



New blackberry variety ORUS-4892-1



A Newsletter for Friends of North Willamette Research and Extension Center

SUMMER/FALL 2020

Berry Research and Breeding Evaluations During a Pandemic

By **Bernadine Strik**, Professor, and Berry Crops Research Leader

These are strange and difficult times for us all. Leading a berry crops research program during a pandemic has been challenging. Maintaining and collecting data on our cooperative breeding plots and continuing on-going research trials are considered essential functions. We are fortunate to have an excellent team including my faculty research assistants, Amanda Davis and Pat Jones, summer students, and the farm staff at the NWREC that are key to our program getting the most important work done in our federal- and industry-funded trials.

We have several on-going research trials in blueberry and blackberry. Students helped hand pick early-season 'Duke' blueberry (Figure 1) to collect our last year of data on the impact of **weed mat**

color and adding a layer of sawdust under weed mat compared to just sawdust alone as a mulch. So far, covering a layer of sawdust with weed mat appears to be a winner compared to weed mat or sawdust alone.

We machine harvested our newest blueberry cultivar, Mini Blues, in mid-July (Figure 2). It's clear that this small-fruited, exceptionally flavored blueberry variety (Figure 3) from our USDA/ARS-OSU cooperative breeding program is well-adapted to leaving bushes un-pruned for several

years—a huge cost savings for growers. Growers cannot afford to hand-pick this tiny fruit, so evaluating machine harvesting is very important. Thank you to our local company, Littau Harvesters, for the**continued on page 2**



Figure 1. Students picking Duke blueberry in weed mat color trial.



Figure 2. Senior Faculty Research Assistant (FRA), Amanda Davis, driving Littau machine harvester for first pick of Mini Blues in pruning research trial.



Figure 3. Our USDA/ARS-OSU small-fruited blueberry cultivar Mini Blues.

in-kind donation to our program. We are also evaluating the effect of pruning and trellising options in the late-season cultivar 'Legacy' by measuring yield, fruit size, and hand- and machine-harvest efficiency or costs.

We continue to be world leaders in evaluating **organic production systems** in blueberry. Our certified organic trial is in its 14th year. Portions of this trial have also been studied by a Masters and two Ph.D. students. Our long-term trial on the impact of planting method, cultivar, mulch type, and fertilizer rate and source on yield and fruit quality, weed management costs, and soil and plant nutrient status has been published in several papers. One of these, highlighting the disadvantage of some fertilizer sources in increasing soil and plant potassium and reducing yield, was awarded the best published paper in a journal of the American Society for Horticultural Science in 2019. We are now evaluating alternative organic fertilizer sources in this one-acre planting. Amanda Davis, Senior Faculty Research Assistant at NWREC, managed a commercial crew that helped us hand-pick our 'Duke' and 'Liberty' fruit for data collection (Figure 4).

In our newest trailing blackberry cultivar, **Columbia Star**, we are carefully managing the planting, established in fall 2019, by training the new canes as they grow (Figure 5). These will fruit for the first time in 2021. In addition to comparing high- to normal planting density, we will test the impact of primocane suppression and low input pruning and training on grower returns. The USDA/ARS, in collaboration, will be measuring plant water uptake using a weighing lysimeter with a goal of optimizing plant irrigation for best plant growth and water conservation.



Figure 5. FRA, Amanda Davis, hoeing in *Columbia Star* blackberry, new research trial.



Figure 4. Commercial picking crew in organic *Liberty* research trial.



Figure 6. FRA, Pat Jones, driving Littau machine harvester in red raspberry breeding evaluation trial.

