



# Newsletter

## Updates

### In Case You Missed It the 2020 WSHGA and WSU Extension Alfalfa Variety Trial Results are Available

Please fill out the online survey to help us evaluate the importance of the trials at [https://wsu.co1.qualtrics.com/jfe/form/SV\\_0oyob0WYmHeaVmu](https://wsu.co1.qualtrics.com/jfe/form/SV_0oyob0WYmHeaVmu). The trial results can be found at <http://wallawalla.org/variety-trials/>. Thanks for your interest. Steve Norberg, Ph.D. Regional Forage Specialist WSU.

### THE 2021 FIRST FORECAST OF STRIPE RUST FOR THE EASTERN PACIFIC NORTHWEST

Adapted from Xianming Chen

Based on the weather conditions in November and December 2020, stripe rust in the 2021 wheat growing season is forecasted to be in the upper range of moderate epidemic level (20-40% yield loss on susceptible varieties). Using forecast models based on the 2020 November and December weather data, yield loss of highly susceptible winter wheat varieties in the 2021 crop season is forecasted to be in the range of 27 to 46% with an average of **39%**. This number is lower than the forecast (44%) made last January for the 2020 crop season due to the relatively cold weather of December in 2020 compared to 2019. Currently grown varieties are forecasted to be **0 to 29%** yield losses depending upon the level of resistance or susceptibility of individual varieties. Based on the forecast, fields grown with moderate susceptible or susceptible winter wheat varieties (stripe rust ratings 5 to 9) may need the early fungicide application at the time of herbicide application. The early prediction made in January is often close to the real situation, but usually not better than the prediction in March based on the entire winter weather. Therefore, we will make another prediction in early March. However, stripe rust resistant or moderately resistant spring wheat varieties (stripe rust ratings 1 to 4 in the Seed Buying Guide) are recommended for planting.

More information at: <https://striperust.wsu.edu/2021/01/12/2021-first-stripe-rust-forecast-and-2020-variety-yield-loss-and-fungicide-tests-january-7-2021/>

A special **THANK YOU** to the Walla Walla Cattlemen's for sponsoring this newsletter!

*Walla Walla County*  
CATTLEMEN'S  
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## Announcements

### MARCH

**15-18:** 2021 WineVit: WA Winegrowers Convention  
Register at: <https://www.winevit.org/registration-fees>

### 4-H & FFA Youth Virtual Livestock Field Days.

Registration is \$5 per session. Classes start at 9 AM—Noon. Register: <https://bit.ly/2021livestockfielddays>

### MARCH

**20** Virtual Beef Youth Livestock Field Days

**27** Virtual Swine Youth Livestock Field Days

### APRIL

**3** Virtual Lamb Youth Livestock Field Days

**10** Virtual Meat Goat Youth Livestock Field Days

The WSU Walla Walla County Extension Office is currently closed to the public due to the COVID-19 virus. Appointments will still need to be made prior to visiting our office. We appreciate your patience while we work through the current restrictions. You can contact us at 509-524-2685 or email [becki.green@wsu.edu](mailto:becki.green@wsu.edu).



#### MG PLANT CLINICS

Master Gardeners are available for plant issues and identification through our virtual clinic. Visit our website at: <https://extension.wsu.edu/wallawalla/gardening/> to find the clinic forms. Email the form along with photos to: [becki.green@wsu.edu](mailto:becki.green@wsu.edu).

**POSTMASTER send address changes to:**  
WSU EXTENSION  
328 WEST POPLAR  
WALLA WALLA, WA 99362

WSU EXTENSION NEWSLETTER  
PUBLISHED 4-6 TIMES ANNUALLY  
VOLUME 2021 NO. 2  
WSU EXTENSION  
WALLA WALLA COUNTY  
328 WEST POPLAR  
WALLA WALLA, WA 99362

## Agriculture

### CELLULOSE NANOCRYSTALS INSULATE CROPS AGAINST FROST DAMAGE

Adapted from Brian C. Clark, WSU Insider

A new agricultural innovation from Washington State University may solve an ancient predicament: how to protect crop plants from cold damage at bud break. As spring brings warmer weather, plants wake up from dormancy and begin the processes of growth and flowering. But one cold night can kill those buds before they have a chance to flower and fruit.



Healthy cherries not affected by frost.

What's needed are tiny baby blankets that shield those emerging buds from frost. And it's precisely an insulating coating that researchers at Washington State University have developed and are in the process of commercializing.

