



TFREC at a Glance

- Crops: apple, pear, sweet cherry
- Systems: conventional, organics, new technologies
- Land resources: 400+ acres of research orchards & facilities
- 13 WSU Faculty, 32 Staff, 5 post-docs, 17 grad students
- USDA-ARS Postharvest Research Facility



TFREC Faculty

- *Achour Amiri, Plant Pathology; Postharvest Tree Fruit Diseases*
- *Elizabeth Beers, Entomology; Tree Fruit IPM*
- *Jenny Bolivar, ANR; ITT Extension – Tree Fruit Horticulture*
- *Tianna DuPont, ANR; Tree Fruit Extension Specialist*
- *Kate Evans, Interim Center Director; Horticulture; Pome Fruit Breeding*
- *David Granatstein, emeritus, Sustainable & Organic Agriculture*
- *Vince Jones, Entomology; Director, Tree Fruit Decision Aid System*
- *Lee Kalcsits, Horticulture; Tree Fruit Physiology*
- *Stefano Musacchi, Hort; Endowed Chair, Tree Fruit Physiol & Mgmt*
- *Tobin Northfield, Entomology; Tree Fruit*
- *Louie Nottingham, Entomology; Pear IPM*
- *Marcy Ostrom, ANR; Small Farms & Community Food Systems*
- *Sara Serra, Horticulture; Tree Fruit Physiology & Management*
- *Carolina Torres, Horticulture; Endowed Chair, Postharvest Systems*



TFREC Faculty



Achour Amiri
Plant Pathology



Elizabeth Beers
Entomology



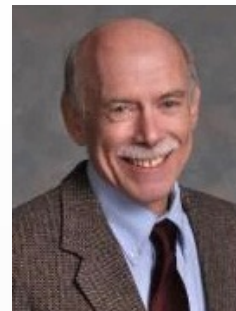
Jenny Bolivar Medina
ITT Extension



Tianna DuPont
Extension Specialist



Kate Evans
Horticulture



David Granatstein
Emeritus



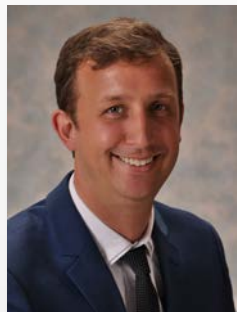
Vince Jones
Entomology, DAS



Lee Kalcsits
Horticulture



Stefano Musacchi
Horticulture, EC*



Tobin Northfield
Entomology



Louis Nottingham
Entomology



Marcy Ostrom
ANR/Small Farms



Sara Serra
Horticulture



Carolina Torres
Horticulture, EC[†]

* Endowed Chair of Tree Fruit Physiology & Management

[†] Endowed Chair of Postharvest Systems



Operations Staff

Administrative Staff



Kate Evans
Interim Director



Darla Ewald
Office Manager & HR



Megan Welker
Office Assistant



Shelly Tompkins
Budget & Finance



Wendy Jones
IT/Communications

Physical Plant Staff



Jerry Moreland
Facilities Manager



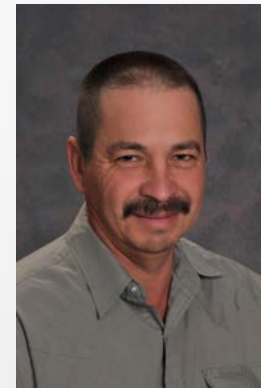
Trish Mulvaney
Maintenance



Micah Cawdery
Maintenance



Cameron Burt
Farm Manager



Francisco Figueroa
Columbia View
Orchard



Mike Mitchell
Sunrise Orchard

Farm Operations

Not pictured: Evan Mendonca, Sergio Alfaro-Rameriz, Daniella Reyes, and Willy Stockman





- Conduct basic and applied research on major diseases of pome fruit
- Develop solutions to enhance disease management and increase packout
- Study the epidemiology and etiology of major pathogens in orchards and storage rooms
- Use traditional and molecular approaches to understand mechanisms of fungicide resistance development in major pathogens
- Investigate the effect and impact of postharvest environments on disease development





