

# WHEAT LIFE

The official publication of the Washington Association of Wheat Growers

JULY | 2020

## BYTE(ING) DOWN ON RURAL BROADBAND

### ALSO IN THIS ISSUE:

WAWG's Year in Review

Wheat Pete whets appetite for higher yields  
at 2020 Wheat College

The WGC's 2020/21 budget balanced

Looking Down Under to learn new methods  
of dealing with resistant weeds

Putting ag history in schools

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# WHEAT LIFE

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The official publication of



**WASHINGTON  
ASSOCIATION OF  
WHEAT GROWERS**

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Ritzville, WA 99169-2394  
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# President's Perspective



## Ag COVID-19 requirements are too much

By Ryan Poe

I have a beef with Gov. Jay Inslee's COVID-19 requirements for agriculture.

Agriculture was deemed essential in the beginning phases of the shutdown for COVID-19, which meant we could continue to work while making accommodations for social distancing and to limit potential spread of the virus.

Two of the guys that work on our farm had major concerns at that time. One is in a high risk category because of his age, and the other has a compromised immune system. We did our best to accommodate their needs. One of the concerned employees was able to run a tractor that no one else was operating and had his own service truck.

We received notice of the governor's requirements on May 29, and we were supposed to cease operation of our farm by June 3 if we couldn't comply. Besides the physical distancing of six feet or more that is required in all interactions within the scope of employment, we are supposed to provide our employees with PPE. We are required to provide handwashing stations and put measures into place to ensure that, at a minimum, employees wash their hands for more than 20 seconds at certain intervals throughout the day. We are supposed to disinfect surfaces at regular intervals throughout the day and check employees' temperatures at the beginning of the day.

I just don't get how we are supposed to achieve this. PPE is extremely hard to come by, and we can't require employees to provide their own, homemade cloth versions. My guys have their own service vehicles and spend their day on a tractor. If they don't have a problem, I'll see them once a day when we are moving vehicles. But under these requirements, I am supposed to be disinfecting surfaces, checking temperatures, making sure they are washing their hands and providing PPE daily, all while not getting within six feet of them. We don't hire a large number of people on the farm, and we all have a lot of work to get done every day. It's frustrating how these requirements are being placed over the whole industry. Our state's diverse agriculture system hardly warrants a one-size-fits all approach. I would hope the governor's office would take that into account and reach out to the different commodities and determine which requirements make sense within that sector. Immediately after the requirements were released, WAWG sent in comments, explaining why these requirements didn't make sense for wheat growers (see page 20).

Under emergency rule making, L&I will be able to levy fines of up to \$10,000 for violating any of the governor's requirements. If that happens to you, will you please contact the WAWG office at (509) 659-0610 and let us know? I think it's important, with all the craziness going on, that we hear what is happening on your farms. Also, if there is anything that WAWG can do to help you with these requirements, please reach out and we'll see what we can do.

At the time of writing this column, we've gotten just shy of an inch of rain at my house in Hartline, which is very much appreciated. The rain should finish off our winter wheat crop nicely, and it will help our fallow moisture considerably. Stay safe, everybody. ■

**Cover photo:** Sunrise/sunset outside Harrington, Wash. Photo taken by Stacey Timm Rasmussen. All photos are Shutterstock images or taken by *Wheat Life* staff unless otherwise noted.



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<b>Non-Voting Membership</b>						
<b>Student \$75</b>	X	X	X			
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## WAWG's current top priorities are:

- ✓ Preserving the Snake River dams.
- ✓ Maintaining a safe and sound transportation system that includes rail, river and roads.
- ✓ Establishing favorable trade agreements.
- ✓ Fighting mandatory carbon emission regulations.
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## State board meets ahead of summer harvest break

On a cool, rainy June, Washington Association of Wheat Growers (WAWG) leaders and staff held their second state board meeting via Zoom. The goal of the meeting was to pass the 2020/21 budget and check in with the counties one more time before the harvest break.

Most counties reported decent moisture in recent weeks and said the wheat crop looks pretty good, although reports of stripe rust are rising.

Spencer Miller, one of the 2019/20 Washington Wheat Ambassadors was in attendance. He thanked growers for the opportunity to serve as an ambassador. Miller just graduated from Ritzville High School and is planning to attend Colorado State University to pursue an ag business degree. The other wheat ambassador, Gunnar Aune, was unable to attend the board meeting. Aune was recently named one of the Washington state FFA officers.

Diana Carlen, WAWG lobbyist, touched on the COVID-19 farm worker protection requirements recently released by Gov. Jay Inslee, saying they didn't make much sense for the wheat industry. WAWG submitted comments on the requirements; see page 20. Carlen said she has spoken to the governor's office and relayed WAWG's concerns and asked for outreach to the ag community before any additional guidance is issued.

The state is facing a potential \$7 billion budget shortfall, thanks to COVID-19, and Carlen anticipates legislators will call a special session later this year to deal with it. She

said the governor has asked each state agency to freeze hiring, service contracts and equipment purchases. She added that looking for new revenue is "definitely on the table," especially a carbon tax or cap and trade, since transportation revenue has been taking a big hit. She told board members that they will need to watch ag tax incentives, since eliminating those will immediately start saving the state money.

"We have to be vigilant on that," she said. ►

## Asotin wheat growers award scholarship

The Asotin County wheat growers have awarded a \$1,000 scholarship to **Shelby Forgey**, daughter of Brad and Jody Forgey of Asotin.

Forgey just graduated from Asotin High School where she played varsity basketball and track. She grew up participating in 4H and FFA and has been tap dancing since she was two. Forgey is planning on attending college in Walla Walla, Wash., to study to be a crop adjuster. She said that career would allow her to travel around and work from home where "...I'd still get to work with horses and have some cows."

Forgey's family owns a cattle ranch/dryland wheat farm, and she definitely feels an affinity towards the animal side of the operation. She said she got her first horse when she was three and has slowly expanded "her herd" ever since.

Growing up in agriculture has taught Forgey a lot of skills and values, such as the value of life and working hard.

"I definitely learned that even if you don't want to do something, you have to do it," she said, adding that she once got asked about the term adulting. "Adulting is something that I think I do on a daily basis. I know how to cook. I know how to take care of someone or something, and that's because of the way I grew up in agriculture."

Forgey thanked wheat growers for the scholarship.

"College isn't cheap, so every little bit helps," she said.

The Asotin County wheat growers scholarship is funded solely by wheat donations from county growers. ■





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Coronavirus Food Assistance Program (CFAP) eligibility dominated the national legislation discussion. Nicole Berg, a grower from Benton County and vice president of the National Association of Wheat Growers (NAWG), said NAWG has been meeting with USDA officials and advocating to make all wheat classes eligible for CFAP. They are also working on verifying and

providing accurate wheat industry numbers to the agency. Based on the formula USDA used to determine CFAP eligibility, white wheat was deemed ineligible for payments. See page 22 to read the comments submitted by WAWG.

U.S. Department of Agriculture (USDA) agencies were well represented at the board meeting. All USDA field offices continue to be

closed to the public, although the agency is working on a plan to slowly transition staff back to their offices. Chris Mertz, regional director of the National Agricultural Statistics Service, said data collection continues by phone and online surveys, with reports going out on time. He encouraged producers to fill out surveys online, saying it saves everybody "a lot of time and hassle, and

## Introducing Lance Marshall

So far, it's been a pretty eventful year for the Washington Association of Wheat Growers (WAWG). Add in one more change—the hiring of a new staff member.

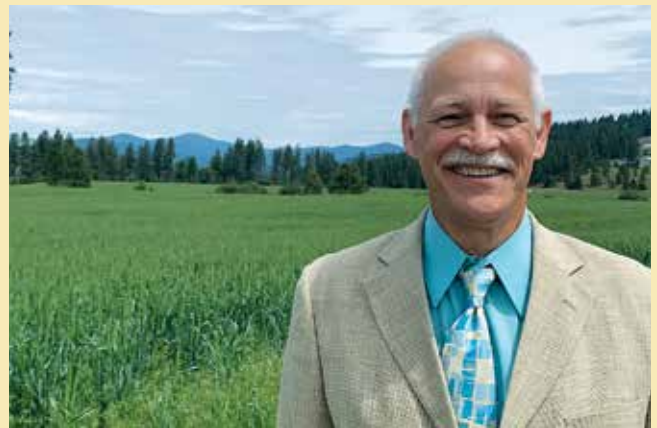
**Lance Marshall** was brought on board in June to replace retiring *Wheat Life* ads sales manager, Kevin Gaffney. Marshall and his wife, Pamela, live in Clarkston, Wash., with their youngest daughter. Two other daughters live on the west side of the state. Marshall comes to the role with more than 40 years of experience in print media advertising sales.

"I like to build relationships with my customers. I don't have customers, I have friends," Marshall said. "I don't consider this a transactional relationship, like 'you buy from me and I'll make money.' I want to use our product to help customers increase sales of their product so that we can all succeed together."

While Marshall may have grown up and spent most of his adult life on the west side, he attended Washington State University for three years before graduating from the University of Washington. A job during his time in Pullman at a men's clothing company whetted his appetite for sales. He discovered, however, that he didn't much like retail sales.

"I really loved the interaction with the customers and helping them find what they wanted," he said. "But I didn't like standing around waiting for someone to come in. That was too slow for me. After graduating from college, I wanted to do sales but I wanted to get a job where I went to the customer so I don't have to wait for the customer to come to me."

Back on the west side of the state, he answered an ad for a local Yellow Pages salesperson and never looked back. Most recently, Marshall was working at the *Capital Press* as the northeast Washington sales rep. At the time



he heard about Gaffney's retirement, Marshall said he was kind of looking for another job.

"It's like you can look ahead and see three options, but out of the blue, here's option 27," he explained. "I had no idea that this was even a possibility. From the minute I met Kevin and we talked, there was just this thing inside of me that said this is for you."

If selling ads for *Wheat Life* isn't exciting enough, Marshall also enjoys motocross racing in his free time. In 2017, he was the over-60 expert champion in the International Oldtimers Motocross Association, and in 2018 and 2019, he was second in the master class, which is the highest level.

"It (motocross racing) is something I've done for 40 years. I love the power and acceleration of the motorcycle," he said. "I'm a jumper. I love the big jumps and being up in the air." He also enjoys golfing and is looking forward to teaching his grandsons how to waterski.

Looking back at his first few weeks on the job, Marshall said he came into the position with high expectations that have been met by both his co-workers and the customers. He admits, however, that he has a lot to learn about the wheat industry.

"Everybody has been willing to help out," he said. ■

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you can complete it on your schedule.”

Jon Wyss, state executive director for the Farm Service Agency (FSA), said by the end of June, all of his staff will be back in the office, but they won't be meeting with producers until sometime in July, if all goes well. FSA is also working on internet tools that will allow producers to do electronic signatures for acreage reports and program applications. The 2020 Agriculture Risk Coverage and Price Loss Coverage (PLC) program enrollment deadline of June 30 is quickly approaching, but producers have until Sept. 30 to make their one-time update to PLC payment yields. Wyss also touched on CFAP eligibility, saying USDA did get WAWG's comments, and he will continue to advocate

on behalf of the wheat industry. Wyss added that USDA kept back approximately 20 percent of the CFAP funds in case more commodities were added to the eligibility list.

In its final action before adjourning until September, the board passed the 2020/21 budget.

“WAWG wishes a successful and safe harvest season to all Washington wheat growers,” said Michelle Hennings, WAWG's executive director. “While the board may not be meeting again until fall, our staff and leaders are still hard at work advocating for the Washington wheat industry. If growers have any comments or concerns, please contact our office by phone or email.” ■

## Year in Review 2019/20

Another year, another 12 months of advocating for the Washington wheat industry. Here's some highlights and a look what the Washington Association of Wheat Growers (WAWG) has been up to for the last 365 days.

