CREEPIN CREEPIN CONTRACTOR OF THE Oregon Wheat Industry

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ON THE COVER



Board of directors at the Tri-State Convention

Shanna Hamilton

Ex-Officio

Dan Steiner



Clint Carlson

President

I grew up on our family farm south of Ione, graduating from Ione high school. I attended Oregon State University where I majored in General Ag, with a minor in Ag Econ. There was not an Ag Business degree at that time, but that is another story for a different time.

I met my wife Sarah, at the AGR house where I was a member. We had the Sigma Kappa's over for a social, and I taught her how to western swing. I knocked her contact lens out with my elbow, and the rest is history. When we married in July of 1983, she moved to the farm and became

a science teacher in Heppner. We have two children, Alex and Julianne. They are both grown. Alex is finishing Medical school at UNC, Chapel Hill. Julianne is an account manager for Expeditors International in Portland.

Many of you know my Dad passed away in October. I want to thank you for all for

your condolences and kind words that have been sent over the past months. In his honor, I am recirculating the President's wheat article name and bringing back "My Two Cents Worth." This was the name of the article when dad was President in 1982.

I want to thank Alan von Borstel for his past year serving OWGL as President. Through his leadership the league accomplished many items on this year's agenda, both statewide and at the national level.

I also want to thank Blake for his many years of service to OWGL. He has guided us through some tough issues and made the league much stronger and respected on the state and national level.

As Blake prepares for retirement, we appreciate the efforts he made to help the league become one of the leaders in Oregon agriculture. We now welcome Amanda Hoey as the new CEO of Oregon Wheat. As she transitions to her new leadership position, the OWGL Board of Directors will work with her to continue our leadership in Oregon agriculture. With Amanda's background in business and her years of economic development, she brings new ideas and strategies to propel our organization to a greater future. I look forward to working with her, and I am excited to start on our new path together.





Current dues schedule with the Wheat PAC \$25.00 donation:

\$125	Less than 320 Acres:
\$175	Between 320-2000 Acres:
\$225	More than 2000 Acres:

*We believe this would be a reasonable option to include an additional membership level. "More than 3500 acres" at \$300.00.

This will be a topic of discussion at the next board meeting, feel free to give your local OWGL County President your feedback.

Potential Dues for FY 2020-21

Less than 320 Acres:	\$125
320-2000 Acres:	\$175
2000-3500 Acres:	\$225
Greater than 3500 Acres:	\$300

What does the future hold for Oregon Wheat?

Your membership dues are the life blood of our lobbying efforts in Salem. As the size of our farms grow larger, the number of memberships is falling. Through attrition and transition to larger operations those five or ten \$200.00 checks, are now one or two \$200.00 checks for the same acres farmed. With all the chaos in Salem these days, it takes more time and money to manage and defeat the harmful legislation coming out of the Oregon Legislature.

Our lobbyist Amanda Dalton does an amazing job of keeping us up to date on harmful and helpful bills in Salem. Her firm is always leading the way for action to determine the impact on our farms. She schedules appointments for the "Lobby Day" and brings us to Salem to testify when needed. Please see Amanda's

CONTINUED ON PAGE 4

CONTINUED FROM PAGE 3

reports on our website under "legislative news" for a rundown of proposed bills that are upcoming in this year's short session.

These are not the times to cut back on your OWGL presence. I know it is hard to write that check! Your dues have a great return on your investment. Farmers and ranchers have persevered for centuries. The items that Amanda Dalton outlined in her December interim legislative update are things we deal with on a day to day basis. If no one is in Salem representing us, or if we never go to Washington D.C. to lobby our delegation or agencies, imagine how much worse it would be...

Your participation is vital. We need all members to speak up and let us know what is important to you. We want to know what issues affect your bottom line. Write letters when there are issues that affect your farm. Call our CEO or an officer when you have concerns or comments. Come to the board meetings and be active. Become a county president if the opportunity arises.

Look what happened with the Timber Unity demonstration. Timber Unity and all who participated prompted the Republican Senators to leave the state. This ultimately stopped the "Cap and Trade" bill last session. But, it will be back! There will always be issues to deal with and there will always be needs for lobbying and grower participation. If you desire, please donate to the Wheat PAC, www.owgl.org/WPAC.

On the national level, I am on the NAWG Environment and Research Committee. We deal with Farm Bill issues, such as CRP, CSP, Glyphosate, GMO, Cap and Trade and other regulatory issues and legislation.

I was also appointed to the Joint NAWG/USW Wheat Breeding Innovation Committee. In this committee, we are updated on varietal trials, traits, classes of wheat, disease resistance, GMO events and uses of gene editing and other types of breeding techniques. We give comment and direction to the agencies, public universities and private companies involved in wheat breeding.

Alan, Blake, and I attended the NAWG Strategic planning meeting, in Denver in December. With North Dakota leaving NAWG at the start of FY 2020, there was a cut to NAWG's budget of \$220,000. In addition, there was a large decrease in dues from several other states due to lower production caused by extreme environmental factors. The total shortfall was around \$300,000. The staff and the budget committee did an outstanding job of creating a workable, balanced budget for FY2020, but NAWG still faces long-term budget and staffing pressures.

NAWG requested direction from the Board of Directors and called the strategic planning session. To make a long story short, we established four "lines of business":

- Legislative & Policy Influence
- Member Information, Services & Products
- Partnerships & Alliances
- NAWG Operations

For each line of business, we established several measures of success, measurable goals, as well as immediate and longterm action items with timeframes. These will be ongoing action items at future board meetings.

As we move forward this year, we face many challenges of our own. Continue to keep OWGL in your thoughts and prayers. Help support and encourage Amanda Hoey, Amanda Dalton, the Board and staff. Most of all participate, pay your dues and get involved!



My Top Ten List at Oregon Wheat

Blake Rowe, CEO, Oregon Wheat



It is hard to believe my time as your Oregon Wheat CEO is quickly drawing to a close. I have countless memories and milestones, more than I could ever share and a few that shouldn't ever be written down. However, not surprisingly, a few people have asked if I would share my top ten list from my

time with Oregon Wheat. So, here you go....

Two Farm Bills – The work every five years to pass a new Farm Bill is probably the most important collective

efforts by all the ag and forestry interests across the country. We were able to accomplish some Oregon specific objectives, including some long-sought changes in crop insurance for summer fallow producers, but just being involved was a fascinating experience.

Governor's Trade Mission – My first trip overseas in 2011 was as part of a trade delegation organized by Governor Kitzhaber to showcase Oregon products in Japan, South Korea and China. Dale Case and I were able to meet with US Wheat staff and wheat customers in each country. It was a great marketing and cultural opportunity and included some

unforgettable visits in China to the Sino-American Baking School, the Great Wall, the Port of Tianjin, and Hong Kong.

Office Anniversary Trip – I was privileged in 2016 to help represent Oregon Wheat at the 60th and 50th Anniversary celebrations of the openings of the US Wheat offices in Tokyo and Taipei, respectively. Oregon's role in founding these offices was featured at each event; a great opportunity to celebrate the heritage shared by generations of Oregon wheat growers.

RDLFI – One of the legislative highlights of 2019 was securing \$2 million dollars of annual and continuing federal research funding to support the Resilient Dryland Farming Initiative, with the bulk of that money going to the work done by the USDA Agricultural Research Service staff co-located with CBARC.

