

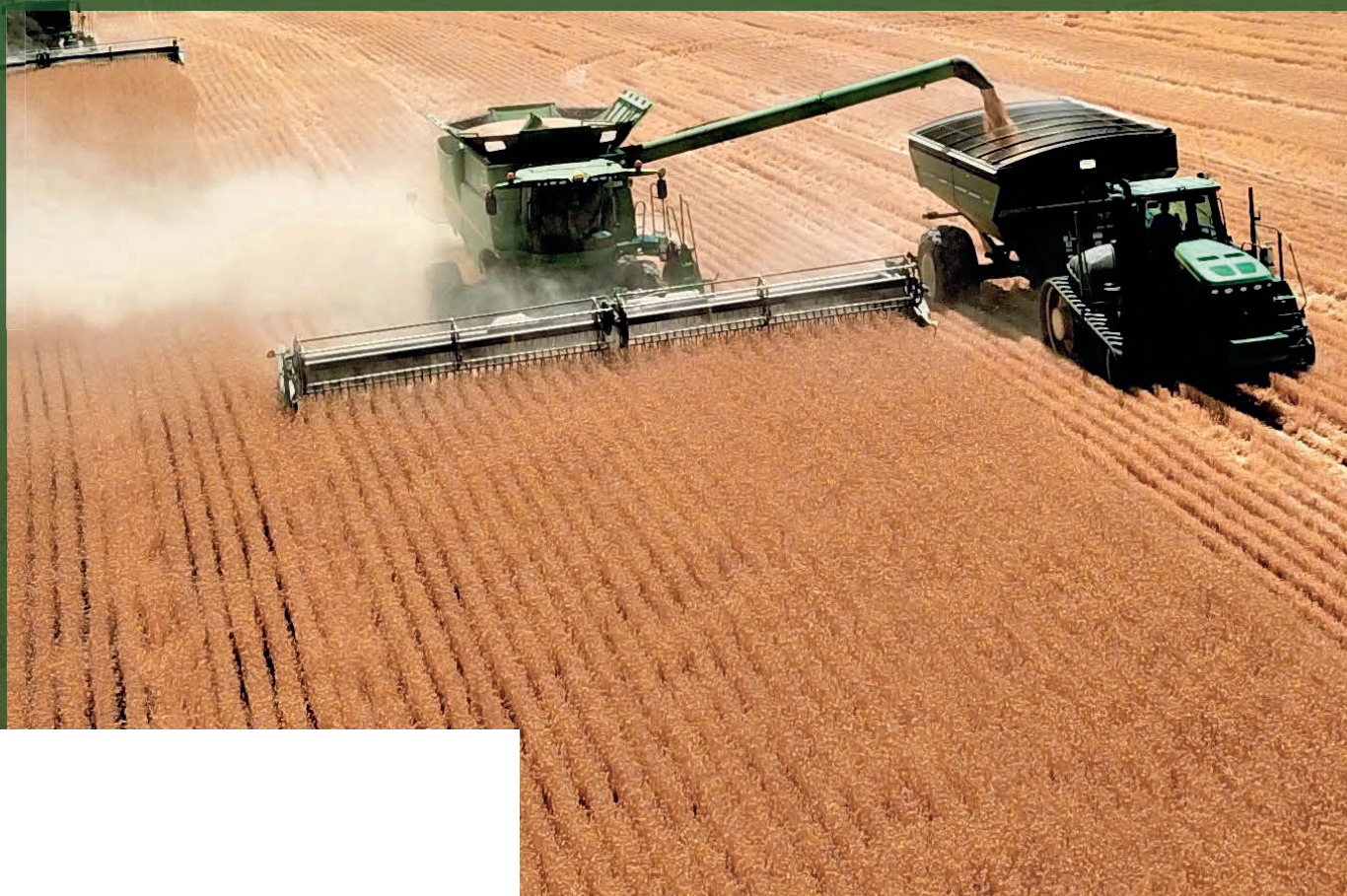
AUGUST 2020

# OREGON WHEAT

*An Official Publication of the Oregon Wheat Industry*

## IN THIS ISSUE

- 6 Prioritizing the Future of the Wheat Industry in OWC Funding
- 10 #OriginalStewards
- 19 Survey Responses Influence Producers' Bottom Lines

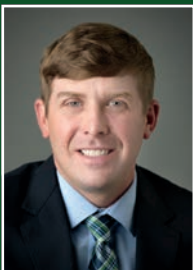


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## ON THE COVER



*Photo by Gavin Newton*





**Clint Carlson**

President

“Never before have the wheat growers of Oregon faced the multitude of problems that we face today. Lower farm prices and higher cash farm cost during the 1981 season have severely impacted net farm income which is estimated to be down 10% from 1980.” This was a quote from Louis Carlson in his president wheat magazine article, March of 1982. It sounds like not much has changed in the last 40 years. In the past four years that I have been on the OWGL board, Executive committee and NAWG board, I have learned of many issues on the state and federal level. In 2020 as in 1982, we still have issues with price and too much wheat, but some of the topics we deal with have changed.

There are two specific topics I want to talk about in this article: sustainability and climate change.

Over the last 30 years, we have been told by Extension and the NRCS to move to more “sustainable” farming, such as no-till farming, because it will produce more bushels, save the soil, reduce costs, and it promotes sustainability. Also in the last 10 years, sequestering carbon has been inserted into that list.

Climate change has taken on many definitions over the past 50 years. Back in the 70’s and 80’s, the threat was “global cooling” and the talk was to put coal dust on the poles to help warm the planet. During the 2000’s and later, “global warming” became the phrase to watch and carbon dioxide became a noxious gas. Now, the world just uses “Climate change” to define our current state and carbon must be reduced.

As I mentioned above, we have been urged to move toward no-till or direct seeding. The OWGL does not promote one type of farming over the other (no-till over conventional tillage). As an organization, we work for and with our wheat producers. The definition of sustainability is relative to your operation and how you foresee your long-term production goals. There are differences in the farming techniques but some tools are the same, such as, using crop protection chemical to burn down volunteer wheat in the spring, to control weeds in our crop, and control weeds in chemical fallow. To the modern farmer, crop chemicals are as important as the tractor or combine. As the climate change discussion has evolved over the years, agriculture has been drawn into the mix as an agent to sequester carbon. Theoretically, government programs such as EQIP and CSP, legislative Cap and Trade regulations or Voluntary

## MY TWO CENTS WORTH



Carbon Credit programs, should make sustainability and climate change complement each other.

Can sustainability and climate change complement each other in our world of dry land farming? The answer is.... Yes and No!

Wheat producers have adopted sustainable farming practices and use safe and approved chemicals to accomplish the goals. However, the Non-Governmental Organizations (NGO) and environmental groups are pushing the government, international, and national companies to adopt lowering carbon emissions. They also push to ban or limit our use of a number of these chemicals that we use to achieve the sustainability goals. How, as farmers, can we move forward with the stated goals



My ask to our OWGL members: I would like for you to get involved and help OWGL try to mitigate our way through these very important issues. We are way past the sentiment that “someone else will fix it” and “I don’t need to be involved.” There are things coming down the pipeline that will affect all the wheat growers in the nation and specifically, Oregon.

from the state and federal governments, if the approved tools are taken away? Wheat farmers are businesspeople who survive by working efficiently and putting the least amount of inputs into growing the crops. If our tools are removed arbitrarily, we are forced to use farming practices from fifty to seventy-five years ago. The outcome of this will be more wind and water erosion, less carbon sequestration, and ultimately less sustainability and efficiency. Our state and federal legislators, USDA, and partnering NGO’s need to understand that if the demand is for less carbon emissions, but desire sustainability, our tools that enable the producer to achieve those goals need to remain in place.