### JULY 2019

Farmers begin signing up for the **Market Facilitation**

**Program** (MFP). The program, administered by the Farm Service Agency (FSA), will provide \$14.5 billion in direct payments to producers who have been negatively impacted by retaliatory tariffs on their products. Payments are based on a county rate multiplied by a farm's total plantings and will be made in three tranches. The payment for nonspecialty crops in Eastern Washington counties averages just more than \$21.50 per acre. County rates across the nation range from \$15 to \$150 per acre.

**Conservation Reserve Program** (CRP) acres that are set to expire this year can be extended for one more year, as long as the current contract is 14 years old or less. FSA continues to work on implementing regulations from the 2018 Farm Bill, which include the requirement to hold a general CRP sign-up every year.

On the state legislative front, **WAWG engages** with several work groups during the interim period, including the Snake River Dams Stakeholder Work Group, the Sustainable Farming Work Group and the Environmental Justice Task Force.

For the second year in a row, WAWG joins the Washington Grain Commission (WGC), Washington State University (WSU), the Washington State Department of Agriculture (WSDA) and other commodity groups in **celebrating Washington state agriculture** in the nation's capital. The

group visits with most members of the state's congressional delegation and then holds a Taste of Washington reception featuring products from the state's agricultural industry. While back east, WAWG leaders also meet with several U.S. Department of Agriculture (USDA) agencies about MFP payments and farm bill implementation.

Trade has been grabbing headlines all year, especially the importance of passing the U.S.-Mexico-Canada Agreement (USMCA). In support of the regional trade pact, the **Motorcade for Trade** launches an RV tour that has two stops in Eastern Washington, including a stop at the Berg Family Farm in Benton County, for a roundtable discussion with ag industry leaders.

WAWG celebrates a win when FSA selects Benton County for a **pilot program that looks at yield discrepancies** in the Agriculture Risk Coverage-County program. Dryland wheat farmers in the county see their reported yields drop from 82 bushels to 36 bushels, meaning many of them qualify for an additional program payment.

Investigation continues into the June 2019 **discovery of genetically engineered (GE) wheat plants** growing in Washington state with the confirmation that the plants were developed by Monsanto to be resistant to glyphosate. The USDA's Animal and Plant Health Inspection Service announces a test kit that will identify the event will be made available to the industry's trading partners. This is the second time GE wheat plants have been found in Washington fields—the first time was in 2016. There are no GE varieties of wheat being grown commercially, and there is no evidence that GE wheat has entered into the food supply.

In the southern part of Eastern Washington, combines start rolling as **harvest 2019 gets underway**. ►



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## AUGUST 2019

WAWG is one of the sponsors of a **watery legislative tour** that focuses on the importance of the Snake River dams, especially to agriculture. More than 3 dozen legislators take a boat ride from Kennewick up to Ice Harbor Dam. While on route, they hear an overview of the Snake River System from U.S. Army Corps of Engineers representatives and see a barge in the process of being loaded at Tri-Cities Grain. They also hear from a National Oceanic and Atmospheric Administration research fisheries biologist on West Coast salmon recovery and orca health. Once at the dam, the group has the opportunity to go through the navigation lock and then see where the turbines are housed. They also get a brief overview of the fish ladders and the steps Bonneville Power Administration is taking to help salmon move past the dam.

## SEPTEMBER 2019

WAWG's executive director, Michelle Hennings, takes part in a stakeholder interview held by a consulting team hired by the Washington state governor's office to talk about the **potential impacts of breaching the lower Snake River dams**. She tells interviewers that wheat growers are "completely opposed to any action regarding the dams that would negatively impact our ability to move grain to the ports in Portland and Vancouver." Wheat growers are confident that dams and salmon can co-exist, and they believe breaching the Snake River dams will not have a noticeable impact on the Puget Sound orcas.

After months of negotiations and uncertainty, a **trade agreement is reached between the U.S. and Japan** that keeps U.S. wheat on a level playing field with Canadian and Australian wheat. Canada and Australia had begun to see reduced tariffs on wheat imported to Japan as part of the Comprehensive and Progressive Trans-Pacific Partnership (CPTPP). Locked out of the agreement, U.S. wheat imports would have become less and less cost competitive to the point that Japan's flour millers would have no other choice than to buy the lower cost wheat from the CPTPP member countries.

## OCTOBER 2019

The **majority of the 2019 wheat harvest is wrapped up**, and by most accounts, it was successful. Yields are average to above average, and quality is good, despite cooler temperatures at the end of July and rain in August and September that raised fears of low falling numbers. Unfortunately, for those farmers who are lagging behind in harvesting their crops, there are more clouds on the horizon...

...Actual literal clouds. And rain. And snow. A **wetter-than-normal fall** means there are fewer opportunities for the

last of the spring wheat and a whole lot of chickpeas to dry out enough to be harvested. And because winter wheat usually follows chickpeas in farmers' rotations, that means a delay in winter wheat planting. Fortunately, the weather dries up for a short time in late October, and most farmers are able to work with local elevators to harvest and dry their crop.

**Enrollment** for FSA's Agriculture Risk Coverage (ARC) and Price Loss Coverage (PLC) programs opens.

WAWG takes part in a **career showcase** in Ritzville, Wash. The event is organized by the Adams County Development Council. Thirty-three businesses discuss career options with students from the area's sixth through twelfth grades.

Marci Green, WAWG past president, becomes **one of the faces at snakeriverfaces.com**. Full color print ads appear in west side publications and on Facebook. The effort is a way to combat misinformation and criticism of the Columbia-Snake River System and is sponsored by the Pacific Northwest Waterways Association (PNWA).

## NOVEMBER 2019

Many **county wheat grower groups start meeting** to discuss resolutions prior to the 2019 Tri-State Grain Growers Convention. Hennings and WAWG lobbyist Diana Carlen attend as many as they can to update growers on issues and legislative priorities.

The **2019 Tri-State Grain Growers Convention** is back on Washington wheat growers' home turf, taking place in Spokane at the Davenport Grand Hotel. Approximately 500 growers, agency representatives and industry supporters gather to hear top notch speakers; establish guidance on industry concerns; and learn the latest on herbicide resistance, 2018 Farm Bill programs and other topics of interest.

It isn't all education and updates at the convention. There is also lots of **awards and recognition** to give out. Whitman County is named WAWG county of the year, and Mike Miller, a grower from Ritzville and a Washington Grain Commissioner, is named WAWG member of the year. Jeffrey Shawver, a grower from Franklin County, wraps up his year as WAWG president, handing the gavel over to Ryan Poe, a grower from Grant County. Howard McDonald of Douglas County moves up to vice president, and Andy Juris of Klickitat County steps into the secretary/treasurer position.

Wheat growers also welcome two **new Washington wheat ambassadors** for the upcoming year. High school seniors Spencer Miller of Ritzville and Gunnar Aune of LaCrosse give short presentations at the state's awards banquet at the convention. For the next year, Miller and Aune will



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learn how WAWG advocates for the industry and will take part in the association's annual trip to Olympia to meet with legislators.

WAWG's leadership team attends the **fall conference of the National Association of Wheat Growers (NAWG)** in Sante Fe, N.M., to take part in committee meetings and discuss national issues.

Growers learn that thanks to high yields, Eastern Washington wheat growers who elected the ARC-County option will **not be receiving a payment** for their 2018 wheat crop.

## DECEMBER 2019

After several years of one-year extensions, the first **CRP general sign-up under the 2018 Farm Bill**—and the first general sign-up since 2015—finally arrives. According to FSA records, there are nearly 190,000 acres expiring in Washington in 2019, with another 195,000 expiring next year. The general sign-up runs through Feb. 28, 2020.

However, there's some **bad news for Douglas County CRP acres**. Because of a rule change in the 2018 Farm Bill, the county's SAFE acres are no longer exempt from counting towards the county's CRP acreage limit, which puts the county roughly 43,800 acres over their cap. That means farmers in that area will not be able to participate in this general sign-up. The Natural Resources Conservation Service (NRCS) and FSA state leaders put their heads together and come up with a way to save some, but not all of those acres under NRCS's Environmental Quality Incentives Program.

The **U.S. House of Representatives passes the USMCA** with bipartisan support by a vote of 385 to 41. The bill now heads to the Senate.

The much-anticipated **draft report on breaching the lower Snake River dams**, commissioned by the governor's office, is finally released for public comment. Hennings urges growers and industry stakeholders to submit comments, saying "...we believe this study was an unnecessary duplication of the ongoing federal environmental impact statement process and that the \$750,000 appropriated for the study would have been better used elsewhere. We are appreciative that the study consultants reached out to stakeholders on the east side of the state, because it is that population that will have to shoulder the impacts if the dams are breached." The report doesn't make any recommendations on whether or not the dams should be breached, only summarizing the views of those who were interviewed.

## JANUARY 2020

The **U.S. Senate passes the USMCA** by a vote of 89 to 10. Less than two weeks later, the president signs the agree-

ment into law. Wheat growers across the nation heave a sigh of relief, but there's more good trade news on the horizon...

... When the **U.S. and China sign Phase One** of a trade agreement. China agrees to purchase and import, on average, at least \$40 billion of U.S. food, ag and seafood products annually over the next two years. China also agrees to implement a transparent, science- and risk-based regulatory process for the evaluation and authorization of products of agricultural biotechnology and to abide by its current WTO obligations on the transparency of its domestic support measures and wheat, corn and rice tariff-rate quotas.

With Democrats in control in both the state House and Senate, **carbon regulation, cap and trade and a capital gains tax are all expected to be on the radar for the 2020 Legislative Session**. In this 60-day "short session," legislators' main task will be to pass supplemental budgets for the operating, transportation and capital budgets. The supplemental budgets are generally minor adjustments to the biennial budgets (passed in the 2019 "long session") based on updated spending and revenue information.

WAWG officers and leaders' first major **advocacy trip** in 2020 to Washington, D.C., coincides with NAWG's winter conference. While on the Hill, wheat growers meet with almost every member of the state's federal delegation or their legislative aides. They also meet with officials at NRCS, the U.S. Army Corps of Engineers (the agency responsible for maintaining the Columbia-Snake River System), FSA, the Risk Management Agency and the National Agricultural Statistics Service. Priorities include supporting the 2020 full reauthorization of the federal Grain Standards Act; supporting timely implementation of the 2018 Farm Bill; supporting keeping the lower Snake River dams intact; supporting funding to maintain and improve Washington road, river and rail systems; and evaluating changes to conservation programs within the 2018 Farm Bill.

More than 30 growers and industry stakeholders meet with 60 legislators and agency staff during a busy but successful **2020 Olympia Days** trip. WAWG's top issues include preserving the lower Snake River dams, carbon regulations and transportation funding, especially for the short-line rails.

While in Olympia meeting with legislators, WAWG lobbyist Diana Carlen, WAWG President Ryan Poe and WAWG Past President Marci Green **testify** during a House Rural Development, Agriculture and Natural Resources Committee public hearing in support of a bill that would

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compensate growers if the Washington State Department of Natural Resources (DNR) terminates a lease early under their higher and better use clause. The bill, which is supported by DNR, ultimately fails to pass the Senate Agriculture Committee due to a misunderstanding, but the sponsor, Rep. Chris Corry (R-Yakima), is determined to bring it back next year.

The Agricultural Marketing and Management Organization (AMMO), in conjunction with Washington State University Extension, sponsors three **farm bill education workshops** this month to help growers understand the differences (and their options) between ARC and PLC. More than 155 growers and landlords brave snowy weather to attend the sessions. The takeaway is that the PLC program looks to be the most attractive option for the next two years for most growers.

An independent evaluation commissioned by PNWA determines that the **removal of four lower Snake River dams would cost the U.S. more than \$2.3 billion over the next 30 years**; lead to significant additional carbon emissions that contribute to climate change; and jeopardize health, safety and livelihoods in already economically fragile local and regional economies.

Mitchell Powers becomes the **newest member of the WAWG state board**. He is the sixth generation on his family's dryland wheat farm and cattle ranch near Bickleton in Klickitat County.

