APRIL 2019



8 Hemp Becomes a Legal Crop
14 New OSU barley variety "Thunder" added to the American Malting Barley Association (AMBA) recommended list
14 Click Click - Sounds Like Trouble
17 New Research Funding Approved for Daylord Forming

Dryland Farming

anteries and

Address Service Requested

OREGON WHEAT GROWERS LEAGUE





Clint Carlson

Vice President





Brent Chevne Immediate Past President

Emery Gentry (Interim), Umatilla County Wade Bingaman, Union/Baker County Kurt Melville, Wallowa County Josh Duling, Wasco County Tom Duyck, North Willamette Valley Collin Crocker, South Willamette Valley

Alan von Borstel President

County Presidents

Deacon Heideman (Interim), Gilliam County Rodney Cheyne, Klamath County Kevin Corn, Malheur County Erin Heideman, Morrow County Ryan Thompson, Sherman County

Issue Liaisons

Jerry Marguth, Environment & Regulations Walter Powell, Farm Policy & Transportation Craig Reeder, Research & Technology

Ex-Officio

Dan Steiner

Staff

Blake Rowe, Chief Executive Officer Shanna Hamilton, Director of Communications Sally Christensen, Membership Director



OREGON WHEAT COMMISSION

Growers

Dale Case, Cove Darren Padget, Grass Valley Bob Newtson, Helix







Jerry Marguth Vice Chair

Public Member

Travis Jones, Government and Public Affairs, Nike, Inc., Beaverton

Handlers

Jordan Van Zante, Export Handler, Pacificor, LLC, Portland Jason Middleton, United Grain Corp., Pendleton

Staff

Blake Rowe, CEO, Oregon Wheat Tana Simpson, Associate Administrator



IN THIS ISSUE

- President's Half Acre 3
- Washington, DC Version 15.0 4
- 6 Wheat Farm Energy Use Profile
- 8 Hemp Becomes a Legal Crop
- 10 Winter Stuff on the Desk
- Choosing the right variety: interactions between 12 varieties, locations, and seasons
- New OSU barley variety "Thunder" added to the American Malting Barley Association (AMBA) 14 recommended list
- 14 Click Click Sounds Like Trouble
- 16 Growers Take to Portland
- New Research Funding Approved for 16 **Dryland Farming**
- 18 Growing a Better Dryland Wheat Crop
- 20 Seventy Seasons of Service
- 22 Soft Pretzel Recipe

Subscriptions

For address changes, extra copies, or subscriptions: **Oregon Wheat Growers League** 541-276-7330 schrist@owgl.org

Sales & Advertising Rates

If you are interested in advertising for this publication, please contact our sales representative.

Leah Anderson - Ad Sales • NDP 406-475-1856 • landerson@ndpub.com

Oregon Wheat is published bimonthly by Oregon Wheat Growers League, 115 SE 8th Street, Pendleton, Oregon 97801. Oregon Wheat is sent to all Oregon wheat producers through funding provided by the Oregon Wheat Commission. Receipt of Oregon Wheat magazine does not indicate membership in the Oregon Wheat Growers League.

Every effort is made to ensure accuracy in articles published by Oregon Wheat; however, the publishers assume no responsibility for losses sustained, allegedly resulting from following recommendations in this magazine. Consult your local authorities.

The Oregon Wheat Growers League has not tested any of the products advertised in this publication, nor has it verified any of the statements made in any of the advertisements. The League does not warrant, expressly or implicitly, the fitness of any product advertised or the suitability of any advice or statements contained herein.



Cover:

Wheat Fields at the base of the Blues in winter

Provided courtesy of the East Oregonian





Alan von Borstel President

I just returned from a weeklong trip to Washington DC and the Big Apple. My son is home helping me this winter, so I didn't have to ask my neighbor Tim to take care of my cattle herd while I was gone. Somehow in the past I have always managed to leave the farm during the worst week of the winter. Tim has always wondered how I could plan this a year in advance. I thought maybe it was just Tim's bad luck, but it happened again this year. It must be my good luck.

While in DC, Brent, Clint, Blake and I spent several days meeting with USDA Farm Service Agency staff and Oregon's Senators and Representatives, or their legislative aides, thanking them for their support on the passage of the farm bill and explaining to them that moving forward on trade agreements is paramount to American agriculture, especially Oregon wheat.

Our visit to DC, timed to coincide with the National Association of Wheat Growers (NAWG) Winter Conference, included numerous committee meetings and reports from NAWG, as well as a variety of meetings on Capitol Hill. We met with Al Johnson, former USTR Chief Agriculture Negotiator, and heard his current perspective on trade with many countries including China, Japan, Canada and Mexico. He reiterated what current USTR Chief Agriculture Negotiator, Gregg Doud, has said - that the Trump Administration has made it a priority to include agriculture in all trade negotiations. We heard from Hiroaki Kojima, Counselor, Embassy of Japan, on US and Japan trade relations. He stated that Japan would work to negotiate a bilateral agreement with the US but would much rather have the US join the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). Their hope is that a bilateral agreement will lead to the US joining the CPTPP.

We also heard from Carlos Vazquez Ochoa, Embassy of Mexico, and Colin Bird, Embassy of Canada, who gave their perspectives on the US Mexico Canada Agreement (USMCA). I think all parties are ready to move forward but the current US tariffs imposed on imported steel and aluminum and retaliatory tariffs by Canada and Mexico are hindering the USMCA ratification process.

Next, we heard from House Ways & Means Committee Majority Staff member, Katie White, and Senate Finance Committee Majority Staff member, Andrew Brandt. Unfortunately, a lot of my optimism

The Wide-Open Spaces in DC & NYC

for a fast track to new productive trade agreements faded during these presentations. There is such bitterness between the House and Administration it is going to be hard to move forward.

Finally, we also heard from USDA Deputy Secretary, Steve Censky. He focused most of his talk on trade with China and the need to stand firm in negotiations. While I remain optimistic that a deal can be struck with China, it may be a long process to get there.

Brent, Clint and I also devoted some time and effort towards keeping NAWG whole. Because of drought and poor crops, North Dakota Wheat Growers Association (NDWGA) has only been paying half dues to NAWG the past two years, as is allowed under the current NAWG by-laws. They requested to continue paying half dues for the upcoming year citing their dissatisfaction with NAWGs efforts on their issues as grounds for staying at half dues. Their request was denied by the NAWG board of directors. It is my firm belief that both NAWG and NDWGA are better off together. North Dakota is the largest wheat producing state and thus pays a large share of the total dues paid to NAWG, but also lacks population and brings only one House representative in addition to their two senators in DC. NAWG needs their dollars, but North Dakota needs the help provided by the legislative clout of all the other NAWG member states. Oregon pledged to help North Dakota with their issues and sincerely hopes they will return as a full member in NAWG.

My wife, daughter, and son-in-law joined me after the meetings, and we visited the Holocaust Museum in DC. Then we took a 125-mph train to New York City. The three-hour ride gave us an opportunity to see there is little open country between DC and New York City. We rarely left what I would call developed property. We stayed in downtown New York City amongst the sky-scrapers. Each floor of our hotel had only 4 rooms and two elevator shafts. I was convinced I could turn a grain elevator into a hotel in Manhattan.