- Focus on multi-tactic IPM solutions to tree fruit pest problems to stabilize agroecosystems
- Address emerging issues with invasive species such as spotted wing drosophila and brown marmorated stink bug
- Develop and maintain integrated biological control through studies of non-target effects
- Monitor pesticide resistance and promote resistance management options
- Test new candidate materials, and techniques such as Sterile Insect Release for potential of building blocks of IPM programs





- Orchard integrated pest management (IPM)
- Fire blight management
- Quick decline, little cherry disease (LCD), and replant disease education
- Orchard management education





Kate
Evans

Pome Fruit Breeding



- Dwarfing rootstocks for pear to facilitate efficient high-density plantings in PNW
- New improved apple varieties, selected for the major production regions of Washington state, and available to WA growers





Vince
Jones

Insect Ecology/WSU Decision Aid System (DAS)



- Insect population dynamics
- Orchard integrated pest management (IPM)
- Development & implementation of decision support systems (DAS)
- Insect behavior
- Biological control
- Effect of introduced pests on ecosystems
- Mechanisms of mating disruption

Decision Aid System
Better Pest Management through Science and Technology

Register Now Go to My Account

Delayed Dormant Sprays

Thursday Jan 02, 2020

Dormant sprays are important for management of a wide range of pests including European red mite, woolly apple aphid, rosy and green apple aphids, and San Jose Scale. Most of these are easily controlled using a variety of materials, but if you are using oils, remember that good coverage is essential because they work by covering the egg stage and preventing respiration.

Which Leafroller Species is in Your Orchard?

Thursday Jan 02, 2020

There are two leafrollers commonly found in Washington orchards: Pandemis leafroller (PLR) and Obliquebanded leafroller (OBLR). The phenology of the two species is quite different and you need to be sure which species you have for proper management and use the correct model on DAS. PLR used to be more common, but in the past 10 years, OBLR has displaced PLR from many of the production areas.

Delayed Dormant Sprays for Leafrollers

Thursday Jan 02, 2020

Pandemis leafroller (PLR) and oblique-banded leafroller (OBLR) have different phenologies which are well documented on DAS. Delayed dormant sprays can work well for PLR, but are generally too early in the season for efficacy against larvae of OBLR.

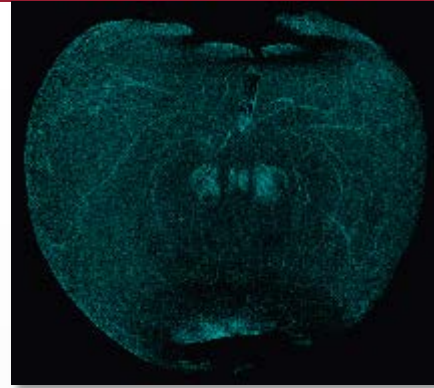
[More articles](#)

What is DAS?

A collaborative project between WSU Extension and WSU Agricultural Research Center.

WSU DAS is a web-based platform designed to transfer time-sensitive information to decision makers in the tree fruit industry. It runs insect, disease, disorder, and horticultural models to estimate the current status of the issue and links that to appropriate management and pesticide recommendations.

[Read more](#)



- Apple sunburn management: evaporative cooling, netting, and gene expression.
- Netting to optimize light and fruit surface temperature.
- Interactions between rootstocks and the environment.
- Mitigation of bitter pit in Honeycrisp.
- Deficit irrigation for water management and improved fruit quality.



