



Announcements

JANUARY

14 Agronomy and Soil Science Training Seminar, WWCC Water and Environment Center 8:30 a.m.– 4:30 p.m. Offering 6 CCA CEU's (pending), and 1 WSDA pesticide credit (pending). **Lunch is included so please pre-register with the WSU Extension office by Tuesday January 12. Fee is \$20.** For more information, call 509-524-2685 or email becki.green@wsu.edu or pre-register online with a credit card at <http://wsu-seminar.bpt.me/>. Space is limited to 85 participants.

20-21 Hay Expo, Three Rivers Convention Center, Kennewick, WA. To register, visit <http://www.wa-hay.org/> or call 509-585-5460 for more information.



26 WSU Oilseed Production Workshop, Richland, WA. One-day workshop includes region-specific topics chosen by local growers, industry members and WSU Extension educators, such as oilseeds 101, economics, livestock and canola, field diagnostics, whole-farm revenue protection, marketing, storage, and more. Canola, rapeseed, mustard, and flax will be the focus crops of panel presentations in both general and breakout sessions. Registration includes lunch and refreshments and will be available beginning December 7 at <http://css.wsu.edu/biofuels/2016-wsu-oilseed-workshops/>. To learn more, send an email to ksowers@wsu.edu.

26-28 WA/OR Potato Conference 2016, Kennewick, WA, Three Rivers Convention Center. Includes a Spanish language program with pesticide credits for farm workers. Featuring the 2nd Annual Potato Peel-Off. For more information or to register, call 509-766-7123 or visit www.potatoconference.com.



28-29 Pre-License Pesticide Training, Yakima Convention Center, 8:00 a.m. to 4:30 p.m. Refer to Feb. 2 - 3 for more information.

FEBRUARY

2-3 Recertification Pesticide Credits (6/day) & Pre-License Pesticide Training, Pasco, TRAC, 8:00 a.m. to 4:30 p.m. You must pre-register at least 7 days prior to the courses at pep.wsu.edu. For directions and training agendas, visit pep.wsu.edu; for registration questions call 509-335-2830 or email pest@wsu.edu; license information available at WSDA 877-301-4555.

9-11 Washington Association of Wine Grape Growers Annual Convention, Three Rivers Convention Center, Kennewick, WA. The premier educational and networking opportunity for the



Northwest grape and wine industry with sessions for everyone including growers, viticulture staff, wineries, enologists, tasting room staff, marketers, and more. For more information visit: <http://wawgg.org>.

17-21 Northwest Flower & Garden Show, Seattle, Washington State Convention Center, 7th & Pike. See designer gardens and attend free hands-on demonstrations and seminars. For more information, visit www.gardenshow.com or call 253-756-2121.



18-19 Pre-License Pesticide Training, Spokane, Mirabeau Park Hotel, 8:00 a.m. to 4:30 p.m. Refer to February 2-3 for more information.

28-29 Pre-License Pesticide & Recertification Training, Yakima, Convention Center, 8:00 a.m. to 4:30 p.m. Refer to February 2-3 for more information.

25-28 Sewing & Stitchery Expo, Puyallup Fair & Events Center, 110 9th Ave SW. More than 100 daily seminars and classes and booths with over 400 exhibitors. Call 866-554-8559 or visit www.sewexpo.com.



Farming & Livestock

NEW INSIGHTS ON AN OLD PEST: SIX VERSIONS OF DOWNY BROME ID'D IN NW

It may all look the same, but it turns out one downy brome plant can be very different from another.



While other weeds, like prickly lettuce, show differences in their leaves from one plant to another, downy brome isn't so showy. Instead, we now have evidence that the scourge of Pacific Northwest (PNW) wheat farming has considerable variability when it sets seed, evidence that may lead to better weed control strategies.

Downy brome was first reported in Washington in 1893. Although most of the expansion of brome in the West was accidental, it was deliberately sown at an experiment farm in Pullman in 1898 and subsequently sold across the West as a "100 day forage grass" in 1915. It has been a widespread problem in the PNW since 1925.