The OWGL and NAWG have been in the conversation with legislators and various agencies on these topics and

**CONTINUED ON PAGE 4**

## CONTINUED FROM PAGE 3

are trying to either stop or reduce the impact of these non-sensical policies on our growers. Our lobby team in the state capital work tirelessly to stop or reduce the impact of these policies on our farms. At the national level, Oregon Wheat has influence with our Oregon delegation and the various USDA agencies. The problem is that influence only goes so far, when there are bureaucratic agendas that don't mesh with the wheat farmer's capacities.

My ask to our OWGL members: I would like for you to get involved and help OWGL try to mitigate our way through these very important issues. We are way past the sentiment that

"someone else will fix it" and "I don't need to be involved." There are things coming down the pipeline that will affect all the wheat growers in the nation and specifically, Oregon. If you have question on these subjects or others, contact Amanda Hoey or myself. We want to know your thoughts on these topics and your suggested solutions to these problems.

*Clint Carlson*



## Adjusting to Virtual Life


Shanna Hamilton, Director of Communications

When this magazine arrives to your inbox whether virtual or via the mail service, it will mark five months of a shift in my office space to accommodate teleworking. Luckily, I can do my job just about anywhere I have Wi-Fi. I cannot help but feel grateful for this career at OWGL and the opportunity to share the stories of our producers. So often we scroll through our social media platforms and see the numerous complaints, rants, and misinformation, or are disheartened by a news channel (or six). As many families have already endured through the global health crisis, this new era has brought challenges like we have never seen before. Parents who work outside of the home were forced to switch gears to be teachers in addition to keeping the workload of their full-time jobs and trying to keep the home life as normal as possible. Those whose jobs are on the farm perhaps found themselves with

extra farm hands to keep busy, whether their child, niece, grandson, or the neighbor kid. The show goes on, and in our case, the crops get harvested—and marketed.

Instead of being able to travel overseas or have our overseas buyers visit Oregon, we now have created video content for our trade partners to view at their leisure. The technology that is at our fingertips to create a video on our smart phone and share with an international customer is critical in 2020, and more so in this specific time. We would much prefer the alternative of travel, but we are adjusting as needed. We cannot replace the relationship building through the personal touch of visiting a family farm, but being able to open up your device and see that our Oregon producers are continuing to provide a high quality product, is assurance that we are not stopping; we are forging on.

In the Oregon Wheat world, we have been tackling virtual platforms for over a year. Mapping out how to share our stories and 'toot' our (your) horn. The current climate has only spurred the need for the ability to share our story virtually to those individuals who we may never have been able to connect with previously. The struggle I face is convincing our growers to share their story when busy with the demands of managing their farm. Now the added social distance may make for some entertaining footage.

It is unclear what our future holds, but we do know we will continue to build our content for our producers and our buyers, and we will be there showing whoever wants to view it, what Oregon Wheat is all about. The value of the reliability of Oregon Wheat shines during periods of unanticipated disruptions. High quality products, high quality people and high quality service. 

### SHARE YOUR STORY

If you are interested in hosting OWGL at your farm to share your family farm story contact Shanna for further details.

Yup, we've got a contactless option too, submit your content directly to [shamilton@owgl.org](mailto:shamilton@owgl.org)!





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# Prioritizing the Future of the Wheat Industry in OWC Funding

Amanda Hoey, Oregon Wheat CEO



By the time this article hits your mailbox, most of our Oregon farmers should be somewhere along the harvest spectrum, with many hopefully celebrating bringing in a solid crop. So much can still happen, but up to this point Oregon's 2020 wheat story has largely been driven by two factors: 1) extensive early drought followed by some critically timed late spring rains and 2) disease pressure, managed by additional fungicide applications. Disease pressure was particularly pronounced this year in portions of the state where cool, wet weather provided the perfect conditions for stripe rust proliferation. Producers had the benefit of early detection at research plots and fungicides controls to minimize potential yield loss, but that involves an added expense.

When the Commission staff conducted the annual variety survey this spring, the results reflected a heavy concentration in one variety that has some stripe rust susceptibility. Concentration into any particular variety is certainly driven by the best choices for each individual farmer based on the availability of seed, adoption of highest performing varieties for both yield and the package of disease resistance, the continuation of practice, as well as other factors—including quality performance! It provides a good reminder of why the Commission partners with our public research institutions to invest into ongoing research to continually improve upon the options for growers.


This year the Oregon Wheat Commission adopted a 2020-2021 budget reflecting priorities in market development, research, and grower services. The Commission placed a heavy emphasis on research, dedicating the bulk of our resources to work with Oregon State University, Washington State University and the Western Wheat Quality Lab. Grower assessment funds will support wheat and barley research projects in an amount totaling nearly one million dollars. Funds will support evaluation and further development of new high yielding disease resistant varieties, expansion of weed control programs, continuation of critical disease research such as with stripe rust and soilborne wheat mosaic virus ... and the list of projects goes on.

The continued research focus is essential for allowing growers the best access to tools and an increase in profitability. Research extends into market development as well. Wheat Marketing Center Programs and Services were included in the budget for ongoing activities and new technical services to further opportunities for key markets. A newly funded

allocation to the Center is for a Chlorination Alternative for soft white wheat cake flour. Chlorination has long been a treatment strategy to improve the functionality of soft white wheat for cake flours. Looking at alternatives for our customers, the project will conduct analysis of the effect on soft white wheat cake quality and functionality for heat and/or ozone treatments. This type of project also reflects the importance of our partnerships as a tri-state collaborative with Washington and Idaho who are partnering on the project. Operating together- both in project funding and in market development- is critical for the PNW.

Our partnerships stretch beyond the PNW for international market development as we channel over \$150,000 to the U.S. Wheat Associates. Financial contributions to U.S. Wheat includes trade servicing activities with at least fourteen countries, hosting trade teams (in person or virtually as we adapt in the current climate) and hosting end product collaborative or contracting for wheat value workshops. It also includes work conducting the wheat analysis program, conducting the crop quality survey, supplying information export trends, promoting wheat, and providing South American technical support and market development. These international marketing programs are essential to supporting long established and beneficial relationships, as well as further supporting growth markets and expanding into new markets which have real potential but may take time to develop with respect to quality wheat grown in the PNW.

The final significant segment of our budget is grower services. Most of these services are delivered under agreement with the Oregon Wheat Growers League and match member dues and other revenues to support public information, education and outreach, foreign market development, and legislative activities on the state and federal levels: working for the wheat grower in DC and Salem. In addition, funds to grower services will support the annual Grower Workshop, which, Covid-19 challenges aside, we anticipate proceeding in 2021.

In reviewing budgets of past years, it is obvious that the Oregon Wheat Commission is committed to the future of the wheat industry- ensuring a strong focus on market development while increasing research funding and lowering administration costs. Our research and market development activities will not always be smooth with wins at every turn. Nor will they always give us the results we want or expect. However, sometimes we learn as much from what did not work, as what does work. I look forward to seeing the results from these investments near and long term: celebrating our wins and learning from our challenges. 