While in NY we visited the 9/11 Memorial, Statue of Liberty, Ellis Island, Empire State Building, Central Park, and took in a Broadway play and Times Square night life. Two days in New York City left me feeling like a coyote trapped in a culvert. We're glad to be home now enjoying our wide-open spaces.

3

Washington, DC - Version 15.0

Blake Rowe, CEO, Oregon Wheat



It seems hard to believe, but by my unofficial tally, last week's trip to Washington, DC was my 15th trip since I went to work for Oregon Wheat. Every trip has its highlights and things that set it apart from other visits and this trip was no different. Our group,

including myself, Oregon Wheat Growers League (OWGL) Officers Alan von Borstel, Clint Carlson and Brent Cheyne, Oregon Wheat Commissioners (OWC) Darren Padget and Dale Case, and OWC Associate Administrator Tana Simpson, committed the full week to the effort. Two of our days were largely spent on the Hill visiting our Congressional delegation and Administration officials, with the balance going toward the National Association of Wheat Growers (NAWG) -US Wheat Associates (USW) Winter Conference.

The trip had a challenging start with all the eastside folks having to fight through heavy, drifting snow and deal with delayed and rerouted flights just to get to DC. Their perseverance was rewarded with some of the better visits we have had on the Hill.

We were successful in connecting with all of our delegation, including personal visits with Senator Merkley, Representative Walden and Representative Schrader, and with key staff for Senator Wyden and the other Representatives. The leading topic in all the visits was trade policy, specifically: the need to get a new agreement with Japan before our absence from the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP) costs us a major share of the



Japanese wheat market; the importance of ratifying the US Mexico Canada Agreement (USMCA) to replace NAFTA and protect the US's share of Mexico's wheat market; the impacts of our lost wheat sales to China resulting from the steel, aluminum, and intellectual property tariffs levied by the US and the retaliatory tariffs levied by China; and the huge potential risk auto and auto parts tariffs would pose to our wheat export markets. Eight of the top 11 countries that export autos and auto parts to the US are members of the top-10 list of overall US wheat export markets and 5 of them are also members of the top-10 purchasers of PNW soft white wheat.

I think our delegation has a good understanding of our wheat trade issues and the important role trade plays for OR agriculture. They share our concerns and have expressed them on many occasions to the Administration. That said, the only immediate direct role Congress has right now is with USMCA. Based on what we heard during our visits, I would say the ratification of USMCA is likely in the Senate, but uncertain in the House. There is recognition that the agreement is a significant improvement over NAFTA in many areas, but there are still concerns about whether

- Continued on page 6



OREGON WHEAT FOUNDATION

PENDLETON COUNTRY CLUB | MAY 14, 2019

GOLF SCRAMBLE

Tough weeds' defenses are once again shattered.

Talinor[™] cereals herbicide, with a new active ingredient, provides quicker, more efficient knockdown of resistant broadleaf weeds in a stand-alone product. And that means you'll be smashing yield records. Talk to your Syngenta retailer about Talinor, a cereals herbicide designed to do one thing: hammer weeds.

Dialino



syngenta®

- Continued from page 4

the labor and environmental standards and enforcement mechanisms are tough enough. The government shutdown delayed some of the work to move the ratification process forward, but most of the people we talked with still expect a decision on ratification sometime in mid-2019.

Also, on the trade policy front, Darren and I were able to join a small group of wheat representatives to talk about the upcoming bilateral negotiations between the US and Japan with Assistant US Trade Representative Michael Beeman. Beeman, an expert on Japan trade issues, will likely be part of the US team that meets with representatives from Japan. He was very well informed on the wheat industry's concerns and assured us that they want to see ag issues addressed early in the negotiations. He was very engaged and we had an excellent discussion.

We also took time in our delegation visits to express our appreciation for some big achievements. Senators Wyden and Merkley and Representatives Walden, Schrader, DeFazio and Bonamici were all thanked for their support of the final Farm Bill (Agricultural Improvement Act of 2018). We also thanked Senator Merkley and Representative Walden for their work to secure a \$2 million appropriation for USDA's Agricultural Research Service (ARS) to fund the Resilient Dryland Farming Initiative. The final Congressional votes to approve this funding (part of the FY 2019 ag appropriations bill) occurred while we were in DC and President Trump signed the bill on Friday before we left DC (good timing on our part and some nice news for the trip home). We will need to continue to work to make sure this funding finds its way to ARS-Pendleton.

When time allowed in our visits, we also mentioned some of our priorities for 2019, including implementation of the new farm bill, completing the revision of the Waters of the US (WOTUS) rule, protecting the Columbia and Snake River dams and navigation system, passage of an infrastructure bill that includes much improved rural broadband coverage, and improvements in the coverage and affordability of health insurance for family farms.

The Winter Conference sessions were filled with updates and discussion of the challenges we face. USW reported some good news on their funding via the farm bill and the Agricultural Trade Promotion (ATP) funds they will receive as part of USDA's 2018 tariff relief program. The ATP funding will greatly enhance their work to expand our markets overseas over the next 3 years. We heard reports from several USDA representatives on efforts to implement the new farm



bill; progress is being made, but the shutdown has delayed completion.

The NAWG Board had some tough discussions about North Dakota's dues and their dissatisfaction with NAWG's performance. Alan, Brent and Clint put a tremendous personal effort into discussions with ND representatives, trying to understand their concerns and find a way to keep ND as a full NAWG member. At this point the "ball is in ND's court" and we probably won't know much more until we get to the NAWG meeting at Commodity Classic.

As with the prior 14 trips to DC, number 15 was important to serve the needs of our growers, but we were ready to come home at the end of the week. If you see one of the "DC Team" give them a pat on the back and a thank you; they represented you well.

For more information, please visit: <u>http://www.</u> owgl.org/wheat-producers/legislative/

Wheat Farm Energy Use Profile

As part of the League's effort to share our concerns about the Cap-and-Trade legislation (HB 2020) being considered by the 2019 Legislature, we sent a survey out to our growers to build a profile of energy use on Oregon's wheat farms. We had good responses from growers and were able to assemble the information we received to create the graphic that we are using in the Legislature [the graphic can be seen on the facing page]. The graphic and information is helping us explain the potential impacts and cost of the proposed Cap and Trade proposal on Oregon wheat farms.

A big thank you to all the farmers who took the time to provide data for the survey.

For more info on HB 2020, please visit <u>http://bit.ly/HB-2020</u>

OREGON WHEAT FARM ENERGY

Oregon Wheat Growers recognize that efficient use of energy is both economical & sustainable. This graphic explores the potential costs for Oregon growers under the proposed Cap & Trade proposal.

Surveyed members use on

average over 24K gallons of diesel annually, including both on- and off- road diesel fuel.

Members used on average 450,376 kilowatt hours (kWh) of electricity per year.

A cross the state, 56% of members use either, or both, propane and natural gas in their operation.