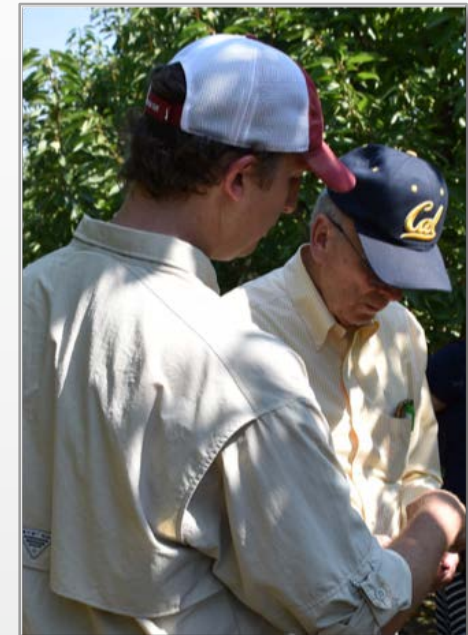


- Innovative orchard design for apple and pear suitable for mechanization and automatization.
- Evaluation of new rootstocks for apple and pear.
- Orchard management: *optimization of growth, pruning, production capacity, fruit quality, harvest time in apple and pear.*
- Precision crop load management in apple.
- Apple thinning with net (bee exclusion).
- Manchurian crabapple replacement: *find alternative pollinizers.*
- Dry matter in apple and pear: *consumer preference and willingness to pay.*





- Applied insect ecology
- Biological control
- X Disease and vector control
- Population dynamics
- Theoretical ecology



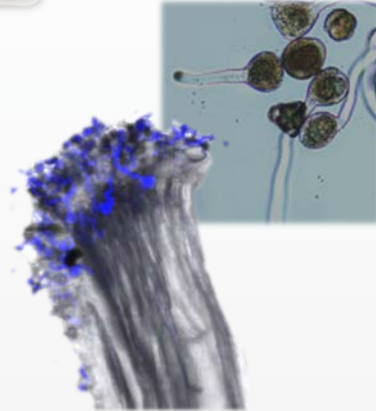


- Pear integrated pest management (IPM)
- Cultural pest controls: reflective films and overhead washing
- Augmentation biological control of pear psylla with earwigs
- Pest management effects on insect behavior