FUNDED RESEARCH PROJECTS (FY 2020-21)	PRINCIPAL INVESTIGATOR
<b>Developing Improved Winter Wheat Cultivars for Oregon</b> <ul style="list-style-type: none"> <li>Develop new soft white, hard white, hard red winter and winter club wheat cultivars with superior end use quality adapted to the high and low rainfall wheat growing regions of eastern and western Oregon with superior biotic and abiotic resistance/tolerance to minimize production risks and increase economic returns to growers.</li> </ul>	Robert Zemetra
<b>Gene Introgression and Gene Editing for Developing New and Improved OSU Wheat Varieties</b> <ul style="list-style-type: none"> <li>Develop wheat breeding lines carrying genes for improved disease resistance and low polyphenol oxidase reaction.</li> <li>Transfer genes for CoAXium herbicide resistance into wheat breeding lines.</li> <li>Determine the feasibility of using CRISPR-Cas9 gene editing to rapidly modify OSU wheat varieties and breeding lines for improved end-use quality.</li> </ul>	Robert Zemetra
<b>Oregon Barley Variety Development and Deployment</b> <ul style="list-style-type: none"> <li>Accelerate the development of imazamox herbicide-tolerant varieties adapted to Oregon.</li> <li>Develop, release, and demonstrate the utility of facultative and winter malting varieties</li> <li>Spring-planted and facultative variety development and release.</li> <li>Create and deploy naked multi-use barley germplasm.</li> </ul>	Patrick Hayes
<b>Wheat and Barley Variety Testing in Oregon</b> <ul style="list-style-type: none"> <li>Evaluate the performance of commonly grown varieties, related to variety performance, adaptation, and disease resistance.</li> </ul>	Ryan Graebner
<b>OSU Cereal Quality Testing and Lab Equipment Maintenance</b> <ul style="list-style-type: none"> <li>Conduct analyses for early breeding stages, testing of base product quality at intermediate stages, and industry-scale evaluations of product-specific quality at release.</li> <li>Perform quality testing and develop recommendations regarding performance of elite lines, variety candidates, and economically important varieties</li> <li>Invest in maintenance of equipment</li> </ul>	Ross & Kongraksawech
<b>Screening for Resistance to Major Wheat Diseases in Oregon</b> <ul style="list-style-type: none"> <li>Evaluate elite and advanced wheat lines and mapping populations for resistance to stripe rust, Septoria tritici blotch, Cephalosporium stripe, Fusarium crown rot, strawbreaker foot rot, sharp eyespot, and barley yellow dwarf virus.</li> <li>Determine genetics and identify molecular markers associated with disease resistance.</li> </ul>	Chris Mundt
<b>Oregon Wheat Statewide Weed Management Research and Extension</b> <ul style="list-style-type: none"> <li>Study the response of troublesome weed species from several locations in Oregon to the herbicide Aggressor</li> <li>Test tiafenacil and tolpyralate as potential new herbicide chemistries in wheat production systems</li> <li>Conduct research into harvest weed seed control practices</li> </ul>	Hulting, Brunharo & Barroso
<b>Fusarium Crown Rot Management in Low Rainfall Zones</b> <ul style="list-style-type: none"> <li>Provide growers with data-driven recommendations on cultural management of Fusarium crown rot. Cultural management techniques evaluated will include seeding rate and dry starter fertilizer package.</li> </ul>	Christina Hagerty
Long-term dryland cropping system strategies for managing carbon sequestration, reducing soil erosion, increasing disease suppression, and improving weed control in eastern Oregon.	Corp, Machado, Hagerty, Barroso, & Graebner
<b>Improving Control of Wheat Stripe Rust</b> <ul style="list-style-type: none"> <li>Improve the understanding of stripe rust disease epidemiology and the pathogen population; improve stripe rust resistance in wheat varieties; and improve the integrated management of stripe rust.</li> </ul>	Xianming Chen
<b>Western Wheat Quality Lab</b> <ul style="list-style-type: none"> <li>Provide supplemental support for assessing the quality of OSU wheat breeding samples and the quality of public and private pre-release lines</li> <li>Conduct large-scale flour milling of the PNW Wheat Quality Council breeder samples on the WWQL's Miag Mill</li> <li>Support the transition to a New Cultivar Development Manager</li> </ul>	Morris, Kiszonas & Engle



# Field Days in 2020 Look a Bit Different

Columbia Basin Agricultural Research Center Staff

Few things are business as usual amidst the COVID-19 pandemic, but Oregon State University Columbia Basin Ag Research Center (OSU CBARC) managed to maintain the integrity of the experience of two of the state's longest-standing wheat field days, the annual Pendleton and Sherman Station Field Days. While the field days went to a virtual experience this year – the exchange of research results with growers was still robust and vigorous.

Fourteen video presentations were released prior to the Field Day online gathering. Topics ranged from new wheat varieties, soil nutrient management, Fusarium Crown Rot disease identification, Russian thistle emergence, to soil health, and pea-ola companion cropping studies, and more. The short (5-10 minute) videos allowed scientists to present their recent research results and updates. Many growers, consulting agronomists, stakeholders and community members viewed the videos and then joined the online Field Day event to ask and discuss follow up questions of the scientists.



*Dr. Christina Hagerty presents soil borne wheat mosaic virus research.*

The videos were watched 1,821 times on Facebook and 1,979 on the CBARC YouTube Channel as of mid-June representing 934 unique viewers. Historically, in-person field days brings together about 130 and 65 individuals in Pendleton and Sherman, respectively.

About 70 people, representing six states, gathered via Zoom web-based video conferencing to have a vigorous 2.5-hour discussion time about the research that is happening across the region by both OSU CBARC and USDA Agricultural Research Service scientists.

“

The videos were watched 1,821 times on Facebook and 1,979 on the CBARC YouTube Channel as of mid-June representing 934 unique viewers. Historically, in-person field days brings together about 130 and 65 individuals in Pendleton and Sherman, respectively.

Chris Williams, a grower from Athena, and the Pendleton Station Liaison Committee Chair said, “I appreciated the opportunity to interact with the researchers. Having the videos ahead of time -it spurred some good questions and then the discussion generated even more follow up questions.”

He felt like it was a great time to learn from researchers and other growers alike that were online together.

Williams also said, “One noted advantage of the virtual gathering was that having all the scientists together created



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an interdisciplinary discussion that stimulated the conversations – for a broader and more robust experience.”

He would like to see that robust facilitated discussion continue at future field days – be they virtual, on locations or some hybrid version of both.

Mary Corp, Director and Emeritus Professor of OSU CBARC remarked, “This adaption and innovation by researchers and extension educators is leading to additional plans to do more videos and future educational web-based events. We are excited about the positive feedback and reaching a broader audience.”

More important science-based research results will be coming in the future, available via smart phone, tablet, or desktop computer. Corp notes that plans are already in the works for 2021 field days that incorporate what things learned from this year’s virtual field days and videos. It appears that the challenges of today are bringing about creative solutions and will make future events more relevant and more accessible.

Additional tours are also provided by the Statewide Cereal Variety Testing Program. The program has 5 self-guide tours available currently at on-farm research sites. Additional video reports on 2020 harvest of the trials will also come out in August.

For more information on the virtual field days visit [www.owgl.org/field-days](http://www.owgl.org/field-days) 

#### NOTE:

From Oregon to Kansas, virtual field days have become the norm this year. OWGL and OWC staff have ‘attended’ these field days and encourage our growers to tune in and view the recordings offered.



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## We Need your Support!

OWGL wants to showcase the value Oregon Wheat producers provide to our industry and environment. As we work on raising the necessary funds for the “Original Stewards” project, OWGL has put together two options for our growers to help support the project.

**Option 1**, buy a hat and/or t-shirt and the net proceeds go directly to this fundraising effort! We’ve had many requests for our “Original” Oregon Wheat patch hats, so we are bringing them back for this fundraiser! Pair your new hat with a new t-shirt available in two color options!

