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On the cover: Picea pungens 'Bizon Blue' is a consistantly successful conifer for Bizon Nursery. Photo courtesy of Bizon Nursery On this page: Left: Pinus thunbergii 'Kotobuki' has unique curly needles and other features. Photo by Dave Grotz Right: Digging a small 1-foot-square section is helpful for scouting for European chafer grubs. Photo by ALEC KOWALEWSKI. PHOTO COURTESY OF OREGON STATE UNIVERSITY

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The silver linings of COVID-19

When the pandemic started, it threw our businesses and lives into chaos.

It was difficult to follow as scientists continually discovered more about the disease, and we all had to adapt. Social distancing slowed many of our plant production processes, and trips to the grocery store became infrequent.



Jim Simnitt
OAN PRESIDENT

As we come into September and the kids are going back to school by mostly staying home and taking classes remotely, there have been some silver linings to living and dealing through this COVID-19 year.

Travel restrictions have made all of us stay closer to home when summer vacations were planned. With everyone at home looking at their yards and patios, the nursery industry had strong spring and summer sales — up 8%, according to some reports. Nursery suppliers also saw strong sales; bark, pots, and chemicals all showed sales in the positive.

And it wasn't just the nursery industry and supply chain. *The Wall Street Journal* reported strong retail sales topping pre-pandemic levels through mid-August.

Foreign travel restrictions and personal trepidation to venture to common tourist attractions in large metro areas have led to an increase in state and federal park attendance. Many parks and trails saw more visitors, including many who have never ventured out hiking before.

These are all positives for health, but possibly more than just "getting fresh air." In Japan, a Nippon Medical School study showed how spending time in nature boosted the body's natural immune system health and increased the production of white blood cells. Communing with nature in our yards or our vast park system is an easy way to socially distance and stay healthy.

The way the world conducts business has changed. Remote meetings and telecommuting have become commonplace in most industries. *Forbes* has reported that remote work has increased productivity by 47%. The OAN has hosted countless meetings with state and federal elected officials, including Gov. Kate Brown, and various state department heads. These Zoom meetings are well attended, with members throughout the state logging in from their offices or pickup trucks.

Anyone — almost anywhere — can log on and have an informative discussion with peers and get back to work without the cost of travel and time. This has allowed our volunteer leaders to cover a lot of ground and be active on many fronts. I can see this as an extremely useful tool in the post-pandemic world.

As of this writing there have been few COVID-19 related outbreaks at Oregon nurseries. Those that occurred were identified and resolved quickly and healthily. It is quite remarkable that the nursery industry has been working full time since the pandemic started with our own safety precautions in place, even before OHSA regulations came into effect in June.

I believe this is due to OAN getting information from state and federal health authorities to members quickly. Communication is key. From the start we have all been working on keeping a safe and healthy workplace.

The biggest positive outcome, for me, has been our personal lives slowing down. I know for my own family, with two young kids, we are constantly in motion. School, classes, games — oh, and sit-down dinners for the whole family. Under normal circumstances, life and weeks fly by. This past six months, I have totally

enjoyed my kids being home with few obligations to attend.

Slowing down is not a bad thing, once in a while. I just hope I remember these silver linings when things pick back up and open up completely.



Northwest News

OAN members and chapters are encouraged to send in relevant news items, such as new hires, new products, acquisitions, honors received and past or upcoming events. Email news@oan.org.

Oregon OSHA offers grants for infectious disease training

Oregon OSHA is accepting grant applications for the creation of innovative safety and health training and education projects specifically designed to help combat the risk of infectious disease in the workplace.

Any employer, labor group, or nonprofit organization may apply, but employers are not allowed to use the grants to pay for employee training. Rather the grants are for the creation of training materials. These will become the property of Oregon OSHA and be made available to the public.

This grant opportunity comes amid the coronavirus pandemic and as the division pursues new rules to protect workers against infectious diseases. Applications are due by 5 p.m. Friday, October 9. For more information, log on to osha.oregon.gov/edu/grants or contact Teri Watson at teri.a.watson@oregon.gov or 503-947-7406.

The Oregon Legislature launched the Occupational Safety and Health Education and Training Grant Program in 1990. Award recommendations are made by Oregon OSHA's Safe Employment **Education and Training** Advisory Committee, a group with members from business, labor, and government.



NURSERIES MADE ELIGIBLE FOR **USDA COVID-19 ASSISTANCE**

The U.S. Department of Agriculture announced August 11 that producers of nursery crops and cut flowers are now eligible for aid through the Coronavirus Food Assistance Program (CFAP). Also added to the list were specialty crop producers, aquaculture, and nonspecialty crops and livestock.

According to USDA, the CFAP program "provides direct relief to producers who faced price declines and additional marketing costs due to COVID-19." Information specific to nursery and cut flower producers is online at www.farmers.gov/cfap/nursery. Applications were due August 18, but that has been extended to September 11; apply at www.farmers.gov/cfap.

According to OAN Executive Director Jeff **Stone**, industry groups lobbied the administration to make this happen. "OAN made the case, AmericanHort made a full court press, and U.S. Sen. Jeff Merkley (D-Oregon) was a critical lever in this happening," he said.

MANTS 2021 TO MOVE ONLINE DUE TO COVID-19; DETAILS TO COME

Organizers of the Mid-Atlantic Nursery Trade Show (MANTS), the green industry's largest East Coast trade show, announced that the show will not take place as an in-person event in 2021. The show had been scheduled for January 6-8 at the Baltimore Convention Center. Organizers say it will be replaced with an online platform where buyer and seller can interact, with details to be announced later.

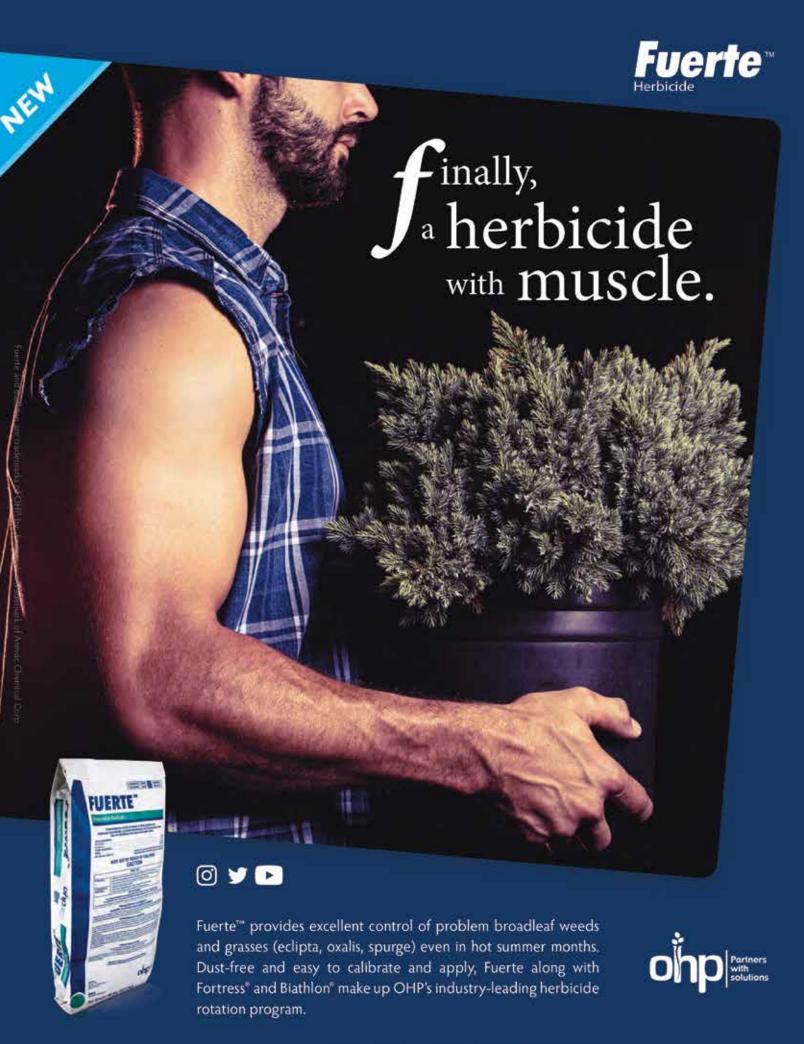
The change is due to concerns about the ongoing COVID-19 pandemic, as well as questions about the availability of the event venue. The Baltimore Convention Center has been in use as a 250-bed COVID-19 field hospital since April, and that is scheduled to continue through the end of December.