Oregon Wheat Growers export



TOP 3 USES OF NATURAL GAS

Heating Buildings Heating Green Houses Peppermint Oil Extraction

77.5%

On Road

TOP 5 USES OF ELECTRICITY

Irrigation Seed cleaning Heating Lighting Shop machinery

TOP 3 USES OF PROPANE

Heating Forklift **Weed Burning**

TOP 3 ELECTRIC PROVIDERS

Pacific Power Wasco Electric Co-op **Columbia Basin Electric**

On-road diesel use is a small part of fuel needed to deliver wheat to the Pacific Rim.

22.5%

Off Road

RESULTS REFLECT ENERGY SURVEY RESPONSES FROM FARMERS IN THE MAJOR WHEAT PRODUCTION AREAS OF OREGON INCLUDING THE COLUMBIA PLATEAU, WILLAMETTE VALLEY, KLAMATH FALLS, AND NE OREGON. (DEC. 2018)

Hemp Becomes a Legal Crop

Shanna Hamilton, Director of Communications

One of the biggest fallacies coming out of the enactment of the 2018 Farm Bill is: now that hemp is legal, people can do whatever they want with it and its derivatives. This is incorrect!

To provide a brief background, hemp is defined in the legislation as the cannabis plant (produces marijuana) with one key difference: *hemp cannot contain more than 0.3 percent of THC* (the compound in the plant commonly associated with getting a person high). Thus, hemp cannot get a person high. For years, federal law did not distinguish hemp from other cannabis plants, all of which were effectively made illegal in 1937 under the Marihuana Tax Act and formally made illegal in 1970 under the Controlled Substances Act (CSA)—the last barring cannabis all together. The hemp policy in the United States has been radically transformed by this new legislation, although there are some misconceptions about what, exactly, this policy change entails.

The 2018 Farm Bill has no effect on state-legal cannabis programs. Over the past 22 years, 33 states have legalized cannabis for medical purposes, and over the past six years, 10 states have legalized cannabis for adult use. Each of these programs remain technically illegal under federal law, and the Farm Bill does nothing to change that.

The 2018 Farm Bill is expansive, allowing hemp cultivation broadly, not only through pilot programs for studying hemp-derived products. It explicitly allows the transfer of hemp-derived products across state lines for commercial or other purposes. It also doesn't set restrictions on the sale, transport, or possession



of hemp-derived products, so long as those items are produced in a manner <u>consistent with the law.</u>

The FDA has stated that this doesn't mean hemp products containing certain cannabis-related compounds can be sold freely. It is clear that hemp is no longer federally illegal under the CSA, but it is also clear that the phrase "any part of the plant" includes "the seeds thereof and all derivatives, extracts, cannabinoids, isomers, acids, salts, and salts of isomers." This definition expansion is significant, given its inclusion of hemp-derived cannabinoids (commonly called CBD), and given the already explosive growth of the CBD-infused products market, a trend which will no doubt continue to grow now that hemp is legal. However, the 2018 Farm Bill does not create an entirely free system in which individuals or businesses can grow hemp whenever and wherever they want, as most crops, there are many restrictions.

First, hemp cannot contain more than 0.3 percent THC, per section 10113 of the 2018 Farm Bill. Any cannabis plant that contains more than 0.3 percent THC would be considered non-hemp cannabis—or marijuana—under federal law and would thus face no legal protection under this new legislation.

Second, there will be significant, shared statefederal regulatory power over hemp cultivation and production. Under section 10113 of the Farm Bill, state departments of agriculture must consult with the state's governor and chief law enforcement officer to formulate a plan that must be submitted to the Secretary of Agriculture. A state's plan to license and regulate hemp can only begin once the Secretary approves said plan. In states opting out of a hemp regulatory program, USDA will construct a regulatory program under which hemp cultivators in those states must apply for licenses and comply with a federally-run program. This system of shared regulatory programming is similar to options states had in other policy areas such as health insurance marketplaces under ACA, or workplace safety plans under OSHA-both of which established federally-run systems for states opting not to set up their own systems. Oregon Governor Kate Brown and the Oregon Department of Agriculture will have to put together a hemp plan for our state and submit it to the Secretary and USDA. However, Oregon's hemp plan will probably not be able to include any provisions relating to cannabis which, while legal in Oregon, remains illegal at the national level.



Third, the law outlines actions that are considered violations of federal hemp law (including such activities as cultivating without a license or producing cannabis with more than 0.3 percent THC). The law details possible penalties for such violations, pathways for violators to become compliant, and even which activities qualify as felonies under the law, such as repeated offenses.

Until USDA issues its regulations, hemp cultivators and processors will continue to be subject to state pilot programs. Ultimately, states must submit their plans to control hemp production. While there is not a deadline per say, once a state submits their plan to USDA, the agency has 60 days to approve it or reject it. USDA rules will not come overnight, as the agency could take at least a year to issue its regulations.

A couple of other key hemp provisions in the Farm Bill are worth noting. First, once implemented, it should be legal for nationally chartered banks to lend to hemp farming operations, something that hasn't been allowed up to now. Second, USDA will probably be able to facilitate the development of crop insurance coverage for hemp production.

Ultimately, the Farm Bill legalizes hemp, but it doesn't create a system in which people can grow it as freely as they can grow garden crops. This will be a highly regulated crop in the United States for both personal and industrial production.

We expect that hemp as a crop will continue to develop rapidly with lots of coverage as the rules are drafted and implemented. We will follow the developments and report regularly to keep our growers up to date.



Miller Oil. Inc. 2158 NW O Neil Hwy Prineville, OR 97754 541-416-1078 Shortstop Xtreme 1709 Gekeler Lane LaGrande, OR 97850 541-910-7134

Winter Stuff on the Desk

Wally Powell, Chair, Oregon Wheat Commission



Trading

"Dear Optimist and Pessimist, while you were busy debating over whether the glass was half-full or half-empty, I drank it. Signed: the Opportunist."

During a meeting two days ago, I was

thinking about buying a few May Wheat calls. I leaned over to ask a friend his thoughts. While I was mulling, he had pulled the trigger; thus, the above quote.

Travel-Indonesia/Singapore/Philippines



Overseas travel is now finished; at least for the next few months. These two photos typify our trips. The first photo shows packaging in a small bakery; and the second, is one of a series of charts from a meeting with PT Pundi Kencana, an Indonesian milling company. I arrived

home yesterday, and my article for the next magazine will go into more depth on this trip; and our markets in general. Kudos to our overseas staff including among others, Joe Sowers, Matt Weimer, and Ivan Goh.



Modern Monetary Theory (MMT)

All of us favor certain writers and certain blogs. One of my favorite market blogs is The Macro Tourist. I like the style and content. Kevin Muir was concerned enough about the future impacts of MMT that he recently wrote a column on this theory. I am passing the material on to you. Modern Monetary Theory is not some out in the weeds vision by an out in the weeds economist. The ideas involved are supported by some on the economic left, some in the financial sector; and some on the economic right.