**Option 2**, send OWGL a donation specifically marked for this project. We are requesting sponsorships at a variety of levels.

*Learn more about Sponsoring on our website:*

[www.owgl.org/Original](http://www.owgl.org/Original)


### The “#OriginalStewards” project:

Producers are the lifeblood to our industry and food supply. They are the ‘Original Stewards’ of the land, continuing to implement new and innovative processes and practices to use fewer inputs while producing even higher quality product and ensuring the long-term health of the

land. It is, after all, our legacy. However, wheat producers are not often recognized for those dedicated farm stewardship practices. It is a well-known fact folks like to eat, however not all know the struggles producers face getting food to the table. With a decreasing budget, workforce, resources, and land, being able to adapt and change with the environment is critical.

### *We need to share our stories.*

The #OriginalSteward project will produce dynamic visual materials to help those less familiar with farming practices understand how farmers act as stewards of the land. Online tools are more popular than ever, and we need to share our stories. High-quality video content will highlight stewardship practices used by Oregon Wheat farmers. These include ranging from modernization utilizing state-of-the-art technology such as GPS, to cover crops and crop rotation in areas that can provide benefit, to a variety of options in farming practices including no-till, to ensuring efficient product usage. We will develop current educational and informational material to be accessible through online platforms.

Help us in producing material that can reach the audiences that might not realize where their food comes from, and how hard producers work to get it to their table. 

## Oregon Wheat Photo Contest!

Enter to win an Oregon Wheat Swag Bag! Top 10 move to Tri-State contest in December.


Submit your favorite harvest photos to [info@owgl.org](mailto:info@owgl.org) by September 15, 2020. **See photo release information online.**

Please only submit 1 HIGH RES photo per email (you can submit more than 1 photo, but separately!)

- Include your name, farm name, location of photo and your phone number inside the email text.
- Photo must be in OR/ID/WA
- High Resolution is requested


Photos will be posted to Oregon Wheat Facebook page (with water marks) and the photo with the most “LIKES” on the Facebook page by October 1, 2020 will WIN an Oregon Wheat Swag Bag that includes a variety of items of our merchandise.

If high resolution photos are not produced for the top 10, the photo will be printed in the resolution given which may affect the final product.

The top 10 photos with the most “LIKES” will be entered into the 2020 Tri-State Grain Growers Convention photo contest. If you are selected as the winner of the Tri-State contest, you are able to win a trip to convention in 2021. 

## Making it Official: USMCA in Force

The US Mexico Canada Agreement officially entered into force on July 1, 2020, providing certainty and essential market stability, benefiting wheat producers. Key wheat provisions in USMCA include continued tariff free access for US wheat exports to Mexico and improved grading treatment for our wheat shipped to Canada. While Mexico is not a top market

currently for the Pacific Northwest, Mexico is the nation’s largest wheat importer. Its ability to continue to source U.S. wheat into the future strengthens the entire market, to the benefit of Oregon producers as well. Join us in celebrating implementation of the USMCA! 



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## Back in the Saddle

**Jerry Marguth**

OWC Chair

Since this is my first writing to the wheat industry for about 5 years (many of you are cringing and some are even thinking “I thought we were finally rid of this guy”), I thought I might start with a restatement of purpose for the Oregon Wheat Commission.

In simple terms the wheat commission serves to direct the funds collected via assessment toward the multiple goals of research, market promotion, and outreach (via the Oregon Wheat League). We assign no priority to those goals and frankly they are all considered equally important and in fact are subtly interrelated. On an annual cycle the commission creates a budget based on projected wheat acres, fixed costs, known future costs, and an allowance for unforeseen expense. I can tell you that the commission that I have worked with for the last 5 years has operated in a fiscally prudent manner. In other words, all commissioners have taken it as a sacred duty to protect the grower’s funds and only spend them where it makes good sense.

In the area of research like most other ag commissions we annually go out with requests for proposals generally to the wheat research community at Oregon State University as well as to the land grant institutions in Washington and Idaho. Proposals are submitted to the commission (often in response to new or emerging cultural problems) and the commission spends several months reviewing the proposals and clarifying questions with the researchers. If the proposal has merit and potential and represents good value for the dollars and might help to resolve an actual problem, then the commission may vote to include it in the annual budget. Commissioners consider it their duty to network with their area growers to understand the production challenges of the day. It is not terribly rare to fund a collaborative project between researchers from all three states to deal with an issue affecting the entire region. The funding flows into the project from all three states as well.

In the area of market promotion, the commission expends funds to help support U.S. Wheat, the Wheat Marketing Center in Portland as well as providing travel for the growers and staff designated to visit the marketing regions where our wheat is sold. It has been demonstrated that millers and bakers in our sales territory really value the personal interaction with producers. The commission also provides funding to host

buyers/millers/bakers who make the commitment to visit the Pacific Northwest and see how the wheat crop is produced and handled on its way to them. On an annual basis funds are expended in concert with the wheat breeding program at OSU to pay for quality testing at the Western Wheat Quality Lab in Pullman of selected varieties either in current production or promising new varieties from current breeding so that everyone in the supply chain can make informed decisions on the best wheat to buy or produce. It all plays into the concept we project that the highest quality wheat products come from Northwest growers and the proof of concept is that the buyers are willing to pay a premium price for those products.



“A human being should be able to change a diaper, plan an invasion, butcher a hog, conn a ship, design a building, write a sonnet, balance accounts, build a wall, set a bone, comfort the dying, take orders, give orders, cooperate, act alone, solve equations, analyze a new problem, pitch manure, program a computer, cook a tasty meal, fight efficiently, die gallantly. Specialization is for insects.”

**Robert A. Heinlein**

Finally, in outreach the commission designates to the Oregon Wheat Growers League to provide for the outreach mission costs to the league. None of those funds may be used for political activity, but they do help to pay for the costs associated with grower meetings and some fixed costs for the League. The OWGL on an annual basis develops a budget based in many cases on the same factors as the OWC (planted acres, crop condition, etc.) and presents a request to the commission for funding to cover the projected expenses. Remember always that the dollars belong to the growers and the OWGL plays the vital role of close interaction with the producers to a much greater extent than the commission.

If you remember anything at all from this diatribe remember this: **the OWC and all its commissioners work to ensure that no grower dollars are wasted.** Beyond that, I wish for all of you to have a safe and bountiful harvest and excellent sales. 🌾



# Developing Wheat Cultivars with Stripe Rust Resistance

Bob Zemetra and Chris Mundt



I just passed the nine-year anniversary of my taking over the OSU wheat breeding program and one of the reasons I came to Corvallis was the ability to work with Chris Mundt and to be able screen for stripe rust resistance in the field without inoculation (Figure 1). I have always believed that it is critical in the Pacific Northwest that wheat

varieties carry at least moderate resistance to stripe rust to maximize profit for wheat producers. Breeding for stripe rust resistance is a major part of the research that is done with the funding provided by the Oregon Wheat Commission. With what is going on with stripe rust in the state this year, I feel it would be useful to describe how the breeding program works to insure new OSU varieties have resistance to stripe rust races prevalent in Oregon and to introduce the concept for variety diversification of wheat varieties in wheat producers fields with different sources of stripe rust resistance to reduce the potential for major stripe rust outbreaks.

## Breeding for Stripe Rust Resistance

To understand how breeding for stripe rust resistance works it is useful to look at a simple generational design of the OSU breeding program (Figure 2). There are three basic sections of the program, early generations, intermediate generations, and advanced generations. In terms of stripe rust, works starts in the early generations with the selection of parents that carry different genes for stripe rust resistance.