LABC – The Latin American Buyers Conference, a US Wheat biannual event, came to Portland in 2016. It was a great conference, with representatives from 16 Latin American countries in attendance, but it was the field trip up the Columbia River Gorge and out to the Padget Ranch in Grass Valley that was the most unforgettable. Between the tour bus and the car caravan, some 70 people, many first-time visitors to the U.S. and Oregon, got to see wheat country up close, meet growers and their families, and share a barbeque dinner.

GE Wheat – 2013 was the Year of GE Wheat in Oregon. This is the one event that everyone remembers, and my list wouldn't be complete without mentioning it. It was an "all hands-on deck" moment and, through the wisdom and efforts of countless people, we came through intact with our markets restored. We proved our policy to "put our customers' interests first", was not just a slogan.

Crop Quality Tour – Another highlight of 2013 was the chance to participate in that year's US Wheat Asian Crop Quality Tour, to present information on the 2013 wheat crop to customers throughout Asia. Darren Padget and I traveled for 18 days, flying over 28,000 miles, and making presentations in seven cities before returning home. I handled the presentation about the soft white crop and Darren made a presentation on wheat farming at each session. Following on the heels of the 2013 GE event, Darren and I were partly on



Latin American Buyers Conference group, 2013



On the Great Wall with Dale Casey & Matt Donegan

the team to help handle questions about the event, but, thanks to all the good work done by so many through the summer and fall, the GE wheat was virtually a non-issue.

Property purchased at CBARC for the Foundation – Monsanto donated money to both the Commission and the League after the GE events of 2013 in recognition of our efforts to manage the fallout, protect our growers, customers, and markets. We elected to use those funds to purchase a 57 acre tract of farmland adjacent to CBARC. The property is held by the Oregon Wheat Foundation and rented to OSU for use by CBARC researchers. This arrangement provides research benefits and some income for the Foundation programs.

Hiring a new CEO – I have always felt that one of the most important things an exec can do is help find the right person to take on the position and then help them to transition into the job. The process the League Board and Commission have used to select Amanda Hoey as your next CEO was excellent and I think our transition is going very well. I am confident that you will find Oregon Wheat will be well led, well respected, and effective at protecting your interests down the road.

The people – It's the people I'll remember most....6 wonderful staff members; the growers who have served on the League Board and Commission, especially the Presidents and Chairs; the incredibly talented folks at USW and NAWG, serving both here and abroad; two of the best lobbyists I have ever worked with, Amanda Dalton and Jana Jarvis; our team of researchers and administrators at OSU; and more wonderful men and women than I could ever mention.

Well, that's my list. It has been my honor to serve Oregon Wheat, get to know you, and walk with you for almost 9 years. Lori and I can't thank you enough for our time with Oregon Wheat. We will never forget you.

PS – this is my last "wheat" column, but maybe not my last column. There is one more, written early in my time with you, that's been on my computer with the apt title "The Column Never Published". Maybe it will find its way into the next issue.

Tri-State Convention Recap

Shanna Hamilton, Director of Communications

The 2019 Tri-State Grain Growers Convention in Spokane provided attendees with a packed agenda of topquality speakers, informational breakout sessions, updates on state and national legislative and trade issues, and an exhibit hall filled with a wide variety of vendors and service providers. Peter Zeihan gave a fascinating presentation on the trends that will drive global change in the years ahead and how it might impact the U.S. and our international markets. Jim Morris, the baseball player that inspired the movie "The Rookie", gave attendees an inspirational talk, encouraging us to be dream makers to those around us.

The Oregon Wheat Growers League Board of Directors meeting and the Annual Members meeting featured trade and issue updates from staff, a full legislative review from Amanda Dalton, and a chance for an interactive discussion of the Cap-and-Trade legislation with Senators Cliff Bentz and Bill Hansel. The members also elected the League's Board and officers for 2020 and set policy and priorities for the year ahead.

The highlight of our state day meetings was the Gala Banquet, where we honored our leaders and recognized those who have served Oregon Wheat in many capacities. The keynote speaker, Senator Bentz provided a fascinating and humorous review of the 2019 session and the Senate "walkout".

The first award of the night began with the Distinguished Service Award. President Alan von Borstel presented this year's award to Mary Corp. Mary has spent her career as OSU's Umatilla County Extension Agent, weed scientist, interim and now the Regional Administrator of the Columbia Basin Ag Research Centers in Pendleton and Moro. She has always been accessible to growers, generously offering her knowledge



Mary Corp

and expertise throughout the region.

As it happened, we presented a second **Distinguished Service Award** to Dale Case. Dale has served the Oregon Wheat Growers League, Oregon Wheat Commission, and currently the Oregon Wheat Foundation for nearly two decades.



2003. Since Dale has served on the OWGL board as chair of two separate Committees, the Marketing Committee. then the Transportation Committee. He served two terms on the Oregon Wheat Commission, from 2011 through this year and has simultaneously chaired the Oregon Wheat Foundation Board of Directors the past two



Dale Case

years. On a side note, we are not sure that Dale has missed a Foundation Golf scramble - held annually in Pendleton each May - for many years!

We applaud Dale and Mary's dedication and service to the wheat industry.

We witnessed some extraordinary efforts on behalf of rural Oregon and agriculture in the 2019 legislative session, culminating with a group decision by the Senate republicans who chose to walk out of the session, denying the Democratmajority a quorum and essentially killing the Cap & Trade legislation for 2019. This was an extraordinary situation and the Gala crowd recognized and thanked them profusely for taking the political heat and putting rural Oregon first.



Senators Bentz and Hansell with their award

We proudly presented the 'Friend of Oregon Wheat Award' to the following Senators:

- Senator Herman Baertschiger, Jr.
- Senator Cliff Bentz
- Senator Brian Boquist
- Senator Fred Girod
- Senator Bill Hansell
- Senator Dallas Heard
- Senator Tim Knopp
- Senator Dennis Linthicum
- Senator Alan Olsen
- Senator Kim Thatcher
- Senator Chuck Thomsen

As Senators Hansell and Bentz were already attending the convention, we welcomed them both to the stage to accept the award on behalf of the group.

Brent Cheyne completed his service on the board in 2019 and as a token of the appreciation Oregon Wheat feels for Brent, we honored him with he **Above and Beyond Award**. President von Borstel presented the award and spoken fondly of Brent and his hard work, especially through his time battling cancer and rarely

CONTINUED ON PAGE 8





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CONTINUED FROM PAGE 7



Brent Cheyne

missing any Board function. Not many would or could keep going at the pace Brent did, but he persevered.

Outgoing President Alan von Borstel and Darren Padget finished up the evening with a special recognition to Blake Rowe, our retiring CEO. The presentation highlighted many of Rowe's achievements leading both Oregon Wheat

organizations as well as fond memories. Not only recognizing Rowe's efforts, but his family's as well, ending the

presentation with a special message from his children and grandchildren. Blake and Lori will be missed. We sincerely appreciate their efforts and sacrifices and wish them all the best family time to come!

Friday was busy with setting up the Foundation Auction and selling wine corks and keys. This year there was a new addition to the mix, a chance to win the stocked Beverage Center. There were 25 keys made, with 1 opening the lock around the fully stocked (and over flowing!) small fridge holding beer, wine and spirits.





The lucky winners were Dana and Kathy Tuckness from Ontario. Keys were selected randomly out of a small treasure chest and for the first year, 20 of the 25 keys were sold!

