia Arbol Market.

Hurdles

We have figured out a lot over the course of the last two years. Our current hurdle is our technician, Hannah Grossman, moving into a permanent roll with WCRC-RM and we will have to retrain our summer technician on data collection. We also will be replanting a lot of the University of Minnesota cuttings due to poor root set.

Project Team



Dr. Brad Tonnessen
Research Scientist, WCRC - Roger's Mesa



Dr. Charlotte Oliver
Regional Viticulture Extension Specialist

Project Timeline

Completed tasks are in orange

Research

Collect data in established blocks		Consumer preference testing		Establish new test block at WCRC-RM		Collect data in established blocks		Consumer preference testing		Collect data in established blocks		Consumer preference testing	
SUMMER	FALL	WINTER	SPRING	SUMMER	FALL	WINTER	SPRING	SUMMER	FALL	WINTER	SUMMER	FALL	WINTER
2024				2025				2026					
				Survey to find current producers				Host expert webinars Host table grape pruning workshop				Table grape demo at WCRC-RM	

Outreach

Enterprise budgets for wine-grapes and peaches in Colorado

Overview

Enterprise budgets for winegrapes and peaches grown in Colorado are outdated. The last update of the winegrapes enterprise budget was in 2010 (Sharp and Caspari, 2010). While the peach enterprise budget is more recent with the last update in 2013 (Sharp et al., 2013), it is still more than ten years out of date. There have been substantial changes not only in the costs for vineyards and orchards but also the prices received by the growers. For example, Sharp and Caspari (2010) assumed an average price of \$1,300 per ton. Data from the 2023 Colorado Grape Grower Survey show an average price of \$1,857, a 43 % increase since 2010 (Caspari, unpubl.).

Likewise, the average price for peaches in 2013 was assumed to be \$0.85 per pound whereas we estimate 2023 prices at \$1.30 to \$1.50 per pound. Unskilled labor was valued at \$10/hr in 2010 or \$11/hr in 2013. However, today many Western Colorado fruit growers rely largely on a H2A labor force, putting the price for labor at \$20/hr. Further, vineyards and peach orchards are now being planted at much higher plant densities than in the past. While higher densities raise establishment costs, they also increase the yield and revenue potential. Here we propose to create new enterprise budgets for winegrapes and peaches grown in Western Colorado.

Objectives

- Objective 1)** *Creation of new enterprise budgets for peaches and grapes*
- Interview eight peach and eight grape growers encompassing both Delta and Mesa counties and both conventional and organic production methods.
 - Construct an indepth enterprise budget based on the interview information and provided budgetary figures.
 - Review and provide to the public as a planning document

Current Progress

The budgets have been completed as of December 27, 2025 after they were returned to 6 producers (3 peach and 3 grape) for final review. We are currently investigating the best route for publication through CSU extension. Completed budgets should be available online by spring but if interested in seeing the budgets now, reach out to Dr. Caspari (horst.caspari@colostate.edu).

Project Team



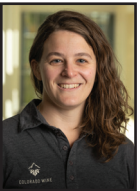
Dr. Horst Caspari
Professor,
Horticulture and
State Viticulturist



Dr. Dana Hoag
Professor,
Agricultural and
Resource
Economics



Dr. David Sterle
Research
Scientist, WCRC -
Orchard Mesa

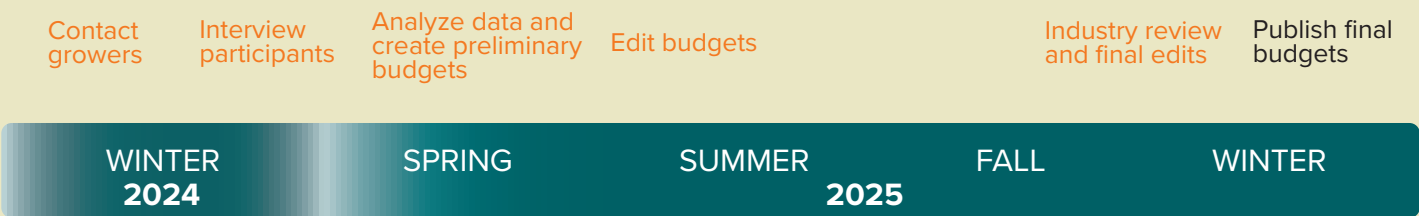


Dr. Charlotte
Oliver
Regional Viticul-
ture Extension
Specialist

Project Timeline

Completed tasks are in orange

Research



Overview and results

Frustrating flyers:

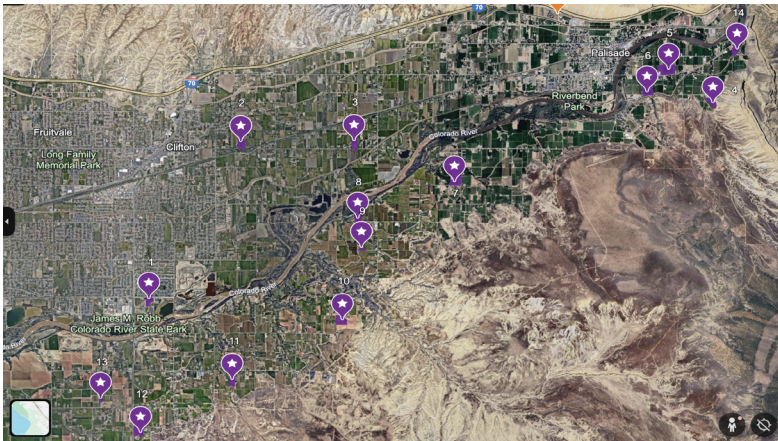
Building a insect monitoring network



Insect trap housing and setup.