So.....I would ask Clint Carlson to take a big deep breath as we discuss endless federal deficits; and lack of impact of same, perhaps. I have provided a link to the Macro Tourist post at the end of this section. Whether I agreed or not, it made me think, and think, and...fall asleep. The following is from Kevin's blog:

Modern Monetary Theory is a macroeconomic theory that contends that a country that operates with a sovereign currency has a degree of freedom in their fiscal and monetary policy which means government spending is never revenue constrained, but rather only limited by inflation.

Here are the policy implications of accepting MMT:

- governments cannot go bankrupt as long as they don't borrow in another currency
- it can issue more dollars through a simple keystroke in the ledger (much like the Fed did in the Great Financial Crisis)
- it can always make all payments
- the government can always afford to buy anything for sale
- the government can always afford to get people jobs and pay wages
- government only faces two different kinds of limitations; political restraint and full employment (which causes inflation)
- The government can keep spending until they begin to crowd out the private sector and compete for resources.

https://www.themacrotourist.com/posts/2019/01/23/mmt/

Finally; Cork, Carbon Sequestration, and the Ideal Plant

The Financial Times recently published an extended piece on work taking place at the Salk Institute in Southern California. The Salk Institute



has been conducting extensive studies related to increasing the cork content in plant roots. With a slow breakdown rate, cork is a good carbon sink. As described in the PDF at https://www.salk.edu/wp-content/ uploads/2017/11/Harnessing-Plants. pdf, suberin (Cork) is a plant-made molecule that is highly resistant to degradation; capable of remaining in the soil for extended periods. Suberin is carbon rich, and most plants apparently have suberin molecules in their root structure.

Question: Can we identify the gene impacting root suberin content; then turn that gene on (using Crispr), leading to a root mass higher in carbon, that will break down very slowly; increasing carbon retention within the soil?

The Ideal Plant might be a plant that has greater root mass, higher root suberin content, increased drought resistance; and is actually grown on extended acreage across the world. We are of course talking of the possibility of transferring the knowledge gained through research on mouse-ear cress (plant with one of the simplest genomes, used for much of the early work on plant genetics and genetic modification) forward into wheat, corn, soybeans, and other widely grown crops.

Time for a little payback.

This just might be the best example of "what goes around comes around" you'll ever see. Northwest Farm Credit Services is a cooperative, which means you have a voice within the organization and we pay cash back to you. No bank does this. When we do well, we share profits with you, not third party investors. And this year Northwest FCS customer-members will receive their largest checks ever. Getting a little payback never felt so good.

800.743.2125 | northwestfcs.com

institution is an equal opportunity provider and employ

Equal Housing Lender This institution is an equal

Here to Help You Grow

Choosing the right variety: interactions between varieties, locations, and seasons

Ryan Graebner, Assistant Professor of Practice, Oregon State University

In-season LSDs- what they do and don't mean

One cornerstone for variety testing is the Least Significant Difference (LSD) test. It is a statistical method that uses plot-to-plot and site-specific variation to determine whether observed differences between varieties are real, or just due to random field variation. In the OSU wheat and barley variety trial reports, entries not significantly different than the top entry in each location are shaded, generally meaning that any of these entries could have been the best performing in this field for that season.

While LSD test does a good job of evaluating genotypic differences that occurred during the previous



season, inferences about what will happen in future years are more difficult to make, due to everchanging weather conditions. For example, a late-maturing variety may do well in a wet year and really "flop" during a dry year. Similarly, varieties susceptible to

stripe rust might shine during a year when the disease is not prevalent.

Estimating season-to-season variance

A basic equation to help understand year-toyear variety performance is:

Yield = (Environment) + (Genotype) + (Genotype * Environment)

This states that the yield is a combination of the environment (growing conditions, including weather and agronomic practices, that affect all varieties uniformly), the genotype (the overall "goodness" of the variety), and the genotype by environment interaction (how well the variety performs in the particular environment). Common statements that relate to each of these terms include:

- "It was a good year" = Environment
- "That's a good variety" = Genotype
- "That variety had a good year" = Genotype * Environment

Some growing conditions can feed in to multiple parts of this equation; a good rain year could benefit all varieties (environment), but also some varieties more than others (genotype * environment).

To understand the repeatability of trial results (distinguishing between good varieties, and mediocre varieties that happened to have good years), you need to know how much of the variability in a season is caused by main genotypic effects (repeatable), and how much is caused by genotype by environment interactions (not repeatable). If 100% of the variability was due to main genotypic effects (as opposed to genotype by environment interactions), trial results would be the perfect predictor of a varieties long-term average (year-to-year fluctuations in variety would still be out of reach). On the other hand, if 0% of the variance was due to main genotypic effects, the results would have no relationship to how the varieties might perform in the following year. While it is impossible to reach the 100% mark, the more results are based on main genotypic effects, the more valuable they will be for predicting performance in future years.

A quick analysis of past variety trial data from the OSU Cereal Extension Program (Table 1) shows that after one year, in most cases, about half of what we see in the results is repeatable genetic effects. Notable exceptions are the Lexington and Pomeroy sites, which appear to be less repeatable from year to year. Note that this doesn't mean these locations are in any way "worse" than others, but only that performance is more difficult to predict from one year of data.

Increasing accuracy- adding years of data

The single most effective thing we can do to improve estimates of variety performance is to consider more years of data. As we add years, main genotypic effects reinforce themselves, while non-repeatable effects tend to cancel themselves out (Table 1). While the largest jump in accuracy comes when we move from one to two years of data, more years will increase the accuracy further.

Increasing accuracy- combining locations

A second strategy that can often increase prediction accuracy is to combine results from similar locations. Essentially, this allows you to add more environments at the expense of including data from trial locations that may be less representative of your field. Combining locations is most beneficial when multiple trial locations are similar to the target field, and when few years of data are available.

12

Table 1. Percent of the variance in variety trial results due to repeatable genotypic effects, based on data from 2009-2018 (higher percentages are better).

	% variance due to genotype after		
	1 Year	2 Years	3 Years
North Willamette	51	67	75
South Willamette	44	61	70
Pendleton	51	67	76
Moro (Kaseberg)	57	72	80
Moro (Station)	48	65	74
Condon	41	58	68
Lexington	36	53	63
Pomeroy	35	52	62
La Grande	53	70	77
Hermiston	51	68	76
Madras	55	71	79

In low rainfall regions of Oregon (<13"), a quick analysis (not shown) suggested that when only one year of data is available, the average yield of all low rainfall sites is a better predictor of variety performance in the following year than results from individual locations.

Increasing accuracy- adjusting for other knowledge

Finally, we can use other known characteristics of new varieties (including disease resistance and maturity) to adjust existing data according to whether we think it would do better or worse in future years. For example, 2018 had low stripe rust pressure, so we might reason that stripe rust susceptible varieties performed better than they would in the average year. This strategy is most useful when data is very limited, and there are wellunderstood reasons why a variety had either a good or a bad year.