At the beginning of the month, the world starts hearing reports out of Wuhan, China, about a new, **highly contagious virus** that causes pneumonia-like symptoms. The first U.S. case of COVID-19 is confirmed in Washington state by the middle of the month. On Jan. 30, the World Health Organization declares the outbreak a global public health emergency as more than 9,000 cases are reported worldwide. Travel restrictions from China to the U.S. are put in place.

## FEBRUARY 2020

AMMO sponsors three **education workshops** this month, covering a diverse set of topics. Lesley Kelly, co-founder of Do More Agriculture, a nonprofit organization, addresses the general well being of farmers and provide tips to help farmers address physical and mental health stress. Eric Snodgrass, an atmospheric scientist for Nutrien Ag Solutions, provides a weather update that focuses on how high-impact weather events influence global agriculture productivity. Kevin Duling, the founder of KD Investors, looks at world supply and demand for wheat, especially soft white wheat, and discusses what marketing tools may best fit each situation. Lastly, QuickBooks expert Cassi Johnson discusses budgeting, payroll, reconciling

and creating reports in QuickBooks to help producers better navigate the software and realize its full potential.

WAWG participates in the **Spokane Ag Expo** where visitors spin a wheel to answer a wheat-related trivia question and are entered to win a television. The winner of the television is Meghan Kulm of Lind, Wash.

Also at the Spokane Ag Expo, Spokane County wheat grower and WAWG past president **Marci Green is awarded the Excellence in Ag Award** for her contribution to agriculture in the Inland Northwest.

A long-term care center on the west side of Washington state becomes a **hotspot of COVID-19 cases**. Gov. Jay Inslee declares a state of emergency.

The Columbia River System Operations draft environment impact statement (EIS) is released by the U.S. Army Corps of Engineers, the Bonneville Power Administration and the Bureau of Reclamation. To the relief of the industry, it **rejects breaching the four lower Snake River dams** as the best alternative to restoring endangered salmon runs, instead, arguing that modest changes to the Columbia River System would increase salmon survival while providing the least impact to electrical generation, transportation, greenhouse gas emissions and farmers' production costs. WAWG encourages growers to leave comments on the draft EIS.

## MARCH 2020

The **2020 Legislative Session comes to a close** as legislators pass budgets in the final days that cut planned spending in order to set money aside to deal with COVID-19. In the end, cap and trade legislation and a low carbon fuel standard fail to gain enough traction to make it to the governor's desk.

At the beginning of the month, thanks to COVID-19, professional sports organizations suspend the rest of their seasons or cancel tournaments. A few weeks later, Gov. Inslee bans gatherings of more than 250 people then lowers the limit to no more than 50 people. All K-12 schools are closed, and churches, restaurants and bars are closed for sit-down service. On March 23, the governor announces a **statewide stay-at-home order** to last for at least two weeks, except those involved in "essential services," including agriculture. Two days later, all state parks and state lands are closed. These actions are repeated in nearly all 50 states. Flour flies off the shelves as people start baking more at home, unemployment spikes and millions get comfortable staying six feet away from everybody else. Meanwhile, farmers continue preparing for spring planting.

WAWG complies with the state's stay-at-home order by **clos-**



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Congress passes a **\$2 trillion stimulus package** that provides credit for struggling industries, a boost to unemployment benefits and direct payments to Americans.

WAWG conducts a **survey to understand the impacts members are seeing due to COVID-19** and the social distancing measures currently in place. Eighty percent of wheat growers are moderately to highly concerned. Possible disruptions to labor appear to be the largest concern at this point, with 59 percent of respondents saying they've had no issues or disruptions with USDA offices and programs.

USDA announces they are **accepting more than 3.4 million acres into CRP** as a result of the general sign-up. In Washington state, more than 283,000 acres were offered with 277,533 accepted, a 98 percent acceptance rate.

## APRIL 2020

On April 2, the **stay-at-home order is extended** through at least May 4.

Wheat farmers throughout Eastern Washington are smack in the middle of **spring fieldwork**. It's beginning to look very dry in the central part of the state.

Agriculture Secretary Sonny Perdue announces the **Coronavirus Food Assistance Program (CFAP)**, a \$19 billion relief program that will provide critical support to farmers and ranchers, maintains the integrity of the U.S. food supply chain and ensures every American continues to receive and have access to the food they need. WAWG and NAWG start digging into the details to figure out how CFAP will work for wheat farmers.

WAWG **submits comments** on the Columbia River System Operations draft EIS, strongly supporting the preferred alternative and rejecting any notion of breaching the lower Snake River dams.

AMMO pairs with NRCS to host an **online webinar** that covers changes being implemented at the agency in response to the 2018 Farm Bill.

## MAY 2020

WAWG holds its first **state board meeting via Zoom** since the stay-at-home orders were put in place. Leaders discuss what's been happening and review the association's proposed 2020/21 budget.

**WSU cancels all crop variety testing tours and field days.**

Festivals and celebrations across Eastern Washington are also canceled as social-distancing measures remain in effect.

Gov. Inslee lays out a plan to slowly start **reopening the state**, county by county, based on the number of new COVID-19 cases in each area. People are asked to wear a mask in public and to practice social distancing. Large gatherings are still prohibited.

USDA finally releases its **rules for CFAP eligibility**. Three classes of wheat—soft red winter, hard red winter and white wheat—have been deemed not eligible. Commodities had to have experienced a 5 percent or greater price decline during two, five-day periods from mid-January to mid-April. WAWG and NAWG immediately point out that while those classes of wheat didn't show a five percent decline when looking at only those two time periods, over the entire time frame, they saw declines of between 8.5 and 10 percent. The organizations argue that USDA should take price volatility across the entire January to April time frame into account.

**Kevin Gaffney, Wheat Life's long-time ad sales manager, retires** after 30 years contributing to the magazine, beginning as a freelance writer. Lance Marshall, from Clarkston, Wash., will take his place.

Growers in Benton and Klickitat counties watch their **fields continue to dry up** as rainfall in that region remains far below normal.

## JUNE 2020

WAWG submits comments to USDA arguing that **all classes of wheat should be eligible for CFAP**.

In its final **state board meeting** before the summer break, WAWG leaders report, via Zoom, that the 2020 crop is doing well in most counties, pass a 2020/21 budget and discuss why white wheat wasn't eligible for CFAP.

For the first time ever, **Wheat College** goes online. Approximately 50 growers log into Zoom to listen to Peter Johnson, a Canadian agronomist, talk about managing wheat for high yields.

As of mid-June, it's estimated that nearly **8 million people worldwide** have been infected with COVID-19 and nearly 450,000 have died. ■



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Control Varieties	lbs/ac (rank)		
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Dwarf Essex Rapeseed	3,678 (20)	3,413 (28)	—
Ericka	3,716 (18)	2,865 (30)	3,829 (25)
Rubisco Seeds' Hybrids			
Mercedes	4,427 (1)	4,933 (1)	5,145 (1)
Plurax CL	4,397 (2)	4,708 (2)	4,959 (2)
Phoenix CL	—	4,636 (4)	4,900 (4)
<b>PNWVT Mean</b>	3,910	3,956	4,470
<b>LSD (p=0.05)</b>	285	326	287
<b>C.V. (%)</b>	15.0	14.7	12.4

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# POLICY MATTERS

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## Inslee releases COVID-19 requirements for agriculture

Last month, Gov. Jay Inslee released his agriculture COVID-19 requirements. While the Washington Association of Wheat Growers (WAWG) understands that these new health and safety guidelines are intended to protect farmworkers in the agriculture industry, we found them shocking and alarming, especially as we head into harvest season.

WAWG was not consulted on these new requirements, and we have deep concerns with how broad, burdensome and unattainable some of them are. The requirements are to be applied to all agricultural activity, regardless of the operation. We also heard from producers who expressed similar concerns. Moreover, the governor's office gave us less than a week to comply with these onerous, expensive requirements.

With the help of our lobbyist, Diana Carlen, WAWG put together written comments that were submitted to the governor's office in hopes of persuading the governor to adopt a rule more in line with the rule adopted in Oregon. Oregon's rule is limited to labor-intensive farm operations when employees would perform their duties or routinely congregate within six feet of one another.

In our comments, we pointed out that "...dryland wheat farms are not as labor intensive as irrigated fruit and vegetable farms. Our members typically employ between two and five employees. Wheat farmers work alongside their employees every day and consider them essential to their business. Since COVID-19 hit, wheat farmers across the state have been operating as essential businesses without any incidents of harm to our employees. They have done this by following the same requirements that all essential businesses have been operating under, including following physical distancing policies; frequently washing and sanitizing hands; practicing precautions such as avoiding touching their face; and avoiding contact with those that are sick. Since wheat farming is not labor intensive, the risk of COVID-19 exposure to wheat farmworkers is low when the above rules are followed."

We are concerned that implementing the governor's requirements will substantially increase the overhead costs of family businesses and make production of locally raised food products unstable. In addition, complying with these new requirements in a timely manner is likely

impossible due to a lack of personal protection equipment, availability of handwashing facilities in the state and CDC-recommended cleaning supplies on the market. We are concerned that certain rules require changes in agricultural workplaces that are not attainable by farmers because there are considerable supply chain issues that make complying with these rules impossible.

To read the full list of comments that we submitted, go to [wawg.org/wp-content/uploads/2020/06/WAWG-letter-to-Governor-6.2.2020.pdf](http://wawg.org/wp-content/uploads/2020/06/WAWG-letter-to-Governor-6.2.2020.pdf)

Shortly after we submitted our comments, the governor's office released additional guidance for the agricultural industry. Unfortunately, many of the regulations we were most concerned about didn't change; however, guidance did change on handwashing stations on outdoor worksites to only apply to employees engaged in hand-labor operations in the field and on transportation, stating that any farming vehicle used solely by one individual need not be disinfected until or unless another individual intends to use the vehicle.

Please know we are aggressively opposing these new requirements and will continue to press for guidance that is more in line with how work is conducted on dryland wheat operations.

Questions or comments can be directed to [michelle@wawg.org](mailto:michelle@wawg.org) or through your county director to the board.

Some of the more notable requirements of Gov. Inslee's order include:

- **Cloth facial coverings.** Guidance states that employees are free to wear homemade face coverings that meet the minimum requirements. This does not relieve employers of the obligation to provide face coverings to each employee who does not wish to wear a homemade version. Nor may an employer require employees to provide a homemade face covering. Employers are required to ensure that employees have clean face coverings on a daily basis. For disposable face coverings, employers must provide new coverings each day. In order to prevent reusable face coverings from being utilized by multiple employees, employers may assign face coverings to employees for multi-day use. Otherwise, employers must launder all face coverings daily. Employers must maintain a sufficient



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supply of face coverings to replace lost, damaged or worn-out reusable coverings.

- **Physical distancing.** Employers, providers and housing operators must ensure physical distancing of six feet or more during all interactions within the scope of employment.
- **Workplace disinfection.** Employers must ensure that high-touch surfaces are disinfected prior to the start of each workday and before and after the morning, lunch and afternoon breaks. For employers with night shifts, the same frequency of disinfecting is required.
- **Handwashing stations.** Employers, housing operators and transportation providers must supply adequate handwashing stations at every location and at all times that employees are acting within the scope of their employment. Employers must put in place adequate measures to ensure, at a minimum, that employees wash their hands for more than 20 seconds at certain intervals.
- **Educational materials and training.** Employers must provide adequate educational materials, including workplace posters, and training to educate employees about the risks of COVID-19 and the required safety protocols. All educational materials must be provided in the language or languages the employees understand.
- **COVID-19 response plan.** Employers are required to document and maintain a COVID-19 response plan.
- **Temperature check.** At the beginning of each day, employers must conduct a temperature check and review the symptom checklist with employees concerning themselves and their households.
- **Testing.** To the extent feasible, employers must ensure timely access to COVID-19 tests for symptomatic employees and must provide transportation as needed. ■

## WAWG submits CFAP comments to USDA

Last month, the Washington Association of Wheat Growers (WAWG) submitted a letter to the U.S. Department of Agriculture (USDA) asking the agency to consider overall price volatility when determining eligibility for the Coronavirus Food Assistance Program (CFAP).