This was already going to be a difficult summer for us in the **USDA/ARS-OSU Cooperative Breeding Program**; we sadly lost USDA/ARS berry crop breeder, Dr. Chad Finn, in December 2019. Our team at the NWREC has been working closely with the team at the Hort Crops Research Unit to ensure that data are collected from the evaluation trials of strawberry, raspberry, blackberry, and blueberry and plots and selections in the breeding program continue to be well maintained by Pat Jones, Senior Faculty Research Assistant at NWREC. He drove a Littau machine harvester to pick the red and black raspberries (Figure 6). I am walking the breeding plots to help evaluate the advanced selections and although I miss my colleague, it's exciting to see the great



Figure 7. Bernadine Strik evaluating late-season USDA/ARS-OSU advanced blackberry selection, ORUS 4670-1.

selections he has developed and help them move forward in the program (Figure 7). For example, the early-season blackberry, ORUS 4892-1, produces huge fruit and shows promise for commercial and home gardeners (see top right cover photo). Evaluation in all of these crops continues and the most promising will move to grower trials and then, if suitable, will go on to be named, patented, and released to the industry.

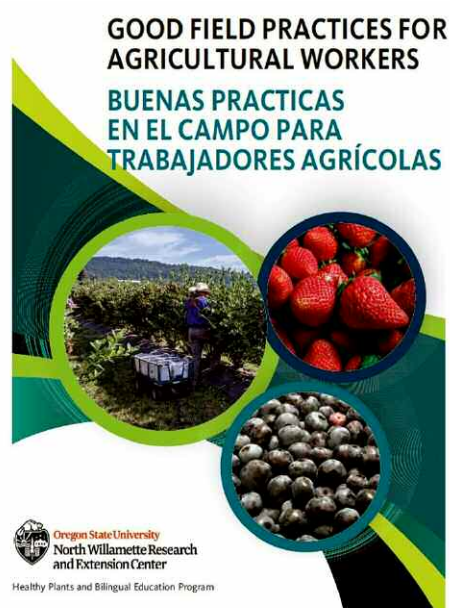
It has not been business as usual in our program at the NWREC. We had to cancel all three of our berry field days and we miss being open to the industry and public. However, we are fortunate that we have been able to continue our important work, even if it means we wear face masks and practice social distancing. We hope things will be back to normal next summer!

Food Safety Education in COVID-19 Times

By **Luisa Santamaria**, Extension Nursery Plant Pathology and Bilingual Education, and **Maria Marlin**, Faculty Research Assistant

When COVID-19 hit, Luisa Santamaria and Maria Marlin, of the Healthy Plants and Bilingual Education Program at NWREC, had just finished finalizing the agenda and securing locations for their annual "Train the Trainer" Food Safety Practices workshop. These workshops, sponsored by the Oregon Blueberry Commission, are designed for small farm owners, contractors, and those in charge of a farm's Food Safety program. Ultimately, the target audience was anyone who is responsible for educating harvest workers in best hygiene practices to avoid fresh produce contamination.

Very quickly, Luisa and Maria had to switch all the workshop materials to an online, virtual format. The training took place via Zoom, and there was a total of 10 sessions (five in Spanish and five in English) during May and June of 2020. The workshops covered how microbes can be introduced in a farm environment, new COVID-19 regulations, and tips for effectively training workers. There was even a group activity that used the "Breakout Room" feature on Zoom. Overall, 169 people attended the trainings. These attendees, in turn, train others at their work places, so the effects this education are much more far-reaching. The feedback from participants has been positive, and we are thrilled we were still able to offer these successful workshops in these challenging times!



The team has also launched a brand-new bilingual Food Safety manual and 5 videos for training harvest workers. The manual is complete with ten modules, review questions, Spanish and English side-by-side and a fun and colorful design. This manual will make your training a breeze! Cost is \$35 per manual, which includes shipping and handling. To order, visit:

https://apps.ideal-logic.com/osuextension?key=F3T9-25VWY_K9KH-5PTF_4b4b5d78

The videos are free and can be found at:

<https://catalog.extension.oregonstate.edu/em9290>

Meet Dalyn McCauley

Dalyn began work at NWREC in mid-May and just days following the completion of her Master's degree in Water Resource Engineering at the University of Idaho.



Dalyn, who hails from Central Point in Southern Oregon, is a new Faculty Research Assistant working on Lloyd Nackley's Nursery Production Research and Outreach Team. Dalyn was hired with funding provided by an Oregon Department of Agriculture's Specialty Crops Block Grant. The project she is working on is titled: Promoting Sensor-Based Irrigation Management.