Additionally, indoor gatherings of more than 10 people currently are not permitted in the state of Maryland, and it's not known when they will be allowed. All the uncertainty adds up to no in-person MANTS in 2021.

More COVID-19 coverage online

Further updates on how the COVID-19 virus is impacting the greenhouse and nursery industry is online at www.diggermagazine.com/category/coronavirus. We are reporting on the most current information as of press time, but please check online for the most up-to-date information.





AMERICANHORT RECOMMENDS STANDARDIZED LABELS

As growers continue to seek out plants for their disease resistance and tolerance to abiotic stresses, AmericanHort has released a standardized list of terms help avoid misleading claims on marketing tags, according to a release from the association. The terms were created by a working group of researchers and industry breeders who can accurately set performance standards. Read the terms online at tinyurl.com/y545887b.

The association encourages all breeders and those involved in new plant introductions across the green industry to follow the guidance in the white paper (PDF available at tinyurl.com/yxn7vuba). It provides specific terminology, such as 'High Resistance to Impatiens Downy Mildew' for impatiens plants, as opposed to a generic 'High Resistance to Disease' tag.

FNGLA CANCELS 2020 LANDSCAPE SHOW

The Florida Nursery, Growers and Landscape Association (FNGLA) has canceled the 2020 Landscape Show due to COVID-19, according to a release from the association. Rising infections in the state were leading organizers away from the possibility of safely holding an inperson show. The next Landscape Show will be held on August 25-27, 2021, in the Orange County Convention Center, Orlando, Florida.

Seminars and workshops are being formatted for remote delivery, and information will be sent out soon to register for the FNGLA's Knowledge College.

OREGON OSHA RELEASES **DRAFT RULES FOR COVID-19**

Oregon Occupational Safety and Health Administration (Oregon OSHA) has released a draft temporary standard intended to protect workers against the COVID-19 pathogen in the workplace. Download a PDF of the rules at tinyurl.com/y573bpxt.

According to the agency's infectious

disease rulemaking page, the temporary standard would be step one in a two-step process; the second step would be a permanent standard that would replace it later. Both come on the heels of emergency rules adopted in May requiring distancing, sanitation measures and other additional steps in the workplace.

According to a potential rulemaking timeline, officials hope to adopt the draft temporary standard by September 14. OAN, Oregon Farm Bureau and others are asking the agency to push back that deadline and allow more time for comment.

"The state is making a significant push to impose additional restrictions on employers, when only a small percentage of COVID-related deaths have been connected to the workplace," OAN Executive Director Jeff Stone said. "Any COVID death is one too many, and work must continue to educate employees and employers on how to prevent transmission, but any rules imposed need to keep the realities of the workplace in mind. We have not seen the level of listening by officials that we would like to see."

The permanent standard would be released in the fall, followed by a comment period and possible adoption by March 1.

GOV. BROWN OFFERS FINANCIAL ASSISTANCE TO FARMWORKERS

Oregon Governor Kate Brown has launched the Oregon Worker Quarantine Fund, a program that will provide financial assistance to agricultural workers who were directly impacted by COVID-19, according to a release from her office.

Regardless of immigration status, the program offers financial support to farmworkers 18 and older who self-quarantine for 14 days after being exposed to the virus. The program pays \$860 for two weeks to cover the cost of average living expenses, and applicants can re-apply if they need to quarantine again. Agricultural workers can learn more at workerrelief.org/quarantine-fund (in English), and workerrelief.org/es/fondo-decuarentena (in Spanish).



The state also offers the Oregon Worker Relief Fund, which provides temporary aid to undocumented immigrants living and working in Oregon on or before February 1, 2020, and have lost their wage because of the pandemic. Learn more at workerrelief. org/find-a-navigator (in English) and workerrelief.org/es/encuentra-un-navegador (in Spanish).

The Oregon Worker Relief Coalition administers both relief packages.

To apply, call 1-888-274-7292 between 9 a.m. and 6 p.m. Monday through Friday, or reach out to the program's communitybased partners — including Causa, PCUN, and others listed online.

COVID-19 TESTING SITE LOCATOR GOES LIVE

The Oregon Health Authority (OHA) has published a COVID-19 Test Site Finder map to help people find local information about where testing is available, according to a release by the agency. The OHA is partnering with Google, Castlight and local public health authorities to update the site. It is available in both English (tinyurl. com/y2v8jgx4) and Spanish (tinyurl.com/ yxcpon9j).

Oregonians who do not have a primary care provider and are suffering from symptoms such as fever, cough, and shortness of breath may go to these test sites. However, if resources are limited, then certain groups of high-risk people will be prioritized for receiving a test. The OHA cannot guarantee that all people will get tested at one of these sites, and it encourages people to contact a health care provider about getting a test.

STATE LEGISLATURE CUTS **BUDGET TO OSU PARTNERS**

Oregon lawmakers cut a combined



USDA Animal and Plant Health Inspection Service (APHIS) botanists examine Amaranthus seeds sent to U.S. residents to determine if they harbor any plant pests or disease. PHOTO COURTESY OF USDA

ers to not to cut funding. The letter was written by the Oregon Farm Bureau, and also has support from the Oregon Cattlemen's Association,

Oregon Dairy Farmers Association, and other agricultural groups.

The funding could set back years of agricultural research, which will impact how decision-makers handle wildfire incidents, livestock and food production, and other critical work across the state. The extension services have helped with contract tracing, social distancing, and hygiene standards during the COVID-19 pandemic, demonstrating their essential services to industry. Read the article at tinvurl.com/vxolswkh.

UNINSPECTED SEEDS FROM **CHINA BEING TESTED**

The unsolicited packages of seeds from China that arrived at many U.S. residents' homes appear to be nothing more than part of a marketing scam at this time, according to a release from the USDA Animal and Plant Health Inspection Service. Several samples of the seeds were tested, with scientists identifying a variety of ornamental, fruit and vegetable, herb, and weed seeds.

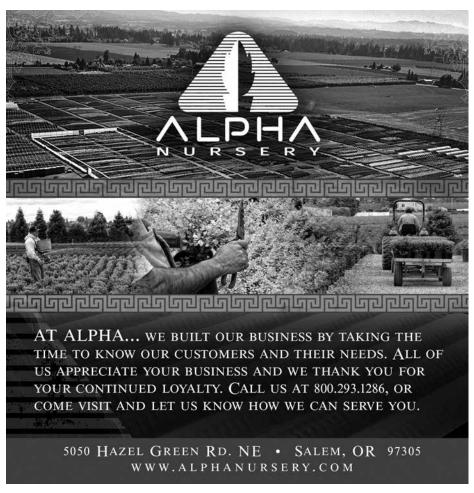
Anyone who received unsolicited seeds is asked to mail the unopened seed packets along with the original mailing packages to the USDA for inspection. If opened, please place the seeds back into the packet they came in and seal them with the original mailing package before putting them in a new package to the USDA. All shipments need to include the sender's name, address, and phone number so officials can make

\$3.6 million from Oregon State University's Extension Service, Agricultural Experiment Station and Forest Research Laboratory budget during the year's second special session, which was held August 10.

The cutback was roughly half the \$7.2 million the Joint Ways and Means Subcommittee on Education had originally recommended, according to a report in the Capital Press (Salem, Oregon).

The Oregon Association of Nurseries (OAN) signed a letter that asked lawmak-





Northwest News

contact for further information, if needed. For Oregon residents, please send them to USDA APHIS PPQ, 6035 NE 78th Court, Suite 100, Portland, Oregon, 97218-4033.

LANDSCAPE COMPANIES THRIVE THROUGH PANDEMIC

The OAN successfully lobbied to keep landscaping services, nurseries, and greenhouses open during the pandemic, which has led to a rush of work headed to the areas lawns, fields and green spaces, according to a report from The Oregonian/OregonLive.

The surge in work has created improvements in safety measures, technology, and access to landscaping information that both staff and customers greatly needed. Garden trends remain unchanged by the uptick in business, but designers such as Amy Whitworth of Plan-It Earth

Design (Portland, Oregon) have seen clients creating better private respite areas and interactive natural spaces as more people are staying home. Read more online at tinyurl.com/yy25a3p2.

OREGON DOT ISSUES REMINDER ABOUT FARM ENDORSEMENTS

The Oregon Department of Transportation is reminding drivers that they need to complete a farm enforcement application and possibly take a drive test when renewing their driver license. Farm endorsements allow people with a regular Class C license drive certain commercial vehicles on public highways, but a prior endorsement is not automatically rolled over on to a renewed driver license.