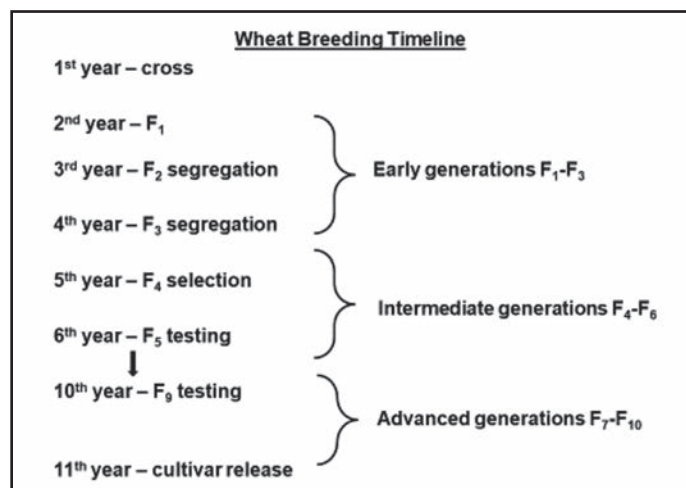


Figure 2. Time line for development of winter wheat cultivars in the OSU wheat breeding program.

By making a cross the resistance genes are mixed and over the next two generations they sort out by allowing the wheat to self-pollinate (selfing) in the  $F_2$  and  $F_3$  generations. With other traits, selection does not normally occur in the early generations but with stripe rust the populations are evaluated in the  $F_2$  and  $F_3$  generations and any populations that show a high level of rust are eliminated. This come from years of experience trying to find the one plant out of a thousand that is resistant. It is theoretically possible but in my experience, I usually throw the selections out the next year due to stripe rust. In the OSU program this work is done by Adam Heesacker, a Senior FRA in the wheat breeding program.

Moving from  $F_3$  to  $F_4$  is the transition from the early to the intermediate generations and a major screening for stripe rust resistance. At the  $F_4$  generation the populations have switched from a bulk seeded plot to individual head rows, usually planted at the Ruggs research site east of Pendleton. Here the head rows are evaluated for stripe rust resistance as well as other traits to reduce the number of individual head rows from about 40,000 to 1,200 to 1,500 (Figure 3).

Selected head rows then move onto the  $F_5$  generation where they are planted as 5' x 15' plots for further evaluation. Any lines that show susceptibility to stripe rust in either western or eastern Oregon are eliminated. Because of this level of selection for stripe rust resistance, each generation in the breeding program has shown fewer lines with stripe rust. With each generation due to selection for stripe rust resistance, heading date, height, yield and end-use quality, fewer lines move forward but they are tested in more locations in the state. This allows for evaluation of the advanced breeding lines over

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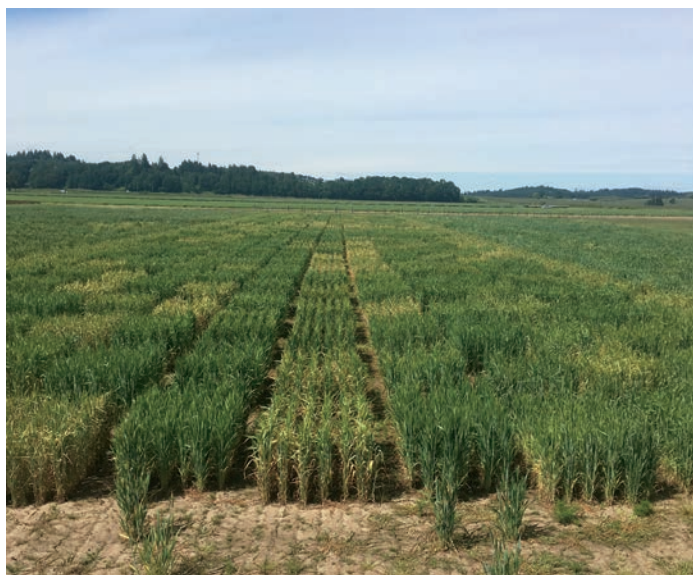


Figure 1. Foote x Madsen recombinant inbred line population showing segregation for stripe rust infection under natural inoculation at the Hyslop field research field laboratory May, 2020.



## CONTINUED FROM PAGE 13

multiple years and multiple locations to produce varieties that are resistant to moderately resistant to stripe rust. This work is done by the OSU wheat breeding crew, Dr. Chris Mundt and his crew, and Dr. Xiaming Chen with the USDA-ARS in Pullman, WA. Examples of varieties developed this way are the soft white winter wheat cultivars Bobtail, Norwest Duet, Norwest Tandem, Nixon, OR2X2 CL+, Appleby CL+, and the line currently being considered for release in the low to intermediate rainfall zones, OR2130755. Sometimes stripe rust races change and a cultivar becomes more susceptible after release. This is the case with Rosalyn, a variety that was resistant when it was released but later became moderately susceptible in western Oregon.

**Researcher's Name:** Bob Zemetra, Professor - Wheat Breeding and Genetics

**2019-2020 Grant Title:** Developing improved winter wheat cultivars for Oregon

**2019-2020 Grant Funding Level:** \$192,200

### 300-word grant summary:

Essential to the economic survival of Oregon wheat producers is the development of new winter wheat cultivars with improved productivity, improved biotic and abiotic stress resistance/tolerance, and superior end-use quality. Market classes include soft white winter (SWW), hard white winter (HWW), hard red winter (HRW) and winter club wheat. To achieve this goal the OSU wheat breeding program utilizes a combination of classical and molecular breeding techniques to develop cultivars with the desired traits as efficiently as possible. New sources of germplasm carrying genes for disease resistance and improved end-use quality will be introgressed into the OSU germplasm by crossing in the greenhouse. Early generation material (F1 - F4) will be evaluated in the field in both western and eastern Oregon to identify lines with disease resistance, abiotic stress tolerance, yield potential and end-use quality. Complementing the field testing will be evaluation at the molecular level to identify lines carrying desired genes for traits such as disease resistance and abiotic stress tolerance. Intermediate generation material (F5 - F6) will be evaluated in preliminary field trials for yield, agronomic adaptability, disease resistance and milling quality. Advanced generation material (F7 - F8) will be evaluated at multiple locations in the state for agronomic adaptability, disease resistance/tolerance, yield stability and milling and baking quality. Elite lines (F9 - F10) will be evaluated in elite breeding and extension trials in Oregon to identify superior lines for release as cultivars. Elite lines will also be entered into regional testing and the extension trials in Washington and Idaho for evaluation under additional climatic conditions. Prior to release, potential cultivars will be submitted for evaluation by the Pacific Northwest Wheat Quality Council to confirm the lines have the desired end-use quality.



Figure 3. F4 head rows segregating of stripe rust resistance at the Ruggs research site, June 2020.


## The Need for Varietal Diversification

So why has stripe rust become more of a problem on Rosalyn this year in western Oregon and on UI Magic in eastern Oregon this year? I believe it is due to a lack of diversification of varieties being grown in these regions year after year. Rosalyn, due to its high yield potential, has been grown in western Oregon for the past several years. UI-Magic has been grown on an increasing number of acres in eastern Oregon over the past three years to the exclusion of any other 2-gene Clearfield variety. Both are moderately susceptible to susceptible to some stripe rust races. UI-Magic also has the issue of being developed from a dihaploid so there is little to no genetic variation among plants so if one plant is infected, all the plants can be infected by that stripe rust race. By having few other varieties being grown in a region year after year, selection of stripe rust races that can infect the predominant variety occurs and if conditions are right for stripe rust, like they were this year, a stripe rust epidemic can occur that causes major damage on the variety grown in that region but leaves other varieties, even susceptible varieties like Mary, showing only moderate infection. So a key to preventing stripe rust epidemics is to minimize selection of races specific to a variety.



