WASHINGTON STATE UNIVERSITY
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Newsletter

January 2019

Announcements

JANUARY

8-9 Cropping Systems Conference, Three Rivers Convention Center, Kennewick, WA. Integration of dryland and irrigated direct seed cropping systems. For information visit: http://www.directseed.org/events/annual-conference/.

15 Cereal Grain Seminar, Walla Walla Airport Conference Room. Registration begins at 8:30 a.m.–3:30 p.m. Offering 5 WSDA pesticide credits (pending) and 5 ODA (pending) credits. **Lunch is included. Register at the WSU Extension office by Wednesday, January 11th or go to** https://www.brownpapertickets.com/event/4025007 **to** register online. Fee of $25 includes lunch. For more information, call Becki at 509-524-2685.

16-17 Hay Expo, Three Rivers Convention Center, Kennewick, WA. For anyone who grows hay for a living or would like to know more about hay production. To register, visit http://www.wa-hay.org/ or call 509-585-5460 for more information.

22-24 WA/OR Potato Conference 2018, Kennewick, WA, Three Rivers Convention Center. Includes a Spanish language program with pesticide credits for farm workers. For more information or to register, call 509-766-7123 or visit www.potatoconference.com .

29-30 Pre-License Pesticide & Recertification Training, Yakima, Convention Center, 8:00 a.m. to 4:30 p.m. Visit http://pep.wsu.edu for more information.

FEBRUARY

9 PNW Beekeeping Conference, EWU Campus, Cheney, WA. Latest bee research and best practices in beekeeping. Register via WASBA.ORG.

11-14 Washington Wine Growers Annual Convention & Trade Show, Three Rivers Convention Center, Kennewick, WA. The premier educational and networking opportunity for the Northwest grape and wine industry. For more information visit: https://www.wawinegrowers.org/.

19-20 Recertification Pesticide Credits (6/day) & Pre-License Pesticide Training, Three Rivers Convention Center, 8:00 a.m. to 4:30 p.m. You must pre-register at least 7 days prior for the courses at pep.wsu.edu. For directions and training agendas, visit pep.wsu.edu; for registration questions call 509-335-2830 or email pest@wsu.edu; license information available at WSDA 877-301-4555.

20-24 Northwest Flower & Garden Show, Seattle, Washington State Convention Center, 7th & Pike. See designer gardens and attend free hands-on demonstrations and seminars. For more information, visit www.gardenshow.com or call 253-756-2121.

21 Soil Acidity Workshop, Banyans on the Ridge – Pavilion, 1260 Palouse Ridge Dr., Pullman, WA. The workshop will feature local experts presenting current research on soil acidity for the Palouse region, and a forum for questions. The workshop is approved for 7 CCA credits and includes lunch and refreshments. Visit: https://extension.wsu.edu/farmers-network/education/workshops/soil-acidity-amelioration/ for more information.

25 WSU Oilseed Production Workshop, Clarkston, WA. One-day workshop includes region-specific topics. Attendees will learn about in-season crop diagnostics for pests, diseases, nutrients, and herbicide damage, fertilizer management for spring and winter oilseeds. Registration is available at http://css.wsu.edu/biofuels/ and includes lunch and refreshments. To learn more, send an email to ksowers@wsu.edu.

28– March 3 Sewing & Stitchery Expo, Puyallup Fair & Events Center. Over 100 daily seminars, classes, and booths with over 400 exhibitors. Visit: www.sewexpo.com.

MARCH

12-14 Healthy Soils, Healthy Region Workshop, Pendleton Convention Center, Pendleton, OR. Coming together to increase the adoption of soil health practices through coordination and training. More information at: http://csanr.wsu.edu/healthysoils/.

Updates

SOIL ACIDITY AMELIORATION

The event, to begin 7:45 a.m. Thursday, February 21st, at Banyans On The Ridge Pavilion, will cover several aspects of liming, the effect of low pH on soil health, managing nitrogen to reduce acidification, the economics of soil acidity, and a panel discussion covering microbes, herbicides and agronomy of low pH soils. Speakers include scientists from WSU, and University of Idaho.