Sticky trap after it has been read. Red circles correspond to positive IDs.



Map of Grand Valley trapping locations.

Overview

This project arose from two industry concerns: how is grapevine leafroll virus spreading and is grape berry moth a factor in fruit quality. Both of these questions were missing preliminary data about presence and distribution of the troublesome insects throughout the Grand Valley AVA.

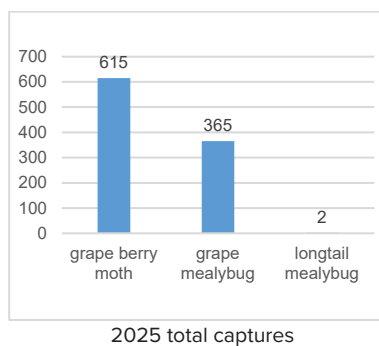
Methods

To collect this information, I partnered with 14 vineyards across the Grand Valley AVA. There was a shift in locations between 2024 and 2025 but the coverage area was the same.

In 2024, traps for grape mealybug was placed and collected every two weeks from June to September. In 2025, the project was expanded to include longtailed mealybug and grape berry moth. The mealybug traps were collected weekly, while the berry moth traps were collected every other week by the Mesa County Workforce Intern Virginia Wilkes. Additionally, the traps were deployed a month earlier in May. The mealybug traps were placed in opposite corners of the vineyard with the berry moth trap in the center to increase berry moth captures and minimize mealybug pheromone overlap. Traps were read the week they were collected and results were sent to participants.

Results

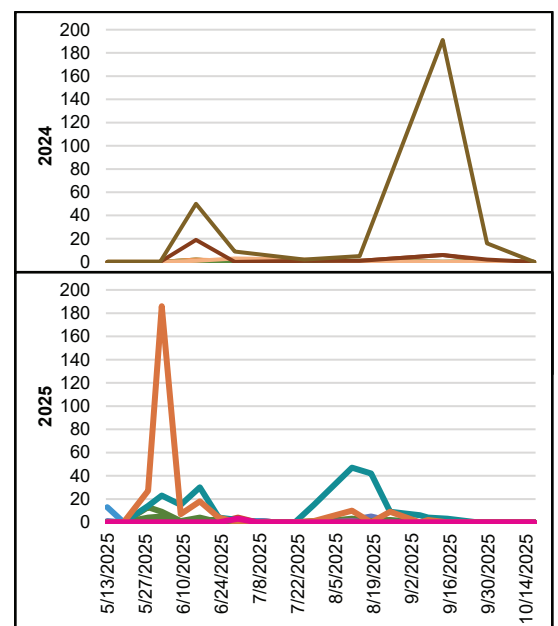
Total 2025 trap captures for all locations and insects are provided in the bar chart to the right. The numbers for all insects was low overall. In some locations, no insects were trapped at all. While we did detect longtail mealybug, there were only 2 captures over the course of the season.



Conclusions and Next Steps

With this season's data, we now have two views of when the grape mealybugs fly providing a slightly clearer view of their lifecycle. In both years, I did observe two peaks in numbers, however, there was a shift in timing and numbers of observed males. I am now looking into the growing degree days and temperatures associated with the two years and the spray programs at the different locations.

I hope to repeat this trapping program again in 2026 and expand into the West Elks area.



Comparison of flight numbers in 2024 and 2025 growing seasons.

Funding sources and contributions

The viticulture Extension specialist position is primarily funded by three entities: the Colorado Wine Industry Development Board (CWIDB), the Colorado Assoc. for Viticulture and Enology (CAVE), and Colorado State University Office of Engagement and Extension (CSU OEE). CWIDB and CAVE have partnered to provide matching funds to CSU to provide salary, fringe, an operating budget, and overhead in a 50/50 split. The specialist is encouraged to partner with other CSU professionals and external partners to secure additional funding for research and programming.

\$55,987
Wine Industry contribution
FY25 Contribution

\$257,745
Total FY25 Program
budget

CSU Contribution		Funds	
	Salary + Fringe	45,319	
	Travel	3,000	
	Supplies	2,578	
	Indirect	5,090	
			55,987
CWIDB Contribution			
	Salary	29,414	
	Travel	1,902	
	Supplies	1,399	
	Indirect	3,271	
			35,986
CAVE Contribution			
	Salary	15,905	
	Travel	1,098	
	Supplies	1,179	
	Indirect	1,818	
			20,000
External Funds			
	Workshop fees	2,414	
			2,414

FY25-FY26			
ODA SOBCP - Going Viral			
	Oliver- Salary	1,738	
	Techician- Salary	20,255	
	Supplies	10,904	
	Travel	767	
			33,664
WSARE- Mesa Grapes			
	Oliver- Salary	2,865	
	Tonnessen- Salary	3,801	
	Technician- Salary	37,902	
	Contracted services	975	
	Supplies	8,916	
	Travel	5,134	
	Indirect	5,959	
			65,552
USDA-RMA- Enterprise Budgets			
	Salary & Fringe	33,984	
	Supplies	134	
	Travel	915	
	Transfers	9,109	
			44,142

The payment process works by CAVE providing their monetary contribution to CWIDB. CWIDB works with CSU to maintain a statement of work and invoicing system to fund the Extension Specialist position.

For grants, funds provided for salary and fringe are used for salary and are not charged to CWIDB funds. Therefore, the actual contribution by the industry is reduced with each grant application and redistribution of effort. This position is "soft funded" and cannot have "salary savings" accounts which can be used as discretionary funds.