Under current rules, a commodity is considered eligible for CFAP if the price of that commodity fell at least 5 percent when comparing two, five-day time periods between January and April of 2020. The decline for soft white

## Lawmakers send letter of support to USDA

Last month, **Rep. Cathy McMorris Rodgers** (R-Wash.) and **Rep. Dan Newhouse** (R-Wash.) sent a letter to the United States Department of Agriculture's (USDA) Farm Service Agency and asked that they support Washington wheat growers by including three classes of wheat for coverage under the Coronavirus Food Assistance Program (CFAP).



The letter asked that the USDA include soft white, hard red winter and soft red winter wheat classes for coverage under the CFAP. The letter also pointed out that these classes of wheat, like so many other commodities, have been negatively impacted by the COVID-19 pandemic and need assistance. The market volatility caused by coronavirus is putting wheat growers in Washington under increased pressure after years of already dire conditions in the wheat market. Like other businesses, Washington farmers need support during this time. ■



wheat, calculated this way, was 2.4 percent. Out of all the wheat classes, only durum wheat and hard red spring wheat are eligible. The Farm Service Agency began taking applications for CFAP on May 26.

About 80 percent of the wheat grown in Eastern Washington is soft white wheat. WAWG pointed out that never before has a farm program made an eligibility distinction based on the class of wheat. Furthermore, market history shows that all classes of wheat suffered severe price drops during the first quarter of 2020.

"...The soft white Portland price from January to April actually swung more than 8.5 percent from its highest price of \$6.33 on Jan. 28 to its lowest point on March 16 of \$5.79. That swing is more than 3 percent higher than USDA's benchmark during a critical marketing time for wheat producers. The price loss experienced by producers who sold wheat during that period is not accurately reflected in the formula used by USDA. Soft red winter and hard red winter futures contracts both saw drops of more than 10 percent during this time frame," WAWG's letter explained.




Another issue WAWG highlighted is the need to address the fact that USDA has not revealed what price series they used, only that cash prices would be used for commodities for which there isn't a futures market.

Ryan Poe, WAWG's president, said wheat organizations have heard that, because depressed wheat prices existed before the rise of COVID-19, the wheat industry overall is less qualified for pandemic relief. "We look at our members, many of whom are struggling, and we don't believe that is true. Every farmer, regardless of the crop they are growing, has been negatively impacted in ways that will be felt for months, if not years."

The letter finishes by respectfully requesting that USDA "...consider overall price volatility during the entire January-to-April time frame for CFAP eligibility in order to account for the price drops all classes of wheat experienced in the 2019 crop year. We also urge you to consider providing assistance to growers of all wheat classes for the upcoming 2020 crop year. That harvest will begin in the next few weeks and is being marketed in continued depressed conditions due to impacts from COVID-19 and retaliatory tariffs."

To read the letter, go to [wawg.org/wawg-submits-comments-to-usda-on-cfap-eligibility/](http://wawg.org/wawg-submits-comments-to-usda-on-cfap-eligibility/). ■

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## WASHINGTON WHEAT FOUNDATION CAMPAIGN UPDATE

The Foundation's mission is to educate, engage and enlist social media and digital followers into actively understanding grain farming in Washington and sharing their knowledge and experience with others. Our continued partnership with North by Northwest Digital Studio is helping to foster that mission.

The Foundation's campaign, administered by North by Northwest, had strong months in April and May for both content and social media promotion. More than 250 followers were gained on the social media platforms, and the Washington Wheat Foundation website saw an increase in visits. The Facebook page alone now has more than 3,000 fans! Demographically, the top three cities that are being reached are Spokane, Seattle and Kennewick. The largest contingency of fans/followers are from Spokane, which still reflects the work done and booth presence at the Beer Festival last summer.

Infographics and nutrition pieces on social media and the website continue to generate popularity and increase traffic to our pages and sites.

Stay tuned for more progress and follow us on Facebook and Instagram. Search for @WaWheatFoundation.

## GROWING COVER CROPS IN DIFFICULT PLACES PODCAST

By the Soil Health Partnership

*From the National Wheat Foundation blog*

Mike Jordan, a wheat farmer in Kansas, joined the Soil Health Partnership (SHP) to gain access to expertise and see if he could make cover crops work on his farm after a few years of trying it on his own with only minimal success.

Jordan has long been interested in conservation. During his interview with John Mesko in this podcast, he explains his dad's interest in conservation that began when he gave up the plow in the early 1960s. In later years, Jordan says that he was building terraces and waterways long before farm programs required him to. It stands to reason that he'd also be interested in increasing his soil health.

"I'd like to think that there's more to improving yields than just waiting on a new variety or using more fertilizer and more inputs. I'd like to find additional ways to improve things without just doing more and more of the same thing," Jordan said.

On Jordan's SHP wheat trial and all over his farm, moisture is the limiting factor. He's interested in planting cover crops to understand how they can impact moisture availability for his cash crops by shading the soil during the harsher parts of his growing year.

Mesko is enthusiastic about the project. The two discuss that much of the published cover crop information for farmers to learn from are results from Ohio or Iowa where cover crops are working very well to capture nitrogen and reduce erosion. Jordan's looking to cover crops to solve different problems in different areas of the country and hopes to prove success over time.

Mesko shows his excitement when he says, "You definitely have some challenges, and that's what's exciting about having a research site on your location. We have a lot of examples where farmers are saying, 'Well, it won't work for me because of this or that,' but if we can figure out how to make it work at your place, we will have a pretty compelling story to tell."

Listen in to hear more from Mike Jordan and John Mesko at <https://apple.co/2RJqL6> ■

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• Tri-State Grain Growers  
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## Rural residents are looking for

# CONNECTION

There are lots of advantages to living in a rural location, but fast, reliable internet service is often not one of them.

As farm equipment becomes more computerized and sophisticated, an internet connection has become a critical link for growers to utilize GPS, manage data and help facilitate equipment repairs and upgrades, not to mention online interactions with U.S. Department of Agriculture agencies. In recent months, the COVID-19 pandemic has highlighted the broadband deficiencies many rural residents and communities face as Washington students shifted to distance learning and many employees began working from home.

The Washington State Legislature has recognized the need for widespread broadband access across the state. In 2018, HB 2664, sponsored by Rep. Mary Dye (R-Pomeroy), was signed by Gov. Jay Inslee. The bill, among other things, extended telecommunications authority to Washington state ports in order to extend rural broadband infrastructure. In 2019, SB 5511, sponsored by Sen. Lisa Wellman (D-Mercer Island), established the Washington State Broadband Office (WSBO) to help develop broadband service to unserved and underserved areas through competitive grants and loans.

WSBO's mission is to ensure that all Washington state citizens and businesses have access to affordable, reliable, redundant and scalable/future-proof broadband technologies. The agency's goals are ambitious—by 2024, a minimum of 25MB per second download and 3MB per second upload should be available to all areas of the state; by 2026, anchor institutions should have 1GB

By Trista Crossley



per second upload and download speeds; and by 2028, all citizens and businesses should have 150/150MB per second upload and download speeds (when upload and download speeds are the same, that's often referred to as being symmetrical).

"The 150 symmetrical is a significant number. It is a very aggressive goal, probably one of the most aggressive goals in the country, in my opinion," said Russ Elliott, director of the WSBO.

Elliott said there are different ways to get to that goal. One way is to construct infrastructure similar to what we have now, infrastructure that will continually need investment and updates and will eventually need to be replaced.

"That's kind of been the tradition, especially in our rural areas where we don't have an economic model that makes sense for investment," he explained. "What 150 symmetrical does for me is to stop considering that way as a path forward and to start to envision future-proof, scalable infrastructure in the state. It's a dance that we have to do between ensuring people have connectivity today, but also ensuring that my 5-year-old will benefit from this when he's paying for it in 20 years."

According to broadbandnow.com, Washington state ranks 16th in the nation for broadband access, and 94.6 percent of residents have access to wired broadband at 25 MB per second or faster. In addition, 94.4 percent of residents have access to DSL service, but only 36 percent have access to fiber-optic cable. The website also breaks down broadband access by county (see sidebar).

Those numbers might seem a little high to many Eastern Washington wheat farmers, something that Elliott acknowledged.

"Based on federal maps, Washington state is pretty well covered, but there are areas identified as being served that are coming back as severely underserved," he said.

One of the things the WSBO is doing is trying to identify the unserved and underserved parts of the state by asking residents to participate in a speed test. The state Legislature has defined underserved at a minimum 25/3 MB per second (download/upload speed); anything under that minimum is considered unserved. Elliott said underserved could also be a quality of service or affordability metric.

The federal government has acknowledged that broadband maps are inaccurate, largely based on how internet



Russ Elliott, Director  
Washington State  
Broadband Office

service providers (ISPs) were able to define what a served area meant. In July 2019, the Federal Communications Commission launched a new broadband mapping effort that requires ISPs to "submit granular data maps of the areas where they have broadband-capable networks and make service available."

Elliott said he would put Washington state in the top 10 percent of states for being very forward thinking in regard to broadband infrastructure that is being deployed, especially the partnership between public and private investment.

"This is a very delicate dance. When we start to talk about public and private monies potentially being applied in similar areas, it gets to be a very sensitive discussion," he said. "We need to honor private investment, but we need to make certain everyone in the state has access. I think Washington is forward thinking and one of the best states in connection, but we also have some challenges, such as an economic balance of connectivity in deep rural areas and affordability in our more urban areas."

That interplay between public and private investment was one of the issues that Dye ran into when she began working on rural broadband policy.

"You can't put a legislatively funded network over a privately funded one, but there's no jurisdiction over where and what they (private investments) do. We need to have networks that will reach out to rural communities and have them be publicly built infrastructures that the private sector can lease into," she explained.

Dye is also a wheat farmer in Pomeroy and has first-hand experience struggling to connect to the internet in order to get farming business done. She expressed frustration that ISPs seem to "cherry pick" the customers they provide service to, bypassing mom-and-pop businesses in favor of more lucrative ones, or charging extremely high prices to hook into their backbone network.

"We are here in our tractors, running the satellite for GIS, running hands free, getting data points every foot across fields, but we have to drive down to the markets in Pomeroy to share with our consultant in Winnipeg," Dye said. "They (ISPs) say it's too expensive to build out to that guy at the end of the gravel road. That guy is running a major, million dollar business, but because he's a farmer, he doesn't count." ►



Rep. Mary Dye  
(R-Pomeroy)

Dye’s legislation allows public entities, like ports, to build open access networks and then lease access to those networks to private companies. This arrangement helps negate the high cost of installing the infrastructure in rural areas, a cost that is hard for private companies to recoup.

“It’s a process proven to be a perfect ladder for rural broadband,” she said.

NoaNet is another example of the effort to provide rural broadband access through a public and private partnership. NoaNet was started in 2000 by a group of public utility districts (PUDs) to market their own internet networks to ISPs. It’s a nonprofit organization supported solely through revenues and traditional lending institutions. In recent months, NoaNet has been reaching out to Eastern Washington grower groups, such as the Washington Association of Wheat Growers, to try to connect with growers and understand where service is lacking and how close those areas are to NoaNet’s network, said Craig Nelsen, COO of NoaNet.

“Once we determine that, we could start engaging with farmers and looking to see if it is economically feasible to get fiber to their facility, or it may be too far (for fiber), but we can tap off our fiber network and shoot a wireless signal over to their farm,” Nelsen said.

After COVID-19 closed schools and sent workers home, NoaNet worked with the WSBO and Washington State University Extension to put up temporary, drive-in Wi-Fi hotspots across the state to help students continue their education. Nelsen said the pandemic has shone a light on the need for broadband access, and he believes now is the time to strike to come up with ways to serve rural areas affordably.