WSU's [Xiao Zhang](#), [Matt Whiting](#) and their colleagues Qin Zhang and Changki Mo are utilizing cellulose nanocrystals, CNCs, to protect grape, cherry and other flowering crop plants during frost events. Cellulose, the most common polymer on the planet, is a remarkable substance with myriad useful properties. Zhang and colleagues write in a [recent paper](#) that CNCs are stronger than steel in a strength-to-weight face off, capable of being drawn into thin film-like layers and, best of all, are super insulative. In a recent field study, the researchers concluded that a single CNC application "improves cold-hardiness of sweet cherry and grape buds by about 2–4 °C compared to non-treated buds."

That thin protective layer is just enough to keep baby buds snug until the cold snap gives way to the warmer spring weather which triggered the new growth in the first place.

Citrus in Florida, almonds and other crops in California, coffee in Brazil, apples and pears in Portugal and Washington State—all are susceptible to frost damage, one of agriculture's biggest killers. While the direct loss of a crop due to cold damage can be in the billions of dollars, the knock-on effects are even worse: loss of a crop means the loss of jobs for pickers, packers, processors, and retailers. A [report](#) from the UN's Food and Agriculture Organization says that "in the USA, there are more

economic losses to frost damage than to any other weather-related phenomenon."



A whorl of Early Robin sweet cherry flower buds after being coated with plant based dispersions in a commercial trial in 2020.

While there has been some innovation in terms of breeding plants for greater cold resistance, the physiological reality of a tender bud is hard to change. Other protective measures, like fabric covers, wind machines, circulating water, or heaters fueled with propane or diesel, have not changed in years. According to the agriculture-focused European Innovation Partnership, "[The frost protection](#) methods that are currently used by fruit producers are essentially the same that were used in the last decades of the 20th century."

After a four-year series of small-scale tests that

proved that CNCs did indeed offer good frost protection, the team is proceeding with both large-scale tests and moving toward commercialization. Whiting thinks that Pomona Technologies will see its first product fully available in 2022.

## Livestock

### CAN COVER-CROPPING AND GRAZING WORK WITH DRYLAND GRAIN FARMING?

Adapted from Western Sustainable Agriculture Research and Education

Farmers know that planting one crop year after year is asking for trouble. It depletes the soil and leads to increased insect, weed and disease pressures. But in certain places, it's also been the major agricultural system for decades.

In north-central Washington, along the Canadian border, dryland wheat production has been the dominate production system for a century using a wheat-fallow rotation.

"Some producers started using direct-seed tillage systems to improve their soil health, but that often meant increased pesticide and herbicide use," explained Leslie Michel, a soil scientist with the Washington Department of Agriculture. "We wanted to experiment with a more biologically intensive and sustainable management system, integrating cover crops and livestock to improve soil health, suppress weeds and reduce pesticide use."

Michel started the research in 2014, when she was with Okanogan Conservation District, seeing if cover crops could be integrated into the wheat-fallow system.

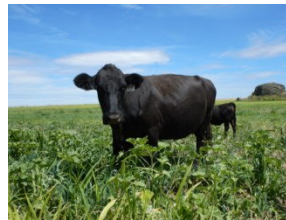
"We're really moisture-limited here," she explained. "The biggest challenge in fitting a cover crop into the rotation is the availability of water."

When one of the cooperating growers told Michel he wanted to run cows on the cover crop, her first thought was "don't ruin my study." Her second thought was "that's a good idea to study."

She applied for and received a Professional + Producer grant from Western SARE and worked with five producers to integrated cover crops and cattle onto their fields before their wheat or other grain cash crops were grown.

"The livestock portion was really key for our producers," she said. "Just having the extra biomass from the cover crop and being able to use it in different ways."

The results were encouraging but mixed. Most soil health parameters didn't change significantly, and soil moisture was significantly lower in the grazed cover-cropped areas than the control plots. Despite that, plant-stand establishment and plant height in the following cash crop was the same, yields were similar.



Cow/calf pair on cover crop



## 4-H News

This year's **Top Chef** contest went virtual allowing 4-H members to show their skills by submitting videos of their culinary talents.

4-Her's were judged for food safety, preparation, menu planning and nutritional knowledge of the foods they prepared.

## 4-H SUPER SATURDAY

**Super Saturday** has become Super Saturdays!

On each Saturday in the month of March, Walla Walla County 4-H will offer two classes of hands-on fun and learning. Classes are open to all youth grades K-12.