Download and complete the Farm Endorsement Application - Form 735-



6776 (7-20) from tinyurl.com/y6kbq7fr and make an appointment at Department of Motor Vehicles (DMV) when ready to renew your license. Drivers may have to take a test if they have been convicted of certain traffic crimes in the previous five years or if they have a traffic crash on their record in the previous two years.

OREGON DEQ UPDATES TOXIC **CHEMICALS FOCUS LIST**

The Oregon Department of Environmental Quality (DEQ) adopted



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GUTTER CONNECTS

a Toxics Reduction Strategy and Toxic Chemicals Focus List in order to reduce toxics in Oregon. The list of the highest priority chemicals or classes of chemicals was recently updated, and DEQ officials shared the changes in a Zoom call July 28.

Consumer product constituents that were added to the focus list include perand poly-fluoroalkyl substances (PFAS) phenol; octylphenol, 4-tert-; thynylestradiol, 17a-; and vinyl Chloride. Flame retardants and industrial intermediates now also include tris (2-chloroethyl) phosphate (TCEP) and tris (dichloroisopropyl) phosphate (TDCP). The four metals that were added are cobalt, bis (tributyltin) oxide, zinc and beryllium. Three new volatile organic compounds (VOCs) on the list are acetaldehyde, styrene, and xylenes.

Propoxur (Baygon) and pendimethalin, two current-use pesticides, were removed from the list, as well as the legacy pesticides of heptachlor (and heptachlor epoxide) and methoxychlor. Dichlorobenzene, 1,4-(Dichlorobenzene-p) was also removed from the VOCs.

Meeting materials and other details are now available on the Toxics Reduction Strategy web page at tinyurl.com/y6tgkj8e.

SMALL FARM SCHOOL HELD ONLINE OVER FALL

The Clackamas Soil and Water Conservation District (SWCD) annual Small Farm School program has moved online this year and will provide Zoom classes on Tuesdays and Thursdays from September 17 to November 19. A total of 18 unique sessions will help both seasoned and beginner small-acre landowners understand a wide variety of topics, including livestock production, environmental conservation, marketing, soil health, financing, and more.

Visit the website for a detailed schedule at tinvurl.com/v3rlxo32.

The cost is \$35 to attend. College students and interns may register for \$25.

OSU Extension, Clackamas SWCD, Clackamas Community College, Rouge Farm Corps, and Friends of Family Farmers are hosting the educational series.

Announcements

WOODY BIBBENS RESIGNS FROM WNLA

Sarah Woody Bibens has stepped down as executive director of the Western Nursery & Landscape Association (WNLA) and Woody Bibens &





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Northwest News

Associates Inc. will no longer be the management company for the association, according to an announcement from the association. She has led the association for more than 30 years, and will stay on until November 15, 2020 to ensure a smooth transition to her replacement.

In Memoriam RANDAL 'RANDY' **JOHN HARRIS**

The OAN is saddened to report the passing of Randal "Randy" John Harris, owner of Harris Glen Farms. He died March 4. 2020 after a brief two-month battle



with metastatic lung cancer. He was 64.

Randy went to school in Lake Oswego, Oregon, and conducted a successful career in wholesale beverage industry right after graduating high school. He worked at Maletis Beverage for more than 30 years.

In 2004, Randy opened a 20-acre wholesale tree nursery in Canby, Oregon, and joined the Oregon Association of Nurseries. With a keen understanding of how to grow high-quality shade trees and what the needs of the nursery marketplace would be, he strategically used his nursery to produce root-pruned tree liners. Randy anticipated that his products would be in high demand as the nation recovered from the burst of the housing bubble.

He grew about 60 different deciduous tree varieties in rootbags and air prune containers, which gave his products a highly fibrous root system. These unique characters were popular at the Farwest Show, and most of his products custom-grown to order for customers across the U.S. and Canada.

Randy loved the outdoors and was a member of the Willamette Valley Country Club. He visited Puerto Vallarta, Hawaii, and the California and Oregon coasts for vacations.

Randy was a devoted husband of 40 years to Marcie, who has taken over the ownership of the nursery. He is also survived by two daughters, Kathryn (Wyatt Martin) and Maggie (Dr. Jeremy Wearn), in addition to his parents Don and Jeanette Harris; brother Fred; and grandchildren Sienna, Ella and Easton Martin.

A Celebration of Life will be scheduled this summer.





Voters pick their Farwest favorites

This year's New Varieties Showcase highlighted 39 selections, with voting taking place online

BY ZEN LANDIS

HE 2020 NEW VARIETIES SHOWCASE was held online this year due to the COVID-19 pandemic, so Farwest Show fanatics could vote for their favorite new plant varieties from the safety of their homes, offices — or home offices.

The virtual contest, sponsored by **Hip Labels**, featured 39 of the hottest new plant introductions slated to hit the market next spring.

All were featured in the August issue of Digger, and at www.FarwestShow.com. Each selection in the showcase demonstrated improved qualities such as color, form, habit or disease resistance.

After collecting more than 1,000 votes, organizers are pleased to announce the three highest-voted plants, as well as some honorable mentions.

FIRST PLACE:

Treasure Island[™] Makatea **Sweet Potato Vine**

(Ipomoea batatas '17-527' PPAF)

Bred by Louisiana State University (LSU) and introduced by Concept Plants.

The Treasure Island™ sweet potato series combines flavor and beauty, making it a real treasure for growers and gardeners alike. Makatea bears vigorous vines with chartreuse heart-shaped leaves which look luscious spilling out of hanging baskets or containers. At the end of the season, gardeners can harvest the edible white-flesh tubers, which are ideal for Asian and Caribbean cuisine. Available as liners and finished plants from Metrolina Greenhouses, and Raker-Roberta's Young Plants.



New Varieties Showcase

SECOND PLACE:

Alpine Wood Fern 'Jurassic Gold' (*Dryopteris wallichiana* 'Jurassic Gold' PPAF)

Discovered by Bob Hollister near the Jurassic Coast, United Kingdom and introduced by Concept Plants.

Dryopteris 'Jurassic Gold' is a unique fern that has an excellent spring foliage color. The young shoots are golden orange fading to bright golden-yellow and green. Compared to Dryopteris erythrosora (autumn fern), the new shoots of Jurassic Gold are bigger, bolder and richer in color. Its fresh orange fronds brighten up shaded places in the garden or on the terrace. Plant Jurassic Gold in a moist, humus-rich soil. It performs well in USDA Hardiness Zones 5-9 and so far, no diseases have been observed. Remove the dead leaves of this deciduous plant after winter. Available as tissue culture and liners from Emerald Coast Growers, JRT Nurseries and Meridian Young Plants.

THIRD PLACE: Clematis Little Lemons (Clematis tangutica 'Zo14100' PPAF)

Hybridized by J. van Zoest B.V. in the Netherlands. Introduced by Concept Plants.

When life gives you Little Lemons, plant them! This unique variety was selected because of its compact size, yellow bell-shaped flowers, seed heads, and long flowering period. Perfect as a garden plant, in containers and hanging baskets. Cheerful yellow blooms contrast nicely against the shiny, compact foliage. After flowering, the shiny seed heads appear, giving an extra decorative effect. Little Lemons flowers from mid-May to early September. Prune in March to 4 inches above the ground. Available as tissue culture, liners and finished plants from JRT Nurseries and Meridian Young Plants.

HONORABLE MENTIONS

The following plants exhibited a style and grace which set them apart in the contest and earned them runner-up titles.

Trees: The Miss Congeniali-Tree Award goes to ... **Ruby Sunset® Maple**. Introduced by J. Frank Schmidt & Son Co.





With its compact form, heat and drought resistance and stunning scarlet fall color, this tree has earned a place in your nursery or landscape.



Shrubs: The Brilliant Blossom Award goes to ... **Akadama™ Hydrangea**. Introduced by Star Roses & Plants.

The vibrant flowers of this haute *Hydrangea* are guaranteed to turn heads. Rich reddish-pink flowers change to a deeper shade of magenta



throughout the season, adding a splash of color to any container or flower bed.

Perennials: The Pinnacle of Perennials Award goes to ... **Artisan™ Coneflower 'Red Ombre'.** Introduced by PanAmerican Seed

This hot new flowering perennial is the first F1 hybrid *Echinacea* from seed and will delight growers and gardeners alike with its vermillion flow-



ers, drought tolerance and winter hardiness.