“We look at fiber first, wireless second and then we look at cell providers to see if we can do a small cell application in a community,” Nelsen said. “I think there are a lot of different things in the works to try to find more affordable ways to get internet to these (unserved or underserved) communities.”

In small cell applications, distribution cans are attached to utility light poles or billboards and receive a broadband signal from a cell tower. The cans then broadcast a wireless signal throughout a community that consumers can hook into. A fixed wireless system relies on line-of-sight to deliver internet access to consumers via radio waves, which can often achieve faster speeds and lower latency than a satellite connection.

Nelsen said NoaNet will continue to work closely with communities and the WSBO to identify opportunities to deliver affordable and reliable broadband access to underserved areas of the state.

WSBO director Elliott said at this point, the discussion needs to happen at the community level to identify needs, rather than relying on ISPs to provide a solution. Elliott has been appointed to an FCC ag taskforce adoption subcommittee where he hopes to influence decision making.

“This lemon called COVID-19 has turned into lemonade for this industry,” Elliott said. “It hasn’t changed the discussion. This is the same discussion we’ve been having pre-COVID—affordability and access. What it’s done is really turned the heat up.” ■



Craig Nelsen, COO  
NoaNet

## What is Washington’s broadband coverage?

According to the website broadbandnow.com, 94.6 per-cent of Washington residents have access to wired broadband at 25 MB per second or faster. Here’s the coverage levels in Eastern Washington wheat-producing counties according to the website:

Adams.....	30.2%
Asotin .....	94.8%
Benton .....	94.0%
Columbia.....	97.1%
Douglas .....	91.5%
Franklin.....	85.3%
Garfield.....	10.7%
Grant .....	83.3%
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# Distance learning

AMMO'S 2020 WHEAT COLLEGE GOES ONLINE WITH WHEAT PETE

By Trista Crossley

Setting aside the factors that can't be changed, such as weather, what has the biggest impact on wheat yields? Peter Johnson, a Canadian agronomist with 30 years of specializing in cereals, says it's all about the producer.

"Researchers have identified that if you put growers in the same region with the same inputs, everything the same, 27 percent, basically 1/4 of the yield outcome, is based on the producer and how they apply those inputs," he said. "That is outside of the weather and soil type and everything else. It's really cool in terms of how we can drive those yields forward, so keep an open mind."

Johnson was speaking to growers as part of the Agricultural Marketing and Management Organization's 2020 Wheat College. Normally, Wheat College is a full day of classroom and hands-on presentations. This year's event, however, was solely online thanks to COVID-19 restrictions. Nearly 60 growers logged into Zoom to hear Johnson speak. Johnson is the resident agronomist with Real Agriculture, where he hosts a weekly podcast, "Wheat Pete's Word." He is also a regular on "Agronomy Monday" on Real Ag radio, Sirius Satellite Radio 147.

Johnson said the beauty of wheat is that the agronomy applies no matter where it is grown.

"If you think of it on a larger scale, a farmer's No. 1 job really is harvesting sunlight. We take the sunlight energy, we take carbon dioxide, put it together with water, and we make photosynthate and turn that into food," Johnson said. "I want to talk about how do we really make cereal yield? Wheat is different than many crops. It gives us so much more potential to do a good job of management, and it is way more management responsive. So where do we find those sweet spots?"

Johnson identified four areas for growers to consider:

- **Number of heads per square foot.** He said the simple answer is to use more seed, but it's more important to manage tillering, particularly with a winter wheat crop. "Tillering is one of those things that we really haven't paid enough attention to, the impact of tillering and how that plays in higher yields." He encouraged growers to get out in their fields and actually count the number of heads in a square foot rather than just looking from the road.
- **Number of spikelets or head size.** "Lots of professors,

**Cereal Yield Components**

- Number of heads/sq.m.
- Number of spikelets (head size)
- Number of florets (grains/spikelet)
- Weight of each grain

Peter Johnson, a Canadian agronomist with 30 years of specializing in cereals, was the featured presenter at the 2020 Wheat College. Normally, Wheat College is a full day of education with a mixture of classroom and hands-on presentation. This year's event, however, was solely online thanks to COVID-19 restrictions.



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wheat teachers will tell their students that the maximum yield of a wheat field is determined once we determine head size. Once we have that head size determined, we can't do anything more to increase yield. I just call absolute malarkey to that." Johnson believes there is much more to wheat yield than just the head size. In his experience, he added, almost never does head size limit wheat yield.

- **Number of florets.** Right after pollination is when it is determined if growers get one seed at every one of those spikelets or three seeds. "This is where a lot of us have slipped the clutch. We haven't really thought about trying to manage at that stage, and yet, that is the No. 1 most critical period in terms of making higher wheat yields."
- **Weight of each grain.** Johnson said growers can easily increase yields 10 percent just by having higher test weight in the crop.

"There are these critical times from a management standpoint where we need to be doing better," he said. "How do we employ those various time periods and increase our yields if we can?"

Johnson said that growers need to better manage wheat during anthesis and grain fill.

"Grain fill conditions are critical. Once you hit anthesis, once that wheat head is pollinated, you have 1,200 growing degree days for grain fill. That's a fairly constant number across most wheat. If we can figure out how to lengthen that grain fill at all, then we can get much bigger yields," he explained.

Growing degree days are calculated by taking the high temperature plus the low temperature, divided by two, minus 32 to get the temperature in Fahrenheit. Then divide that number into 1,200. Johnson's example was to take a high of 86 degrees and a low of 52 degrees to get 32 days of grain fill (86 plus 52 equals 138; divide that by 2; minus 32 is 37; now divide 1,200 by 37).

"If I could somehow shift that and get a 77 degree day and a 49 degree night, it's not that big of a shift. When I do that math, I have a 39 day grain fill period. Does that make a difference on yield? That makes a huge difference on yield," he said. "You gain almost four bushels per acre per day for every day extra of grain fill you can gain."

The only way to do that, he added, was to plant earlier so the grain fill period is shifted into an earlier, cooler time of the year. Johnson cautioned that it isn't a one-to-one ratio. One day of earlier planting doesn't give wheat a day earlier to head out. As a cool season crop, a perfect day for wheat is a high of 65 with a low of 50 degrees. Johnson said if you could do that every day, you would maximize

wheat yield. Wheat is comfortable with temperatures of 65 to 77 degrees. Temperatures more than 77 degrees will begin to negatively impact the crop, and if the temperatures go over 100 during the grain fill period, then the wheat crop is basically shut down.

"As you manage the wheat crop and you are trying to predict yields, keep those critical temperatures, 77 degree temperatures, in mind. Every day above 77 degrees during grain fill, you lose one bushel per acre per day," he said.

Johnson also touched on keeping the crop green as long as possible by applying fungicides later during heading. He said research has shown that for every day the plant stays green through the grain fill period, growers gain up to three bushels per acre. He also stressed the importance of fall weed control, rotating crops and uniform emergence in a field by planting seed all at the same depth.

At the end of the presentation, Johnson answered growers' questions about nitrogen application timing, the effect of nitrogen on protein and narrow row spacing and the role it plays in establishing a canopy. Besides providing an excellent means of weed control, a thick canopy captures more sunlight that in turn provides more yield.

"You can get high yields with wider rows," Johnson said. "Just make sure there's no bare dirt come flag leaf. If there is, you've left yield on the table."

Johnson's presentation can be found online at <https://youtu.be/Yn-3HPoJjg>. Registered participants were entered into a drawing for a Blackstone Grill, which was won by Lori Stonecipher of Walla Walla, Wash. Ryan Ells of Toledo, Wash., was the winner of the RTIC Cooler from Corteva Agriscience. ■

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# New producer grain fund will help support FFA activities



By Jesse Taylor  
*Executive Director, Washington FFA Foundation*

The Washington FFA Foundation is a nonprofit organization that has been around since 1978. We serve as the fundraising and community partner outreach arm of the Washington FFA and strive to meet the financial needs of our growing organization. In

2019/20, the Washington FFA had more than 12,000 dues-paying members throughout Washington state. In 2019, we were home to the largest FFA chapter in the nation.

Throughout the past few years, the Foundation has established numerous initiatives that direct financial support to FFA members. As the Foundation expands, we have created more opportunities for all members such as scholarships, competition stipends, grants and member engagement events like leadership camps and retreats.

This year, the Foundation is launching a partnership with grain cooperatives and our local FFA chapters. The program is an opportunity for Washington grain producers to donate bushels of grain to the Foundation and their local chapters through accounts set up at Pacific Northwest Farmers Cooperative, Pomeroy Grain Growers and HighLine Grain Growers.

The Foundation grain fund is designed to raise money for all of the Foundation's programming goals, including national travel stipends for state winners; career development events and leadership development events; individual student scholarships; summer leadership camps; state officer travel; and future initiatives. Producers have the option of designating their local chapter of choice to receive

50 percent of their donation. The account within these cooperatives is set up under "Washington FFA Foundation."

As I travel the state and speak with our industry partners, the number one issue I hear facing the agriculture industry is labor, or more accurately, the lack thereof. The FFA is a never-ending talent pool that attracts young people from both urban and rural areas into agriculture careers. We need industry, and industry needs us. To quote the FFA creed, it's a natural partnership steeped in the "best traditions of our national life." Individuals and business entities are eager to partner with the Washington FFA, and we are eager to forge better relationships with them.

As this new program grows, we also hope it expands. I want to encourage all producers throughout the state to reach out to the Washington FFA Foundation with inquiries on how to participate and to encourage their local cooperatives to participate in the program as well, if they already aren't.

Washington state agriculture is one of the most diverse agricultural industries in the nation, ranking No. 1 in the country for the production of 11 different commodities. Agriculture production is responsible for more than \$10 billion in economic output at the farmgate, not to mention the hundreds of thousands of jobs, exports and value to the food service sector. Washington FFA is dedicated to growing our membership and continuing to foster the labor needs of this vital industry. We are proud of the work being done and are always seeking ways to better connect with producers from the coastal shores to the hills of the Palouse.

For more information on this program, you can contact me at [Jesse@washingtonffa.org](mailto:Jesse@washingtonffa.org) or at our website at [waffafoundation.org/contact](http://waffafoundation.org/contact). ■



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# CHAIRMAN

## WASHINGTON GRAIN COMMISSION

By Gary Bailey



Farmers are accustomed to going through their budgets with a fine-tooth comb to find savings that line up expenses with income.

That exercise is also a duty of the Washington Grain Commission (WGC), and on May 20, 2020, commissioners meeting in a socially distanced WGC boardroom (with others viewing remotely) voted to do just that. As you'll read in a budget story on page 38, commissioners approved a 2020/21 budget of \$6.28 million, down from \$6.93 million, approximately a 9.4 percent cut.

It's always easier to spend money than look for savings, but it's the savings that ensures there is enough in the bank to make it through the unexpected. The board felt this was a year to pull on the spending reins, not because the activities we fund aren't worthwhile, but because we must recalibrate and match our budget with our income.

For the record, the WGC is funded by a three-quarters of 1 percent assessment on the net selling price of each bushel of wheat and a 1 percent assessment on barley at the first point of sale. Let me make it clear that the WGC is in excellent financial health. The commission has strong reserves to be able to survive a poor-income year or take advantage of opportunities that arise unexpectedly. But just as smaller crops and lower prices impact farmers, they also impact the WGC's bottom line and what we can afford to fund.

In reality, when the Commission funds activities, we are often funding people. Salaries are tied to people and have a tendency to go up every year. If we funded exactly the same activities that we did this year, it would cost more next year. You can see the challenge we face from an income standpoint. We are trying to do more with less. To balance the current budget, a few activities were eliminated, a few more trimmed, and those that we believe return the greatest value to our farmers were left alone.