Conclusion

The intention of this article was to discuss variation within a field, between growing seasons, and between locations, and to take an initial look at the relative importance of these factors in Oregon. Moving forward, our understanding of the relationship between years and locations in Oregon will improve as our analysis becomes more sophisticated and we build a larger base of data to draw from. In its final form, I hope this work will help us make the best interpretation of our results, and identify any gaps in the current variety testing locations that need to be addressed. Researcher's Name: Ryan Graebner

Researcher's Title: Assistant Professor of Practice

2018-2019 Grant Title: Wheat and spring barley variety testing in Oregon

2018-2019 Grant Funding Level: \$152,205

Grant Summary: The Oregon statewide variety testing program provides growers with performance information on commonly grown and newly released wheat and barley varieties. Our close collaborations with public and private breeding programs allows us to test promising experimental lines, which often allows us to accumulate 2-3 years of data on varieties before they are released. Wheat varieties are evaluated in four trials: the OWEYT for soft winters, the HWEYT for hard winters, the OSSYT for soft springs, and the OSHYT for hard springs. Barley varieties are evaluated in the Oregon Spring Barley Variety Trial (OSBVT) and the Oregon Winter Barley Variety Trial. In the 2018-2019 season, the cereal extension program is evaluating 20 winter wheat, 7 spring wheat, 2 winter barley, and 6 spring barley locations throughout Oregon, eastern Washington, and northern California (trials in neighboring states are conducted in collaboration with variety testing programs in those states). Trial locations are chosen to capture a range of environmental conditions and cropping systems in the wheat production areas of Oregon. We evaluate each variety in the program for yield, test weight, grain protein, plant height, and heading date, and work with Professor Chris Mundt, Professor Andrew Ross, and the Western Wheat Quality Laboratory to evaluate each of the wheat entries for disease resistance and end-use guality. Trial results are available on the program's website at https://agsci.oregonstate.edu/wheat/osuwheat-variety-trials.

(¥)

New OSU barley variety "Thunder" added to the American Malting Barley Association (AMBA) recommended list

Thunder - a two-row winter malting barley developed by Oregon State University (OSU) - is on the AMBA recommended list for 2019. This list informs US producers which malting barley varieties the industry intends to use in the upcoming year. Thunder is recommended for high input, irrigated conditions although available data indicate it has potential under higher rainfall dryland conditions. In high rainfall environments, west of the Cascades, a comprehensive program of fungicide protection is required for optimum performance. For agronomic and quality summaries, please see <u>https://barleyworld.org/barleyinfo/seed-availability</u>.

For seed production license information, please contact Denis Sather at <u>denis.d.sather@oregonstate.edu</u> or at 542-754-3711.



Click Click - Sounds Like Trouble

Blake Rowe, CEO, Oregon Wheat

What do you think of when you hear a click-click sound? It might be the sound of a keyboard being pounded or a computer mouse being double clicked (I'm hearing both right now). It might be the sound of a dead car battery that can't quite turn your engine. I heard that one about a month ago, much to my chagrin. It might also be the sound of a fountain pen, for those of us old enough to remember writing on real paper. All of these are possible, but I think what I'm hearing is more like the sound of a ratchet tightening down a bolt or screw.

That figurative ratchet sound has been coming loud and clear from the wheat markets in Japan since the end of 2018. That's when the long awaited (dreaded?) Comprehensive and Progressive Trans-Pacific Partnership (CPTPP) trade agreement went into effect, providing reduced tariffs on wheat exports to Japan from Australia and Canada.

This result has been almost inevitable since the first day of President Trump's term, when he chose to terminate the United State's involvement in the old Trans-Pacific Partnership (TPP). His comments at the time about TPP, referring to it as a "ridiculous trade deal" and that the withdrawal from TPP signaled the end of multi-nation trade deals, left little room for coming back to the agreement at a later date. The remaining eleven TPP countries (TPP-11) continued to negotiate. The group included major markets for our wheat like Japan, growing markets like Chile, Vietnam, and Malaysia, and major competitors like Australia and Canada. They announced an agreement, now referred to as the CPTPP, on the oneyear anniversary of the US withdrawal. The agreement couldn't be implemented until it was ratified by a majority of the signatory countries, which happened in late 2018. Being outside of the agreement now presents US wheat producers with major problems.

The CPTPP went into effect on December 30, 2018 and the first "click" of the tariff ratchet began to benefit our competitors in Australia and Canada. The second click will happen in April and, under the terms of the CPTPP, additional reductions for Australian and Canadian wheat imported into Japan will occur annually over the next 7 years. As shown in Figure 1, the tariff advantage will reach about \$65/metric ton or \$1.70 per bushel. The first two clicks have already put our wheat at a disadvantage of nearly \$0.40/bushel for shipments to Japan.

To further compound this problem, the recently concluded trade agreement between Japan and the European Union will likely provide similar tariff benefits to EU wheat producers.



- Canada, Mexico, Japan, Singapore, New Zealand, Australia have all ratified
- CPTPP will take effect end Dec., then this:



The best chance US wheat producers have at heading off a major loss of our market share in Japan, as much as 45% or 1.35 million metric tons of sales by some estimates, is probably through the bilateral talks between the US and Japan announced back in September 2018. The talks were expected to start in February, but delays caused by the recent government shutdown and the extension of negotiations between the US and China may delay the start of talks into April or later.

The Administration has acknowledged the importance of addressing agricultural issues like the wheat tariffs early in the discussions. Japan has indicated that concessions for agricultural trade, beyond what is in the CPTPP, are unlikely.

So here we are, not quite spectators, but not really in control of what happens either. We press the Administration and Congress at every opportunity to get a deal done. Hopefully before we hear any more clicks on the tariff ratchet.

To find the most current US Wheat information on trade agreements visit the US Wheat Associates website, <u>https://www.uswheat.org/policy/tradenegotiations/</u>

FREIGHT HAULING STORAGE TANKS FUEL

Chevron

We Feature

Chevron Lubricants

cations to erve you:

Convenient

Walla Walla, WA 1205 N. 11th 509-527-3400 1-800-572-8900

LaGrande, OR 804 21st Street 541-963-4932 Pendleton, OR 513 S.W. 6th 541-276-3361

www.byrnesoil.com

ow

Growers Take to Portland

Shanna Hamilton, Director of Communications

Annually the Oregon Wheat Commission (OWC) conducts a Grower Workshop for wheat growers interested in learning more about what happens to their wheat once it leaves their farm and how their wheat assessment dollars are used. This is an opportunity for growers to see firsthand the shipping, grading, product development, research, and customer relations as well as gain a better understanding of topics like supply and demand, transportation, sanitary/ phyto-sanitary issues and global conditions affecting the price of wheat here at home.

The 2019 Grower Workshop was held in February and had 13 participants. As the new kid on the block I was excited to take on the adventure. The group started with a sit down with OWC CEO Rowe to get a better understanding of how assessment dollars are used on growers' behalf. Our next stop was Wheat Marketing Center (WMC) where we learned more about how our wheat is used in products by watching both noodles and



crackers being made (yes, even some taste testing!), conducting Falling Numbers tests to learn about what makes a quality dough, and talking with the scientists about the impacts of variations in grain class, variety and environment on products. However, the highlight for me at the WMC was making our own tortillas, although mine turned out more like a flapjack.