If downy brome emerges with wheat, it can cause yield losses approaching 90 percent. That's why our research showing the weed's variability in setting seed is so important.

Downy brome can reduce soil moisture to the permanent wilting point to a depth of 3.5 feet in fertilized fields. Because downy brome matures earlier than winter wheat, if it emerges with winter wheat in the fall, it often depletes soil moisture and nutrients when winter wheat is at a critical reproductive period—that is, when it's heading. Thankfully, that seldom happens in our region's fallow systems, where farmers plant much earlier than downy brome emerges.

More than 120 years after it was first identified in the state, downy brome is still a top pest. It continues to drive wheat farmers' herbicide applications and university scientists' weed biology research. Lately, we have been building on earlier research to understand more about how downy brome develops.

Two decades ago, Dan Ball, Oregon State University emeritus professor, quantified how

long it takes for downy brome to produce mature seed after winter dormancy. He used growing degree days (GDD), and concluded about 1,000 GDD was a good estimate for when downy brome produces mature seed after coming out of winter dormancy. After that, it's going to set seed no matter what it is treated with (GDD typically are associated with a base temperature, and for downy brome, we use 32 F). Unfortunately, as a decision tool, the GDD model wasn't practical for planning herbicide applications.

Farmers typically treat winter wheat once in the spring with herbicides. It's typical for both a grass and a broadleaf herbicide mixture to be applied simultaneously as weather permits. But timing of herbicide applications are often based on when fields are at their weediest and not on when herbicides will work best on a given species, including when a grass herbicide will work best on downy brome.

Results of our current approach have been variable. That includes variability in the efficacy of different herbicides and variability in timing of application. Both have combined to generate a lot of variability in downy brome control, along with some failures too.

It was complaints of inconsistency in response to herbicide applications that instigated our study to explore the variability in growth and development of downy brome. In work funded by the Washington Grain Commission and the Agricultural Research Service-supported Regional Approaches to Climate Change project, we collected downy brome from throughout the inland PNW.

Using next-generation genotyping tools—the same tools plant breeders use to breed and identify new wheat cultivars—along with old fashioned phenotyping techniques, we now know there are six types of downy brome in PNW wheat fields. Each of the six requires a different amount of GDD to produce mature seed.

We found one type begins flowering by 950 GDD on average, while others begin flowering as late as 1,350 GDD. In other words, an early type can be as much as 400 GDD ahead of a late-maturing version, which depending on the season, can be as much as four weeks! We also found that farmers are likely to have more than one type in a field.



We don't currently use downy brome maturity to decide when to treat. Instead, we use growth and development of wheat (and opportunity), and wheat plants are frequently on a different schedule than brome. In other words, a spring herbicide application might fail to suppress downy brome that begins to flower by 950 GDD, but significantly suppresses downy brome that begins to flower by 1,350 GDD.

Our research is continuing, but in the meantime, keep your eye on that downy brome this spring. Although farmers are quite adept at identifying wheat as it approaches boot, it may pay dividends to watch downy brome just as closely. Treating the weed before it's in the boot may be a better way to get a solid return on that herbicide investment.

Adapted from article written by Ian Burke, Associate Professor of Weed Science in the WSU Department of Crop and Soil Sciences; Nevin Lawrence, graduate student and Kendall Kahl, associate in research in Crop and Soil Sciences.



NEW PLANT GROWTH FACILITY HELPS WHEAT, SMALL GRAIN GROWERS

Adapted from College of Agricultural, Human, and Natural Resource Sciences

When it comes to breeding new wheat varieties, efficiency is key.

"If we can be more efficient in the greenhouse, that translates into better genetic lines that we can look at in field conditions," said Arron Carter, Washington State University's winter wheat breeder. "That means better products get out faster with better information for growers."



To help increase efficiency, WSU and the Washington Grain Commission funded the new \$15 million Washington Grains Plant Growth Facility on the WSU Pullman campus. The U.S. Department of Agriculture partnered to provide equipment and furnishings.