For example, knowing cuts to research projects had to be made, we took a strategic approach to ensure core areas of wheat and barley breeding, weed science and variety testing were funded at last year's level. Those who attend the WGC's annual Research Review consistently rate those programs in the top tier—and commissioners agree.

To be clear, Washington State University (WSU), followed closely by the Agricultural Research Service of the

U.S. Department of Agriculture, are our most important partners, and research is the category that takes most of the budget: 34.5 percent versus 21.2 percent for market development, 15.5 percent for grower services and 7 percent for education/information.

But our level of funding doesn't necessarily reflect our priority. Frankly, I would be hard pressed to say marketing is in second place to research. I see both equally important to the future success of the state's wheat farmers, and we budget accordingly, looking carefully for marketing projects that will yield a return on investment.

Discussion during our recent meeting with Jim Jesernig, the WGC's lobbyist in Olympia, only confirmed this was a year to economize. He indicated that economic fallout from COVID-19 in Washington state will result in an estimated \$7 billion shortfall over the next three years. Quote: "It will get ugly." He expects an emergency legislative session and perhaps another in 2021.

But Jesernig will be cheering from the sidelines as we move forward. He announced his retirement after decades of service to Washington state directly as a legislator and agriculture director and indirectly as a lobbyist. We are pleased that Dan Coyne, Jesernig's colleague, will step in to fill the breach. We wish Jim well in his retirement and thank him for his service to the wheat industry.

As a result of the state shortfall, it has been announced that WSU will perform a "planning exercise" for a 10 percent cut to the institution's budget. If that's the number—the state has suggested planning for a 15 percent decline in revenue—about \$38 million less will be available to WSU. Within the College of Agricultural, Human and Natural Resource Sciences, that would translate to a decline of about \$3.7 million. With numbers like those, if there was ever a year for the WGC to keep its reserves intact, this might be the one.

When it comes to trimming the WGC budget, I think the WGC mission statement offers helpful guidance. Our goal, as arrived at during a strategy session several years ago is, "To enhance the long-term profitability and competitiveness of Washington small grains and small grain producers by responsible allocation of assessment funds in research, marketing and education."

As a roadmap to the future, not to mention a guide to funding the budget, I can think of nothing better than the mission we have laid before us. ■

## Whoa! Commission opts to hold the line

By Scott A. Yates

The Washington Grain Commission (WGC) pulled on the budget reins at their May 20 meeting, electing to approve 2020/21 expenditures in line with income received from assessments during the previous marketing year.

The commission funds its research, marketing and educational objectives and office operations with a three-quarters of 1 percent assessment on the net selling price of each bushel of wheat at the first point of sale. For barley, the assessment is 1 percent.

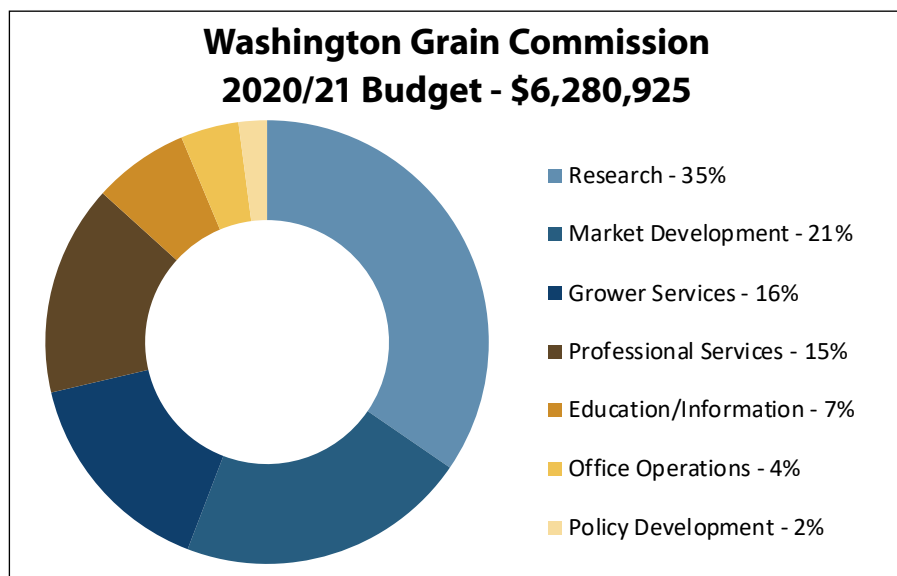
The board approved a 2020/21 budget of \$6,280,925, down from 6,930,254 in 2019/20. The commission uses assessments collected the previous year as a budget baseline.

Gary Bailey, chairman of the WGC, said the commission did its best to think strategically when making budget adjustments to programs or projects.

"Commissioners who serve on various WGC committees during the year provided an invaluable service," Bailey said. "This was a tough year, and who knows what next year could bring given further COVID-19 fallout."

In the past, commissioners have accessed reserved funds to balance the budget to varying degrees. This year, CEO Glen Squires said the board worked to bring expenditures in line with reduced income.

"With so many unknowns facing the industry, it only made sense to



husband resources carefully," he said.

The WGC will invest \$2,171,284 in research, down from \$2,522,395 last year, with an emphasis on ensuring farmers' core interests remained at previous year allocations. Examples include the Washington State University (WSU) winter wheat, spring wheat and barley programs and the Agricultural Research Service of the U.S. Department of Agriculture club wheat program. The Variety Testing Program for wheat and barley also remained at the same level. Other project line items saw reductions.

With all state commissions and research institutions facing budget concerns, Squires said increased collaboration is needed among the university and federal scientists in the region.

"Research issues don't stop at the border and sharing the research needs of farmers throughout the region is paramount," he said.

The commission approved a marketing budget of \$1,335,296, less in total than the \$1,362,333 approved in 2019/20, but as a percentage of the overall budget, the category increased by 1.5 percent to 21.26 percent. The largest share of the funding goes to the work of maintaining markets and addressing market-related issues that arise.

Marketing remains a strong focus of the WGC, and while travel and physical meetings with buyers and end users are projected to be more limited in the near term, efforts are underway to connect and provide information to buyers virtually. Membership in U.S. Wheat Associates (USW) remains the largest line item among marketing expenditures. Together with the contribu-



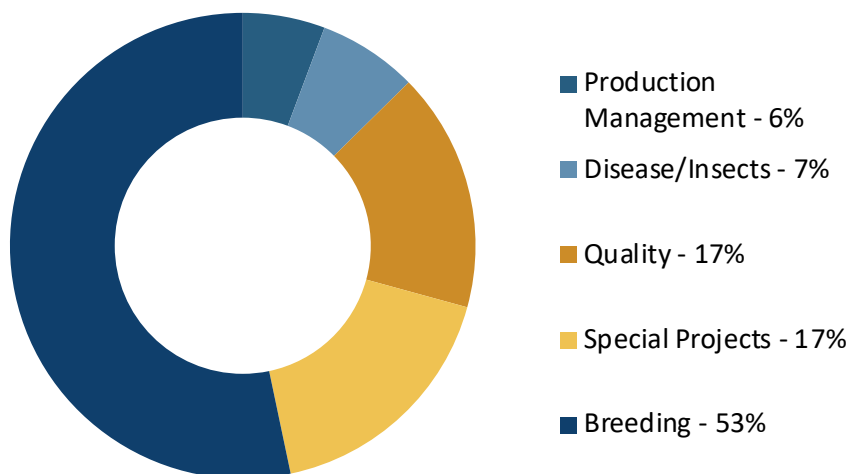
tions of 17 other state commissions, USW works hand in hand with buyers from offices around the world.

The education/information category saw its funding fall from \$540,500 to \$438,500 due primarily to Wheat Week, which is navigating school shutdowns amid the COVID-19 crisis. The innovative program that sends instructors into 5th grade classrooms across the state to teach state science requirements through the lens of the wheat industry is now exploring a virtual approach to reach students (and their parents and families) across eastern and western Washington.

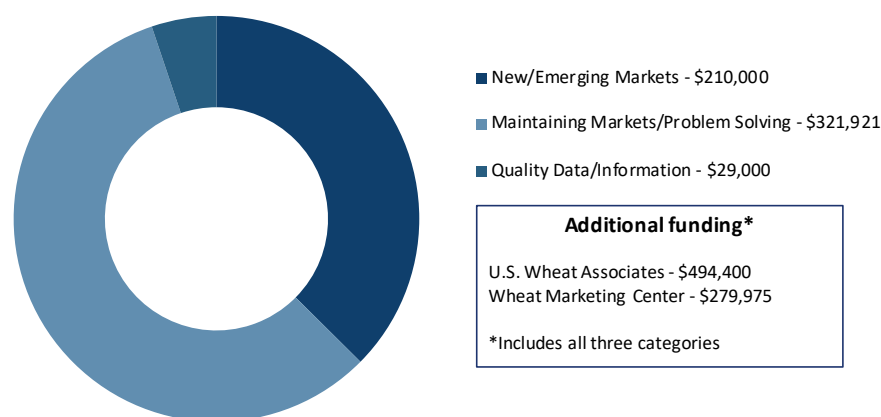
Grower services was approved at \$974,545, down from \$1.18 million the previous year. Included in the amount is funding the WGC provides the Washington Association of Wheat Growers for contracted services, which increased by 7.3 percent, mainly for public relations work.

A complete budget can be found on the Commission website at [wagrains.org](http://wagrains.org). Go to the drop-down menu at the top of the page, click on About WGC/Our Mission/Budget. A button on the budget page downloads the current budget. ■

### Washington Grain Commission 2020/21 Research Funding - \$2,171,284



### Washington Grain Commission 2020/21 Marketing Funding - \$1,335,296



## Community-based management targets herbicide-resistant weeds

Production systems in the inland Pacific Northwest (PNW) are particularly vulnerable to the effects of herbicide-resistant weeds, which can fundamentally alter farming systems and impact growers' livelihoods. One way to control the spread of herbicide-resistant weeds from farm to farm, as well as preserve growers' herbicide tools along with no-till and direct seed options, is community-based management. That is precisely what a group of researchers from Washington State University (WSU) and the University of Idaho, along with farmers, agribusiness representatives and other stakeholders, are in the midst of developing. The initiative will begin with

a series of pilot programs to build and assess community management strategies for herbicide-resistant weeds on the Palouse, culminating in a toolkit that communities can adapt to kick-start their own coordinated management efforts. Growers in the PNW are helping to create the foundation for more targeted and effective efforts to address herbicide resistance in the region by participating in various parts of this project. Growers and other interested stakeholders can follow the process by listening to updates that will be available through WSU's Weeders of the West blog. Additional inquiries can be directed to Dr. Katie Dentzman at [kdentzman@uidaho.edu](mailto:kdentzman@uidaho.edu). ■

# Different but similar

## AUSTRALIA'S EARLY WEED RESISTANCE INFORMS PNW PATH FORWARD

By Ian Burke and Arron Carter

We're in a very different world now from the one that five of us left last February for a two-week, fact-finding tour of Australia to investigate that country's response to weed resistance and weed management.

Besides ourselves, the group included Washington Grain Commission (WGC) CEO Glen Squires and WGC commissioners Gary Bailey and Brit Ausman.

A trip to Australia like the one we arranged can't occur now, and likely won't be possible for years to come. The COVID-19 pandemic has fundamentally altered the life we practiced in the past.

There is no way to compare the magnitude of the impact of a global pandemic to the impact of herbicide resistance on the farm, except perhaps like this: When herbicide resistance evolves sufficiently, the impact to the farming system is such that you have to stop what you have been doing and find a completely different way. As

farmers have already learned from resistance issues and the world is now learning from the pandemic, that's not easy.

### Australian Wheat

Australian wheat shares many similarities to U.S. wheat, particularly wheat grown in the Pacific Northwest (PNW). Like PNW wheat, Australian wheat is primarily produced for export to southeast Asia. But it wasn't always that way.