Annuals: The Five-Star Foliage Award goes to ... HeartbreakerTM Coleus. Introduced by Ball FloraPlant

We can't help but fall in love with the velvety multi-color foliage of this gorgeous *Solenostemon!* The frilly chartreuse margins of each leaf gives way to a luxurious maroon border which contrasts against the hot pink center.



A special thank you goes out to all the growers participating in the New Varieties Showcase this year. We also send our gratitude to the thousands of individuals who voted through the HIP EngagerTM augmented reality technology and online platform.

The Farwest Show was canceled in late May, while Oregon and other states were struggling to contain the spread of COVID-19. Large public events were prohibited from taking place throughout the state by Governor Kate Brown at least through the end of September, or until treatments or vaccinations for the coronavirus were made available. As a result, the Oregon Convention Center determined it could not host the event as scheduled.

The next Farwest Show — to include the New Varieties Showcase — is scheduled to take place August 18–20, 2021 at the Oregon Convention Center in Portland, Oregon. ©

Preventing fraud at your business

ECENTLY THERE have been a few high-profile embezzlement cases at nurseries. Just in Oregon, almost \$5 million was stolen from two nurseries.

Any industry can be impacted by embezzlement and fraud. Fraudsters generally don't target a specific industry. They end up seeing an opportunity where they work.

The best way to stop an embezzlement is to prevent the opportunity in the first place. Keeping your employees honest is priority one.

It is easy to think that it won't happen. After all, who would hire a thief? No one intentionally hires someone who is going to steal. That is the thing about embezzlement. An employee can be a great employee for many years or even decades, but something happens. They make a choice to steal.

It always starts small and generally it doesn't stop until they get caught. It grows over time. Initially, it might be because of a real financial need. It might be because of a sense of entitlement. Or they just make the choice to want more money.

But it's not their money. The business provides for the owner, their family and all the employees and their families. difficult, they are not expensive, and they are easy to implement.

- 1. Mail bank statements to home or to a post office box. The business owner needs to see the bank statements before anyone else. Why? Because in the technological world we live in, anyone can easily change a bank statement to a fake balance.
- 2. View the images of the checks. Do they match up with records or your recollection? They might not!

For example, a business owner discovered this when they inadvertently hit "view image" while viewing an online statement. The check they signed for \$2,500 to one of their vendors did not show said company as the payee. It showed the bookkeeper's name.

Prior to this, the owner would go through the online account. They knew they signed all the checks, but did not realize the bookkeeper had changed the vendor name. Many business owners scan the online accounts but just look at the amounts, not the actual "pay to the order of."

3. Maintain the element of surprise. If only checks over a certain amount are reviewed, start randomly reviewing smaller checks. In the same vein, one can ask for different reports such as profit and loss monthly instead of quarterly. Both of these are basic yet important reports to do. Ask your employee about a random check. It shows you are paying attention to the finances.

4. Don't let audits give a false sense of security.



Kelly Paxton

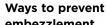
Kelly Paxton is a certified fraud examiner and licensed private investigator who has worked for the Department of Homeland Security, the Washington County Sheriff's Office, Nike and others. She can be reached at kelly@kellypaxton.com.

Audits are important, but they are not the only way fraud is discovered — or even the most frequent. According to the Association of Certified Fraud Examiners 2020 Report to the Nations, tips are the number-one way fraud is discovered.

- 5. Segregate financial duties as much as possible. For example, make it a practice that the person who enters the payments is not the person who makes the bank deposits. Cross training your employees is important. If cash is accepted, make sure to always have two people count it out. If possible, change who counts the money regularly.
- 6. Make sure your employees take vacations. Why is that? Many embezzlements are discovered when an employee misses work due to an unexpected sickness or accident. They aren't there to answer the phone with the vendor asking about a late payment or a customer questioning their statement.
- 7. Never ask employees to share passwords. It is a protection for the employee and business owner. If passwords are shared, how can someone definitively prove who made a deletion or journal entry?

Watching for red flags

Who is the type of person who steals? Are they a hard-ened criminal? Most likely not. Do they have a criminal history? According to the



Preventing fraud at your business

Association of Certified Fraud Examiners 2020 Report to the Nation, only 4% of fraudsters had a criminal record.

However, that does not mean someone who steals has never done it before. In my experience as a fraud investigator, if they start stealing within six months of starting a job, they probably stole at the prior job. Most businesses, due to shame and humiliation, just fire the employee.

Only 15% of all embezzlement cases are turned over to law enforcement. While background checks act as a deterrent, they are not a guarantee.

Is there a way to identify a potential embezzler? Lifestyle that is not commensurate with an employee's salary is the number one red flag.

If an employee shows up in a car that is three times their annual salary, it could be a red flag. If they take extravagant trips that even the business owner doesn't take, that is a red flag. Financial issues due to garnishments, car repossessions or a change in lifestyle might be cause for the business owner to pay closer attention to that employee.

Recovering from the shock

When a business owner finds out that an employee has stolen from the business, it is something they will never forget. Unlike many other types of crimes, these crimes are incredibly personal. Perpetrator and victim may have worked side by side for many years.

I have worked with many business owners to identify fraud and embezzlement that took place at their business. One of these owners said the worst part was having to tell their employees what had happened.

"They wouldn't even look me in the face until I asked if they had any questions,"

the owner said. "An employee turned around, looked me straight in the face and asked, 'How could this happened?' He was hurt. His family hadn't had a large bonus in three years and no wage increases. We had fewer employees, so he had to work longer hours and harder. Our employees believed so much in us and had left other jobs to work for us."

Many people start businesses because they have a passion for what they do. Nursery owners are no exception. Passion is important, but in the end, the business needs to be profitable.

Embezzlement can cause a business to fail and leave the owners with debts. Employees are human and can make bad choices. By installing better controls and monitoring, a business owner can remove the employee's opportunity to steal. Keeping honest people honest is the best policy.



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Can-do conifers

As home gardening booms, these unheralded trees shine as wise, low-maintenance investments

BY KYM POKORNY

N A NORTHWEST REGION surrounded by forests of Doug fir, Ponderosa pine, grand fir and hemlock, people could easily take conifers for granted. However, many gardeners recognize the versatility and minimal care that make them a staple in the landscape.

Even before COVID-19 and the explosive popularity of gardening, the conifer market was respectable, but now it's flourishing, according to Amanda Staehely of Columbia Nursery LLC. She co-owns the nursery with her husband Wayne in Canby, Oregon.

"This year, people chose to work in

their gardens," she said. "It is a comfortable and safe option while quarantining. I've never seen gardens look better. People want staples, and conifers are good for that."

Brent Markus, owner of Rare Tree Nursery and its retail branch, Conifer Kingdom — both located in Silverton, Oregon — has seen a similar tendency. It's one that he says has been coming on for the last 20 years as new introductions bring new fans to the world of conifers.

"It's exciting. We're able to compete with a lot of other new introductions, the hydrangeas and lilacs and such that have such broad appeal," Markus said. "The

conifer market is extremely strong. People have more appreciation for the versatility of conifers."

Giving conifers their due

Some conifers are easy to fall in love with. Pinus contorta 'Chief Joseph', with brilliantly gilded needles in fall and winter and an interesting back story, is one. It was found by Doug Will of Sandy, Oregon, who was hunting in the Wallowa Mountains of northeastern Oregon.

The name Chief Joseph is a translation of Hin-mah-too-yah-lat-kekt, who was a leader in the last half of the

Can-do conifers

Previous page: Bizon Nursery relies on Picea pungens 'Bizon Blue' for good sales.

This page: Pinus strobus 'Stowe Pillar' (bottom) is a unique option to replace industry standards like Pinus 'Fastigiata' (top).

PHOTOS COURTESTY OF BIZON NURSERY

20th century of the Wal-lam-wat-kain (Wallowa) band of Nez Perce, a Native American tribe indigenous to the Wallowa Valley. Seen in its golden glory, 'Chief Joseph' is not easily forgotten.

Sometimes, a new customer needs a nudge to fall in love, but once they learn the benefits of conifers, they see the value.

"I just had a neighbor who built a million-dollar house," Eric Bizon, owner of Bizon Nursery in Hubbard, Oregon, said. "I was explaining what conifers are, and he didn't know what I was talking about. When I told him the value of conifers after the flowers fade and the leaves

fall, then he got it."