Dalyn's career goal is to use her engineering background and expertise to help solve critical and practical issues in agriculture. And, efficient use of water for irrigation in agriculture is certainly one of these issues!

Thus far, Dalyn has been busy building technology to support her research including circuitry, data loggers, and controls to turn irrigation on and off based on environmental parameters. According to Dalyn, "We want to evaluate the actual water use by plants to customize the irrigation pattern—only adding the water needed to maximize plant health and growth and not watering using a more traditional timer system. Irrigation efficiency in agriculture and getting the most crop from every drop, is what this is all about."

Nackley reports that Dalyn's work includes setting up low cost weather stations to measure weather parameters that drive plant water use. "We are really trying to dial in the precise amount of water needed to grow nursery plants, hazelnuts, and wine grapes with this grant funding."

"I believe we have the right person to help lead this effort. I have been impressed by Dalyn's ability to integrate and manage her projects during this exceptionally challenging COVID-19 period. She's knowledgeable, analytical, and pleasant to work with. She's been a great team member leading her projects and collaborating to support others." Welcome to NWREC, Dalyn!



Machine Harvesting for Blueberries has New Approach

By **Sarah Doane**, Faculty Research Assistant

With the continued growth of the blueberry industry in the Pacific Northwest, and coupled with the ongoing and critical labor shortages in the agriculture sector, it is especially important to find effective new ways to harvest fresh market blueberries while still maintaining the highest quality of fruit. Conventional machine harvesting equipment causes too much damage to the fruit to make this a preferred option. A new method—and one that will help expand the number of blueberry varieties that can be efficiently harvested mechanically—is using a “soft catch” surface developed for the OXBO over-the-row harvesting machine.

OSU Blueberry Extension Agent, Dr. Wei Qiang Yang, has been working on the overall effects of this improved technology for several years. This year we continue to evaluate the effectiveness of using the modified OXBO machine on several important fresh market varieties—and the results look very promising.



Wei at field site in the COVID world.

We examine the internal bruising damage immediately after picking. Also, we evaluate the berries after they have been sorted on the packing line. Treatment replications are, then, placed in clam shells and stored in a walk-in cooler for up to 4 weeks. Each week, samples are taken out and firmness readings are performed, blueberries are sliced open, and pictures



OXBO's traditional machine and the modified machine.



OXBO's modified harvesting machine.



Sarah slicing blueberries to photograph for future evaluation of internal bruising.

are taken for future determination of internal bruising damage. Next, the sliced berries are stored for brix (sugar content) and acidity readings.

Our goal is to compare blueberries harvested by hand, the regular OXBO harvest machine commonly used in fields, and the new modified OXBO harvest machine. The results will provide a great view of how to improve the efficiency of harvesting fresh market berries mechanically, minimize internal bruising damage on the berries, and maintaining the best quality product for the market and consumers. Results should be ready for sharing later this fall following the harvest season and all of the data has been analyzed.



Summer student, Caitlin McCabe, performing Brix and acidity tests.

Blueberry Donation Provides Important Help in Pandemic

Nearly 1,800 pounds of fresh picked blueberries—grown at NWREC—helped feed the hungry in the Portland area during July. And, the donated produce was very well appreciated!

Mike Bondi, NWREC Director, said, “The pandemic has created a lot of change for all of us this summer—and, not to mention the critical need for additional food supplies at local food banks, pantries and points of distribution.”

Normally, NWREC relies on OSU Master Gardener volunteers to harvest fresh fruit in some of the research trials. That fruit is purchased by the volunteers and the funds they provide help support the research. But, during the pandemic, the Research Center has restricted access to faculty and staff only, and then, only on a limited schedule. Doing business, as usual, isn't possible.