Next, we were off to the Little T American Bakery, where we toured his small facility and sampled products. The owner Tim Healea has built his operation with an emphasis on quality. He sets himself apart by identifying and sourcing varieties and classes of wheat that optimize his products and they are delicious!



Next stop was a cold but educational tour of the TEMCO grain export facility. Many were intrigued to climb to the top and take in the scenery. It was interesting to learn about how grain is loaded on vessels to meet the specifications of our buyers. Right next door at the Federal Grain Inspection Service we were able to see the process of how samples are inspected in their facility. Interesting side note, FGIS inspectors endure years of training and part time work to build enough seniority to be full time inspectors. Between presentations and tours, it was great to visit with those in the industry and hear what part they have in wheat production.

Day two started off with added layers as we made our way to Shaver Transportation. We were told this would be a highlight and it did not disappoint! Walking through and riding a tug boat was not on my bucket list, but I would suggest you put it on yours as this was an experience to remember. Not only did we get the whole tour including a walk through the engine room (any gearheads dream), it was a ride around Portland not many will ever get. Our final tour on day two was at the Overseas Merchandise Inspection Co. (OMIC) where they do pesticide residue and GMO testing on export shipments among other things. The tour of the facility included a great deal of scientific equipment and an entertaining tour guide!

In addition to the tours the group was also able receive presentations Janice Cooper of the Wheat Marketing Center, Michael Anderson, Assistant Deputy Director of US Wheat Associates, and Robert Zemetra of the Oregon State University Wheat Breeding and Genetics program.

See the gallery online at <u>http://www.owgl.org/</u> wheat-producers/grower-workshop/ and more information on how to sign up for the 2020 Workshop!

6 APRIL 2019

New Research Funding Approved for Dryland Farming

The Oregon Wheat Growers League (OWGL) and the Columbia Basin Agricultural Research Center-Liaison Committee (CBARC-LC), are happy to report that \$2 million in research funding targeted at advancements in dryland production practices was included in the recently passed FY 2019 Budget for the US Department of Agriculture (USDA) Agricultural Research Service (ARS). The beginnings of the effort came out of work by the CBARC-LC in the form of the Resilient Dryland Farming Initiative (RDLFI), calling for an investment of \$2 million a year to advance cropping systems, agronomic practices, soil health, precision ag, and improve resilience and profitability of dryland farm production. CBARC-LC, OSU, and OWGL representatives presented this concept to Senator Merkley and Representative Walden early in 2018 and asked for their help in securing funding through ARS.

Senator Merkley, recognizing the urgent challenges facing Oregon's wheat industry caused by climate change, trade disruptions, low prices and rising production costs, used his position as the Ranking Member on the Ag Appropriations Subcommittee of the Senate Appropriations Committee, to include the RDLFI funding in the Senate's version of the FY19 ag appropriations bill. He worked hard to keep it in the bill through the Conference Committee process and helped get the final conference bill passed in the Senate, while Representative Walden worked to pass the funding through the House. While the impasse over government funding and the government shutdown delayed final passage, the FY2019 Budget for USDA finally passed in mid-February and was signed into law by President Trump on February 15th.

The language in the bill and the accompanying report language (guidance) provided by Senator Merkley's office is as follows:

Report language:

2,000,000/Resilient Dryland Farming. — The Committee recognizes the need for advancements in dryland production practices, cropping, and equipment to increase profitability, conserve the soil, enhance soil water storage, promote soil health, and decrease reliance on herbicides. The Committee provides an additional \$2,000,000 to expand research focused on resilient dryland farming. Research should focus on improving yield and quality parameters; developing cropping systems capable of tolerating drought, heat, and diseases; and quantifying economic and environmental benefits from dryland crop production systems.

Joint Explanatory Statement:

The conferees recognize the need for advancements in dryland production practices, cropping, and equipment to increase profitability, conserve the soil, enhance soil water storage, promote soil health, and decrease reliance on herbicides. The conferees provide an additional \$2,000,000 to expand research focused on resilient dryland farming.

This is a tremendous success and we are very appreciative of the efforts of Senator Merkley and Congressman Walden to secure this funding for dryland research. We will work diligently to make sure the funds move through USDA-ARS and get to the ARS program in Pendleton, where they will support important research that benefits all the dryland wheat growers in the PNW. We will also be working to insure these funds are sustained and continued in future years.



Sign up today for Member Benefit Fuel Program, Call 541-330-8356 for details.

Main Office 2003 1st St Moro, OR 97039 Phone 541-565-3737 Toll Free 800-325-9327 Hermiston Office 345 N 1st Pl Hermiston, OR 97838 Phone 541-289-5015

Bend Office 913 NE 1st St Bend, OR 97701 541-382-4751 Phone 888-616-0690 Toll Free

www.mcpcoop.com



Growing a Better Dryland Wheat Crop

Steve Joehl, NAWG Director of Research and Technology

Dryland winter wheat is the main crop for most growers in the semi-arid climate of Oregon, especially the further east you go within the State. Soft white wheat is the most popular class of wheat throughout the Pacific Northwest, where growers experience similarly dry, even drought-like conditions.

Growers in this region understand wheat's resilience and know it can be productive when other crops typically wither away. Wheat is highly adaptable to conservation tillage and many growers practice summer fallow using a no-till system, which combined with herbicides to control vegetation in the fallow year, maintains sufficient moisture to produce a good wheat crop in most years. To get a good yield, it is imperative to get the crop started and out of the ground quickly. After it is up, then what? How do growers producing dryland wheat manage the crop once it has emerged?

Several 2018 National Wheat Yield Contest winners in the dryland wheat production category provide some tips about the production management practices utilized on their operations located in these semi-arid areas. There are some commonalities to be gleaned from their ideas.

- "Make sure to monitor plant nutrients through tissue samples to identify the nutrient the plant is lacking, then apply it in the next application. We grow all red wheat on our farm, so we are constantly pushing our plants with applications of fertilizer at different times. We have seen better yield and protein results with larger amounts of nitrogen/other nutrients being applied as the plant needs it. We also believe a 3-year rotation of winter wheat, spring wheat, and chickpeas work very well in our area for maximizing yield." – Trevor Stout, Genessee, ID
- "I have to plant winter wheat into a moisture band 5-8 inches deep. This moisture band has been established with various tillage techniques that preserves moisture during the late spring to late summer months. The best time to plant for us is the

last week of Aug to the first week of Sep. Believe it or not, we do not want it to rain after planting, because it will crust the ground before the wheat emerges. It takes the wheat 8-10 days to emerge from 6 inches in the ground. Varieties



adapted here need a long, strong genetically-developed coleoptile to punch through the soil from that depth. Our soil is sandy loam. We cannot take a cookie cutter approach to summer fallow preparation - lots of factors: rain fall amount (our annual rainfall is about 10 inches a year), temp, weed growth, straw matter from the previous harvest, and economics. So, my important personal technique is: plant early, deep, slow and heavy." - Brian Cochrane, Kahlotus, WA

- 3. "Everything comes back to our inputs. We have a good fertility program, paired with the use of seed treatments and foliar fungicides, so managing the plant population creates the right plant competition while increasing nutrient and moisture efficiency. Lower seeding rates allows the plant to flex, improve tillering if conditions permit and grow the way it is genetically bred. In our area, this allows the variety and Mother Nature to work together to maximize our yield a lot better than if we planted higher populations." Alec Horton, Horton Seed Services, Leoti, KS
- 4. "Always have your yield goal in mind and don't lose sight of it. Raise your yield expectations of what's possible. For some, that's 100 bu/ac. Get the soil nutrient level right. Once spring hits, then it gets fun managing the crop through harvest. Spending the time to scout the crop is imperative. To raise productive dryland wheat, keep the nutrients in and the diseases out." - Matt Wehmeyer, AgriMAXX Wheat Seed Company, Mascoutah, IL

High yielding dryland wheat producers all have a common mindset to achieve consistently higher yielding wheat after planting the right variety and getting it out of the ground......keep the plant healthy by limiting disease pressure and feeding it the necessary nutrients. It requires an abundance of management: scouting for disease and insects, timely applications of the correct fungicides and/or insecticides and controlling weeds.