Besides wheat, the greenhouses will be used for research on new varieties of barley. According to the Washington Grain Commission, small grains such as wheat and barley directly contribute over \$1.1 billion

annually and over 3,700 jobs to Washington's economy.

"This is a state-of-the-art facility that will provide major benefits to our wheat and barley breeders, and from them to the entire state," said Kidwell, who began her career at WSU as a spring wheat breeder.

The new building, which is attached to the Plant Growth Facility on Wilson Road in Pullman, adds 7,200 square feet of greenhouse space in 12 bays. It adds a seed storage area, a specialized room for herbicide studies and new lab space for breeders and other faculty, students and staff, among other benefits.

The major small grains research greenhouse was almost 20 years old, and "it was starting to feel pretty cramped," said Dan Dreesmann, the plant growth facility manager.

The air handler systems and controls for the new building are computer controlled, and Dreesmann said everything can be operated remotely.

"It's been a crazy couple of years, with the upgrades to the original facility plus this new space," he said. "But it will be worth it to make things easier for the researchers. They were really eager to get in there and start working."

"We needed this space," he said. "Both for developing new varieties and studying the genomic possibilities, we have to keep pace with new technologies. We wouldn't be able to do that without this facility. We're happy to be in here and using it."

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

WSU EXTENSION NEWSLETTER
PUBLISHED 4-6 TIMES ANNUALLY

VOLUME 2016, NO. 1
WSU EXTENSION
WALLA WALLA COUNTY
328 WEST POPLAR
WALL WALLA, WA 99362

HELP NEEDED! Budget constraints are pushing us to cut postage costs. We can accomplish this if you furnish us with your e-mail address! If you are currently receiving our newsletter by postal mail, please email your current email address to: becki.green@wsu.edu or call the Extension Office at 509-524-2685.



Home & Garden

FALL AND WINTER WATERING: DURING DROUGHT

Adapted from Colorado State University Extension



Limited summer rainfall and water restrictions can deplete subsurface soil moisture. Upon digging, people may find little moisture at 8 to 12 inch depths where most tree roots are located. Paying special attention to fall watering is important for trees to mature buds and enter dormancy

in a healthy condition. Consider tree watering in addition to any general landscape sprinkling while adhering to local water restrictions that are allowed in fall months.

Horticulture experts recommend watering underneath the branches within the circle bounded by the drip line. Water to a depth of 12 inches. Trees should receive ten gallons per inch of trunk diameter measured at knee height. This amount can be reduced by water supplied by general lawn watering or if rain or snow is received. Water trees three times per month in September. Cut back to one or two times per month from October through March, two times monthly for young trees and for evergreens.

Mulch within a circle bounded by the drip line to a depth of 4 inches allowing 6 inches of space between the mulch and tree trunk. A mulch circle of any area will be beneficial whether it extends to the dripline or stops short of that.

Many water application methods can be used. Consider soaker hoses, soil needles, or soft spray nozzles. On hard or compacted soils, soak, wait and soak again to avoid water runoff. Be especially careful with soil needles, also known as deep root feeders. Some people insert these well below a 12 inch depth, placing water out of reach of tree roots. Soil needles should be inserted at an angle to a depth of 6 to 8 inches. Leave the needle in place for 3 to 5 minutes with water turned on low to moderate pressure. Water the area under the



branches in at least twelve sites for a medium sized or larger tree. Disperse water sites evenly within the circle bounded by the dripline. For new trees, water all four sites at least 3 feet from the trunk (stem).

In dry years, established shrubs will need additional amounts of winter watering. Apply 5 gallons for a small shrub (less than 3 feet), and 18 gallons for a large shrub (more than 6 feet) on a monthly basis from October through March. Newly planted shrubs will require more winter water, twice monthly using these same amounts at each watering. Be sure to mulch shrubs to retain

Family Living

TIME FOR VITAMIN D

Adapted from Melissa Bess, University of Missouri Extension



Vitamin D needs can be sufficiently met during the summer months thanks to the sun. Just 10-15 minutes of sunlight (without sunscreen) can provide us with 10,000 IU of vitamin D, which can be

stored and used when needed. However, starting in November, the sun doesn't get high enough in the sky to provide us with the rays we need to absorb vitamin D in our skin. It may be necessary to take a vitamin D supplement in the winter months (November through February).