Lunch and light refreshments are included with registration for the day. This workshop has been approved for seven Certified Crop Advisor credits.

Registration available at Brown Paper Ticket website https://www.brownpapertickets.com/event/3821501. **Contact:** Carol McFarland, WSU Extension, carol.mcfarland@wsu.edu.

Farming

BIODEGRADABLE PLASTIC MULCH COULD HELP ENVIRONMENT, INCREASE YIELD

Adapted from Seth Truscott, College of Agricultural, Human, and Nature Resource Sciences

Figure 1 Researchers lay mulch at Boxx-Berry Farm in Ferndale, where WSU researchers are studying biodegradable mulches.

U.S. agriculture uses about a billion pounds of plastic annually, and much of that material ends up in landfills, rivers, oceans and even our food, beverages and bodies.

Jessica Goldberger's aim is to help farmers grow crops more sustainably and curb global dependence on wasteful, perpetual plastic.

Goldberger, associate professor in WSU's Department of Crop and Soil Sciences, and past president of the Agriculture, Food and Human Values Society, recently gave that group's 2018 presidential address to agrifood scholars. Leveraging the opportunity, she provided new ideas for future research on plastics, and showcased discoveries on how farmers could be encouraged to use biodegradable plastic mulch.

Her address is published in the December 2018 issue of the journal Agriculture and Human Values.

Biodegradable plastic mulches offer the potential to control weeds, retain moisture, and boost farm yields, but many farmers are hesitant to adopt them because of concerns over uncertainty, risk and aesthetics.

Goldberger leads the Technology Adoption Working Group — one of seven teams collaborating in a USDA National Institute of Food and Agriculture Specialty Crop Research Initiative project — that focuses on performance and adoptability of biodegradable plastic mulches.

Her group — a team of scientists in sociology, horticulture, economics, anthropology and environmental psychology — is working to understand farmer attitudes and acceptance of biodegradable mulches. The team's work highlights the need for improved products and new research on:

- Standards
- Best practices
- Ways to better attract organic farmers.
- Presence of microplastics in agricultural ecosystems

"All of us, as human beings living in the Plastic Age, should take stock of the role of plastics in our day-to-day lives and consider changes to our relationship with plastics," she said.

At WSU, Goldberger works at the intersection of agriculture, sociology and food systems. She explores sources of agricultural knowledge, the spread of agricultural innovations, and the ways agricultural beliefs, choices and practices affect rural quality of life, food security, sustainability and the environment.

Forestry

REVERSE ENGINEERING REVEALS PINE TREE'S CHEMICAL PRODUCTION — WORTH BILLIONS

Adapted from Eric Sorensen, WSU News

Washington State University researchers have reverse engineered the way a pine tree produces a resin, which could serve as an environmentally friendly alternative to a range of fossil fuel based products worth billions of dollars.

Mark Lange and colleagues in the Institute for Biological Chemistry literally dissected the machinery by which loblolly pine produces oleoresin.

Before the arrival of petroleum-derived alternatives in the 1960s, the sticky, fragrant oil resin mixture was

central to the naval stores industry and products ranging from paint and varnish to shoe polish and linoleum.

Meanwhile, the international demand for oleoresins has risen. Naturally occurring oleoresins — from sources like loblolly pine — are often preferred. A 2016 analysis by Grand View Research predicted that global sales of oleoresin will approach $1.7 billion by 2022.

The Lange lab's discovery of how it is made "could inspire new engineering approaches for the production of renewable, green chemicals," says Dutch biologist Harro Bouwmeester in a commentary accompanying Lange's research in the Journal of Experimental Botany.

As natural factories go, said Lange, plants are industry leaders. Humans, he said, produce roughly 3,000 metabolites, the small molecules that occur in human metabolism.

"Plants make hundreds of thousands," he said, "and most of what's out there in terms of chemical diversity is probably unknown. It would probably be in the millions. One of the questions is: Why do plants do that?"