Details are still being adjusted, so be sure to check our website calendar for updates. Class times will be at 9:30 AM and 11 AM.

### Planned Classes Include:

Small Animals • Gardening  
Vet Science • Horses  
Magic • Bee Keeping  
Community Service • Dogs



## Financial Incentives of Cover Cropping

### USDA Economic Research Service

- In 2018, about one-third of the acreage planted with a cover crop received a financial assistance payment from either Federal, State, or other programs that support cover crop adoption.
- In fiscal year 2018, USDA's Environmental Quality Incentives Program (EQIP) obligated \$155 million in planned payments toward cover crops on about 2 million acres. This is about 20 times the level of financial support for cover crops through EQIP in 2005, driven primarily by an increase in acres enrolled in a cover crop practice.
- Between 2011 and 2015, the total acreage enrolled in USDA's Conservation Stewardship Program (CSP) through contracts, including cover crop practices and enhancement, increased from about 350,000 acres to more than 2 million acres.
- A variety of incentive programs administered by at least 22 States supported more than 1 million acres of cover crops in 2018.
- In 2018, financial assistance for cover crops across a variety of Federal and State programs, excluding CSP, ranged from \$12 per acre to \$92 per acre.

"Although the cover crops used some soil water, a lack of significant difference in the subsequent crop yield suggests that plant-available water was similar," Michel said. "This may be due to increased water recharge during the winter in the cover-cropped plots with more plant roots and avenues for water to infiltrate the soil."



Depending upon the field, soil, climate, and weather, cover crops can result in a variety of on farm benefits. (NRCS Oregon, Flickr/Creative Commons)

The cows and calves grazed on the cover-cropped plots did well (even if weighing them was more of a challenge than the researchers anticipated.) Since the trials, farmers continue to experiment with cover crops and grazing with mixed success.

Intercropping a grazing mix with a cash crop is increasingly being used. Producers graze the cover crop mix to use as feed for cattle in the winter, and the cash crop can be harvested without the need to replant. Producers found that corn vectored wheat streak mosaic virus into the cash crop, which decreased cash crop yields. While the triticale yields were down, the grazing benefit was significant enough that the grower planned to use the method again, next time without corn.

Michel knows that in the arid conditions, incremental benefits over time are the best anyone can hope for.

"Cover cropping is not a standard practice in dryland farming," she said. "It's becoming more common, especially with people doing direct-seeding, but there's still a lot of missing information. We don't know, for instance, how long to leave a cover crop out there to manage moisture levels and yield. There's also not enough information on grazing's impacts."

And for those reasons, the research will continue.

For more information, see the [project report](#).

## Home & Garden

### SCIENTISTS LOOK TO PUBLIC FOR CLUES TO RECOVER MONARCH BUTTERFLIES

Adapted from WSU Insider

SANTA CRUZ, Calif.— Migratory western monarch has declined by more than 99% since the 1980's. The Xerces Society, an international invertebrate conservation nonprofit, reported that the total number counted in 2020 was down to 1,914, a drop by more than 90% from the prior year — a



count already below the threshold at which scientists warned the migration may collapse.

To help scientists gain insight into migratory monarchs this spring, researchers are inviting the community to participate in the [Western Monarch Mystery Challenge](#).

The challenge was started by a group of researchers from Washington State University, Tufts University, University of California at Santa Cruz and the Xerces Society to help fill a critical gap in knowledge about habitat needs of migrating monarchs in the spring. Running from Feb. 14 (Valentine's Day) to April 22 (Earth Day), the challenge is a call to action to report a monarch if you see one. Once you report a sighting, you will be entered to win prizes.

Scientists know that migratory monarchs spend winter months in groves along the California coast and that wild monarchs are breeding in central California by May. However, much less is known about where monarchs are in February, March and April. This gap is critical to understanding where and when to focus conservation efforts.

"We don't know exactly where western monarchs are in spring, but we do know that this is a critical point in the life cycle," said Elizabeth Crone, a Tufts University biology professor. "Monarch populations are smallest at this time of year and individual butterflies may be at their weakest right after their long winter diapause."

Solving the mystery of where wild, migratory western monarchs are at this time of year is a way for Californians to make a contribution to conserving and restoring the monarch migration in the West. (Note: Reared monarchs are not part of this study.)