All of this is designed to take away stress from the wheat crop. If stress is reduced, it allows the plant to withstand dry periods during the growing season better than if it is held back by disease, or insects or competing with weeds.

"It is pretty simple, really", said Joseph Anderson, Lewiston, ID. "A healthier plant with the right balance of nutrients will rebound faster, and is more opportunistic to produce higher yields when weather conditions turn more favorable with moisture."

Makes complete sense to me.

Steve Joehl is Director of Research & Technology at the National Association of Wheat Growers (NAWG). He can be reached at sjoehl@ wheatworld.org. NAWG's address is 415 Second St. NE, Suite 200, Washington, DC 20002.



Proven Performance

Superior Genetics

Reliable Research



Bailey Jenks Cereal Variety Outreach Coordinator (541) 737-5870 bailey.jenks@oregonstate.edu

Seventy Seasons of Service

Craig Morris and David Bolingbroke

Originally published in Wheat Life Magazine and reprinted here courtesy of Washington Assoc. of Wheat Growers

Interest in the baking quality of wheat is as old as agriculture itself, but the ability to quantify and research methods to improve it are of a more recent vintage.

In the U.S., the revolution in technology, transportation and industrialization in the latter half of the 1800s brought about a keen interest to better understand wheat quality and to improve it through breeding and selection. The discovery of Mendel's laws of genetics—"rediscovered" by Washington State College (WSC) professor and wheat breeder William Jasper Spillman—more or less coincided with the invention and development of the steel roller mill, know-how that turned the centuries-old process of stone milling into a highly efficient, industrialized process. The 1884 Annual Report of the U.S. Department of Agriculture (USDA) included a detailed analysis of this relatively new roller milling "gradual reduction" process.

The earliest study of wheat quality conducted at WSC was completed by professor R.W. Thatcher. As he stated in a 1907 publication, only a minor amount of wheat produced was consumed by its citizens. As a result, the majority was exported and had to "...compete with grain from other wheat-producing countries. In order to command a satisfactory market, it must be at least equal in quality to the other wheats which are offered for sale." Thatcher's study included the varieties Fife, Red Russian, Genesee Giant, Gold Coin and Turkey Red, among others. Analyses included many of the measures we still use today: test weight, protein content, milling, gluten content and bread baking.

Around the same time (beginning in 1908), the USDA, in cooperation with the North Dakota Agricultural Experiment Station, performed milling and baking studies on wheat samples collected across America. In 1917, this activity was moved to Washington, D.C., due probably to the need to support the United States Grain Standards Act of 1916.

In the late 1930s, this function of the USDA was decentralized, and two labs, the Federal Soft Wheat Quality Lab and the Hard Winter Wheat Quality Lab, were established in Wooster, Ohio, and Manhattan, Kan., respectively. Eventually, sentiment grew that Pacific Northwest farmers needed a wheat quality lab of



Research Lab — Our focus is on the genetic basis of wheat quality traits.

their own, focused on the particular types of wheat and environments found here.

In 1943, the Pacific Northwest Crop Improvement Association (PNCIA) was established by the region's farmers. Although farmers began to reap the benefits of a collaborative relationship with the USDA and agronomists at the region's land-grant universities, they still lacked the research expertise and effective quality testing necessary to increase production yields in their fields.

Orville Vogel, a USDA employee based at Washington State College, had already been in Pullman for several years—mostly focused on helping to breed disease-resistant wheat—when the federal government allocated funding for a wheat quality lab as part of the Flannagan-Hope Act, or the Research and Marketing Act of 1946. The following year, the Washington State Legislature also provided funds for Washington State College to use on joint projects with the USDA. Although it's not clear, it's possible a portion of these funds also supported the newly established Western Wheat Quality Lab (WWQL).

Many years later when Vogel was interviewed, he remarked that the lab's opening was a joint effort between the USDA, the college, grower organizations, PNCIA and the Oregon Wheat Growers League (OWGL). The WWQL was the first of its kind in the American West and promised to serve as an important resource for both wheat breeders like Vogel and farmers across the region.

Shortly after allocating funds for the quality lab, the USDA brought in Dr. Mark Barmore, known as a seriousminded mid-westerner, to head it. Barmore assembled staff and equipment, and by the spring of 1948, the lab was ready to begin milling and analyzing wheat samples to determine their quality. One initial complication was acquiring a miller with the right expertise.

Ed Seeborg was the man Vogel—and probably local growers wanted—but the Tacoma native didn't have a college degree, and the USDA wouldn't hire him. Vogel recommended Seeborg because he felt his experiences as a miller outweighed his lack of educational training, remarking that "...It is true that he has only two years of college, but to me his 15 or more years of experience in our own area is worth a darn sight more than two years of college." To solve the problem, the OWGL pitched in to pay his salary for the first couple years until he had taken enough courses to meet the USDA's requirements.

Choosing a local miller exemplifies the significant role local and regional efforts played into the WWQL's creation. The WWQL not only needed to service a specific region and the particular type of wheat grown here (soft white), it also needed workers who had experience with local wheats and connections to the wheat farmers supporting the endeavor.

The PNCIA felt that the WWQL was highly beneficial to regional farmers. In 1948, their field secretary, Robert O. Fletcher, offered the organization's "whole-hearted support" for the lab. Two years later, in a report, he noted that the lab was "...undoubtedly the key project to the improvement of wheats from a quality standpoint and is a tremendous aid to the agronomists in locating high quality strains early in the breeding program." He continued his praise, saying that the lab was "truly a service to the



Samples are received and sorted in the receiving room.

states of Oregon, Washington and Idaho." At the time, the lab operated with a budget of just under \$43,000. That was not an insignificant sum, having the same buying power in 2018 as more than \$450,000.

The process of testing and milling wheats sped up as a result of the WWQL's establishment. Vogel mentioned the role of new equipment like a micro-mill and the creation of the standardized cookie bake still used today for testing quality. With the help of the lab, Vogel tested the quality of the semi-dwarf soft white wheat he developed, Gaines. Upon commercial release in the 1960s, Gaines became famous for its record-producing yields. Washington State University agronomist Rodney Bertramson mentioned how Barmore advised he and Vogel to be cautious pertaining to Gaines' release because of its poor milling qualities. Bertramson said he liked to call Barmore their "conscience."