Vitamin D may be related to a wide range of health benefits, including an increase in immunity and muscle strength. It can also help with preventing osteoporosis, cancer, heart disease, diabetes, autoimmune disease (such as rheumatoid arthritis), depression and others. Research in these areas is still ongoing but shows some promising results.

The primary function of vitamin D is helping the body absorb calcium. Milk is one source of vitamin D, but not all other dairy products have vitamin D. Read the nutrition label to be sure. Other food sources of vitamin D are limited, but include fatty fish (salmon, sardines), eggs, some fortified cereals and breads, and some fortified beverages (soy milk and orange juice). Vitamin D will be listed with the other vitamins and minerals on the nutrition label.

The vitamin D recommendations were changed in 2010. Vitamin D is typically measured in IU or International Units. Infants up to age 1 need 400 IU daily; children (age 1 and up), adults (up to age 70), and women who are pregnant or breastfeeding need 600 IU daily. Adults age 71 and up need 800 IU daily.

Some experts recommend a vitamin D supplement of 1,000 to 2,000 IU because it is difficult to get the recommended amounts from food. Some may only need a supplement in the winter months because they may get enough sunlight in the spring, summer and early fall to get the vitamin D they need. Vitamin D can be stored, so the supplement doesn't have to be taken every day. It is best taken with a calcium supplement or with dairy foods, to help with absorption of the calcium.



The tolerable upper level intake, the highest amount recommended, for vitamin D is 4,000 IU, but research has shown no toxicity in levels up to 10,000 IU. Toxicity would only occur from excessive supplement use, too much vitamin D from the sunlight will not occur.

Older adults, those with darker skin, those who always use sunscreen and obese individuals are at a higher risk for vitamin D deficiency because the body doesn't synthesize the vitamin as well. These individuals may need to supplement at a higher level to get enough vitamin D.

Talk with your physician if you are interested in a vitamin D supplement. Some medications may interfere with a supplement and some may need to be taken at a different time.

Updates

NEW CATALYST PAVES WAY FOR BIO-BASED PLASTICS, CHEMICALS

By Tina Hilding, Voiland College of Engineering & Architecture

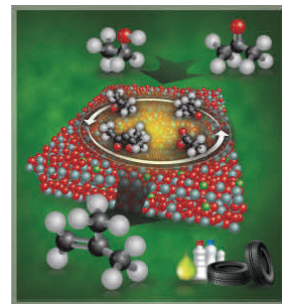
PULLMAN, Wash. – Washington State University researchers have developed a catalyst that easily converts bio-based ethanol to a widely used industrial chemical, paving the



way for more environmentally friendly, bio-based plastics and products.

The researchers have published a paper online describing the catalyst in the *Journal of the American Chemical Society* (<http://pubs.acs.org/doi/abs/10.1021/jacs.5b07401>) and have been granted a U.S. patent.

The chemical industry is interested in moving away from fossil fuels to bio-based products to reduce environmental impacts and to meet new regulations for sustainability, said Yong Wang, Voiland Distinguished Professor in the Gene and Linda Voiland School of Chemical Engineering and Bioengineering.



The catalyst works on bio-based ethanol to create isobutene used in plastics and other products.

The industry has traditionally made a widely used chemical called isobutene – used in everything from plastic soda bottles to rubber tires – by superheating crude oil. But in collaboration with the Archer Daniels Midland (ADM) Company, Wang and his colleagues developed a catalyst to convert bio-based ethanol, which is made from corn or other biomass, to isobutene in one easy production step.