Bizon sells loads of conifers for screening and hedging, but would also like to see some more unusual plants catch the public eye. White pines are a favorite, and one of the best in his opinion is Pinus strobus 'Stowe Pillar', found in the wild near Stowe, Vermont, which is the narrowest white pine on the market - narrower and tighter than Pinus 'Fastigiata'.

> It holds up better under snow and creates an attractive vertical element or specimen in a constricted space. The width doesn't get any more than 3 feet on this 10-foot tall tree that's disease-resistant, hardy to USDA Hardiness Zone 3 and bypassed by

deer and rabbits. 'Stowe Pillar' is always a plant people notice when they go to the nursery, according to Bizon.

Another pine deserving of love is the dwarf white pine Pinus parviflora 'Eiko nishiki', a native of Japan that arrived in the U.S. in the 1970s. Dave Grotz, owner of Peace of Mind Nursery Inc. in Silverton, Oregon, says this five-needle pine is the coolest of the *Pinus* parviflora species.

With multi-colored foliage of silver, green, and a little blue, 'Eiko nishiki' exhibits interesting needles that twist and curve like someone having a bad hair day. A large number of tripod cones of green and brown linger for

several years on a tree that grows to 10 feet tall and 8 to 10 feet wide in 25 years. It is cold tolerant down to Zone 5.



Low maintenance worth the cost

The price of conifers can be a deterrent to the people who don't realize the time and labor it takes to grow them.

"People want a beautiful plant they don't have to do anything to," Bizon said. "Conifers fit the bill but the price can be offputting. Price is a factor. People don't know what goes into it. We have some plants that are 10 years old before we sell them."

Jenni Burkhead, owner of J Farms **LLC** in Amity, Oregon, understands why conifers sell despite the cost.

"I think conifers above all are the lowest maintenance of all plants," Burkhead said. "In our landscapes, the first thing people will tell you is 'I





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Can-do conifers

Top and bottom: Picea mariana 'Aureovariegata' offers some dramatic and colorful needles.

PHOTOS BY DAVE GROTZ

want low maintenance.' Well. why not fill it with conifers?"

Grotz, for one, wouldn't have a problem with that. He can easilv rattle off a long list of conifers he thinks should get more attention. One of them is the variegated black spruce (Picea mariana 'Aureovariegata'), a choice conifer with creamy yellow variegation brushed on top of blue-green needles that grows 6 inches a year to about 30 feet tall and is hardy to Zone 3. Purple

cones that ripen to red-brown are a bonus.

"Anyone who sees it falls in love with it," Grotz said. "It has a nice, uniform shape similar to a Christmas tree and the gold new growth over the blue foliage is spectacular. It's a hot plant. I don't see how you could grow it and be sorry."

At Bizon, two of the biggest sellers are the blue Colorado spruces *Picea pungens* 'Bizon Blue' and 'Fastigata', but they are

having issues with needle cast in high humidity. As a replacement, Bizon is growing Meyer's spruce (Picea meyeri), which will take high humidity with no problems.

It isn't as brilliant blue as 'The Blues', but has a strong blue cast. It is an upright, conical, Christmastree shaped tree that grows to 12 feet in 10 years and is hardy to Zone 6. Picea meyeri was found in a temple garden in China in 1908 by F.N. Meyer and sent to Arnold Arboretum in Boston.

Chris Utterback, coowner with her husband, Tom, of Lone Elder Nursery in Canby, Oregon, wants to see Tsuga canadensis 'Cole's Prostrate' get more attention. While usually grown



as a ground cover, the Utterbacks chose to stake it into a specimen with branches that droop down, giving it the look of hairy Cousin Itt.

"The staked tree is a unique, fun, multiheaded weeping small tree," Utterback said. "It adds softness and texture to the garden.

'Cole's Prostrate' Canadian hemlock, found near Mount Madison, New Hampshire in 1929, is best grown in open

shade in moist, cool soil, protected from wind and hot, dry conditions. If left to grow as a traditional ground cover, — which it does admirably — this conifer gets about a foot tall and 7 feet wide in 10 years. It's noted as a Zone 4 plant.

The bones of a garden

There's so much to recommend about conifers. They give the garden structure and year-round interest. Most can boast of diseaseresistance and cold hardi-

ness. They can be focal points, background buffers, hedges, vertical elements and used in mixed borders or rock gardens.

Designers consider them part of the bones of the garden along with trees, most of which are deciduous, making conifers extra important in winter.

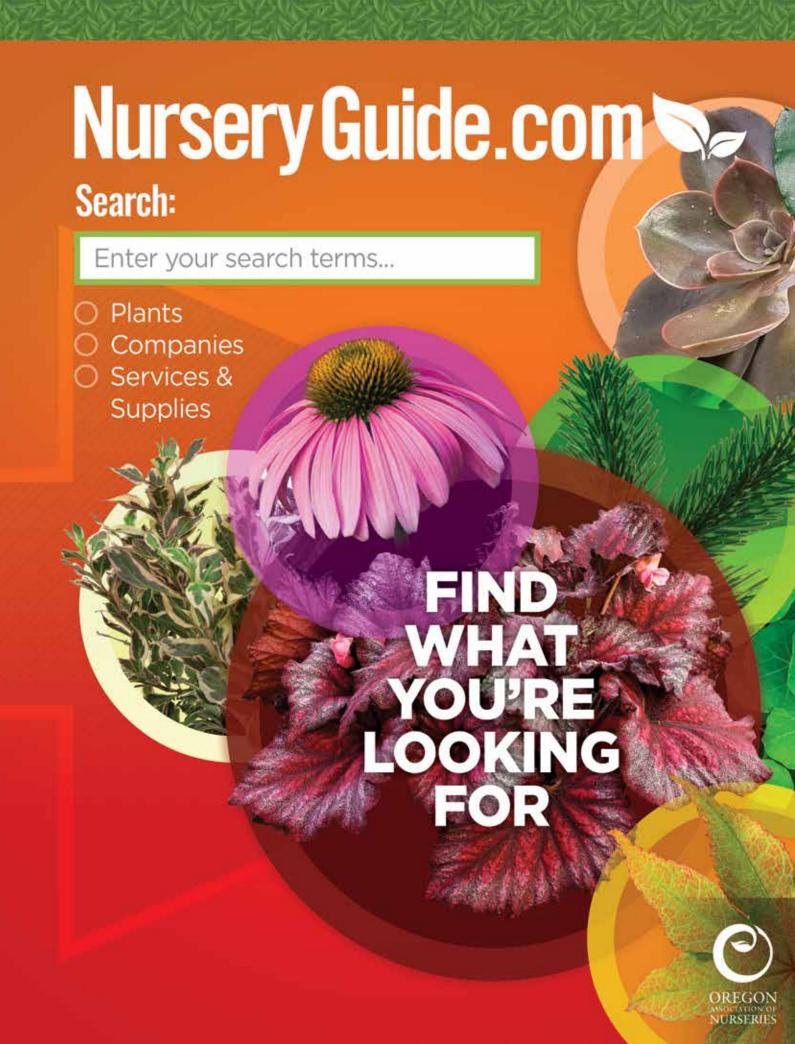
"Conifers are essential to the garden," Staehely said. "There's so much less maintenance if you find the right conifer

> for the right space. They do their work all year round because they're evergreen and have beautiful texture."

> When asked for an example of a tree she thinks is undervalued, Staehely decided on a deciduous conifer, Metasequoia glyptostroboides 'North Light' (aka 'Northern Lights' and 'Schirrmann's Nordlicht'), a dwarf dawn redwood that likes to be the star of the garden. And why not? It has cheery variegation that changes with exposure white in shady areas, gold in the Sun — and a cute globe-shape that makes it perfect as a focal point in a mixed bed.

In 10 years, 'North Light' reaches 2 ½ feet tall and wide and is hardy





Can-do conifers

Pinus thunbergii 'Kotobuki' (this page and opposite) is a great option for small scale conifers. PHOTO BY DAVE GROTZ

to Zone 5. It's also a relatively new cultivar discovered in Germany as a witch's broom around 2005, and it was selected as one of three plants in 2015 for inclusion into the American Conifer Society Collectors' Conifer of the Year Program.

When Staehely considers other conifers for focal points, *Abies koreana* 'Kohout's Icebreaker' comes quickly to mind. She loves the needles that twist and turn around the branches to show off their white undersides. It's similar in looks but not in size to *A. k.* 'Horstmann's Silberlocke', the plant that produced the witch's broom that eventually took its name from the man who discovered it.