This year one of the research trials had an especially heavy fruit load and the plants

were very tall. Hand picking would have been difficult. IR-4 Research Leader, Dani Lightle, arranged with the Berry Research program to harvest the trial with their over-the-row machine harvester—provided on loan each year from Sublimity-based Littau Harvesters. Faculty Research Assistant, Pat Jones, piloted the harvester with help from one of the Berry Research summer students. Then, Heidi Noordijk, Metro Small Farms Coordinator; Kelly Streit, Clackamas Family and Community Health Extension Agent; and, NWREC Farm staff, Marc Anderson—Farm Manager, and Derek Wells—Facilities Coordinator, sprang into action to figure out a way to get the fruit to where it could do the most good.

Approximately 120 harvest containers (“flats”) were borrowed from Gingerich Farms, Canby. The NWREC Farm staff delivered the fruit to a local farm near NWREC, Big B Farms, who had cold storage space available. All of this was a collaborative effort undertaken during typi-

cal circumstances. However, nothing about this year has been typical.

The following morning, the berries were transported back to NWREC, loaded into a cargo van, and delivered to the Tualatin School House Pantry, Tigard High School Food Pantry, Clackamas County Gleaners, and the Clackamas Service Center. Collectively, these organizations distribute emergency assistance food supplies to more than 10,000 families in the Clackamas and Washington County areas—relying on donated supplies from area farmers and grocery stores and distribution centers.

Kelly and her husband, Russ, handled the distribution. She reports, “Everyone was very gracious and appreciative for the donation. This fresh fruit is a huge addition to the local supply for needy in the community. We all thank those who helped make this possible.”

Great work, team!

Boxwood Research Looks at Nursery Practices to Limit Infection

A new research project at NWREC this summer is directed at Boxwood Blight—a devastating disease of concern for nurseries around the region.

NWREC's boxwood blight research project is a collaborative effort between U.S. Department of Agriculture—Agricultural Research Service (USDA-ARS) researchers, Jerry Weiland, Carolyn Scagel, and Jesse Mitchell—located in Corvallis—and NWREC's Nursery Production Research Leader, Lloyd Nackley. Their work is investigating how different watering regimes and plant spacing may be affecting the spread and severity of boxwood blight in container nurseries.

According to Weiland, “We hope to find a sweet spot where we can markedly reduce the potential spread of the infection by modifying air circulation and flow between plants and/or limiting irrigation patterns. We know that poor air flow and the presence of moisture on the foliage for extended periods can create ideal conditions for the development of the disease and spread. Modifying the plant's environment, where they are being grown, would



be an ideal first step to controlling this problem at our production facilities.”

Setting up the project and irrigation infrastructure began in June. Inoculation of the blight pathogen was done in late July. The project is expected to extend into the late fall. “NWREC is an ideal place for this research,” Weiland said. “We have excellent facilities for conducting a trial like ours, there is a good group of nursery program faculty and staff to work with that understand commercial production and managing disease issues, and we are in the heart of the Willamette Valley

where most of the nursery growers are located.” Depending on the results this summer and fall, there will likely be a follow up trial next year, too.



Searching for the Best Oregon Olive

By **Neil Bell**, Community Horticulturist, OSU Extension Service—Marion and Polk Counties and **Javier Fernandez Salvador**, Small Farms Extension—Marion and Polk Counties

One of the obstacles for growing olives in western Oregon is susceptibility to cold injury during our winters. We can be colder than the natural range where olives typically grow. The olive research program at NWREC is looking at different olive cultivated varieties (known as cultivars) that might survive here in our climate and produce commercial quantities of fruit for oil or table olives.

The research team working on this project includes OSU Extension faculty Neil Bell, Heather Stoven, and Javier Fernandez Salvador—all working with Community Horticulture and Small Farms Extension programming in Marion, Polk and Yamhill Counties. Also integral to this effort is OSU Horticulture graduate student Tessa Barker and former Research Assistant Avery Pheil.

According to Bell, “We currently have about 120 different accessions (or, propagation of a plant from an olive tree of interest) growing on in 4” pots for a new planting scheduled for the spring of 2021. We’ve propagated these plants from parent plants acquired from the USDA-ARS Germplasm Repository in Davis, California, which maintains a collection of about 113 olive cultivars from around the world—and is one of the most extensive genetic collections for olives, anywhere.” In addition, the project was gifted a collection of 78 accessions, of varying ages and sizes, grown by Mike Remmick of Hortifrut in his greenhouse in Dayton. He had been looking for an opportunity to plant out his collection. His plants are now part of the NWREC study and provides an opportunity to add cultivars not available from Davis. Finally, other olive plants were purchased and donated.