The Auction, Wine Pull, and Beverage Center offered up around \$4500 of net funds to the Oregon Wheat Foundation. Thank you to all who supported the events and purchased an item, we appreciate you.

Special thank you to Kontos Cellars and the Jerry Zahl family for the generous donation of "The Boss", a specialty

box with a special release wine. The donation was specific to raise funds for the CBARC Endowment! All proceeds are headed to the OSU-CBARC Endowment to aid in research.

New officer Collin Crocker joined the Executive Committee as Secretary/Treasurer, while Ben Maney moved into the Vice President Role and Clint Carlson will reign as



the 2020 President and Alan von Borstel as the Immediate Past President. Thank you to all of our Board of Directors that were able to come and support the Convention.



CLOCKWISE FROM ABOVE:

1. The Board of Directors: Top (L to R) Clint Carlson, Alan von Borstel, Deacon Heideman, Ryan Thompson, Collin Crocker, Blake Rowe (CEO). Bottom (L to R) Wade Bingaman, Erin Heideman, Ben Maney, Kurt Mellville.

- 2. President Carlson welcoming Secretary Collin Crocker.
- 3. Dana & Kathy Tuckness won the Beverage Center.

4. Alan von Borstel and Darren Padget give retiring CEO Blake Rowe his award.





FEBRUARY 2020

9



Riding with the Wheat On Its Way to Export

Michael Anderson, Assistant Director, USW West Coast Office

"This river in general is very handsome, except at the rapid, where it is risking both life and property to pass." – From the Journal of Sgt. Patrick Gass, a member of the Lewis and Clark Expedition.

It is 3:00 on a brisk and overcast Tuesday afternoon, the sun is already low in the sky. I am sitting in the galley of a tugboat — state of the art I am told. With five staterooms, a kitchen, washer/dryer and even a weight room, the tug has all the amenities any crew would need. There is some tension on board, with a hurry-up-and-wait attitude, when the phone finally rings. The deck mechanic answers, the barge we are waiting on is finally loaded with 1,500 metric tons (MT) of soft white wheat. The motor hums to life and we start moving, slowly, toward the grain elevator. It is growing dark as two grain barges are tethered together and we start down river from Lewiston, Idaho, headed to Portland, Ore. It will be a two-and-a-half-day journey first down the Snake River, connecting to the Columbia River and finally to the Willamette River, to reach our Portland export elevator destinations, about 360 miles in all.

We are following the same route that Lewis and Clark took as the "Corps of Discovery" traveled west. The rivers were different in 1805, untamed by today's intricate system



Michael Anderson (front left) with the crew of the tugboat crew.

of dams and locks. The eight dams that we will pass through have made it possible to harness the rivers into a major artery carrying U.S. wheat bound for export from farm to port.

The boat rocks side to side on my first night. It is comfortable but the unfamiliar feeling makes it hard to settle in. Suddenly the boat lurches and the light outside gets brighter. From the deck the first lock, Lower Granite, comes





into view. Two spot lights illuminate our way as we creep up to the lock. Slowly we approach the brightly lit lock and are guided in along a long concrete wall. The force of the shallow water beneath us is the only thing that keeps the tug and barges moving forward. With inches to spare on either side we have entered the lock. Behind the boat a gate rises from underneath the water; it is three feet or so above the surface when suddenly the gate stops rising and our boat starts sinking below the surface. It is a rapid movement, but it goes on for a long time. The water mark gets higher above us as we literally sink below the surface, protected by thick concrete walls. Finally, we stop moving. We are now 100 feet below the level at which we entered the lock. I walk to the front of the boat just in time to see the gates in front, towering above us, start to open revealing the river ahead, and slowly we make our way out of the lock and down the river.

Being a crew member aboard a tug, your day is not a simple "9-to-5" or even 24 hours for that matter. With one crew on and one crew off, the day is broken into shifts of six hours each, from 12 to 6 and 6 to 12. The environment shared by the crew is family like, cooking meals together and watching TV. Only the person driving the boat, the captain or the pilot, is constantly on watch. The deck mechanics jump into action when the boat enters a lock or when we pick up another barge, and this journey is a four-barge tow, meaning four barges being pushed by one tugboat.

From the bridge the captain has a sweeping view on all sides and plenty of sophisticated equipment helps him navigate even when we are surrounded by fog, which in the Pacific Northwest is common. Another lock is just ahead. The boat only moves about nine miles per hour. With precision we fit into the lock, again with just a foot on each side to separate us from the massive concrete walls. Unlike the lock last night, this lock is too short to fit the whole tow in at once but that is nothing out of the ordinary for this crew. Once the barges are tethered in place, the captain skillfully maneuvers the tugboat like a game of Tetris into a tiny space giving the back of the boat just enough room for the lock keeper to close us in. Again, a large iron gate rises from the water behind us

and like an elevator we start moving down inch by inch. In front is what looks like a massive garage door. The lock opens revealing the next stretch of the river ahead.

The mechanics of the lock are simple: we are moving down river with the flow of the water so when we enter a lock it is full of water. The lock is sealed behind us and a valve is released to allow the water around us to rush out of the lock. The tow itself is being moved to the same level as the river we are moving down. Once the tow is at the same level as the water outside the lock, the valve is closed and we wait for the massive concrete door ahead of us to open so the tow can move out. For ships going up river, against the flow, it is a similar procedure but instead of the valve releasing water, the valve fills the lock. It takes about 30 minutes to pass through each lock.

The Columbia Snake River System is a super highway of sorts for moving wheat and other agricultural products from farm to market. The rivers move 53% of all U.S. wheat bound for export. The ability to move such a large volume of grain efficiently makes the river system a very cost-effective and "green" logistical option. The lock system is maintained by the Army Corps of Engineers; its history goes back to the 1930's when President Franklin Roosevelt personally inaugurated Bonneville, the first of the eight dams and locks east of Portland.

After about 60 hours on board the tugboat, we arrive in Vancouver, Wash., on the north bank of the Columbia River. We drop two of the barges at an export elevator and proceed west again, up the north-flowing Willamette River that bisects Portland. It is my third river in a week and we are taking the final barge to an export elevator just across the river from the U.S. Wheat Associates (USW) West Coast Office. There is a vessel at berth waiting for the wheat we have been carrying. The crew drops the barge, and me, at the elevator. I walk up a set of metal stairs connected to a hoist and hop off, touching land for the first time since Tuesday. I walk across the river on Portland's Steel Bridge, under which the wheat from our tow will pass on its way overseas, to my office.





OREGON WHEAT COMMISSION

Welcome 2020

Walter Powell

OWC Chair

I am really looking forward to 2020; or perhaps, I am ready to look away from 2019. My marketing was okay; as were my yields. I just wasn't in the mood for the extraneous stuff that can impact the industry. We want the opportunity to grow quality and quantity and we want to deliver our product to markets we have developed. End of story. Maybe I am losing patience as I move into middle age.

I look forward to working with our new CEO, Amanda Hoey. I have spent eight or nine wonderful years working with Blake Rowe. When I got riled, Blake was calm; when Blake was riled, I remembered the need to stay calm up to a point. It will now be my privilege to work with Amanda and remember to stay calm; up to a point.

Sri ???