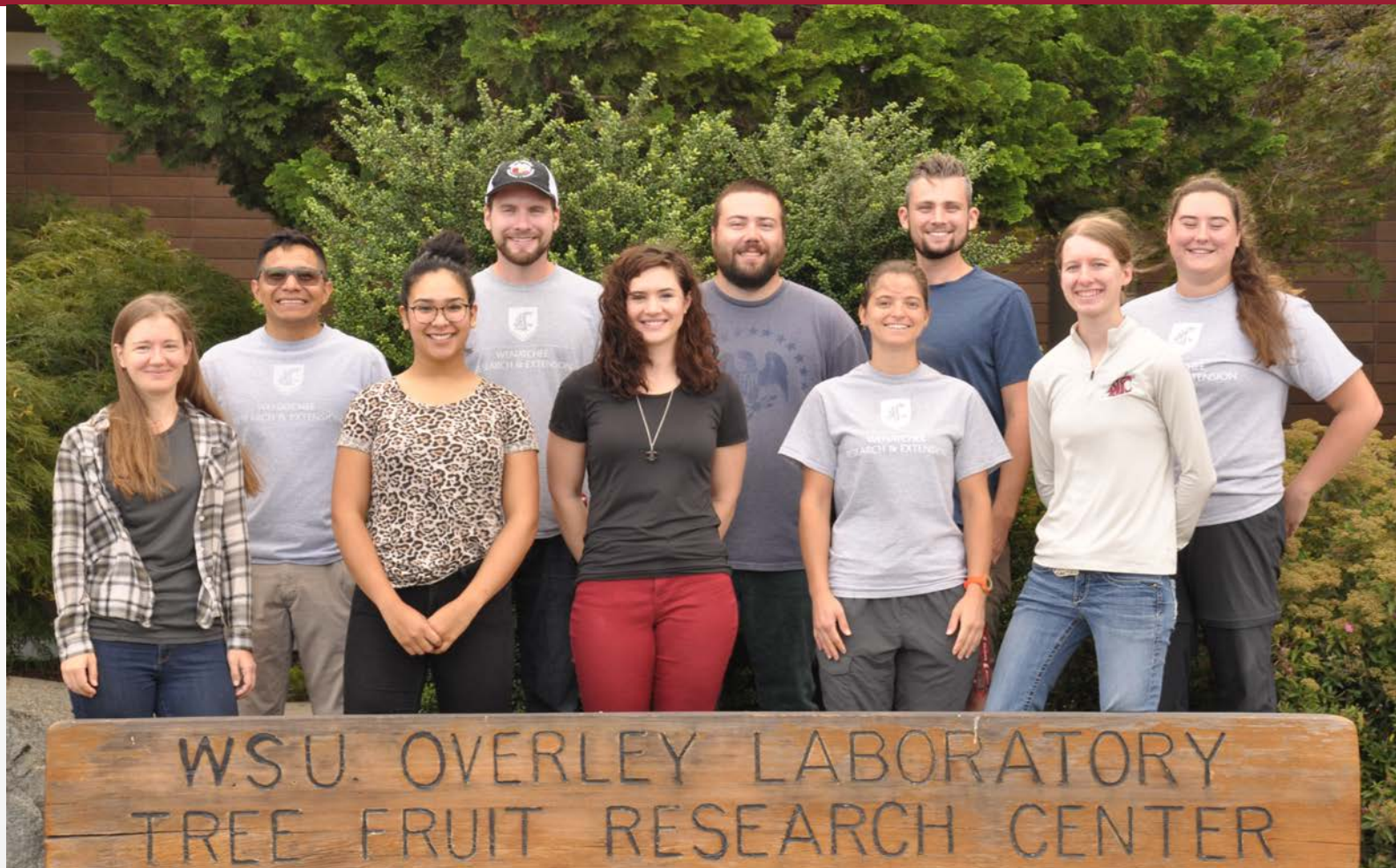




- Non-destructive dry matter assessment to sort pears and apples at harvest.
- Consumer preference and willingness to pay based on at harvest sorting pears and apples.
- Apple flower biology, pollination, and fruit development.
- Photosensitive netting for apple orchard and effects on the light quality and quantity.
- New rootstocks evaluation for apple and pear orchard.
- Precision crop load management for consistent production in apple orchard.



TFREC Graduate Students



L to R: Emmi Klarer, Lederson Ganan, Raquel Gomez, Adrian Marshall, Zara York, Andrew Griffin, Erica Casagrande-Biazus, Jim Hepler, Sara Kostick, Abby Clarke

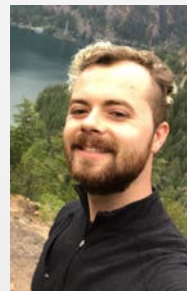
Not Pictured: Claudia Baldassi, Alexander Haase, Dowen Jocson, Stefan Roeder, Nadia Valverdi, Paul Bergeron

Mike and Kathy Hambelton Fellowship

Congratulations 2019 Award Recipients

Pictured here from left to right:

Mike Hambelton, Josh Milne (Entomology), David Enicks (Plant Pathology), Kathy Hambelton, Michelle Reid (Horticulture), Raquel Gomez (Horticulture), and Lederson Ganan (Plant Pathology)



Staff Awards

Congratulations 2019 CAHNRS Award Recipients

Trish Mulvaney,
Classified Staff Excellence Award



Other Award Recipients:

Tawnee Melton, Administrative Professional Technical Staff Excellence Award

Kate Evans, Land Grant Mission Award

Facilities & Resources

- TFREC has 422 acres of total land resources
- The Center campus includes 30 acres used for:
 - 4 acres of research orchard
 - Research & office buildings
 - Greenhouses
 - Shop
 - Student housing



Columbia View Orchard



- 92 acre research orchard located near Orondo in Douglas County.
- 46 acres shared with USDA-ARS.
- The entire site is encircled by an electrified deer fence.
- Home of the WA 38 Mother Tree.



Sunrise Research Orchard

- Purchased 300 A/150 A with water rights in 2006.
- Located south of Rock Island Dam on Hwy 28.
- 80 acres dedicated to research.
- 60 acres of certified organic are leased for commercial production with some research activities.
- Secured equipment compound with modular units for research & educational activities.