How can this be done? Diversification of varieties being grown in a region. Most varieties within a breeding program and especially from different breeding programs will differ in their genes for stripe rust resistance. This is especially true for the minor genes in these varieties. By having more than one 2-gene Clearfield variety being grown in eastern Oregon, different combinations of resistance genes would be deployed in a region and possibly at a wheat grower's farm. With the release of new 2-gene Clearfield varieties with at least moderate resistance to stripe rust such as OR2X2 CL+, Appleby CL+ from OSU and Stingray CL+ and Resilience CL+ from WSU, it will be possible to diversify the varieties in a region so different stripe rust resistance genes are deployed. There are even more 2-gene Clearfield varieties being developed at these two universities as well as the University of Idaho and private breeding programs. This will reduce the level of selection of a virulent race on a specific variety and reduce the potential for a stripe rust epidemic. For this to be possible the growers in a region will need to have access to seed of at least two 2-gene Clearfield varieties that can be grown in their region. This is also true for non-


Clearfield varieties as well. While limiting the number of varieties carried by a seed supplier makes economic sense, it can lead to decreased varietal diversity in the field and result in selection of a more virulent race of stripe rust that can attack the predominant variety in that region.

One interesting note, growing a resistant variety next to a moderately resistant variety will result in less stripe rust on the moderately resistant variety. The opposite is also true, where a moderate resistant variety will show more rust if it is grown next to a moderately susceptible variety. I call it 'rust by association' and it relates to the amount of stripe rust spores present due to the stripe rust on the susceptible variety. Therefore, by growing multiple varieties with different levels of resistance and different genes of resistance, the overall stripe rust in a region can be reduced resulting in less fungicide application and more profit for the wheat producer. Because at the end of the day, the reason for developing new varieties for Oregon wheat producers is to optimize their bottom line through increased productivity, decreased input costs, and increased demand for Oregon wheat domestically and internationally. 

## Marguth Steps into Leadership Role at Commission

Congratulations to Jerry Marguth of Junction City, who was elected as the Oregon Wheat Commission 2020-2021 Chair beginning his reign July 1. Jerry steps into the role released from Walter Powell. Walter has served three years as the OWC Chair but remains on the Commission through June of 2022 for this term.

Dana Tuckness, Producer based in Ontario, steps into the role as Vice-Chair, taking over the leadership role previously held by Jerry Marguth. Reelected as Secretary/Treasurer is Jordan Van Zante, Handler with Pacifcor in Portland.

Three positions on the commission received reappointments by the ODA Director. Reappointed Commissioners include Jason Middleton, Handler with United Grain Corp., Travis Jones, Public Member with Nike, Inc., and Darren Padget, Producer based in Grass Valley. Continuing member to the commission is Bob Newton, Producer based in Helix. 



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 **Dana Tuckness**  
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Term: July 2019 - June 2023

**MEMBERS**

 **Robert Newton**  
Helix, OR  
Term: April 2011 - June 2021

 **Jordan Van Zante**  
Handler, Treasurer  
Pacifcor LLC, Portland, OR  
Term: March 2016 - June 2021

 **Darren Padget**  
Grass Valley, OR  
Term: July 2012 - June 2024

 **Jason Middleton**  
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Term: July 2018 - June 2022

 **Walter Powell**  
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# Community Management of Herbicide Resistant Weeds in the PNW

Dr. Katherine Dentzman

Regular readers of Oregon Wheat will be well aware of the challenge of managing herbicide resistant weeds. April's edition tackled the issue directly, citing the increasing costs of weed management for Oregon wheat farmers and providing a guide to best management practices developed by Oregon Wheat magazine, Washington State University, Oregon State University, and University of Idaho. Suggested practices included planting weed-free seed into weed-free fields, controlling weeds at borders, regularly monitoring fields, diversifying weed management practices, following herbicide labels, and preventing weed seed bank buildup. Perhaps the most difficult recommendation, however, was to seek support.

One of the main reasons producers have not adopted integrated weed management practices is the belief that their actions will be overshadowed by herbicide resistant weeds from neighbors who are not doing their part. Growers can also be hesitant to reach out to neighbors about problem fields, especially when the neighbor is perceived as unreceptive. Farming communities are tight knit and supportive, but no one likes telling someone else—or being told themselves—how to farm. This makes the support element of best management practices particularly thorny. It also makes it a perfect topic for a sociologist.

Dr. Katherine Dentzman is just such a sociologist, with 7 years of talking to farmers about herbicide resistance under her belt. As someone who studies the interactions of groups of people, she aims to understand the external influences that impact and constrain farmers' weed management decisions—including interactions with their neighbors and community. Dr. Dentzman has collected data from twelve focus groups across the country and two surveys, one national and one focused on the PNW, that suggest community-based management is vital for supporting best management practices and controlling herbicide resistance.

Community-based management builds farmer support systems in several ways. By securing buy-in from a large group, herbicide resistance management expands to the landscape level. With multiple growers committed to, and held accountable for, using best management practices, the negative impacts of a few uninvolved farmers dwindle. Facilitation of discussions and information sharing also allows a venue for collaboration where farmers can address issues they may not otherwise talk to their neighbors about. Finally, community management provides resources to participants, including shared knowledge and potential financial resources if the group applies for funding support.



Doug Finkelnburg of University of Idaho speaks at the Idaho Wheat Commission workshop in Pocatello, ID. Photo by Avery Lavoie, University of Idaho.

While this may sound like a pipe dream, the effectiveness of community-based management has actually been demonstrated by several initiatives in the US. Arkansas' Zero Tolerance Program, led by farmers and involving county extension agents and local conservation authorities, operates across the state. This program organizes local community groups to agree to and monitor compliance with weed control metrics that are determined by farmers themselves. The Zero Tolerance Program has been extremely effective, with a drop in the Palmer Amaranth seedbank from 9.3 weeds per square foot in 2010 to 1.2 seeds per square foot in 2012 (<https://www.uaex.edu/publications/pdf/FSA2177.pdf>).

In another example, Iowa State University and Harrison County farmers are working with landowners, lenders, industry representatives, and county extension agents to manage HR weeds (<https://www.ipm.iastate.edu/harrison-county-pest-resistance-management-project-overview>). At the national level, the Weed Science Society of America's Herbicide Resistance Education Committee has now prioritized community management of herbicide-resistant weeds (<http://wssa.net/society/wssa-committees/herbicide-resistance-education-committee/>).

Dr. Dentzman is currently collaborating with other researchers at Washington State University, University of Idaho, and Oregon State University to bring similar initiatives






Attendees at a Science Policy Tour in Harrison County, Iowa, organized to learn from the farmers and other organizers of the Harrison County Community Pest Management pilot program.

to the PNW. In 2018, she conducted a survey of wheat growers (n=104) in the Pacific Northwest and found that 80% of respondents were aware of the mobile nature of herbicide resistance, 60% communicated with their neighbors about herbicide resistance, and 67% agreed that herbicide resistance must be managed cooperatively. These rates outpace the national average from a survey conducted in 2016, indicating that the PNW may be especially primed for community-based management initiatives.