So, it is the week of Christmas, I am working through a paper I needed to write (not this one), bored out of my mind; and I decided to check the wheat markets. Looking for a bit of Christmas cheer, I think. In the middle of the market comments stood Sri Lanka buying 2.4 million bushels of white wheat, second only to the Philippines for the week. Remind me again Joe Sowers (US Wheat), where is Sri Lanka exactly, have I been there, is this unusual, can we expect more of this, so on and so forth? Email off to Joe, email returned by Joe. Island just south of India, I haven't been there, somewhat unusual maybe, who knows. I obviously needed to dig into Sri Lanka.

An Intertwined Economic World

The largest miller in Sri Lanka is not a local company; Prima Limited was established (1961) in Singapore and now has mills in Singapore, Sri Lanka, and the People's Republic of China. This is a large multi-national company. The second largest milling company in Sri Lanka is Serendib Flour Mills. Serendib is owned by the Al Ghurair Group out of the United Arab Emigrants, Dubai. Al Ghurair was established in 1960, and focuses on foods, trading, resources, property development, construction, energy, and whatever else when an opportunity appears. These two companies saw opportunity in Sri Lanka and are running with that opportunity.

The chart below (provided by US Wheat's Joe Sowers), shows that sales appear to be good for white wheat in Sri





Graph provided by US Wheat Associates.

Lanka. Joe's caution is that, since it apparently is a Prima contract, some of the wheat could end up going to their mill in Singapore. Joe would also like to see more hard red sales; he's never satisfied.

I was now too deep into Sri Lanka to not push forward and investigate policy and governance. Also, population, size, or anything else, rather than return to the paper I was avoiding. I struck gold. The United States is almost (policy and governance wise) calm in comparison with Sri Lanka. The following is drawn from the December 27th, 2019 issue of The New Indian Express.

"Since the 2018 constitutional crisis triggered by then President Maithripala Sirisena's sacking of prime minister Ranil Wickremesinghe and the seeming compromise by both sides following apex court's intervention, both the leaders were virtually running parallel states and it was confounded by the Easter bombings, claimed by the ISIS-linked National Thowheeth Jamaath (NTJ)." In other words, the President sacked the Prime Minister, and he refused to leave. Sri Lanka ended up with two administrations. Sri Lanka then held elections this fall.

"Sri Lanka's powerful Rajapaksa dynasty made a comeback in 2019 with former defence chief Goatabaya Rajapaksa storming to victory in the presidential polls promising stringent security in the wake of the island's worst terror attack that killed nearly 270 people on the Easter and brought to the fore the deep-rooted differences within the unity government."

"

"Since the 2018 constitutional crisis triggered by then President Maithripala Sirisena's sacking of prime minister Ranil Wickremesinghe and the seeming compromise by both sides following apex court's intervention, both the leaders were virtually running parallel states and it was confounded by the Easter bombings, claimed by the ISIS-linked National Thowheeth Jamaath (NTJ)."

"He named former strongman Mahinda Rajapaksa as the new prime minister after incumbent Wickremesinghe of the United National Party (UNP) resigned from the post following the election debacle."

He named his brother, (until 2015, the President), as the new Prime Minister.

My Take

Sri Lanka's third leading export category in 2018 was coffee, tea and spices. The seventh leading export was machinery, including computers. Coffee, tea and spice exports declined by 44.5% year over year and machinery was up 49.8% year over year. These extreme shifts indicate major changes and disruptions are happening in the Sri Lankan economy. They aren't alone as waves of change are rippling across the globe. Whether our country's GDP is 86 billion USD or 20.5 trillion USD, we are all trying to figure out a world in transformation; and likely not doing too good a job of it yet.

We are all going through a phase of rapid change, but we will do a better job adjusting...eventually. Sri Lanka will move forward, as will the United States.

Best to you all in the New Year.

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Attaining Genetic Resistance to Multiple Plant Diseases

Chris Mundt, Professor and Cereals Pathologist



Multiple diseases reduce wheat productivity and increase grower production costs in the PNW region. A major goal of OSU wheat researchers is to produce wheat varieties with high yield potential, favorable agronomic traits, high quality, and resistance to a broad spectrum of wheat diseases. The advent of DNA technology has provided opportunities to better understand the

genetics of resistance and has also sometimes resulted in a challenge to our past understanding of genetic resistance. A now common scientific approach is the use of so-called molecular mapping populations. The basics of this approach is to make a cross between two parents with contrasting traits, develop a large number of stable progeny lines resulting from that cross, evaluate the progeny for reaction to disease in the field, and evaluate DNA markers on the parents and progeny lines. Statistical methods are then used to determine the strengths of associations between measured disease levels and the presence of the DNA markers. This approach allows us to follow the genetics more closely and, hopefully, to develop markers that will enable us to select more efficiently for improved disease resistance.

As an example, multiple disease resistance has been studied in two molecular mapping populations, each a cross

of a European wheat variety with the Oregon variety Tubbs. These populations were originally developed by then OSU wheat breeder Jim Peterson. The populations were later evaluated for resistance to stripe rust and Cephalosporium stripe in a collaboration between myself and OSU wheat breeder Bob Zemetra via the Ph.D. thesis of Dolores Vazquez. This collaboration provided substantial information

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Figure 1. Percent whiteheads caused by take-all disease in plots grown to different wheat varieties in the first year of wheat production and tested with a single wheat variety across all plots in the second year. Growing Bobtail wheat in the first year substantially reduced disease severity in the second year.

Cephalosporium stripe, Fusarium crown rot, strawbreaker foot rot, and perhaps barley yellow dwarf virus. Others have identified markers on chromosome 5AL that condition resistance to stripe rust, powdery mildew, a biotype of Hessian fly, two different nematode species, Fusarium crown rot, and Rhizoctonia root rot (Liu et al. 2016. Theor. Appl. Genet. 129:345–355; Thompson et al. 2017. Genes Genomes Genetics 7:1109–1116).

Why it matters:

- Plant diseases are major constraints to wheat productivity and can often increase production costs and reduce ability to implement soil conservation methods.
- Genetic resistance is the most economically and environmentally sound approach to controlling wheat diseases.
- Our climate in the PNW is favorable to a multitude of wheat diseases; thus, varieties with resistance to multiple diseases are needed.
- Resistance in wheat may be mediated through changing microbial populations, thus providing an additional tool for controlling wheat diseases.

In the December 2017 issue of Oregon Wheat, I reported on a seemingly

different project regarding the wheat take-all disease, and the possibility that growing varieties such as Bobtail in the first year of wheat culture could reduce the severity of the take-all disease on subsequent wheat crops (Fig. 1). Bobtail apparently derived this trait from the parent 'Einstein', with the trait likely being controlled

regarding genetics of resistance to these two diseases. The same collaborators have since been able to test these populations against several other diseases, showing that several DNA markers are associated with quantitative trait loci (QTL) that provide some measure of resistance to multiple diseases. Of particular interest is a marker on wheat chromosome 5AL that was found to be associated with reduced levels of stripe rust,

by a gene on wheat chromosome 5A (V.E. MacMillan. 2012. Ph.D. Thesis, University of Exeter. It has long been known that certain strains of the soil bacterium Pseudomonas fluorescens can reduce the severity of take-all. Further, such strains can sometimes induce resistance in the plant against a diversity of other pathogens, as well as promote the growth of wheat even in the absence of disease. Graduate student Evan Perkins has



Figure 2. Relative population sizes of protective strains of the bacterium Pseudomonas fluorescens in soil cropped to different wheat varieties.

recently derived preliminary evidence showing that the wheat variety Bobtail induces the production of 20-50 times more protective Pseudomonas fluorescens bacteria in the soil as compared to six other tested varieties (Fig. 2). Interestingly, it has also recently been shown (Liu et al. 2019. J. Plant Growth Regul. 38: 1314–1324) that a wheat QTL on chromosome 5AL promotes the growth of a phosphorous-solubilizing strain of Pseudomonas, resulting in increased plant growth. This QTL is located close to the 5AL QTL discussed above that we found to promote multiple disease resistance, providing further evidence for a role of wheat chromosome 5AL in encouraging the population of favorable Pseudomonas bacteria. Coupled with the multiple disease resistance data discussed above, it is possible that protective strains of Pseudomonas strains in the soil can be controlled through wheat genetics, and that this trait can be selected for in a breeding program, either directly or through the use of DNA markers.