Wheat is a relatively new crop for Australia. Historically, sheep were raised in what is now the country's wheat belts, and sheep need food. The Australians, ever pragmatic, found the best forage grass they could—rigid ryegrass—and planted it in dense stands throughout the wheat belts. If that sounds unusual, consider that in the U.S. we once tried cheatgrass as a forage, only we didn't have to plant it. The cheatgrass took care of that itself.





Rigid ryegrass is an incredible plant species. It is what weed scientists like to call “very adaptable.” When you add a species like rigid ryegrass into a production system like that used in Australia, where there is essentially no government support for crop production (farm programs don’t exist, and insurance is very expensive), you get herbicide resistance. Quickly. Shockingly fast, in fact.

Australian wheat farmers no longer have any post-emergence herbicides that are even moderately effective for controlling rigid ryegrass. As new herbicides were introduced, one by one in the 1980s and 1990s, they were used like products coming off a seemingly endless conveyor belt. Rigid ryegrass evolved resistance to all of them, often within a few years of introduction.

As a consequence, Australia was the first country to create a “Resistance Initiative” to help farmers deal with the threat. Australian farmers have also evolved. Those who are left are very good at what they do, and based on the recent trip organized by the WGC, we can learn a lot from them.

## The GRDC effect

**Privatization of research.** The Grains Research and Development Corporation (GRDC) is one of a few re-

search and development corporations that were created when Australia opted to privatize agricultural research and support in the 1980s. The GRDC is still funded by the government, but it is also supported by the equivalent of checkoff dollars from farmers.

Functionally, the Australians combined parts of the U.S. Department of Agriculture (USDA) and various state grain commissions (like the WGC) into a single entity to support grain farming. There is no “land-grant” university system or a Cooperative Extension Service. Instead, the GRDC funds research at various universities based on their location and specialization.

Where the small grain farmers in the U.S. benefit from federal Hatch Act dollars flowing to Washington State University (WSU), the GRDC has to pay for the entirety of crop research. That has translated into efficiency and specialization on the part of Australia’s weed science programs, and it resulted in plant breeding being privatized. The only public plant breeding in the country is essentially prebreeding for new or novel traits; managing quality; or creating new grain production systems.

Overall, the effect has led to the GRDC organizing farm support as well as providing national strategic

Except for a few indigenous Western Australian trees, the view of a wheat farm in the Southern Hemisphere doesn’t look that different from Ritzville. Of course, it is 110 F in February. Farmers are prohibited from removing trees, even from the middle of fields.



(Above, top left) Beach sand is used to lime Australian wheat fields on an annual basis. As one Australian farmer put it, “if you aren’t liming, you aren’t farming!” (Right) Farmers in Australia operate on what is called a tram-line system, which is built on permanent wheel tracks. Using a chaff liner, the rigid ryegrass seed is deposited in wheel track, where traffic kills them. The downside is the ruts left by the constant traffic over the same spot. (Above, bottom left) It’s much smaller than American workhorse pickups from Ford, Dodge and Chevy, but the little Toyota Hilux (similar to a Tacoma) is the vehicle that farmers drive all over Australia. This one is outfitted with an aluminum work body, a spray boom and autosteer.



In a shop at the University of Sydney, Guy Coleman (left) and Caleb Squires (second from right), postdoctoral research associates, show off the solar-operated weed detection and removal robot to the team from Washington including (from left) Gary Bailey, Brit Ausman, Arron Carter and Ian Burke.

guidance for farming research, including herbicide discovery.

**Specialization in Australia.** Specialization and efficiency were two attributes of the Australian system that stood out during our visit. We started our visit by meeting with staff at the Australian Herbicide Resistance Initiative (AHRI), an organization singularly focused on understanding and mitigating herbicide resistance. The next stop was with InterGrain, a company focused on plant breeding. Our third stop was with a private crop research company that focuses on conducting field research trials, including variety trials.

At every visit, we interacted with Australians who were remarkably focused on doing critical grains research in support of the overall system. Each entity did their “thing” very well.

### Targeted research on managing weeds

**Herbicides.** We had the opportunity to visit three weed science research programs in Australia. In Western Australia, we visited AHRI, led by Prof. Hugh Beckie; in Adelaide, we visited Prof. Chris Preston and his research program; and we visited Prof. Michael Walsh’s program at the University of Sydney. Although herbicides were involved in the research programs, the overall lack of new herbicides, coupled with farmer and farm consultant expertise, reduced the need to conduct the sort of

herbicide efficacy research conducted in the U.S.

Instead, the Australian weed science research groups conduct targeted, integrated weed management research. They also operate weed resistance testing programs. Testing for resistance is widely used by Australian farmers, even though it is quite expensive. One of the most eye-opening aspects of Australian farmers’ behavior was their proactive response to weed resistance. Sending in weed seed samples for resistance testing is standard operating procedure.

**Plant breeding.** Plant breeding in Australia is privatized, and the system for collecting royalties is different than ours. Instead of paying royalties when purchasing seed, the farmer reports the variety at grain delivery. The royalty stream is then directed back to the company based on those reports. It means that farmers can save seed, and every farm we visited had a seed cleaner.

There are positives and negatives to any system. The Australian seed system can be gamed when farmers report a variety different than the one they actually grew. On the positive side, there is likely less farm-to-farm seed contamination during planting.

Where public plant breeding does occur, it is singularly focused on a particular problem. Plant breeding as a scientific endeavor is managed by the Commonwealth Scientific and Industrial Research Organization (CSIRO),



which is substantially similar to the U.S. Department of Agriculture's Agricultural Research Service for agricultural research.

CSIRO is engaged in breeding for wheat competitiveness with wheat. It's not a new idea, but they have brought a very creative spin to it. For instance, we were introduced to wheat varieties with leaves as wide as a corn leaf.

### Grower attitudes, engagement and the business model

**The "aren't farming" statement.** February is high summer in Australia, meaning days of 110 F. Although there were no crops in the ground at the time, we were able to tour five farms in Western Australia and visit with farmers, all of whom were eager to share and discuss aspects of their business.

We were all struck by their engagement with independent consultants. A consultant might assist as many as 30 farmers in an area. The smallest farm we visited was 10,000 acres.

We were astonished to learn how they lime. It's routine to spread low grade lime derived from beach sand on wheat fields during summer. The rate is low, and the lime is applied regularly. Our hosts were blunt. As they put it, "if you aren't liming, you aren't farming."

Farmers consider essential activities to be those that were it not to occur would potentially lead to farm failure. Liming and weed management were discussed in the same breath.

**Weed management in practice.** When it came to weed management, the farmers we visited could specifically identify and talk about the multiple integrated weed management techniques they were using. All of them tram-line

(a farming system built on permanent wheel tracks where the crop zone and traffic lanes are permanently separated). They also chaff-line (placing a chute on the rear of the harvester that concentrates the chaff into a single line). These practices result in most of the rigid ryegrass seed being placed in the drive line of the combine (and all of the other equipment used in the field).

All of the farmers we spoke with expressed interest in seed destructor technology (where a hammer mill is fixed onto a combine, and the weed seed is fed through it), but none felt it was quite worth the cost. A chaff-line setup on a combine could be rigged for less than \$1,000 and was viewed as effective enough.

All of the farmers had their consultants arrange for herbicide resistance testing where needed.

### Conclusion

Weed management research, and particularly herbicide resistance management research, in Australia is very advanced and is managed from the GRDC down to the farmer in an efficient and organized system. The farmers we spoke to indicated herbicide resistance was one of the primary issues their farms faced.

As researchers, we have both been to a myriad of meetings and events while serving the wheat industry, but our tour of Australia was the most educational and impactful of all. Our discussions and tours showed substantial similarity in the complexity and practices on farms "Down Under" to our own wheat farms and the farming systems of the PNW.

We look forward to integrating what we learned into our programs and spending the future capitalizing on the linkages and ideas about weed resistance and weed management that we gained during the journey. ■



Leon Ryan (middle, in front), a Western Australian farmer, shows Ian Burke (left) and Gary Bailey (right) a weed as they walk out to a paddock near York, Western Australia.

# Dealing with oxidation

## NEW PATH TOWARDS WHEAT PLANT HEALTH REVEALED

By Andrei Smertenko

*Associate Professor, Institute of Biological Chemistry, WSU*

On a sunny day, wheat plants are kept busy collecting light energy and converting it into fats, sugars, proteins and many other useful molecules.

Collecting and transforming light energy depend on oxidation, a chemical reaction between molecules during which some molecules lose electrons while others gain electrons. For example, burning logs is oxidation of carbohydrates in the wood by atmospheric oxygen. Electrons generally function as a type of currency in the chemical world—molecules use electrons to trade energy between each other.

Although essential, oxidation reactions pose a major threat to plant life by generating reactive oxygen species, or ROS for short, as a byproduct. Another name for ROS is free radicals. As important as ROS production in plants is, it has not been exploited in wheat breeding, and there are advantages for doing so. Introducing genotypes with low ROS production will reduce the cost of running breeding programs by increasing the efficiency of capturing drought- and heat-tolerant genotypes.

The bulk of ROS derives from oxygen or water. One of the most common ROS—superoxide—derives from oxygen. Consider this: each oxygen atom has eight electrons—two on the inner orbit and six on the outer orbit (Figure 1a). In the oxygen molecule, two atoms share four electrons on the outer orbit where each electron has a pair. Gaining an extra electron makes the superoxide (Figure 1b). Now there are 13 electrons on the outer orbit, and one of them is not paired. An unpaired electron makes the superoxide molecule highly unstable and highly reactive.

Reaction of ROS with key molecules such as proteins, lipids or DNA causes so-called oxidative damages. In the case of proteins, the key outcome of oxidative damages is loss of protein structure and functions (Figure 2). Left uncontrolled, the oxidative damages would kill the plant. Plants mitigate the danger of oxidative damages with the help of a ROS scavenging system consisting of many specialized proteins and organic molecules known as antioxidants.

All ROS scavenging proteins are enzymes, and one of them is superoxide

dismutase. The job of enzymes is to facilitate chemical reactions in cells. This superoxide dismutase catalyzes a reaction in which superoxide is converted into hydrogen peroxide and oxygen. However, while neutralizing the superoxide, this reaction creates a new problem: the hydrogen peroxide itself is highly unstable and within seconds, decomposes into another ROS molecule, hydroxyl radical.

To deal with that, hydrogen peroxide must be neutralized before damaging other molecules, and it has to be done fast. A class of ROS scavenging enzymes, peroxidases, undertakes the job at a clip. In fact, peroxidases are the fastest enzymes ever studied.

Antioxidants are structurally diverse small molecules capable of relieving the ROS from an excess of electrons (Figure 3a, b). In the course of this reaction, the antioxidant molecules become damaged and require rehabilitation before they can act again (Figure 3c). A group of specialized enzymes are responsible for the rehabilitation of the antioxidants. Among the most common antioxidants are vitamin C, or ascorbic acid, vitamin E and carotenoids.

Plants stash large quantities of antioxidants to counteract sudden spikes of ROS production and use the enzymes as the long-term mechanism for preventing oxidative damages. And, oh boy, plants cannot have enough of both mechanisms as the threat of oxidative damages occurs much too often. This is because, unlike animals, insects or even bacteria, plants cannot run or hide from environmental stresses and have to take whatever the environment throws at them “on the chin.” In just one growth season, a winter wheat plant experiences freezing, heat and drought, all of which stimulate ROS production. Making it through to the harvest, therefore, takes at least some ROS scavenging.

Heat waves make ROS production jump. Performance of all enzymes is optimized for a temperature below 86 F. Above this limit, most proteins lose their normal structure. As a consequence, chemical reactions in cells, including oxidation, go wrong.