Historic photo of man chipping a loblolly pine tree in Florida, circa 1910 -20. Workers would cut away large chunks of bark from tree trunks, causing the flow of oleoresin, which was collected in pans placed below.

In the case of the loblolly pine, oleoresin is a critical defense against insects and pathogens. While an animal can run from an attacker, a plant has to stand and fight. To do this, the pine produces oleoresins so toxic that the plant has to store them in specialized structures, called resin ducts, to keep from poisoning itself.

To see how oleoresin is made, Lange concentrated on cells around the ducts, cutting them out with a laser-equipped microscope.

"Essentially what you do is draw around the area that you want to cut out and then the laser follows what you've been drawing and blasts it off," Lange said.

Fittingly, Lange did this in WSU's Franceschi Microscopy and Imaging Center, whose namesake, the late Vincent R. Franceschi, also studied resin ducts and their role in defending a conifer from pests.

Lange compared cells near the resin ducts with cells further away, looking for the expression of genes that would trigger oleoresin production.

Using the amplified genes from several thousand cells, Lange and his colleagues identified genetic sequences known to produce certain enzymes and matched them to reactions that could lead to the creation of oleoresin.

"We are trying to understand the biochemical reactions that lead from a simple imported carbon source to a complex mixture of oleoresin and products," Lange said. "That's the factory.

A more efficient and less damaging method for extracting oleoresins, known as borehole tapping, has been developed by the University of Florida. See video at borehole tapping method .

With a better knowledge of the reactions, and their genetic underpinnings, researchers can screen trees for genes that make them better producers of the resin. Or they could replicate the resin-producing metabolic pathway in other organisms.

"That could be an E. coli or a yeast, something of that kind, and then you can make specific chemicals from there," said Lange.

"Ultimately," said Bouwmeester in his commentary, "this could result in robust pine tree genotypes that can compete with classical oil based chemistry for the production of green chemicals through forest plantations."

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Livestock

DO YOUR HORSE A FAVOR, GIVE IT A FLU SHOT

Dr. Brian Joseph **Washington State Veterinarian**

Equine influenza virus (EIV) or "horse flu" is a highly contagious but preventable disease found here in Washington. Protect your animals with regular vaccinations and proper hygiene.

About horse flu

Equine influenza outbreaks occur annually in Washington and across the United States and are a major cause of economic loss due to lost training days and veterinary costs.

They can be prevented through immunization, but the virus remains persistent because of irregular or inadequate vaccination and asymptomatic disease carriers.

Horses in Washington have been infected

Every year, horses in Washington become infected with EIV. Since mid-November 2018, eight confirmed cases have been reported to the Washington State Veterinarian's office. However, EIV is a common disease and is managed by private veterinarians, not WSDA.

Signs that your horse may have EIV

- High fever
- Thick green or yellow nasal discharge
- Swollen lymph nodes under the jaw
- Harsh, dry cough
- Depression, loss of appetite and weakness

Most horses recover in two to three weeks, although complete recovery in severely affected animals may take several months. Any horse showing clinical signs should be isolated for at least 21 days.

Can humans get EIV?

No, but dogs can.

What to do if you think your animal may have the flu

Call your vet if you think your horse may be infected. Veterinarian treatment is vital for proper diagnosis and care. Uncomplicated cases require rest and supportive care. Affected horses should rest for a minimum of three weeks -- one week for each day of fever. These horses should not attend shows or leave the premises during that time.

Transmission

Equine influenza virus spreads rapidly through barns, race tracks and training facilities through the inhalation or contact with germs shed by infected horses.

Contaminated equipment such as feed buckets, tack and grooming aids can spread the disease.

Practice good hygiene

The virus can be inactivated by commonly used disinfectants and diligent use of hand sanitizer. Exposure can be reduced through quarantine and observation of newly acquired horses for a two week period; a prudent practice after any horse acquisition or transport.

How to protect your animals

Vaccinate. This is a preventable disease with regular immunizations and biosecurity.

It is recommended that at-risk horses, such as show horses, be immunized at three month intervals while sedentary horses may be vaccinated annually due to a smaller risk of exposure.