The above two projects are "works-in-progress" and require additional confirmation but represent some of the studies we are undertaking to increase the number of tools we have available to control wheat diseases in a cost-effective and environmentally sound manner.



2019-2020 Grant Title: Screening for Resistance to Major Wheat Diseases in Oregon

2019-2020 Grant Funding Level: \$54,844

300-word grant summary:

A combination of locations, production practices, and inoculation techniques will be used to provide high levels of disease pressure in trials of stripe rust, Cephalosporium stripe, Fusarium crown rot, strawbreaker foot rot, Septoria tritici blotch, and barley vellow dwarf virus. Inoculated trials for sharp eyespot will be conducted for the first time for a subset of nurseries. Resistance levels of entries in statewide vield trials will be determined to evaluate potential new varietal releases and to allow growers to make the best varietal decisions when new varieties are first available to them. Resistance levels of entries in elite and advanced yield trials from the OSU Wheat Breeding Program will be used to determine which lines to advance in the program towards potential release. Field data from a Madsen × Foote molecular mapping population collected in the current and previous seasons will be further analyzed statistically to evaluate the genetics of durable stripe rust resistance in Madsen and to evaluate and combine genes for quantitative resistance to Septoria from Madsen and Foote. Genetics of resistance to sharp eyespot will be studied in the Einstein × Tubbs mapping population in the field, as resistance is known to be present in that population. Studies will be completed to determine if the ability of some wheat varieties to suppress build-up of the takeall pathogen is driven by changes in the soil microbial community. Improved methods for reporting disease resistance rankings of varieties to growers and field men will be developed through collaboration among the extension, breeding, and pathology programs. The studies described above are crucial to continued progress in the OSU Wheat Breeding Program, increased profitability for Oregon wheat growers, and ability to adopt conservation tillage practices.

Introduction to the article and how it relates to grant work:

My cereal pathology program interacts very closely with the OSU Wheat Breeding and Genetics Program and the OSU Extension Cereal Variety Program. Primary goals are to make decisions on wheat lines to move forward towards release as varieties, and in evaluating current and upcoming varieties from both public and private breeding programs so as to provide growers with a comprehensive evaluation of disease reaction to the many wheat diseases present in Oregon. A considerable amount of genetic material is screened annually against multiple diseases to make informed decisions that will impact growers in the short term. For the longer term, however, fundamental understanding of the underlying genetics is also needed to improve levels of resistance in the future, and to react to changes in pathogen populations and to potential introduction of new pathogens. This article describes two on-going studies that have the potential to increase our ability to more effectively develop resistance against multiple wheat diseases.

New Weed Scientist Joins the OSU Corvallis-Based Weed Science Group

Andy Hulting, Associate Professor and Extension Weed Management Specialist, Corvallis

Our program has some exciting news to report in that we have been able to add a new Weed Science faculty member to the team working on weed management issues across the state. Dr. Caio Brunharo fills the vacancy created by the retirement of long-time OSU weed scientist Dr. Carol Mallory-Smith. Caio is a recent University of California, Davis, graduate with extensive field and laboratory experience studying herbicide resistant grass weeds and he has been named the new lead research and teaching weed scientist at Oregon State University in Corvallis. Caio will work closely with other Weed Science faculty located in Corvallis and around the state and PNW. In addition to his research appointment, Caio will teach undergraduate and graduate-level weed-management classes in the Department of Crop and Soil Science.

Caio has been working in Weed Science since 2009, when he joined the weed science program at University of Sao Paulo, Brazil, as an undergraduate student worker pursuing a degree in agronomy, and continued in the same institution as a MS student in weed science with an exchange period at Colorado State University. His MS research focused on a glyphosate resistant weed species, tall windmill grass, of broad occurrence in agronomic crops in Brazil, where he conducted surveys to map the distribution of resistant populations in orange orchards, cotton and soybean fields, weed resistance levels, and the underlying physiological reasons of why the resistant biotypes were able to survive previously lethal doses of glyphosate.

He then obtained a PhD degree from the University of California at Davis, with focus on several aspects of herbicide resistance in Italian ryegrass and annual bluegrass populations from orchard crops in the Central Valley of California. More specifically, he is interested in both applied and basic research to develop improved chemical management strategies for herbicide resistant Italian ryegrass and annual bluegrass, as well as determining the biological mechanisms underlying the resistance traits. Following completion of his PhD degree, he continued research at UC Davis as a postdoctoral scholar, conducting more in-depth applied and basic studies to understand herbicide resistance in Italian ryegrass, before starting in this new position at Oregon State University. Caio is looking forward to conducting both basic and applied weed management research.

Herbicide Evaluation Studies in Wheat Continue

Grass weeds continue to cause substantial yield and quality losses to Oregon wheat producers. The OSU Weed Science Programs conduct numerous herbicide evaluation studies statewide, including studies that explore weed

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OSU Corvallis Weed Science Group. From left to right, in the back: Nixxon Montgomery, Caio Brunharo, Carol Mallory-Smith, Andy Hulting, Kyle Roerig and Lucas Riboldi. In the front: Adriana Perez, Seji Jang, and Andreia Suzukawa.

management programs for improved weed control in Oregon wheat. Portions of ongoing weed management research and Extension projects in winter wheat and spring wheat, including wheat herbicide evaluations, funded in part through the Oregon Wheat Commission (OWC), are presented here. Many of our efforts are focused on helping wheat growers optimize grass weed management in wheat where you manage a number of problematic species and have ongoing issues with herbicide resistance with some of them.

A statewide effort is focusing on evaluation of new herbicide products that have recently entered or will be entering the wheat market soon, many of which will be available to wheat growers over the next several years. These herbicides include the Arylex technology (Quelex-halauxifenmethyl plus florasulam) from Corteva, mesosulfuron + thiencarbazone (Osprey Xtra) from Bayer, saflufenacil (Sharpen powered by Kixor) from BASF, bicyclopyrone + bromoxynil (Talinor), pinoxaden + fluroxypyr (Axial Star) and pinoxaden + fenoxaprop (Axial Bold) from Syngenta, and tiafenacil and tolpyralate (Shieldex) from ISK. Of particular interest, because of its wide spectrum of control of both grass and broadleaf weeds common in wheat, is the new herbicide active ingredient pyroxasulfone developed by Kumiai Chemical. Two products containing pyroxasulfone including Zidua from BASF and Anthem Flex from FMC (also contains carfentrazone) are being evaluated under OR production conditions in both winter and spring wheat production systems. The new version of Osprey called Osprey Xtra which is a premix of mesosulfuron and thiencarbazone will

2018-2019 Grant Title: Oregon Wheat Statewide Weed Management Research and Extension

2018-2019 Grant Funding Level: \$52,900 300-word grant summary:

The OSU Weed Science Programs conduct herbicide evaluations across the wheat growing regions of Oregon to identify new chemical control strategies for difficult to manage weeds in wheat. The process for EPA registration of new herbicide products requires site-specific information on weed control efficacy, crop tolerance, and environmental behavior across a broad range of agricultural environments. We work with the agricultural chemical industry and the Oregon Department of Agriculture to help register safe, effective herbicide products for use by Oregon wheat producers. We collaborate with the OSU Wheat Breeding and Cereal Extension programs and weed scientists across the Pacific Northwest (PNW) to ensure that locally-adapted winter and spring wheat varieties exhibit adequate crop tolerance to commonly applied chemical weed control products. A large portion of our weed research in winter wheat focuses on winter annual grass weed management including management of downy brome, jointed goatgrass, rattail fescue, Italian or annual ryegrass as well as key broadleaf weed species. Research is also conducted to improve understanding of weed biology and herbicide resistance in weeds, and to identify weed management practices that prevent or delay the occurrence of herbicide-resistant weeds. New information derived from statewide weed research is disseminated to Oregon wheat growers and industry agronomists using an array of Extension programming methods. These methods include participation in OSU Extension, grower and industry meetings, development of OSU and PNW Extension publications and webbased delivery of research results, and the continued development of the five wheat-focused chapters in the Pacific Northwest Weed Management Handbook (both print and online versions, http://pnwhandbooks.org/ weed/).

improve both the grass and broadleaf weed control spectrum over the older formulation and according to our data, as well as University of Idaho data, will improve postemergence control of rattail fescue over the older formulation of Osprey.

In addition, OSU advanced wheat breeding lines including 1086, 118H, and 0755, have all been tested for tolerance to commonly applied wheat herbicides including preemergence treatments applied at planting followed by postemergence treatments of combinations of older ALS inhibitors and the newer herbicide products discussed above. Crop injury and wheat yield were measured and reported to the OSU Wheat breeding Program.

Reminders for Spring Postemergence Herbicide Applications in Wheat for Grass Weed Control

A competitive wheat crop with an adequate stand is the key cultural weed management strategy to limit impacts of grass weeds. But there are some additional considerations to maximize postemergence control of grass weeds with herbicides as we transition into the spring. In general, it is important not to apply postemergence herbicides when cold, wet weather is expected within one week following application. Reduced weed control efficacy and crop injury may occur when maximum daytime temperatures are less than 40° F after application. If possible, growers need to time late winter and spring applications of products including, Outrider®, Osprey or Osprey Xtra, PowerFlex HL®, Axial XL or Axial Bold, Everest[®] and Beyond[®] to avoid these types of environmental conditions to maximize grass weed control efficacy. In addition, each of these products has its own unique adjuvant system (additions of NIS, AMS, COC, and MSO, for example) that must be utilized to achieve grass weed control and limit potential for wheat injury. Always refer to the label or our current recommendations for your growing region for each product and for product updates in the PNW Weed Management Handbook.

Weed management Extension efforts have been ongoing throughout 2018-2019 and have included research update presentations at several industry winter grower meetings and OSU Extension-organized grower meetings across the state, including Hermiston, Pendleton, Forest Grove, Albany, Salem, Corvallis, Hood River, among others, as well as field tours of research plots at Hyslop Research Farm. The primary focus of these Extension meetings and field day presentations has been to update growers on field research results, as well as to review best weed management practices in wheat. Because topics at these meetings almost always focus on integrated weed management strategies or continuing education topics such as managing herbicide resistance or herbicide site of action discussions, they are a good opportunity for growers and crop consultants to earn ODA pesticide license recertification hours. Working with our weed science colleagues at WSU and U of I, we have also recently updated several weed management- related Extension publications for wheat growers. Publications and current recommendations on feral rye (PNW 660), rattail fescue (PNW 613) and downy brome (PNW 474) management can be freely accessed online at http://smallgrains.wsu.edu/weed-resources/.

A new publication (PNW 730) exploring the feasibility of "harvest weed seed control" for PNW wheat production systems is also available.

In summary, the funds provided by the Oregon Wheat Commission are vital for continued herbicide evaluation and weed management studies as well as our ongoing wheat-related Extension efforts. We continue to build on OWC funding to pursue projects that are important to Oregon wheat growers. For more information on these projects please contact us.

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The Next Chapter

Amanda Hoey, Incoming CEO



Happy New Year! As my first article for the Oregon Wheat publication I wanted to begin with how pleased I am to have been selected for the position of Chief Executive Officer (CEO) for Oregon Wheat. I am equally excited about this opportunity and focused on the work necessary to continue the strong leadership for Oregon Wheat, ensuring we address the needs of wheat

producers. I will be reaching out into communities to meet growers throughout these coming months. I look forward to the occasion where we can meet and discuss your history with Oregon Wheat and how I may be able to help you.

Born and raised on a wheat farm in Wasco County that has now produced four generations of farmers, I have a grounding in the issues facing our rural communities and wheat producers. The family farm on which I live has been jointly managed by my mother and father, with my brother now taking the reins and ownership in the business. Maintaining a profitable wheat farm requires a range of talents- from operator to bookkeeper to land steward to mechanic to wheat marketer. I bring many of those skills to Oregon Wheat through my professional experiences, with one exception: mechanic. I stand in awe of some talented mechanics who kept my favorite Mack truck running harvest season after harvest season—despite the beating it took over those field roads.

Beyond the close connection to the Oregon Wheat industry, I come into this role with over a decade of executive leadership experience. In 2006 I joined Mid-Columbia Economic Development District (MCEDD) in The Dalles to support a bi-state region encompassing Hood River, Wasco and Sherman counties in Oregon and Klickitat and Skamania counties in Washington. In 2008, I was promoted as the Executive Director for the organization. With a complex governance involving a large board of directors and multiple formation entities, MCEDD provided a range of opportunities to develop my leadership and management

Amanda began working with Oregon Wheat Commission and Oregon Wheat Growers League in January, splitting her time accordingly preparing for the separation from MCEDD. Beginning in February Hoey splits her time equally between the two wheat organizations and the economic development district and begins full time in March.

While she is working through the transition with Blake, Hoey will participate in key events in Washington, D.C., Pendleton and The Dalles, including opportunities for growers to meet her.



skills. As the Executive Director, I worked with a multitude of community partners to identify a comprehensive vision and implement actions that result in long term solutions. Under my leadership, MCEDD diversified its regional economic initiatives to include additional opportunities for access to capital and enhancing private-sector led regional industry development. I led the organization's growth, expanding our project management team to better serve the region and promote economic opportunity.

In my position with MCEDD I also had the opportunity to serve on the National Association of Development Organizations (NADO) Board of Directors and NADO Research Foundation Advisory committee. These roles allowed me to participate in advocating for increased federal resources and policy changes necessary across a variety of agencies to ensure long term vitality of our communities. Before joining MCEDD, I worked in small business development. I hold a degree from Whitman College and graduated Magna Cum Laude with a major in Economics. Among other professional experiences, I was selected as a Marshall Memorial Fellow in 2016, participating with individuals from across the United States and Europe in the German Marshall Fund's flagship leadership development program.