The cultivars from Mike Remmick were planted at NWREC in August 2018 to create an Olive Stock Block where they grow side-by-side in an irrigated field. The main purpose of the Stock Block is to serve as a source of cuttings for the propagation of the plants that will go into the cold hardiness evaluation study to be planted next spring. However, the Stock Block—now two years in the ground at NWREC—provides the opportunity to get an early look

at how this wide range of cultivars are performing.

In July, Neil, Mike Remmick and Sean Hogan—owner of Cistus Nursery in Portland—spent a day going through the planting and rated the plants for growth habit, vigor, flowering and fruit set to pro-



vide some anecdotal, non-replicated, information about the various cultivars.

Although the purpose of the cold tolerance evaluation is primarily to identify hardier cultivars of olives for western Oregon, that alone will not be enough. The hardier cultivars must also produce good yields of quality fruit. Even with very mild weather the last two winters since the Stock Block was planted, the July review found some limited freeze injury in the planting. Also, there were significant differences in vigor and habit among the various cultivars. But, what was most noticeable was the variation in the extent of flowering between cultivars, as well as, fruit set. Some of this is to be expected, since the Stock Block plants vary in age. But, some cultivars really stand out in terms of potential productivity. ‘Tragolea’, ‘Carboncella’, ‘Mixan’ and ‘Arbosana’, in particular, distinguished themselves with high fruit set. These cultivars are from Greece, Italy, Albania and Spain, respectively. With

the exception of ‘Arbosana’, none of these are grown to any extent in Oregon. Others that displayed good fruit set include ‘Redding-Picholine’, ‘Moraiolo’, ‘Lucca’, ‘Coratina’, ‘Chemlali’ and ‘Bouteillan’. These cultivars were also selected from various locations throughout the Mediterranean basin or in the case of ‘Redding-Picholine’, in California.

This July evaluation provided an early glimpse at growth and yield potential of olive cultivars. The plan is to follow up with a similar evaluation in late October as harvest approaches. At this point, however, we are not recommending any of the cultivars because this cold tolerance evaluation work takes multiple years of testing to ensure results. Cultivars, like ‘Arbosana’ are known to be freeze susceptible.

Besides the plant material donations, funding for this project is provided by a Western Sustainable Agriculture and Education (SARE) grant.

Summer Students HUGE Help to NWREC

Every year the faculty at NWREC hire students to assist with their field research projects during the summer. Over the past several years we have had about 30 students join us to work and learn—with about half being students studying agricultural or biological sciences at Oregon State University. Others come from various universities—public and private—and community colleges around Oregon and across the U.S. Some students are in high school. Most of our students work here for several summers. They are all excellent and highly valued members of our team.

This year was no different...except the faculty struggled to figure out how they would manage this summer with the COVID situation in April and May when they were hiring, several research projects were facing delays, and not knowing how we would need to safely support these workers. Also, we have been managing the Research Center under a restricted

access policy each week since March—for all faculty, staff, and student workers—while wearing face masks inside and outside, moving the lunch areas outside, and being much more vigilant about sanitation practices.

That said, we had another great group of students who accomplished incredibly important work for our faculty, the Center, and to support agriculture in the region. Many have now returned home or to schools—or both. A special thank you to this year's student group at NWREC for their great support:



Javier Fernandez Salvador, project leader, (front center) surrounded by his summer student team. From left: Irene, Avery Phiel (Research Assistant), Phillip, Logan, Ken, Tessa Barker (grad student), and Briauna.