Work with your veterinarian to come up with a vaccination program and biosecurity plan tailored to your needs.

For additional information visit **WSDA's Animal Health Program page**.

Home & Garden

GET A LEG UP ON FRUIT TREE PROBLEMS WITH DORMANT OILS

Adapted from Kym Pokorny

Just when you're ready for a long winter's nap, it's time to tend your fruit trees.

If you don't, chances are they'll struggle in the coming season. Giving them attention now helps ward off insects and diseases, said Steve Renquist, a horticulturist for Oregon State University Extension Service who has taught hundreds of gardeners the basics of managing fruit trees.

Applying dormant sprays – Superior oil, copper, and sulfur – helps control nasty pests and diseases like codling moths and apple scab.

Superior oil, also called horticultural oil, is a highly refined miscible oil (up to 99.9 percent pure) that when mixed with water and sprayed on trees will smother overwintering insects and their eggs. It targets mites, aphids, leaf hoppers, mealy bugs, leaf miners and more.

Lime sulfur is a fungicide that controls fungal diseases like apple and pear scab and peach leaf curl.

Copper is a fungicide and bactericide that controls diseases like bacterial blight, fire blight and Nectria canker. It kills bacteria and fungal spores left in the trees, including Pseudomonas syringae, a common bacteria that can cause gummosis, which is oozing of bacterial infested honey-like sap from bark split. In a rotation of copper and sulfur, the copper will deal with bacteria and sulfur will target fungal diseases best.

With a spray regimen of all three – used in conjunction with good hygiene and pruning practices – most fruit tree problems can be nipped in the bud, according to Renquist.

The trio of pesticides, which can be used in organic gardens, fit snuggly into the realm of IPM or integrated pest management, a practice that uses a variety of low-risk tools to deal with pest problems and minimize risks to humans, animals and the environment.

“They are a really important part of good IPM,” Renquist said. “When you’re planning a program, you want to use products that have low toxicity, and won’t cause a lot of problems for the environment. Dormant sprays score pretty well. Their toxicity level for animals is pretty low if you follow the labels. Superior or horticultural oil kills target insects, but beneficial insects are rarely around trees in the dormant season.”

A good reference for disease and pest control is Extension’s Managing Diseases and Insects in Home Orchards, which has a list of cultural practices and least toxic products for various pests and diseases.

Renquist recommends a three-pronged approach to spraying. In fall around Thanksgiving, apply copper or sulfur but not both. Spray sulfur mixed with Superior or horticultural oil in early January. Then use copper or sulfur in mid-to late February. If you used copper in fall, use sulfur in February or vice versa. Don’t combine copper and sulfur in the same tank to minimize the risk of damage to tree bark.

If you don’t like to spray or forget the early spray, Renquist said the January application is the most important. This year, if you’ve missed the January timing, you’re still better off to make the third spray.

Some tips from Renquist:

- Apply Superior or horticultural oil during the dormant season to allow for greater coverage and a higher likelihood of getting to a majority of insects.
- Spray when temperatures are above freezing but before buds break.
- Don’t mix copper and sulfur in the same tank.
- Prune trees to keep the branches separated for good pesticide coverage and good hygiene. The best time is in January so that the last spray or two will cover the pruning wounds.
- Clean up fruit, leaves and debris under trees. They can harbor insects and diseases. If you don’t want to rake leaves, mow over them a couple of times and leave them to decompose.
- Clear weeds from around the trunk and under the tree where insects and rodents can hide.
- Add organic matter around trees for fertility and because enhanced microbial populations in the soil will help devour the remnants of orchard sprays that fall to the ground.
- Accept a little damage to fruit.
- When planting fruit trees, consider dwarfs so you don’t need a ladder for spraying.
- Read the labels of all products you use and follow the instructions. Using any pesticide incorrectly is not only harmful to you and the environment, it can actually cause damage to the very plants you’re trying to benefit.