Supporting this, results from three listening sessions conducted by Dr. Dentzman and graduate student Avery Lavoie at the 2019 Tri-State Grain Growers Convention, 2020 Idaho Wheat Commission workshop, and 2020 WA County Weed Board Coordinators Meeting found enormous interest in community-based management initiatives. Listening session participants identified existing networks (ex. direct seeder associations), caring and cohesive communities, and regional agronomic advantages as particular strengths the PNW can leverage to create these initiatives. They also emphasized the need for additional resources, particularly financial, along with innovative education programs and partnerships with university and community leaders.

This fall, Dr. Dentzman, along with Dr. Ian Burke (WSU), Dr. Drew Lyon (WSU), Dr. Doug Finkelnburg (UI), and Dr. Joan Campbell (UI), will pilot several community-based herbicide resistance management initiatives in the region. Updates will be available through WSU's Weeders of the West blog (<http://smallgrains.wsu.edu/weeders-of-the-west/>). Interested parties are encouraged to contact Dr. Dentzman at [kdentzman@uidaho.edu](mailto:kdentzman@uidaho.edu).

*Acknowledgements: Funding to support the Listening Sessions was provided by the USDA APHIS and the WSSA. The findings and conclusions in this publication have not been formally disseminated by the U.S. Department of Agriculture and should not be construed to represent any agency determination or policy.* 

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# With Air Pollution Linked to More COVID-19 Deaths, the Northwest Can Be Thankful for its Abundant Clean Energy

Kurt Miller, Executive Director of Northwest RiverPartners

As Northwest states enter various stages of reopening just in time for summer, we are aware of the continued need vigilance, but there is something we must be grateful for—our clean energy base.

A nationwide study, released in April from Harvard's TH Chan School of Public Health, indicated that people with COVID-19 who live in regions with higher levels of air pollution are more likely to succumb to the disease than people who live in less polluted areas.

It may be comforting to know that roughly half the Northwest's electricity comes from hydropower. Combined with wind at 9%, nuclear at 3%, and solar at 1%, that means almost 2/3 of the Northwest electricity is clean and emissions-free. Those figures make the Northwest the least carbon-intensive region in the United States.

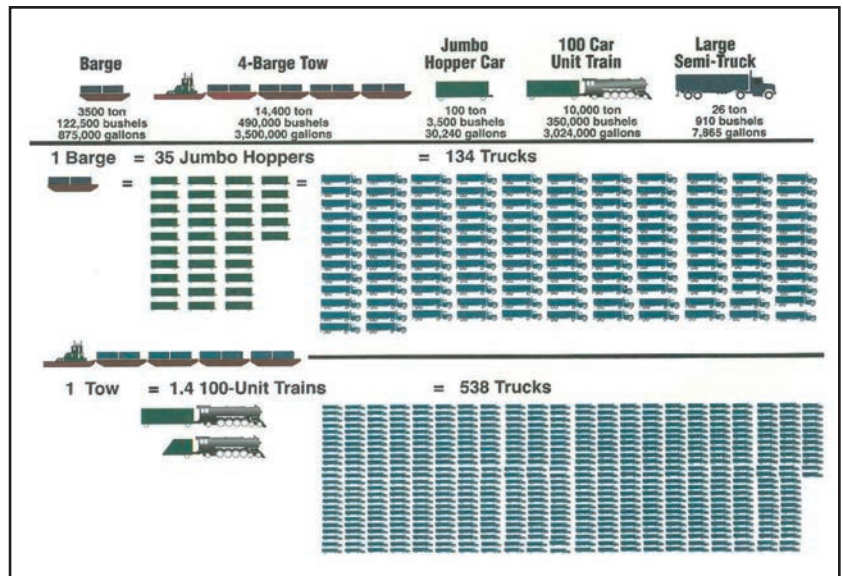
Not surprisingly, the Northwest also boasts nearly the lowest sulfur dioxide and nitrogen oxide emissions in the nation. These are pollutants typically associated with electric generating plants that use coal and natural gas for fuels. The number of those pollutants will continue to decline with the planned shuttering of thousands of megawatts of coal-fueled power plants over the coming years.

In terms of health, the Harvard study claims to be the first to examine the link between long-term exposure to air pollution and the risk of death from COVID-19 in the U.S.

The extensive study examined 3,080 counties across the United States, comparing COVID-19 illnesses to levels of air pollution. The researchers adjusted the comparison for variables that might influence the outcome, like socioeconomics, obesity, smoking, and access to hospitals and COVID-19 testing. By making these adjustments, they were able to make apples-to-apples comparisons.

In an April 7, 2020 New York Times article, one of the study's authors, Francesca Dominici, concluded that counties with higher pollution levels "...will be the ones that have higher numbers of hospitalizations, higher numbers of deaths and where many of the resources should be concentrated."


The Harvard study's conclusions are consistent with other studies connecting failed health to higher levels of air pollution. For example, a 2020 paper by a European research team found that air pollution is killing almost 9 million people worldwide each year mostly due to higher incidences of heart



**The Columbia-Snake River System is 465 miles of wheat-growing, goods-shipping, salmon-fishing, clean-power-producing greatness, rivalled only in the U.S. by the Mississippi River. It's what makes our region strong and balanced—and we all must work to protect it. The Columbia River System serves multiple functions, not only providing 90% of renewable power in the Pacific Northwest but also serving as the main and most efficient source of transportation to get goods to ports. The river system reduces traffic congestion and pollution.**

**In 2018, it would have taken 38,966 rail cars or 149,870 semi-trucks to move the cargo that was barged on the Snake River.**

and respiratory diseases. The study claims that this figure is higher than the combined death total from tobacco smoking, HIV, and vector-borne illnesses.

At Northwest RiverPartners, we know how important our abundant and affordable hydroelectricity will be in helping to rebuild the Northwest economy, but it's now clear that the abundance of clean energy has an even more important role. While the COVID-19 fight is far from over, we take heart in knowing that the region's commitment to clean energy will likely save lives as well. 



# Survey Responses Influence Producers' Bottom Lines

Dave Losh, Oregon State Statistician, Northwest Region

*Let's get to the bottom of those surveys producers regularly receive. Is it **really** worth your time to respond? Absolutely, argues Dave Losh with NASS. It can impact you directly through ARC/PLC payment amounts, disaster program resources, influence on policymakers designing farm support programs and much more.*

USDA's National Agricultural Statistics Service (NASS) has a Northwest regional office located in Olympia, WA which oversees the survey activities for Oregon, in addition to Alaska, Idaho, and Washington state. Data is collected from a sample of producers and combined for State totals and then estimates are combined for a total at the National level. The region office staff are responsible for collecting and analyzing the information using specific knowledge of cropping practices and conditions within the Northwest region.


Producers can report information at a time of their own choosing and are encouraged to complete the survey online or by returning the survey by mail. This is the best way to avoid getting follow-up telephone calls, especially in the evening after a day's work. We utilize local NASDA enumerators as budget allows for follow-up calling.

As with most of the NASS surveys, these are voluntary and are confidential by law. NASS pledges that no individuals' data will be revealed and publications only have summary totals. Accuracy of the estimates relies on participation from producers. NASS cannot get the data in a timely manner from FSA or others to meet report deadlines that are congressionally mandated. All reports are made public to everyone at the same time.

Two upcoming surveys offer producers a chance to participate:

The September Ag. Survey (August 28-September 15) will ask producers for harvested acreage, yield and production, and grain stocks on farm as of September 1, for small grain crops in Oregon and the U.S. Data from this survey will also be used to estimate yields at the county level. Estimates will be released on June 30.