NAME	SCHOOL	NWREC PROGRAM/FACULTY
Ashley Ambrose	Linfield University	Berry Research/Strik
Mitch Doubrava	North Marion High School	Berry Research/Strik
Annika Pounds	Oregon State University	Berry Research/Strik
Sophia Rutz	Linfield University	Berry Research/Strik
Amanda Stephens	Utah State University	Berry Research/Strik
Matthew Robinson	Oregon State University	Berry Research/Strik
Caitlin McCabe	Cornell University	Berry Extension/Wang
Jaden Stewart	Canby High School	Farm/Anderson
Sierra Burnell	Central Oregon Community College	Farm/Anderson
Kate Peters	Canby High School	Farm/Anderson
Kaylee Shearer	George Fox University	Farm/Tree Orchard Crops/Berry Research
Luke Van Lehman	Oregon State University	Nursery Production Research/Nackley
Owen Van Lehman	Oregon State University	Nursery Production Research/Nackley
Hannah Velazquez	Portland State University	Nursery Production Research/Nackley
Aleksandar Bozaric	Oregon State University	Tree Orchard Crops/Wiman
Nate Edmonds	Silverton High School	Tree Orchard Crops/Wiman
Tatum Keyes	Portland State University	Tree Orchard Crops/Wiman
Erica Rudolph	Southern Oregon University	Tree Orchard Crops/Wiman
Philip Treismann	Oregon State University	Berry Initiative-Olive Research/Fernandez
Logan Rower	Oregon State University	Berry Initiative-Olive Research/Fernandez
Irene Yang	Oregon State University	Berry Initiative-Olive Research/Fernandez
Briauna Renne	Oregon State University	Berry Initiative-Olive Research/Fernandez
Cora Bobo-Shisler	Oregon State University	Berry Initiative-Olive Research/Fernandez
Ken Poblador	Oregon State University	Berry Initiative-Olive Research/Fernandez

August is Time to Plant Winter Vegetables

By **Heidi Noordijk**, Metro Small Farms Program Coordinator

During the hottest days in August of the year, the NWREC Learning Farm fields were prepared for overwintering vegetable crops. Plantings of cabbage, cauliflower, purple sprouting broccoli, and radicchio happened in mid-August. The Small Farms team at NWREC is evaluating six varieties of each crop for winter hardiness, maturity, pest pressure, and flavor as a part of the Developing Oregon's Winter Vegetable Market Project—with grant funding provided by the Oregon Department of Agriculture.

Planting time is critical for winter crops, but, it's a bit like Goldilocks. The plants need enough growth to be able to mature when the weather warms up in mid-February, but not too big that the inner heads will be susceptible to cold injury. These crops are planted around the same time but have varying harvest windows, with radicchio maturing from late November through early February and cauliflower from mid-February through late April.



Top: Fredor cauliflower on April 1. Wrapper leaves in cauliflower protect the heads from cold injury, harvest occurs as soon as a portion of the head is visible. Once heads are exposed, they are susceptible to cold injury. Bottom: April 2 Fredor harvest with wrapper leaves removed.

Overwintering cauliflower and purple sprouting broccoli require vernalization (exposure to a prolonged period of cold temperatures) to trigger head formation. Varieties have been selected that have different vernalization requirements allowing for an extended harvest season and market availability. Growing winter vegetables is risky business. Plants can be susceptible to cold injury and cold snaps do occur that can wipe out an entire crop.



Purple sprouting broccoli ready for harvest on March 9, 2020.

Brussels sprouts were transplanted on three different dates in 2020 (see photo below) to evaluate the effect on maturity, sprout size, and cold hardiness. Several of the varieties in the trial have the potential of growing through February, if the winter is mild.



Brussels Sprouts plantings at NWREC on July 23, 2020. Flowers are planted at the edges of the field and between varieties to encourage pollinators and other beneficial insects.



Pink Kabocha squash will be evaluated for flavor and storage life. Photo taken July 23, 2020.

Storage crops of winter squash and celeriac were transplanted on June 5. The squash will be harvested in late September and stored throughout the winter to test varieties for storage life and flavor.

Celeriac, also known as celery root, will be harvested from October through December and evaluated for storage life. The celeriac can be harvested earlier if there is a high rodent population in the field. Celeriac flavor improves when exposed to colder temperatures, but rodents enjoy this crop too. Scouting the field and managing rodents is one way to increase marketable yields for later harvests.