Field Day Activity

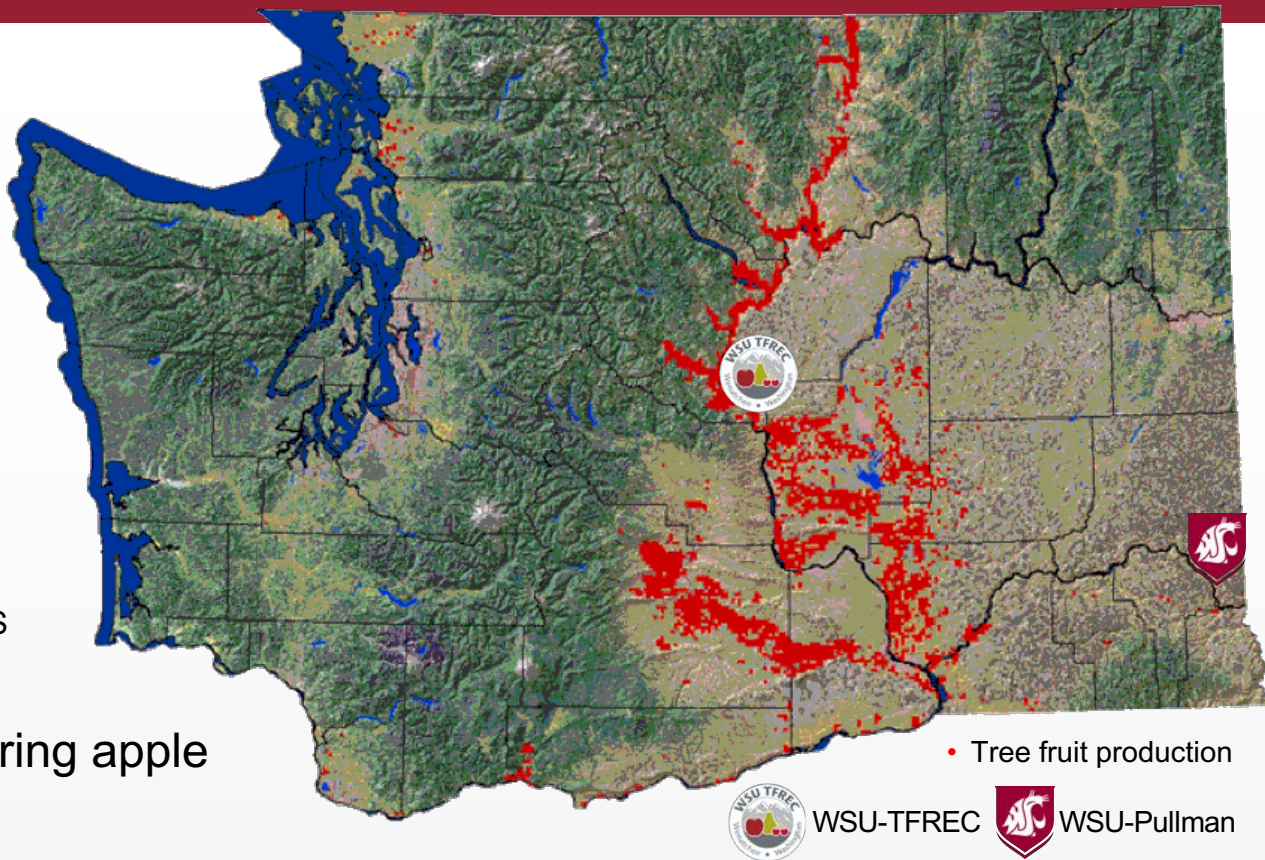


WA 38 test planting



WA Tree Fruit Industry Quick Facts

- WA TF is worth over \$10 Billion annually
- About 1/3 WA fresh fruit is exported
- Roughly 233,400 bearing acres of tree fruit 2018 USDA/NASS
- WA has 170,000 bearing apple acres 2018 USDA/NASS
- WA #1 state in the U.S. for utilized production of apple (65%), pear (49%), and sweet cherry (71%) 2018 USDA/NASS
- WA organic acreage: 16% of apple, 16% of pear, 6.7% sweet cherry 2018 Recent Trends in Certified Organic Tree Fruit in Washington State



\$32M Tree Fruit Endowment

Tree Fruit Growers passed a time limited *special project assessment*

Largest gift in WSU history!

Supports WSU Wenatchee and Prosser R&E Centers



- Endowed Chairs (\$12 Million)
- Information & Technology Transfer (\$12 Million)
- Research Facilities & Orchard Operations (\$8 Million)

Partnered Management with the Endowment Advisory Committee



Download Tree Fruit Impact Report at:
tfrec.cahnrs.wsu.edu