Like M. g. 'North Light', it was also chosen as an ACS Collectors' Conifer of the Year. This Korean fir is such a slow grower that it can arrive at only 1 foot after 10 years, but it's been known to put on more height than that. No one will walk by this small but mighty addition to the garden.



Search Nursery Guide.com to find growers who produce wholesale conifer varieties.

Scan the code to search for

Conifers

Abies

Picea

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Thuja











There are also opitons for *Cedrus* (cedar), *Chamaecyparis* (cypress), *Cupressus* (cypress), *Juniperus* (juniper), *Larix* (larch), *Metasequoia* and much more.

The OAN Nursery Guide is the best available resource for green industry professionals in search of wholesale plants, nursery supplies and related services. With more than 16,000 listings in those categories, the Guide is used all year long by nearly 6,500 motivated buyers.

Over 16,000 Nursery Guide listings



It was in a field at I Farms that the owners discovered Pinus sylvestris 'Green Penguin' — a plant that should have more fans - and introduced it in the New Variety Showcase at the 2012 Farwest Show. Burkhead says she came up with the name because of its cone-shaped form that looks like a bottom-heavy penguin. The juvenile foliage is shorter than the previous year so the branches look tufted at the end, an unusual characteristic that pulls in prospective customers.

'Green Penguin' is so cute, it can be sold in gallons, a plus for growers. There is nothing boring about this Scotch pine, which grows 3 to 5 inches a year up to about 4 feet tall and 18 inches wide in 10 years. An extremely easy-to-grow conifer, 'Green Penguin' never needs pruning and keeps its bottom-heavy conical shape. It's fine down to Zone 3.

Because you can't have too many pines, Grotz of Peace of Mind Nursery suggests Pinus thunbergii 'Kotobuki' as a serious contender for small spaces. At 4 feet tall and 2 feet wide at maturity, this Japanese black maple can fit just

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Can-do conifers

Pinus sylvestris 'Green Penguin' is suitable for containers.

PHOTO BY JENNI BURKHEAD



about anywhere. Discovered in Japan centuries ago, 'Kotobuki' means "congratulations" or "long life" in Japanese.

Anyone who has it can congratulate themselves on choosing a stellar plant. The needles on this upright conifer are dark green and held on branches that carry cream-colored cones, a nice contrast against the dark needles. This is one tough customer — it needs no pruning, is salttolerant for the coast, hardy to Zone 3 and disease-resistant.

Conifers are a no-brainer for the garden, which makes them a hit with both grower and customer. Even in the land of forests, we can appreciate all the thousands of conifers available in every size and shape.

Kym Pokorny is a garden writer with more than 20 years' experience writing for The Oregonian (Portland, Oregon) and other publications. She is currently a communications specialist with Oregon State University Extension Service. She can be reached at kym.pokorny@oregonstate.edu.



What to do with plastics

Plant growers, retailers, plastic manufacturers and recyclers consider new tactics for the recycling and disposal of plastics, as concerns mount over landfills and fuel

BY PETER SZYMCZAK

UNDREDS OF POUNDS of it are in every automobile, truck and tractor. It's made into millions of straws, utensils and to-go containers for use in the food industry, as well as the disposable, sanitary medical instruments used by doctors and nurses.

And it's everywhere in the greenhouse and nursery industry too, found in everything from drip tube irrigation systems to injection molded pots, trays, flats, poly film and durable polyethylene silage bags.

"When we started, very little was being done to recycle agricultural plastics," said Allen Jongsma of Agri-Plas, an agricultural recycler in Brooks, Oregon. "Most people didn't have a clue how much plastic waste there was."

According to a 2018 report by the

International Energy Agency, the production of plastics — the most familiar group of petrochemical products — has outpaced all other bulk materials (steel, aluminum and cement) two-fold since 2000. The United States and Europe are currently consuming 20 times as much plastic, and 10 times as much fertilizer (also made from petrochemicals) as developing economies such as India and Indonesia, underscoring the huge potential for growth in plastics use worldwide.

With more plastics in the environment every day and their growth showing no signs of slowing, new tactics are being considered to recycle plastics locally.

"A lot of new paper products actually start with plastics — seedling trays, styroblocks, and the way plant material is transported around," said John

Desmarteau, communications director at Agilyx, a plastics recycler in Tigard, Oregon. "What we want to do is put plastics back into its best use."

The concept seems simple: Set aside the stuff that can be chopped up, melted down and made back into useful stuff. The problem is, there's no single turnkey process, due in large part to all the different kinds of plastics currently in the field, with new ones being invented by material scientists every day.

Where do all the plastic go?

Up until about two years ago, most U.S. plastic waste was sent overseas to China, Vietnam, Thailand and other southeast Asian countries, where it was recycled, incinerated, buried under-

Growing plastics

ground or disposed underwater.1

"We were sending over very contaminated loads of material, which limited what they could recover," Desmarteau said. "They also paid more per pound than any domestic converters, so it didn't promote domestic conversion technology."

But the waste stream turned tide in January 2018, when China abruptly stopped buying our recyclable plastics, paper and other refuse. China determined that the high levels of contamination causing damage to its environment and public health, combined with the low cost of oil needed to make virgin plastic, made recycling and disposal no longer desirable or profitable.²

China's ban, called "National Sword," came down on Oregon particularly hard.³

As of February 2020, Agri-Plas had largely stopped taking in any more nursery pots, baling twine, drip tubing, pesticide containers, and other greenhouse plastics. The recycling facility, which has been in operation over 25 years, had a colossal backlog of plastics — Jongsma estimated it in excess of two million pounds — with no place to send the sorted, ground and ready-to-be-recycled material.

"Normally we send a load a day out of here," said Jongsma, co-owner with his wife Dari. "Right now we've only got one

order, and we don't know when it's turning around."

Mechanical vs. chemical methods

The majority of waste plastics are processed mechanically — sorted into like material and ground into flakes, then melted into "beads" for reuse in the manufacture of new plastic items.

There are many downsides to this process. For starters, it takes much energy to sort, grind and transport the material, largely defeating the economical and ecological purposes of recycling in the first place. In addition, plastics must be made from the same types of polymers and they must be very clean, free of dirt, plant debris or any chemical contaminants, or the recycling process won't work.

"A nursery sends a stack of #1 gallon pots. There's stuff made in Asia, there's stuff made in the U.S., there's some HD, there's some injection, but they all look about the same, when in fact they're all different. The industry really needs standardization," Jongsma said. "It's time to innovate and adapt."

Jongsma has teamed up with chemist Kevin DeWhitt to build a machine that holds the promise of converting 20,000 to 25,000 pounds of plastics per day into usable fuel. At a conversion rate upwards of 75%, that's 15,000 pounds of low-sulfur diesel fuel that could be sold back to farmers for powering tractors, possibly in the shipping industry. Carbon ash, a byproduct of the process, could be used as a soil amendment.

Similarly, Agilyx is also developing a chemical process that could prove revolutionary. The company, founded by DeWhitt in 2004, is racing to develop a scalable model for converting plastics — polystyrene, specifically — into fuel and feedstock for new plastic products.

"We found that polystyrene items

could create a new product that is a dropin product for new polystyrene products," said John Desmarteau, director of communications. "Now it's less of an intermediate product that needs further refining."

The new product promises up to 70% less greenhouse gas generation compared to virgin products.

"It's indistinguishable from virgin material, and it can go back into the highest grades of sterile food service, medical items, plant trays and styroblocks," Desmarteau said. "Our hope is to increase plastic recovery globally from 10% to 90%."

It's estimated that 359 metric tons of plastic were produced in 2018, equivalent to the mass of roughly two-thirds of the world's population, with less than 10% of it actually recycled.⁴ The rest was disposed in landfills, burned in incinerators creating air pollution, or left uncollected.

Reducing waste

At Kraemer's Nursery, a stockpile of plastic pots in various sizes had accumulated over the years. Maybe they'd be of use again some day ...

"Sometimes you just have to take a look and ask, 'Are we ever going to use these?' And if not, then we try to get it to recycling," said Chris Ames, opera-

tions director.

Since joining Kraemer's last year, Ames has overseen the reduction and organization of those piles after instituting a Lean initiative to improve efficiency at the 850-acre facility in Mt. Angel, Oregon.

"Before we basically just made piles of miscellaneous garbage plastic, stacked on top of each other, mixed in with garbage," Ames said. "Now we basically have a base set up where containers get put in the same spot every time, garbage string all together."