"The Monarch Mystery Challenge is an opportunity to get even more people to participate in western monarch community science—and these animals need our help right now, more than ever," said Sarina Jepsen, conservation biologist at the Xerces Society.



#### Media contacts:

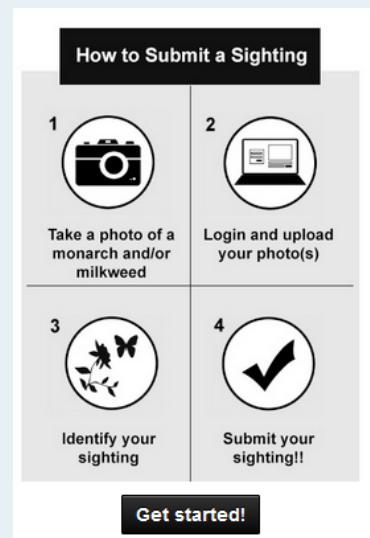
Lilianne de la Espriella, WSU communications coordinator, 561-929-7764, [monarchmystery@wsu.edu](mailto:monarchmystery@wsu.edu); Cheryl Schultz, professor, WSU School of Biological Sciences, [schultzc@wsu.edu](mailto:schultzc@wsu.edu).



Photo Cheryl Schultz

#### How to participate:

1. If you see a monarch outside of overwintering groves, take a picture! (Don't worry, it can be far away and blurry).
2. Report it through the following options, and be sure to include date and location:
  - iNaturalist (the app is free)
  - Western Monarch Milkweed Mapper OR
  - Email it to: [MonarchMystery@wsu.edu](mailto:MonarchMystery@wsu.edu)
3. Be entered to win a variety of prizes every week you report a sighting.





## WINTER INJURY OF LANDSCAPE PLANTS IN THE PACIFIC NORTHWEST

Adapted From PNW Plant Disease Handbook

### Factors that Influence Winter Injury

Plants in the Pacific Northwest may be injured by extreme cold or other types of winter weather. Winter injury may be caused by a complex combination of circumstances rather than a single factor, and the extent of injury will also vary. Some of the factors are weather, site, and plant.

### How to Tell Whether a Tree or Branch is Alive

Before pruning a sad-looking plant to almost nothing or pulling it out altogether, check to see whether it is still alive. Scrape the bark away with a fingernail or make a shallow slant cut just under the bark with a pocket knife. Live branches are bright green or white just beneath the bark. Dead branches are brown and may be soggy. Check the tree or shrub in several places: at the twigs; down the branches, and at the crown or soil line. Older wood may be more hardy than younger wood. If the outer twigs have died, move toward the trunk until you hit live tissue.

Sometimes, faded green branches may begin to regrow and do not die. Remove damaged tissue after you give the plant a chance to recover and it starts to grow again.

### What to Do for Winter-injured Plants

Don't do anything until late spring when new growth begins on the live wood and does not begin on the dead wood. Before doing anything, check to be sure the crown is alive. Then prune to remove dead wood.

- Prune properly. Do not leave stubs. Prune back to live, green, healthy wood. Prune to a bud, stem, or trunk. Give a suffering plant a chance to become healthy again. Prune out only dead and severely damaged wood. Do not prune live wood. The larger the leaf surface area of the plant, the better it can manufacture food and grow new tissues.
- Water properly. Make sure the plant is not further damaged by drought. Pay special attention to evergreens and plants situated under eaves. Water properly throughout the spring, summer, and fall. Do not overwater.
- Fertilize properly. Fertilization is recommended if the soil lacks adequate amounts of basic plant nutrients.
- Mulch with a loose organic mulch to maintain soil moisture and to protect from temperature extremes.
- On damaged fruit trees, remove as much developing fruit as possible to allow the tree to recuperate rather than produce fruit.

The best thing you can do for your injured tree or shrub is to avoid further stress during the coming season by giving it special attention and care.



Flowering pear tree with winter injury to one side. Damage on the SW side easily seen in the left image the summer after the injury occurred. Center image is the same tree 2 years later and again 4 years later on the right.  
Jay W. Pscheidt, 1990, 1992, and 1994.



Winter injury on peach caused flower buds to wither up and drop off. Flower bud scar to the right of the pink buds and a dried flower bud below.  
Jay W. Pscheidt, 2014.



Winter injury of rose. Note the black and yellowed canes.  
Jay W. Pscheidt, 1991.

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*Debbie M. Williams*

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County Extension Director