All of these experiences have been valuable investments in developing skills throughout my career. I take great pride in returning to my home and my roots investing in rural economies by being able to work with the Oregon Wheat Growers League, Oregon Wheat Commission and Oregon Wheat Foundation Boards. Together with the talented staff and our partners serving the interests of Oregon Wheat producers, I am excited about the long-term growth of the wheat industry. From enhancing resources for ag research to addressing policy challenges that would otherwise hinder farm profitability/viability, the work of Oregon Wheat is critical to ensuring vibrant rural communities. I look forward to working with each of you over the coming years.

The 2019 Soft White Crop Shines Again

U.S. Wheat Associates

Pacific Northwest (PNW) farmers produced another fine soft white wheat (SW) and white club (WC) crop with good test weight and very acceptable finished product characteristics for 2019. Adequate soil moisture at planting and throughout the growing season did contribute to higher moisture and protein content compared to 2018 but protein remained lower than the 5-year average. In fact, the higher SW protein segment provides opportunities in blends for crackers, Asian noodles, steamed breads, flat breads, and pan breads. Variations in performance data for 2019 compared to 2018 and the 5-year averages are included below for this 6.09 million metric ton (MMT) crop, including 170,000 MT of WC.

That is a summary of results from the U.S. Wheat Associates (USW) 2019 SW and WC crop quality analysis to be posted soon at https://www.uswheat.org/market-and-crop-information/crop-quality/. To complete the analysis, the Wheat Marketing Center (WMC) received and tested SW and WC samples from Idaho, Oregon, and Washington. The Federal Grain Inspection Service (FGIS) graded and ran wheat protein on each sample. WMC conducted wheat, flour, Solvent Retention Capacity (SRC), dough, and finished product tests on composites based on production zones and protein levels. Funding for the annual survey come from state wheat commission USW members and the USDA Foreign Agricultural Service.

As always, buyers are encouraged to review their quality specifications to ensure that their purchases meet their expectations.

Wheat and Grade Data: The Overall average grade of the 2019 SW and WC crops is U.S. No. 1. The average SW test weight of 61.6 lb/bu (81.0 kg/hl) is slightly lower than last year's 61.7 lb/bu (81.1 kg/hl); WC test weight of 60.6 lb/bu (79.7 kg/hl) is slightly higher than 2018's 60.4 lb/bu (79.5 kg/hl). SW has fewer damaged kernels, fewer shrunken and broken kernels, and less foreign material than the 5-year averages. WC shrunken and broken kernel percentages are lower than last year and the 5-year averages. WC foreign material is higher than last year and 5-year averages. WC dockage is slightly higher than last year and the 5-year averages. Other WC grade factors are similar to past averages. Wheat moisture for both SW and WC is above last year and the 5-year averages.

The Overall SW and WC wheat protein content (12% mb) of 10.0 and 9.8%, respectively, are 0.7 and 0.8 percentage points above the respective 2018 values, but below those of 5-year averages. SW and WC wheat ash contents (14% moisture basis) are similar to last year and the 5-year averages. Thousand kernel weight for SW is above 2018 and the 5-year average levels; WC is lower than last year and higher than



the 5-year average. SW kernel diameter is the same as last year, but larger than the 5-year average. WC kernel diameter is smaller than last year, but larger than the 5-year average. Falling number values are 317 sec for SW and 355 sec for WC.

Flour, Dough, and Bake Data: The 2019 Buhler Laboratory Mill flour extraction average for SW and WC at 72.1% and 72.8% respectively are lower than last year and the 5-year averages. Flour protein content (14% mb) is 8.9% for both SW and WC. Flour ash content (14% mb) for both SW and WC are higher than last year but the same as 5-year averages. Amylograph peak viscosity value for SW is 485 BU, slightly lower than last year; WC is 523 BU, much higher than last year but lower than the 5-year averages. WC starch damage is lower than last year and the 5-year averages.

Solvent retention capacity (SRC) water values for SW and WC are less than last year and 5-year averages. SW lactic acid and sodium carbonate values are similar to last year and the 5-year averages. WC lactic acid values are higher than last year, but same as 5-year average. SW and WC gluten performance index (GPI) values are similar to last year and 5-year averages. SW farinograph peak and stability times are shorter than last year and the 5-year averages. WC peak time is slightly longer than last year and 5-year averages. SW and WC water absorptions are similar to last year, but less than the 5-year averages. The SW and WC alveograph L values are considerably longer than last year and 5-year averages. SW and WC extensograph resistance is larger than last year and the 5-year averages. SW and WC extensibility values are longer than last year and the 5-year averages.

Chinese Southern-Type Steamed Bread: In southern-type steamed bread compared to a control flour, the 2019 SW and WC specific volumes are slightly less than last year and the 5-year averages. The SW total score is higher than last year and the 5-year averages; WC is the same as last year, but lower than the 5-year average.

News of the Liaison Committee of the Pendleton Agricultural Research Center

Chris Williams (Chair) and Nathan Rea (Co-Chair)

Back in 2018, the Liaison Committee (LC) of the Pendleton Agricultural Research Center, with support from OWGL, developed the Resilient Dryland Farming Initiative to seek expanded federal funding for research critical to Oregon's dryland wheat growers. Senators Merkley and Wyden, and Congressman Walden sponsored the initiative as a provision in the 2019 Agriculture Bill. Thanks to them, an annual appropriation of \$2M was added to the annual base budget of ARS at Pendleton. About 25% of this funding passes to CBARC to support its collaboration with ARS in multidisciplinary field research. Renamed the Resilient Dryland Farming Appropriation, or RDFA, the new program has three key goals: 1) improve yield and quality parameters, 2) develop cropping systems capable of tolerating drought, heat, and diseases, and 3) quantify economic and environmental benefits available to growers from the research.

These goals were discussed at the LC meeting held on November 15, 2019 at the Pendleton Agricultural Research Center. ARS scientists Dan Long and Kate Reardon updated the LC on recent work to achieve the goals, and on the cooperative agreement that was formalized between ARS and OSU, including the ARS plans for new scientific programs in agricultural economics and plant physiology. They mentioned that a team approach, involving the scientific expertise between ARS and OSU, will be used to study how the wheat-based cropping system can be diversified with cover crops and alternative crops. Attention will be given to rotation benefits to winter wheat and cover crop's impact on water availability. This project has a forward focus - looking to help ensure that our agricultural system is resilient enough to overcome climate variability, diseases, and increasing weed pressure.

Three new ARS scientists will be brought to the facility: an ag economist, a plant physiologist, and a support scientist in bioinformatics. These science disciplines are complementary to the existing OSU and ARS scientific staff and will enhance research collaborations and maximize the potential of each agency. With the climate expected to shift towards being warmer and drier, the plant physiologist will work to increase understanding how plants best tolerate drought stress and overcome stress factors that limit plant health and growth. Growers have wanted economic information to back up the agronomic results of field experiments, so the economist will determine the profitability and risk of each cropping system and environmental benefits that are associated with

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The Liaison Committee acts as an interface between the dryland wheat growers and agricultural scientists, operating independently of both USDA-ARS and OSU-CBARC. Its primary focus is to identify and discuss opportunities that the ARS-OSU research community could seize or build on and challenges it faces in its mission to find solutions to problems experienced by growers in eastern Oregon.

increased nutrient availability or pest suppression from alternative crops. Soil harbors thousands of microbes, so the bioinformaticist will use new genetic tools to decipher the function and structure of microbial communities to better understand how to manage them for the benefits they provide.