Kraemer's reuses as many pots, trays and flats as possible by sanitizing them in an onsite steam-sterilization facility to extend their lifetime. Ames is also actively looking to upgrade the propagation trays they use to get even more use out of them.

"They're expensive, but if we can get multiple uses then it makes sense," Ames said.

But those thicker trays, too, will eventually need to be disposed of. Traditionally, Agri-Plas has been where Kraemer's and many other Oregon nurseries have taken their spent plastics.

"We send everything that they'll take, but we're limited in how much we can send their way now," Ames said.

"We are a little stuck, looking for other recycling resources," echoed Mark Bigej, chief of operations at Al's Garden & Home, the state's largest independent nursery retailer. Al's has growing facilities in Hubbard, Mt. Angel and Gresham, where they grow 90% of the soft-stemmed annuals and perennials they sell at their retail locations.

"We try to use our flats as much as possible. Some of the gallon carrier trays we get years and years, but our 6-inch in gallons and 4-inch we only get one year," Bigej said.

Bigej said they try really hard not to send this material to landfills, but right now there's no good, consistent solution.

"Priority-wise, recycling is pretty high up there," he said. "We're such a great industry, but we are so dependent on plastics."

Profusion of petrochemicals

Domestic oil drilling by fracking (hydraulic fracturing) has surged since 2000, with Texas, Pennsylvania, Louisiana, Oklahoma and Ohio leading the way.5 Nationally, fracking produces approximately 50% of the oil and two-thirds of the natural gas used in the United States, according to the U.S. Energy Information Administration.

Fracking has not only made America less reliant on oil imports for its energy needs, it has also tapped into a new profitable resource. When natural gas comes out of the ground, it contains ethane - a key ingredient in the manufacture of plastics.6

America is producing so much ethane

that more than 300 new petrochemical and plastics plants are either planned or are under construction around the country. With more ethane than existing U.S. plants can use, the U.S. has also become the world's leading exporter of ethane, which has spurred the growth of plastics industries in India, China and Europe.8 U.S. exports of ethane are expected to keep growing and are on pace to double by 2040.

"Natural gas is practically free, which helps keep the price down," said Rick Anderson, president of Anderson Pots, a manufacturer of injection molded nursery pots, bands and flats made of polypropylene and high-density polyethylene.

About 10 years ago, Anderson introduced a line of biodegradable pots, but there was "absolutely no interest in them on the grower side. They were slightly more expensive, but people were worried they would not be as durable," Anderson said.

With abundant supplies of virgin petroleum and natural gas, there's less incentive to recycle — until now, as piles of plastic waste begin to build up.

"There's incentive to recycle in the Pacific Northwest because we're here, but there's no infrastructure," said Nicole Janssen, president of Denton Plastics in Gresham, Oregon. "It's the same all over the U.S. We need more processing facilities to handle the materials."

Recycling rules vary from state to state, depending on the recycling facility, and even year by year. "Check frequently with your recycler to see what their current requirement are," has become the recycling mantra.

Since 2014, Anderson Pots has tried to simplify the process by partnering with Denton Plastics to convert old plastic nursery containers and flats into new containers. Anderson offers credits toward future purchases of pots.

"We'll take whatever's ours or American made," Anderson said. "The main impediment is it has to be clean, no dirt or rocks. Making sure it is clean and reusable is the main problem."

Additionally, Denton Plastics recently received an Oregon Metro grant to install a new continuous melt filter on an existing plastic extruder line.⁹ The new equipment will enable an estimated 6 to 8 million pounds of plastics to be processed.

A deposit on the future

Until technology catches up, new legislation is attempting to curb plastic consumption.

Fast on the heels of Oregon's single-use plastic bag tax and ban10 taking effect this year, the Break Free From Plastic Pollution Act of 2020 11 is new federal legislation, co-sponsored by Oregon Sen. Jeff Merkley and others, that seeks to phase out all singleuse plastic products and hold corporations accountable for waste in an effort to reduce packaging and reform the waste and recycling collection system.

The proposed federal legislation is not expected to pass. Lacking a set of national standards, the problem of what to do with plastic waste is being sorted out by local recyclers like Agilyx and Agri-Plas.

"It's happening here in Oregon," said Desmarteau of Agilyx. "We're working on a process that can be replicated in other places across the nation. As much as there was doom and gloom over the last two years, more domestic converters coming online should help offset the losses of foreign entities willing to take on our waste."

Peter Szymczak is a freelance writer for Digger magazine. He can be reached at szymczak.peter.t@gmail.com

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Image 4 (above): Scout for European chafer grubs by digging a 1-foot long by 1-foot wide by 2-inch deep section of sod, the action threshold for high maintenance turf is 15-20 grubs per square foot. Photo by Alec Kowalewski

Protecting lawns against European chafer

These control strategies can help mitigate damage to turfgrass

BY ALEC KOWALEWSKI, EMILY BRAITHWAITE AND CHAS SCHMID

beetle that feeds on turfgrass roots causing substantial damage. In more recent years, this invasive insect has been confirmed in the Pacific Northwest and British Columbia. Populations have been observed as early as 2015 in Portland, Oregon and Seattle and Tacoma Washington areas. Their numbers have been increasing ever since.

HE EUROPEAN CHAFER (Amphimallon majale) is a

Identification and life cycle

The adult European chafers can be found above ground in late June and early July. This thick-bodied beetle is about

Image 1: The adult European chafer is about 1/2-inch long and has a light-brown or tan colored body. PHOTO BY MICHAEL REDING

½-inch in length, larger than a Japanese beetle (Popillia japonica), but smaller than a green June beetle (Cotinis nitida). This

> beetle has a light-brown or tan colored head, thorax, abdomen and wing covers (Image 1). The insect's eyes are dark-brown to black, and the wing covers have grooves running the length of the insect. The abdomen protrudes slightly beyond the wing covers at the rear end.

> The adult stage of this insect is shortlived, at one to two weeks. During this time, the adults find partners, mate, and then lay eggs before dying. Each female European chafer will lay 20-40 eggs, one at a

European chafer

Image 2: European chafer grubs are about 1 inch long and have a white C-shaped body with three pairs of legs. PHOTO BY DAVID CAPPAERT

time, in the top 2-4 inches of moderately dry soil. The eggs are one-tenth of an inch long, thick and white to a dull gray in appearance. Larva hatch from these eggs about two weeks after being laid.

The larval stage of this insect lives underground from late July to the following May (11 months). This larva is a large, C-shaped grub. Chafer grubs have a white body, light-

brown head, three pairs of light-brown true legs, and a dark section at the end of the abdomen (Image 2). The European chafer raster pattern, which is used to distinguish between various species of white grubs (European chafer, Japanese beetle, and June beetle), includes a Y-shaped anal slit and two rows of parallel spines run-



ning toward the front of the grub.

These grubs reach maximum length of one inch in the fall and cause the largest amount of damage to the rooting systems of grass plants in the subsequent spring. In May and early June, the chafer larvae form pupae in preparation for the transition to the adult stage of their life

cycle. The pupae are just over ½-inch in length and stout with a light-brown appearance. In late June and early July, adult chafers emerge from the pupae and leave the soil to complete the life cycle.

Damage

Symptoms of chafer grub activity include localized patches of drought-stressed turf appearing in the spring and early sum-

mer months. These patches of turf easily peel up from the soil because the grubs have eaten the root system. At this stage, insecticide applications will not make a difference because the root damage has already been done. These areas often become desiccated during the summer months, and will require replacement with





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seed or sod. Skunks, raccoons and birds will often forage for the grubs in infested areas, damaging the turfgrass in the fall and following spring (Image 3).

Scouting

Scouting for European chafer grubs should be done in the fall (September and October). To scout for these grubs, dig up a 1-foot long by 1-foot wide by 2-inch deep section of sod with a square end shovel. Flip the sod layer over and inspect the soil for grubs (Image 4). European chafer prefer dry, sunny turf areas with little irrigation. Sloped turfgrass areas prone to surface runoff will likely be drier than flat turf area, and consequently could have higher rates of chafer infestation. Animals forging for grubs in the fall and spring are also a good indicator of infested turfgrass.

Preventive management

The typical action threshold (pest population) that will cause damage if untreated is 5-10 grubs per square foot for low maintenance turf, and 15-20 grubs per square foot in high maintenance turf. Considering this, adequate implementation of the primary cultural practices (mowing, fertilization and irrigation) is an important factor because this will increase resistance to damage.