Family Living

RESOLVE TO REPLACE DIETS WITH GOOD HEALTH HABITS

Adapted from Linda Rellergert, University of Missouri Extension

This is the time of year when many people start diets. But after a few weeks of not getting enough to eat or eating food that does not taste good, most dieters give up, having "failed" once again. The truth is, though, it is the diets that are the failures, not the people who try them.

Instead of improving health, dieting is often harmful and counterproductive. Health statistics show that only 5 to 10 percent of those who diet and are able to lose weight are able to maintain the weight loss for more than a short time. Most dieters quickly regain the lost pounds - plus a few extra - and end up heavier than they started.

Diets promote unhealthy eating habits, often by eliminating nutritious foods. Dieters are encouraged to ignore internal body signals of hunger and fullness. Eventually, the ability to respond appropriately to these normal physiological processes is lost. Chronically hungry people become obsessed with food and are likely to overeat when an opportunity to do so presents itself.

Accept that there is no ideal body size, shape or weight. People come in a variety of sizes and shapes, and all can benefit from a healthy lifestyle. Research conducted by Steven Blair, director of research at the Cooper Institute for Aerobics Research in Dallas, has shown that people can be both fit and fat. He notes "There will always be tall, skinny people and short, stocky people. That's out of our control. What we can do is exercise regularly, follow good health practices, and live life to the fullest." Each person is responsible for taking care of his or her body. Acceptance and self-respect lead to confidence, wellness and wholeness.

Adopt normal eating patterns. Normal eating means regular meals and one or two snacks a day to satisfy physical hunger. Healthful food choices provide variety, moderation and balanced nutrition. All foods can be part of healthy eating. Respect the body's signals of hunger and fullness by eating when hungry and stopping when satisfied. Normal eating also means eating more some days and less others, and trusting that it will balance out over time. Finally, find non-food ways to cope with stress.

Make physical activity a part of every day. Benefits include reduction in blood cholesterol and lipids, lower blood pressure, and relief from stress. Find activities that are fun and enjoyable, and that fit into daily routines. Walking, sledding, skating, dancing, bowling, gardening, or playing with the kids are excellent ways to get physical. Then you can go on to add other activities like weight training, yoga or Tai Chi that build muscles or improve balance and flexibility.

Get more sleep. Most of us get seven or fewer hours of sleep rather than the eight hours a night recommended by the National Sleep Foundation. This may seem like just a small deficit, but the effects are cumulative. Chronic sleep deprivation contributes to stress and tension, accidents in the home, work place and on the road, and can cause difficulty in coping with the little everyday annoyances of life.

4-H

ACHIEVEMENT NIGHT

On November 18, 4-H youth and adult volunteers were honored at the 2018 annual 4-H Achievement Night. Approximately 185 awards were presented to 4-H members, clubs, and volunteers in recognition of their 4-H accomplishments during the past year.

Audrey Bennett received recognition as the Outstanding 4-H Volunteer Leader of the Year for over 8 years of exceptional leadership and service to the young people of the Walla Walla County 4-H program. Audrey is greatly appreciated for her dedicated service to 4-H as a volunteer.

Ruth Ladderud received the Inspirational Leader of the Year award and has been a 4-H leader for 15 years.

Walla Walla Exchange Club received the 4-H Appreciation Award for their continuing support of the 4-H program and its members.

Two outstanding 4-H Members from Walla Walla County were selected in each age division based on the quality and growth of their 4-H project, leadership skills, and their active involvement in the county 4-H program. The junior division outstanding members were Sierra McColley and James Perkins; the intermediate division recipients were Lauren Green and Isacc Miller; and the senior division winners were Rebecca Holderman and Timothy Daves. Receiving honorable mention awards Joseph Newton, Adrienne Berube, Austin Renwick, Lars Bray, Avery Klein, Regina Nelson, Ryan Chapin and Carolyn Bergman.

WASHINGTON STATE UNIVERSITY
WALLA WALLA COUNTY EXTENSION

Celebrating 100 Years of Extending Knowledge and Changing Lives.

Debbie M. Williams
County Extension Director