Cabbage and radicchio harvest goes from



Celeriac planting date June 5, 2020. Six varieties are being grown and evaluated for storage life and flavor.

late November through March depending on the variety and temperatures. These crops can also be harvested earlier and stored in a cooler.

For information about winter vegetables, recipes, cooking tips, videos, and upcoming events, visit <https://www.eatwinter-vegetables.com>



Metro Small Farms Extension Program Assistant, Clint Taylor, inspecting winter squash in the field trials.

PHOTOS BY
CLINT TAYLOR AND HEIDI NOORDIJK

New OSU Organic Fertilizer and Cover Crop Calculator Now Available

By **Nick Andrews** and **Dan Sullivan**

The OSU Organic Fertilizer and Cover Crop Calculator has been online since 2010, and is widely used by farmers, students and agricultural professionals. It is a free online tool that predicts nitrogen release from cover crops, organic fertilizers and compost using nitrogen mineralization models. You can also enter your input and labor costs to compare the cost and nutrient value of different management plans.

We have recently moved the Calculator to a new website, and updated to version 5 of the Calculator. Changes to version 5 include revised cover crop nitrogen mineralization models that provide 4-week and 10-week nitrogen release estimates. The revised models also predict nitrogen immobilization from low nitrogen cover crops. Version 4 only allowed entry of up to three cover crop fields, version 5 allows entry of up to eight cover crop fields at a time. The nitrogen mineralization models for organic fertilizers and compost are the same as in version 4. Like version 4, the new version 5 is also available in two formats: one for per acre calculations, another for per 1000 ft² calculations.

A new Extension Publication "OSU Organic Fertilizer & Cover Crop Calculator: Predicting Plant-available Nitrogen" (EM 9235) describes the research that went in to developing the nitrogen mineralization models. If you sample your cover crop biomass and submit a sub-sample to a laboratory for total N and dry matter analysis, you can use the Calculator to predict the fertilizer value of your cover crop stand. You can enter these results into the Calculator to predict the fertilizer value of your cover crop. Table 3 and figure 2 from the publication show the Calculator's predicted amount of nitrogen that is immobilized or mineralized by cover crops with different nitrogen concentrations.

The OSU Calculator website links to the new Calculators, and includes a quick guide and records sheet to help you sample cover crops and use the Calculators. It also links to OSU Publication EM 9235 and PNW Extension Publication 636 "Estimating plant-available nitrogen release from cover crops" that describes cover crop sampling methods in detail and additional research background.

We are using the Calculator to evaluate crop performance in on-farm cover crop trials. If you have any questions about the Calculator, please contact nick.andrews@oregonstate.edu.

Table 3. Predicted PAN release from cover crop residues at 4 and 10 weeks after field application¹

Cover crop N concentration	Plant-available N (PAN) predicted by the OSU calculator			
	% of total N		lb/dry ton	
	% total N in dry matter ²			
	4 wk	10 wk	4 wk	10 wk
1.0	-32	-12	-6	-2
1.5	-11	7	-3	2
2.0	11	26	4	10
2.5	28	38	14	19
3.0	34	42	20	25
3.5	39	46	28	32
4.0	45	50	36	40

¹ PAN estimated via OSU calculator prediction equations. Source: OSU calculator

² Obtain a total N analysis (on DM basis) from a laboratory analysis report or a database. For additional explanation, see "Calculator data input" (page 2).

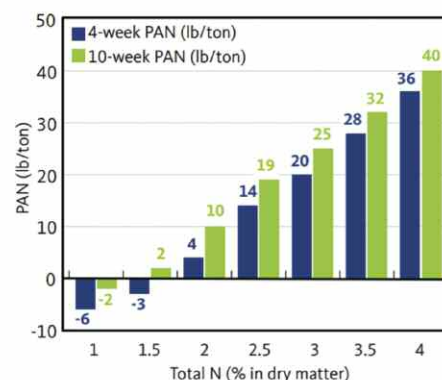


Figure 2. Calculator predictions for PAN from cover crop residues; PAN in units of lb/dry ton