High-maintenance lawns in the Pacific Northwest should be mowed at least once a week to a height of 2-3 inches. To improve nutrient levels, grass clippings should be returned using a mulching mower. High-maintenance lawns should be fertilized twice in the spring and twice in the fall at 1 lb. N per 1,000 square feet per application, totaling 4 lbs. N per 1,000 square feet annually.

Research has shown that frequent irrigation during late June and July can substantially mitigate pest populations. It is speculated that the adult chafers prefer to lay their eggs in dry soil, rather than moist soil. Frequent irrigation also improves turfgrass tolerance to root-feeding pests, such as the European chafer.

Considering this, irrigation events of 1/4-inch deep, four times a week,

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European chafer

Image 3: Skunks and other animals will forage for European chafer grubs in infested areas damaging the turfgrass, David Smitley, 2018. PHOTO COURTESY OF OREGON STATE UNIVERSITY

totaling 1-inch per week are suggested for high maintenance lawns in the Pacific Northwest. An August and September application of parasitic nematodes (Heterorhabditis bacteriophora) is suggested, however data on the effectiveness of this control method is minimal. Similar to insecticides, biological control agents typically need to be applied annually when managing insect populations.

Insecticides

Before considering insecticides, always evaluate chafer grub populations. If the action threshold of 5-10 grubs per square foot for low maintenance turf, and 15-20 grubs per square foot in high maintenance turf is not reached, an insecticide application will not provide any benefit. If insecticides are going to be applied for control of this insect, the best results will



be observed when treatments are made while the larvae are young, also known as early instar, grubs in the fall.

Spring scouting and insecticide applications will likely not prevent drought-related turfgrass damage in the summer months because the root system has already been compromised. In the spring months, the fully developed, or late instar grubs, are also resistant to some insecticides.

Effective preventative insecticides with relatively low animal (mammals and fish) toxicity levels include chlorantraniliprole, thiamethoxam, clothianidin, and imidacloprid. Chlorantraniliprole is the only insecticide listed that has a low bee toxicity. To protect pollinators, the remaining products should not be applied to turfgrass adjacent to blooming plants. These preventative products should be applied





early in the chafers' life cycle in July and August. Late applications of these products will not provide effective control.

Effective curative insecticides include thiamethoxam, trichlorfon, and carbaryl, but all have relatively high animal toxicity levels to mammals, fish and bees. These curative products are highly toxic to bees and should not be applied to turfgrass adjacent to flowering plants. Curative insecticides should be applied in the fall in September and October. Spring application of any insecticide will provide limited control.

At this time, the larva are at their final instar, making them more resistant to the insecticides. The larva have also been feeding on the turfgrass roots since the fall, causing a significant amount of damage going into the spring months.

Conclusion

European chafer populations are growing in the Pacific Northwest, and this insect is particularly damaging to turfgrass areas that receive minimal irrigation levels. Regular irrigation during the summer months, combined with frequent mowing and fertilization, will increase the action threshold for European chafer to 15–20 grubs per square feet.

If these populations are observed during scouting, preventative insecticides can be made in July and August, while curative insecticides can be applied in September and October. Curative insecticides that effectively control European chafers are more toxic to animals and pollinators than the preventative insecticides, so curative applications should be used as a last resort. Spring insecticide applications will have minimal effects because the damage has likely already been done and should be avoided. ©

Alec Kowalewski, associate professor and turfgrass specialist at Oregon State University (OSU), can be reached at alec.kowalewski@oregonstate.edu. Emily Braithwaite is a faculty research assistant at OSU. Chas Schmidt, Ph.D. is a turfgrass research assistant.



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Our Oregon 'Field of Dreams'

OK. The pandemic sucks, and not just for the reason of a legitimately insidious virus causing a massive loss of life and economic carnage.

We are weary and fatigued with COVID-19 as it stretches into its seventh month. For certain, the year 2020 has enough memes to make it a standalone chapter in our lives. Everyday life has been shelved as we shelter in place. It has brought into the light the loss of things we frankly took for granted.

The jarring ring of classroom bells have been silenced. Baseball and softball fields full of dreams are empty. We don't hear the audible POP of a good fastball in a catcher's mitt. The smell of cut grass and a dirt infield are just memories for now. There are no seventh inning stretches to organ music, paying homage to the man who made it a ritual of a summer day, legendary Cubs announcer Harry Caray.

Yep. I hate this virus.

Our connections with baseball

When I sat down to write this column, I wanted to talk about the many ways Oregon agriculture intersects with the community through sports. Our grass seed has a significant presence in almost every community throughout the world. Baseball, football and soccer — all embrace natural grass as the serving tray of lifelong memories.

But it doesn't end there. Oregon food producers provide their bounty to snack shacks resentfully staffed by parents trying to catch a glimpse of their son or daughter on the field, as well as the pricier snack bars at major league ballparks.

It takes between 140 and 240 pounds of Kentucky bluegrass seed to grow in a sports field for football, soccer or baseball. I say Kentucky bluegrass, but Oregon farmers produce it. It is used all over the world. Our growers only need to plant a little under 1 pound of seed in order to produce enough seed for even the largest of these facilities.

Reporter Sierra Dawn McClain explored many of these connections in an article for the Capital Press, a newspaper covering West Coast agriculture that is based in Salem, Oregon.

"According to industry data, the leather from one cow hide yields 12 baseball gloves or 144 baseballs," she wrote. "A standard baseball, according to manufacturers, also contains a cork or rubber core wrapped with 450 feet of wool yarn, often from domestic sheep producers."

And there's more. "According to the Popcorn Institute, about 30% of all popcorn is eaten at stadiums and similar venues," McClain reported. "The closure of baseball stadiums was a huge change for producers. The nation's No. 1 baseball bat manufacturer, Louisville Slugger, said that about 40,000 domestic trees are used to make bats for a typical baseball season, of which 48% are ash and 52% maple." God, I love that.

Throwing the first pitch

The Salem-Keizer Volcanoes are a minor league baseball team in Keizer, Oregon. They are a Short-Season Class A team in the Northwest League and have been an affiliate of the San Francisco Giants since the Volcanoes' inception in 1997.

In 2015, the ballclub reached out to the association to create "Nursery Night" and fans were able to walk through the parking lot and see first-hand the topnotch plant material as they bought their family-friendly priced tickets. The Stone family was in full attendance.

I have been at OAN for 15 years and remember well the only first pitch by an OAN president in my time with the association. On that beautiful evening, Mike Coleman, owner of Arrowhead Ornamentals, strode out to the mound and delivered a legit pitch. There was no Fauci moment here. As a high school baseball player from St. Paul High School — that's St. Paul, Oregon — Mike crushed it and zipped that puppy in.

I, too, was a high school pitcher but I'm certain that I would have sailed it to hit the mascot, à la "Bull Durham."

For the history buffs out there, the first presidential first pitch was thrown in 1910 by William Howard Taft, when the Washington Senators hosted the Philadelphia Athletics on opening day. Since then, every president except for the current one has thrown out a first pitch at a major league



Jeff Stone OAN EXECUTIVE DIRECTOR

baseball game. Franklin Delano Roosevelt did it a record 11 times as president.

Harry S. Truman and Gerald Ford each accomplished the noteworthy feat of throwing out left-handed and right-handed first pitches in the same game. Truman did it in 1950 on Opening Day, while Ford did it in 1976 at the All-Star Game. Ford, was a star athlete in college for the University of Michigan. His sport was football, though.

Two other presidents had closer ties to baseball. George H.W. Bush pitched for Yale and was team captain, while George W. Bush was managing general partner of the Texas Rangers.

Catchers wear masks - we should too

It is a fantasy that each of us is not responsible to do our part to get the nation healthy and back to whatever might resemble "normal." There are no hot dogs being raised on ranches. There is no Queso River, located in the beautiful Gelatinous Goo River Basin. Things happen because we make them happen, even when it's hard. So it will be with the end of this pandemic.

I will leave this column in the capable hands of a quote from the movie "Field of Dreams." James Earl Jones plays Terrance Mann and tries to help a struggling Ray Kinsella, played by Kevin Costner.

"The one constant through all the years, Ray, has been baseball. America has rolled by like an army of steamrollers. It has been erased like a blackboard, rebuilt and erased again. But baseball has marked the time. This field, this game: it's a part of our past, Ray. It reminds of us of all that once was good, and it could be again."

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