The researchers examined the costs and lifetime of their catalyst to determine its practicality for the marketplace and determined that it could be used for other closely related feedstocks. They also discovered just how their catalyst works, knowledge that could be used to design more efficient catalysts for a wide range of applications.

In addition to ADM, the work was supported by a grant from the Department of Energy (DE-AC05-RL01830, FWP-47319).

“This is one example that shows the benefits of closely linking the practical and fundamental aspects of research to develop scalable and commercially practical catalysts for applications of importance to industries,” said Wang, who holds a joint appointment in the U.S. Department of Energy’s Pacific Northwest National Laboratory (<http://www.pnnl.gov/>).

HEALTH AND WEALTH TIPS FOR A NEW YEAR

Adapted from Barbara O'Neill, Ph.D., CFP®
Extension Specialist in Financial Resource Management
Rutgers Cooperative Extension



Most New Year's Resolutions involve health and money. Lose 20 pounds, for example, or save \$50 a week. Most people think of health and wealth as "separate" goals but, in fact, both aspects of life are closely related. Want to be healthy and wealthy? Consider these steps:

Build "Health Capital"

Health is a financial asset, just like stocks and bonds. It decreases the odds of costly medical bills today and/or later in life. Eat nutritious meals, get enough sleep, exercise regularly, and manage stress. Without good health, you can't earn an income and build wealth. One study found that older workers with chronic health problems accumulated less than half the wealth of healthier peers.

Junk the "Junk Food"

Just cut it out: soda, fast food, fatty pastries, chips...you know the drill. Not only will you lose weight (trimming 100 calories a day = 10 pounds of annual weight loss), but you'll pocket the savings. Save \$7 a day on "empty calorie" foods and drinks and you'll have over \$2,500 in a year.

Half-Size Food Portions

Instead of eating 4 cookies a day, eat two. Bring half a meal home from restaurants and eat less at home. Getting two meals from one can save hundreds of dollars (and thousands of calories) annually. For example, saving \$3 a day by "doubling up" results in savings of over \$1,000 a year

Restrict Yourself

People are more successful savers when they "pay themselves first" and automatically deposit money from their paycheck into a savings account. Examples of health "restrictions" are portion-controlled frozen foods and asking for sauces and salad dressings "on the side."

Sweat the Small Stuff

"Little" things matter! Healthy habits that save big bucks over time include washing your hands frequently (especially before handling food) to avoid the expense of flu and cold treatments and flossing your teeth to help prevent periodontal disease.

ACHIEVEMENT NIGHT

On November 15, 4-H youth and adult volunteers were honored at the 2015 annual 4-H Achievement Night. Approximately 185 awards were presented to 4-H members, clubs, and volunteers in recognition of their 4-H accomplishments during the past year.

Bob Kinion received recognition as the Outstanding 4-H Volunteer Leader of the Year for his 24 years of exceptional leadership and service to the young people of the Walla Walla County 4-H program. Bob also served on the Washington State 4-H Advisory Board as a district representative and continues to provide support for Valley Chapel 4-H.

Connie Vinti received the Inspirational Leader of the Year award. Connie has served over 44 years as a 4-H volunteer. After serving as a club leader for many years, Connie is now assisting youth to learn life skills through judging public speaking and record books. Connie is greatly appreciated for her dedicated service to 4-H as a volunteer.

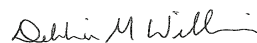
Columbia REA received the 4-H Appreciation Award for their continuing support of the 4-H program and its members.

Two outstanding 4-H Members in Walla Walla County were selected in each age division. The junior division outstanding members were Leah Chapin and Bodie Holderman; the intermediate division recipients were Makenzie Frost and Ryan Chapin; and the senior division winners were Miriam Bennett and Wyatt Dial. Receiving honorable mention awards were Lauren Green, Patton Wright, Reagan Case, Erin Chapin, Kiana Newcomb, Bow Maiden and Cora Jo Borgens. These members were selected based on the quality and growth of their 4-H project, leadership skills, and their active involvement in the county 4-H program.



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Debbie M. Williams
County Extension Director

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