In a 1965 letter nominating the WWQL for a USDA Superior Service Award, Vogel doled out high praise for the work the lab had accomplished since opening 17 years before. He wrote that "...the high milling and baking qualities of new Pacific Northwest wheats resulted largely from the ingenious and skillful testing services and from the effective liaison between wheat breeders and processors, which had been provided by the laboratory personnel."

Despite the accolades, in 1966, the federal government nearly shut down the WWQL as part of a reduction of agricultural research funds. Alerted to the lab's impending closure, the region's congressional delegation was asked by farmers and others to oppose the measure. A few months later, the fund reduction plan failed to pass in the House.

The WWQL's current director, Craig F. Morris, has overseen the lab's work for the past 30 years. Surrounded by a sea of societal change, the mission of the lab remains essentially the same as when it was established. The same standard cookies are baked to test flour quality, and the lab's technicians remain busy researching how to improve quality. After having completed the 2017 crop milling and baking analyses, the lab celebrated 70 seasons of service.

Craig Morris is director of the Western Wheat Quality Lab, and David Bolingbroke is a history Ph.D. candidate at Washington State University. Research assistance was provided by Ujwala Ganjyal. Several of the sources used were obtained through the Washington State University Library's Manuscripts, Archives and Special Collections.

Ð

KNOW YOUR CO-OP

In the wake of various cooperatives closing nationwide, Oregon Family Farm publication ran an article in December noting specifics that co-op members should pay close attention to and the co-op structure. Closer to home the article specifically talked about Pendleton Grain Growers (PGG).

Agricultural co-ops are owned by farmer-members. Members elect a board of directors (BOD). The most effective co-ops succeed when owner-members pay careful attention to the board, the management and the financials for their organization.

Pay Attention to the Board

Elected democratically by members. Sets the overall policies, budget and management. Observe & Evaluate; as a whole and individual directors.

Pay Attention to Management

Management decides how tasks, set by the Board will be completed. Key tasks include, planning, reporting to the Board, controlling co-op operations to benefit the members, bookkeeping and preparing financial reports.

Pay Attention to Financia

Pay attention to financials beyond he annual statement showing the patronage refund. Tax laws require that co-ops notify each member in writing of their patronage refunds and the total amount allocated to the members account. Pay attention to new tax law and any changes to accounting practices

ASK THE QUESTIONS!

Members must pay attention to who runs their co-op, how they run it, and what is being reported! Trust, but verify.

FULL ARTICLE @ HTTP://BIT.LY/OFFCO-OP

Recipe Homemade Soft Pretzels (No Knead, No Machine)

April is National Soft Pretzel month!

Enjoy this delicious recipe from Gemma Stafford at Bigger Bolder Baking Blog, she is working with the Wheat Foods Council and sharing many amazing recipes like this one.

https://www.biggerbolderbaking.com/homemade-soft-pretzels/

Ingredients

- 3 cups strong flour/bread flour
- 1 ½ tsp salt
- ¹/₄ tsp yeast
- 1 tbsp sugar
- $10\frac{1}{2}$ ounces water
- To poach the pretzels: 6 cups water
- 6 tsp baking soda
- egg wash
- salt
- melted butter, to brush pretzels

Instructions

- 1. In a large bowl add in the flour.
- 2. Add yeast on one side of the bowl and salt and sugar on the side of the bowl. If you add the salt on top of the yeast it will deactivate that yeast and your dough will not rise.
- 3. Add in water and mix to form a dough. That's it, your dough is done!
- 4. Wrap the bowl tight with film wrap and lay a bowl over it. Put it in a dry place at room temp and leave overnight. A minimum of 12 hours, but up to 18 hours and let time do its magic.
- 5. The next day your double will smell boozy and bubbling. It is pretty incredible.
- 6. Turn out onto a floured surface and divide into 9 balls and let it and relax for 2 minutes.
- 7. To shape: take each piece of dough and begin rolling them on the counter. Bang the dough on the counter like I do in the video and they will just naturally get longer and longer. Keep going until you reach 24 inches. Twist the ends of the dough and press onto the opposite sides of the pretzel.
- 8. Put straight into boiling water with baking soda and poach for **JUST** 30 seconds, then place on a baking tray. This boiling step is the secret to firm skin and adds that definite pretzel flavor.
- 9. Brush with egg wash and sprinkle with sea salt.
- 10. Bake 450° F for 15 minutes, or until golden brown.
- 11. Serve immediately and enjoy!!!!



IT IS RAINING. IT IS WET, AND IT IS MUDDY. SLUGS ARE IN THE FIELD. GAME ON.

Introducing your first defense for slug control: Ferroxx AQ slug and snail bait.

When the conditions are sloppy, charge in with our new waterproof formulation. It is rain, mold and water resistant and packed into pellets that are highly palatable to slugs, eliminating bait shyness. Unlimited number of applications per year allowed with no retreatment interval. Zero PHI, 4 hour REI. Residue (MRL) exempt.

Ferroxx AQ Because you can't sit on the sidelines.





HAVE YOU HEARD WHAT THE MARKET IS SAYING ABOUT BIOst® INSECTICIDE FOR WIREWORM CONTROL?

Albaugh's BIOst® Insecticide 100 provides the grower with a second mode of action to enhance the performance of insecticide seed treatments for wireworms resulting in wireworm mortality and improved Return on Investment.

"Innovation that provides wireworm performance and grower value" St. John, Wa

"Finally Enhanced Performance on wireworms" Nesperce, Id "I didn't even know it was on my seed... but I am glad it was" Palouse, Wa "My Stands definitely have improved with BIOST Three-way insecticide seed treatment" lone, Or



Insecticide

"I have been waiting for something like this to help my growers" Edwall, Wa

The wireworm populations are decreasing on my farm. That's a great Thing." Touchet, Wa

Insecticide Seed Treatments

"Second mode of Action with efficacy on wireworms" Pomeroy, Wa

"I am finding dead wireworms" Starmill, ID "Proven Performance -2 years in the market on over 200,000 acres per year" Palouse, Wa



Albaugh's goal is to deliver performance and value against wireworms.

 Albaugh's BIOst[®] Insecticide 100 wireworm technology when combined with separately registered seed treatments Resonate[®] Insecticide and Nipslt Inside[®] Insecticide will provide the grower with 3 active ingredients and two modes of action against wireworms.
Albaugh's BIOst[®] Insecticide 100 provides a contact mode of action resulting in enhanced performance and wireworm mortality.

Contact your local seed retailer for more information on BIOST® Insecticide 100

Refer to the product label for complete use directions and instructions. Bl0st[©] and Resonate™ are trademarks of Albaugh, LLC. Nipslt Inside[®] Insecticide is a trademark of Valent USA, LLC. Always use and follow label directions. EPA Reg. No. 84059-14-42750 AD No. 100616, EPA Reg. No. 42750-133 AD No. 110316, EPA No. 59639-151