The County Ag. Production Survey (September 12-October 11) provides the data needed to estimate acreage and production of small grains crops in Oregon, Idaho, and Washington at the county level. This data directly impacts growers as the information is one of the sources of data for county level estimates used to determine payments in the ARC/PLC payment programs. If there are not enough responses to publish county data, a surrounding county's data may have to be used instead. This may have a negative effect on producer payments because of local yield difference between counties. USDA's Risk Management Agency uses the data to administer the Federal Crop Insurance program. USDA's Farm Service Agency also uses the estimates to administer disaster assistance programs.

Specific Oregon crop and livestock information can be found at the Northwest region home page at [www.nass.usda.gov/wa](http://www.nass.usda.gov/wa). Oregon State Statistician, Dave Losh can be reached at [Dave.Losh@usda.gov](mailto:Dave.Losh@usda.gov) with questions or for help with finding NASS estimates. 

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# Public Engagement in the Agriculture Innovation Agenda

Shanna Hamilton, Director of Communications

**Fact:** Over the past seventy years, US agricultural output has almost tripled (270%) while inputs have only increase by a tenth of a percent annually (USDA's Economic Research Service).

It is no surprise to anyone in the agriculture communities that technology in agriculture has come a long way in a short time. That is not stopping anytime soon. In fact, USDA announced back in April, that they are seeking feedback on the Agriculture Innovation Agenda, searching for input on the most important innovation opportunities to be addressed in the near and long term.



The Agriculture Innovation Agenda includes four innovation clusters, or main areas of focus; **these include genome design, digital and automation, prescriptive intervention, and systems-based management.** These areas are listed as the most compelling transformative opportunities to solve in the next 10-30-year time frame, according to

## CHECK IT OUT ONLINE:

### Secretary Perdue Announces New Innovation Initiative for USDA

*The Agriculture Innovation Agenda is a Solution for Farmers, Consumers, and the Environment*



<https://bit.ly/PerdueAIA20>

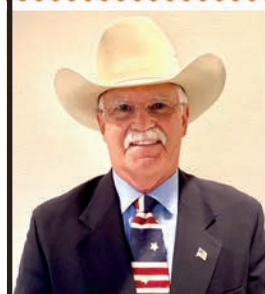
USDA. They are also areas in which innovations for the wheat industry have had a dramatic impact over the past few decades. These include innovations such as GPS systems in tractors, precision spraying and advancements in wheat breeding, among others.



**Eric Snodgrass**  
Keynote  
Speaker



**Sara Wyant**  
Keynote  
Speaker



**Steve Miller**  
Emcee

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\*Registration packets will be mailed in September



USDA intends to work with the ag communities and the broader innovation communities to increase productivity while conserving the natural resource base. The stated goal is to increase agriculture production by 40% while decreasing the environmental footprint of U.S. agriculture by 50%. Feedback will be used to identify opportunities for targeted federal research dollars and necessary regulatory framework to enable solutions or identify over regulations that stymie innovation.

“Even during this uncertain time, we recognize our work at USDA is twofold: to meet the immediate needs of our customers in this national health emergency and to support American agriculture in the face of future demands. To do this, we are taking a page from our farmers’ playbook to remain resilient and to keep an eye to the horizon,” said Deputy Secretary Stephen Censky. “We know now, more than ever, it is important to double down on innovation in order to support farmers, ranchers, and producers as they work to increase productivity while conserving our natural

“

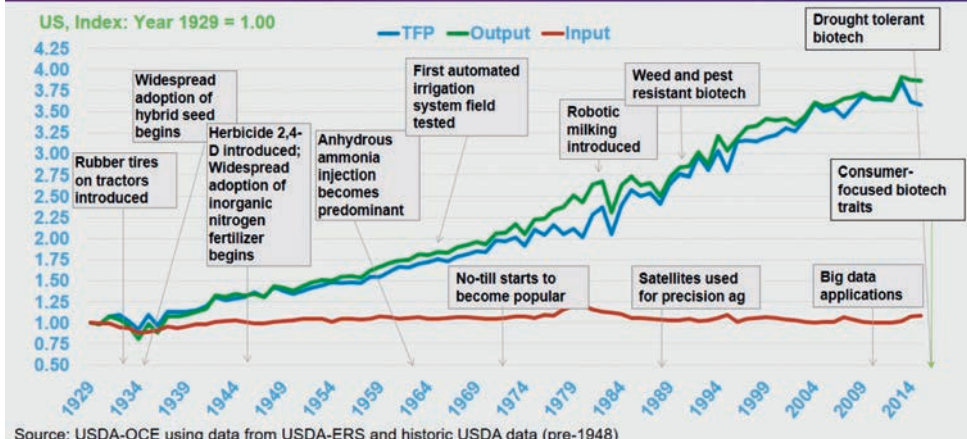

Over the past century, agricultural research gains in this country have been harnessed to work towards efficiencies in accomplishing a single mission: clothing, feeding, fueling, and sheltering the world using fewer resources. This under-appreciated innovation has given Americans the healthiest, safest, most affordable and most abundant food supply on earth, and we cannot take that for granted.

**Secretary Sonny Perdue, USDA**

resource base. Although current dynamics have shifted, our focus remains on positioning American agriculture to be a part of the solution to future demands.”

Respondents were asked to submit comments by August 1, 2020 in order to identify innovation opportunities for the next age of agriculture productivity, environmental conservation and suggested approaches to said opportunities with “an eye to the public and private sector research needed to support them”. USDA is not solely relying on input from the public but also sought agricultural and scientific communities input in hopes to better accompany the research goals with the intent

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of aligning applications and technologies for the next 10 to 30 years through the Ag Innovation Agenda.

Based on collected input USDA will develop a comprehensive U.S. agriculture innovation strategy to optimistically be released by the end of 2020. 

# RECIPE

## Whole Wheat Crepes

From: Lisa Leake of 100 Days of Real Food

<https://www.100daysofrealfood.com/recipe-crepes-for-breakfast-or-dessert/>

SERVINGS (Adjust to suit): 8, 8" crepes



### INGREDIENTS

- 3 eggs
- 1 cup whole-wheat flour
- 1 cup milk
- 3/4 cup water
- 1 tablespoon honey
- 1 teaspoon pure vanilla extract
- 1/4 teaspoon salt
- 1 tablespoon butter, melted, + extra for cooking

### INSTRUCTIONS

- Put all ingredients in blender and mix well. Let stand about 15 minutes.
- Melt and swirl around a small pat of butter in an 8 or 10-inch frying pan over medium heat.
- Angle pan and pour enough batter on one side to thinly and evenly cover the pan. Very quickly swirl the batter around to cover the pan in one thin layer.
- Immediately use your cooking spatula to push down the thin edges of the crepe around the perimeter.
- After about 1 minute (and once it is golden brown on the bottom) carefully flip it over without tearing the crepe.
- Fry for 1 more minute on the other side (until it is golden brown as well) and then roll up each crepe.
- Serve with 100% pure maple syrup.



### Nutrition Facts

Whole-Wheat Crepes

Amount Per Serving

Calories 114      Calories from Fat 36

% Daily Value\*

Fat 4g	6%
Saturated Fat 2g	13%
Cholesterol 68mg	23%
Sodium 123mg	5%
Potassium 80mg	2%
Carbohydrates 14g	5%
Fiber 2g	8%
Sugar 4g	4%
Protein 5g	10%
Vitamin A 180IU	4%
Calcium 54mg	5%
Iron 0.6mg	3%

\* Percent Daily Values are based on a 2000 calorie diet.





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