North Willamette Research
and Extension Center
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Mike Bondi, *Director*
Shelley Hughes, *Admin. Assistant*
Jan Egli, *Office Specialist*
Marc Anderson, *Farm & Facilities Mgr.*
Derek Wells, *Building/Trades Maint.*
Joe Battilega, *Farm Technician*

Extension & Research Faculty

Bernadine Strik, *Berry Crops Research Leader*
Wei Yang, *Berry Crops Extension Agent*
Javier Fernandez Salvador, *Special Berry Initiative*
Lloyd Nackley, *Nursery & Greenhouse Production & Management Research*
Luisa Santamaria, *Nursery Pathologist/Bilingual Extension Agent*
Chal Landgren, *Christmas Tree Extension Specialist*
Nick Andrews, *Organic Extension Faculty*
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Kristie Buckland, *Vegetable & Specialty Seed Crops Extension Specialist*
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Dani Lightle, *Pesticide Registration Research Leader*
Nik Wiman, *Orchard Crops Extension Specialist*
Nicole Anderson, *Field Crops Ext. Agent*

Research & Program Staff

Amanda Davis, *Berry Crops Research*
Pat Jones, *Berry Crops Research*
Sarah Doane, *Berry Extension*
Heather Andrews, *Orchard Crops*
Kody Transue, *Orchard Crops*
Judy Kowalski, *Christmas Tree Research & Education*
Brian Hill, *Nursery & Greenhouse Production Research*
Rebecca Sheridan, *Nursery & Greenhouse Production Research Post Doc*
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Clint Taylor, *Metro Small Farms Program*
Cora Bobo-Shisler, *Berry Initiative Research*
Tessa Barker, *Olive Research*

Harvest Dinner to Have a New Look

This year's NWREC Harvest Dinner was not possible due to COVID-19. So, what else is new? But, don't despair, we've pushed the event back into October and will be going **virtual**, instead. OK, this won't be the same kind of event as the past, with 300 people out on the lawn and enjoying all the sights, savory aromas, and great camaraderie of our wonderful supporters.

But, we still do want to gather—and, maybe even more importantly, this year, that we be together. I hope you will join us. This year's Harvest Dinner is open to everyone!

The agricultural community has a lot to be proud of. It's been a tough year in so many ways for so many. But, our farmers and agricultural producers continued to find ways to provide the food and fiber to keep us all fed, support the local economy and keep people employed—and did all of this under difficult and challenging circumstances. This year's Harvest Dinner will be a special time to relax, celebrate successes and accomplishments, reflect on the past year, meet new faces, and prepare for our important work together in the weeks and months ahead.

The 2020 NWREC Harvest Dinner will be Thursday, October 22 from 6:00-7:15pm. The event will be broadcast via Zoom. All you need is the internet to participate. Registration details will be coming out soon and sent to everyone on the *Down on the Farm* email list. This year, you bring your dinner and favorite beverage and we'll share a meal "together" virtually.

Although plans are still developing for the event, we already have commitment from College of Agricultural Sciences Dean, Alan Sams, to join us and share his thoughts about the past year and what's ahead. Also, new



Guests dish up at the 2019 Harvest Dinner—the 2020 Dinner will have a new look and go virtual.



College of Agricultural Sciences Dean, Alan Sams, will join the 2020 Harvest Dinner.

OSU President, F. King Alexander—and a great friend of agriculture—is planning to be present and is looking forward to greeting our group. In addition, we will feature a video highlighting NWREC's research and education outreach accomplishments and activities during the past year...plus, share other features you won't want to miss.

Sponsorships for the 2020 Harvest Dinner are available. Contact NWREC Director, Mike Bondi at michael.bondi@oregonstate.edu. Funds will help offset expenses of this year's event.



Oregon State University
Extension Service

Oregon State University–North Willamette Research & Extension Center
15210 NE Miley Road, Aurora, OR 97002 • Phone: 503-678-1264

Website: extension.oregonstate.edu/NWREC • Hours: Monday-Friday, 8:00am-4:30pm