The Federal government has been slow to fill vacant positions across many agencies, so we don't expect the new scientists to be onboard until sometime in 2021. While we wait for the people, construction of 2700 square feet of laboratory space has already begun for the new science programs, including an updated fire alarm system and backup generator for the main ARS building. Completion is anticipated May of 2020. In addition, research trials have been established at two locations: one near Lexington in a low rainfall zone and one on the research center in the intermediate rainfall zone. The plots include a series of treatments with cover crops and alternative crops. The first sets of plots are in the ground and the researchers look forward to seeding additional plots this coming spring.

If you have been around for 20-30 years, like some of us have, you might think that we have done this all before. We are looking closely at opportunities to see what we might learn that we don't already know. For example, new winter pea and lentil varieties are available that are drought tolerant and capable of fetching good market prices. The complementary study of economics will provide valuable information about the desirability of growing a crop, whether to adopt a practice, and the costs and benefits of allocating scarce resources. Plus, advanced tools of molecular biology are available for analyzing the soil's DNA and determining the various functions of microorganisms in the soil. Bioinformatics can take these genetic data and reveal factors in the environment that are driving the change. This level of understanding of the soil, coupled with yield, soil chemistry, and soil properties, can help identify best practices and predict what returns growers may expect in adopting a cultural practice.

The success of the RDFA depends on grower initiative and involvement and we want that to be a continuing theme of this research. The ARS and OSU scientists will give regular updates to growers at semi-annual LC meetings to make sure



that the research is relevant to real issues faced by dryland growers across the Columbia Plateau. Anyone can become involved by contacting us to volunteer to serve on the LC. We strongly believe that growers and researchers working together will be successful at making our dryland systems more resilient, sustainable, and profitable for the long-term.

Oregon Wheat Foundation Receives Grant Donation

Shanna Hamilton, Director of Communications

The Oregon Wheat Foundation has received a generous gift of \$25,000 from the Oregon Community Foundation, via a grant on behalf of the Marguth Family Fund.

Jerry and Betty Marguth pledged this contribution to the Foundation in December. Betty Marguth is the daughter of Bob and Jean Nixon for whom the Nixon variety was named in recognition of their service to the wheat and agricultural industry in Oregon.

The Nixon's farmed in the Willamette Valley, growing wheat on their farm since the 1940s. They had an intense love for the land and agriculture in the Pacific Northwest. Bob and Jean were partners in both marriage and business. They were active in the Oregon Wheat Growers League and the Oregon Wheat Commission, with Bob Nixon serving as chair of the Oregon Wheat Commission from 1976 to 1977 and Jean Nixon serving as chair of the Oregon Wheat Commission from 1992 to 1993. They are the only couple who have both served as chairs of the Oregon Wheat Commission.

Both the Marguth's and Nixon's have been active in the grass seed and mint industry organizations plus a long list of community activities. Wheat production was always in their crop rotation. They have a great deal of love and respect for the wheat industry, the growers they met over the years, and their association and respect for Oregon State University and the dedicated folks that work in the field of Agricultural Sciences.



"Through my various roles within a variety of Oregon Agriculture boards, I have gained a deep and abiding respect for Oregon Agriculture and the remarkable people that truly define what makes Oregon the best place on the planet to be a farmer." -Jerry Marguth

Jerry and Betty have both served on the Oregon Wheat Growers League board and Jerry currently sits on the Oregon Wheat Commission. Jerry was a crucial member of the CEO search process and is a key resource to Oregon's wheat industry.

On behalf of Oregon Wheat, we want to say THANK YOU for this generous contribution to the Oregon Wheat Foundation and for this family's many years of service to our industry.

Dark Chocolate Whole-Wheat **Brownies**

Recipe found at: https://www.100daysofrealfood.com/recipe-real-whole-wheat-brownies/

INGREDIENTS

3/4 cup whole-wheat flour

1/2 cup unsweetened cocoa powder, you will have much better results if you use "dark" cocoa

1/2 teaspoon baking powder

1/2 cup coconut oil

INSTRUCTIONS

- 1. Preheat oven to 350 degrees F and grease a 9X9 inch square glass baking dish with oil or butter.
- 2. Whisk together the dry ingredients in a bowl including the flour, cocoa and baking powder and set aside.
- 3. In a small pot on the stove melt the coconut oil together with the maple (or honey) syrup and vanilla extract.
- 4. Once the coconut oil is melted whisk the wet ingredients into the dry ingredients. Add the egg and keep whisking until it's mixed together thoroughly. If using nuts fold them into the batter with a spatula.
- 5. Pour the batter into the glass baking dish and bake for 16 - 20 minutes or until a toothpick inserted in the center comes out clean.

6. Eat or store in an air-tight container at room temperature enjoy!

Note: These brownies are "cakelike" and a very "dark" chocolate flavor i.e. not as sweet as typical store-bought milk chocolate product.

Amount Per Serving	Carlot All All All and a second
Calories 149	Calories from Fat 90
	% Daily Value
Fat 10g	15%
Saturated Fat 7g	44%
Cholesterol 12mg	4%
Sodium 7mg	0%
Potassium 114mg	3%
Carbohydrates 15g	5%
Fiber 2g	8%
Sugar 7g	8%
Protein 2g	4%
Vitamin A 15IU	0%
Calcium 30mg	3%
Iron 0.7mg	4%







RECIPE

1/2 cup pure maple syrup, or honey

1 tablespoon pure vanilla extract

1 egg

- 1/4 cup nuts, chopped (optional)

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.





GOT WIREWORM SEED TREATMENT INSECTICIDE WITH BIOST® INSECTICIDE 100

Albaugh's 3 Way seed treatment insecticide offer kills wireworms DEAD*.

 3 Year Wireworm Summary (Bu/A)

 70 68.02

 66 65.08

 64 64.97

 62 64.97

 60 59.41

Albaugh's BIOst® Insecticide 100 seed treatment provides a second mode of action that results in DEAD Wireworms.

Over the past three years Albaugh's 3 way wireworm offer with BIOst® Insecticide 100 has been successfully used on 1 million acres providing arowers with improved stands, DEAD wireworms and increased profits.

58 -

56 -

54 -

Fungicide only

BIOst[®] Insecticide 100 Proven Field Performance providing growers with increased stands, DEAD wireworms and increased profits:

Yield data from University and 3rd party trials (7 trials) - 2017-2019. Trials conducted in WA,ID & MT

Albaugh 3 Way

Wireworm Offer with

BIOST[®] Insecticide 100

CruiserMaxx[®]

Cereals 1.33

 BIOst® Insecticide 100 has proven commercial wireworm performance over the last 3 years on spring and winter wheat.

High IMD

- 2. Albaugh's 3-way insecticide seed treatment offer kills wireworms DEAD.
- Growers have had success over the past 3 years using Albaugh's 3 Way Wireworm offer with BIOst[®] Insecticide 100.

Contact your local seed retailer for more information on the 3 Way Wireworm offer with BIOst® Insecticide 100

Refer to each product label for complete use directions and restrictions. BIOst® and Resonate® are trademarks of Albaugh, LLC. Nipslt Inside® Insecticide is a trademark of Valent USA, LLC. *Dead wireworms have been observed in Albaugh's 3 Way wireworm seed treatment offer both in replicated trials and commercia seed treatment offer both in replicated trials and commercia seed treatment offer both in replicated trials and commercia Always read and follow label directions. EPA Reg. No. 84059-14-42750 AD No. 100616, EPA Reg. No. 42750-133 AD No. 110316, EPA Reg. No. 59639-151

Albaugh* Your Alternative*