The impact of heat stress is exacerbated by drought. Normally, plants cool down by evaporating water from the leaf surface through stomata, the tiny openings on the leaf surface. However,

**...Introducing genotypes with low ROS production will reduce the cost of running breeding programs by increasing the efficiency of capturing drought- and heat-tolerant genotypes.**



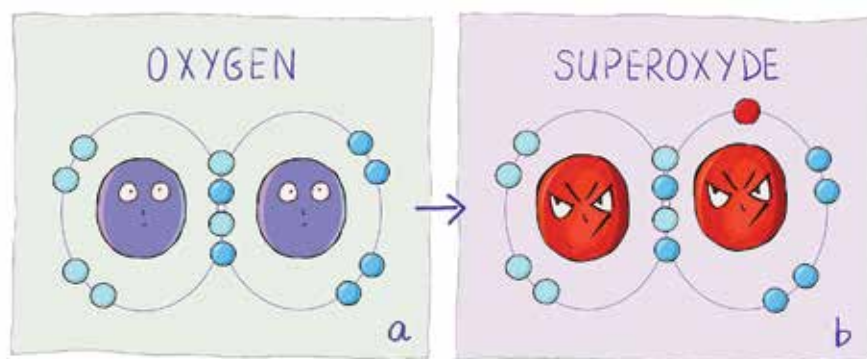
drought induces stomata closure to prevent water loss through evaporation making the temperature control mechanism defunct.

As the temperature of the plant body rises, production of ROS exceeds the scavenging capacity; ROS accumulate and so does oxidative damages. Plant development takes a wrong turn, resulting in lower tiller numbers, smaller spikes, reduced grain number per spike and smaller grains. Furthermore, the protein and starch content are also frequently affected.

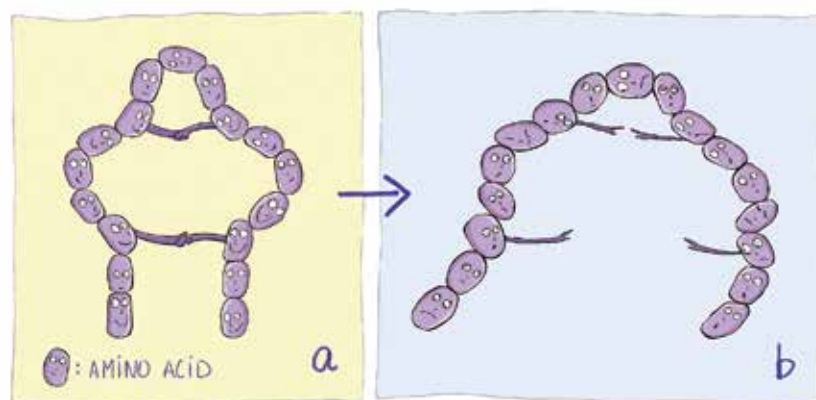
One of the most effective ways to sustain yield under heat and drought is breeding tolerant varieties. The problem is that since both stresses affect all aspects of plant health, breeding resilient varieties depends on simultaneous improvement over an array of traits. Those might include longer roots for accessing soil moisture, more efficient water management through stomata closure, temperature-stable enzymes...the list goes on.

But improving control of ROS production would multiply the benefits of other traits. For instance, less oxidative damages during spells of harsh weather would allow plants to resume more quickly their developmental program with fewer errors once conditions improve.

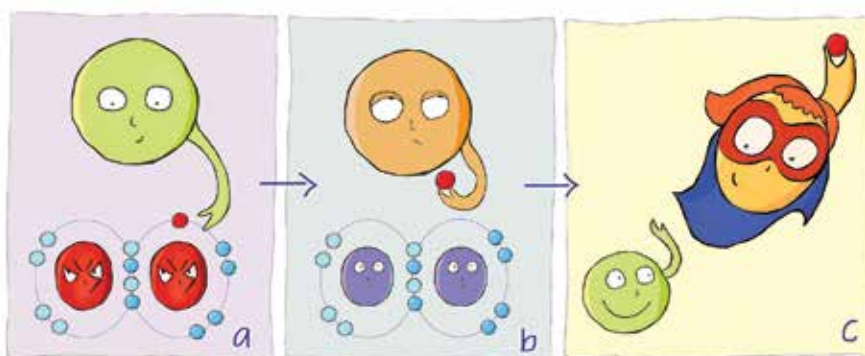
Despite its apparent importance, the ROS scavenging trait has been underexploited in breeding programs due to a lack of corresponding genetic markers, as well as an absence of technology for discovery of such markers. Developing tools for measuring the ROS trait in breeding populations is crucial



**Figure 1.** Superoxide derives from oxygen. a. The outer orbit on the oxygen atom contains six electrons. In the oxygen molecules, each atom shares two electrons with its neighbor. b. Gaining an extra electron from other molecules as an outcome of oxidation reaction converts oxygen into superoxide.



**Figure 2.** Oxidative damages disrupt structure of molecules. a. All proteins are made of amino acids. Arrangement of amino acids is essential for protein activity. One of the mechanisms to maintain protein structure is through disulfide bridges between amino acids. b. Oxidative damages break down the bridges. Consequently, a protein loses normal structure and becomes defunct. Damages to other amino acids also affect protein activity.



**Figure 3.** Antioxidants sacrifice themselves for the sake of other molecules. a. Antioxidant scavenges the extra electron from the superoxide. b. Accepting the extra electron damages the antioxidant molecule. Superoxide becomes oxygen. c. Specialized enzymes regenerate the damaged antioxidants making them ready for the next round of ROS scavenging.

ILLUSTRATIONS BY EUGENIA REZNIK, GRADUATE STUDENT IN ARTS, UNIVERSITY OF QUEBEC, MONTREAL, CANADA, AND UNIVERSITY OF ST-ETIENNE JEAN MONNET, FRANCE.

for developing the next generation of wheat varieties. Thanks, in part, to research funded by the Washington Grain Commission, that goal is now within reach. ■

# WHEAT WATCH

WASHINGTON GRAIN COMMISSION

## World wheat exports shuffle; US in third place



By T. Randall Fortenbery

As we move through the first quarter of the 2020/21 wheat marketing year, a picture of the world trade environment is beginning to emerge.

Figure 1 shows the current (as of mid-June 2020) expectation of wheat export volume for the major exporters in 2020/21 compared to the previous two years (based on the U.S. Department of Agriculture's (USDA) World Agricultural Supply and Demand Estimates (WASDE)).

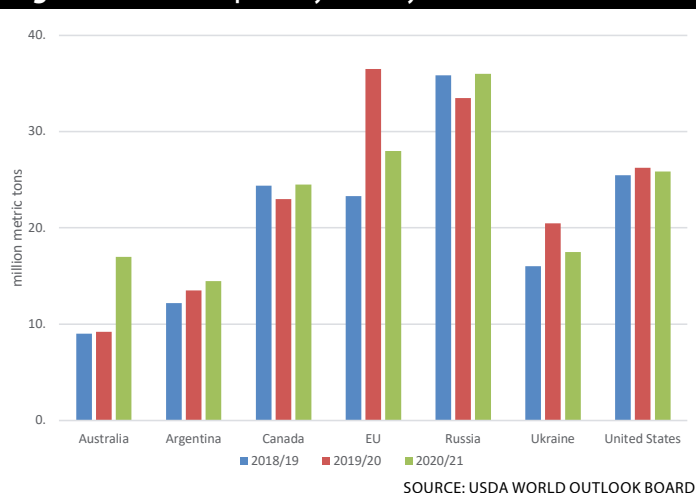
The picture in Figure 1 reveals significant revisions of the wheat trade picture from USDA's May forecast. Specifically, Australia's export projection has increased about 2 million metric tons (or 13 percent) compared to the May projection. This was due to both a larger Australian crop than initially expected and a reduction in wheat feed use due to increased barley feeding and an improvement in pasture conditions following last year's horrific fires.

Russian exports were also increased by about 1 million metric tons in June based mostly on less regional competition. Exports were reduced by about 1.5 million metric tons for Ukraine because of a smaller-than-expected crop, and Russia picked up some of Ukraine's export market share as a result. In addition, exports for the EU were reduced slightly because of a smaller crop. On net, the total world trade forecast for 2020/21 wheat was increased just slightly between the May and June forecasts.

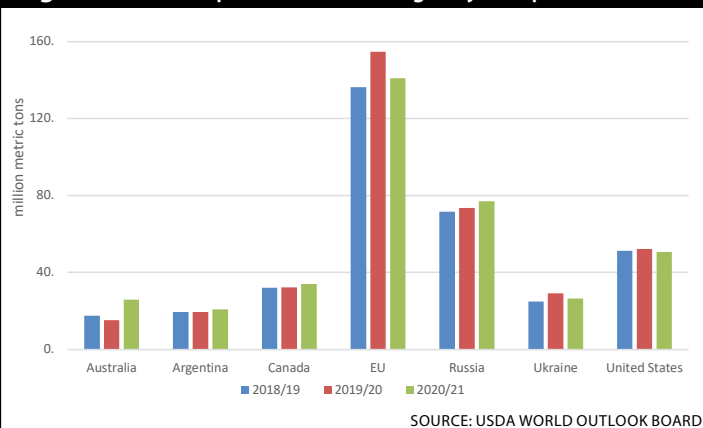
More dramatic is the change in export expectations this year compared to previous years. Note from Figure 1 that the U.S. export volumes are much more stable year to year compared to our major export competitors, except maybe Canada. If the current projections hold through the marketing year, the U.S. will be the third largest wheat exporter for the second year in a row, falling from number two in 2018/19. Despite a significant decline in total wheat exports compared to 2019/20, the EU remains the number two exporter of wheat this year.

The EU, Ukraine and the U.S. are currently expected to experience declines in total wheat exports for

**Figure 1: Wheat exports by country**



**Figure 2: Wheat production among major exporters**



2020/21, ranging from a 23 percent reduction for the EU to a 1.5 percent reduction for the U.S.

The reduction in EU exports is directly tied to reduced production expectations (Figure 2). In 2019/20, the EU produced about 155 million metric tons of wheat. That was 20 percent of all worldwide wheat production, and 48 percent of production among the major wheat exporters.<sup>1</sup>

The current forecast suggests the EU will produce about 18 percent of total world wheat, and 43 percent of wheat accounted for by the major exporters. Despite the reduced crop size and large percentage export reduction in 2020/21, however, the current EU forecast still represents the second-largest

<sup>1</sup>The major wheat exporters generally include Argentina, Australia, Canada, the EU, Russia, Ukraine and the U.S. China and India are also major world producers of wheat, but are not usually active exporters.



export volume in the last five years.

The other major exporters are also expected to increase wheat exports this year. The most dramatic is Australia. Australia's wheat exports for 2020/21 are expected to increase almost 85 percent year over year. This will result in the second highest Australian wheat export volume in the last 6 years, lagging only the 2016/17 year when more than 22 million metric tons of wheat was exported. It also results in Australia overtaking Argentina in exports and puts Australia about equal with Ukrainian exports for 2020/21.

Based on the June 11 WASDE, USDA is projecting a 2020/21 marketing year average wheat price for U.S. producers of \$4.60 per bushel, equal to the marketing year average price currently estimated for the 2019/20 marketing year. However, the market appeared to be a bit more optimistic than USDA concerning new crop prices until early June.

Figure 3 Panel A shows the 2019 December soft red wheat futures prices compared to the 2020 December prices through mid-June each year. Note that the 2020 December prices were consistently trading above the 2019 December futures until early June. While prices for the two different years were about equal as of mid-June, USDA had projected an average U.S. wheat price for 2019/20 June last year to be \$5.10 per bushel—50 cents higher than the current projection for this year.

The June forecasts are generally based on data through May 31, so the convergence in December futures prices had begun to occur just a few of days before USDA calculated their 2020/21 market year price. So, wheat futures for midmarketing year 2020/21 were trading above a year ago through May this year and then equal to a year ago the first couple of weeks of June. Despite this, USDA is projecting a significantly lower market year average price this year compared to their projection at this time last year.

As we approach the 2020 harvest, U.S. export prices look quite competitive relative to the other major exporters. Figure 3 Panel B shows the average export price the last day of the last three months for the 2019/20 marketing year (March, April and May) across major exporters. New crop prices as of June 9, 2020, are also shown.

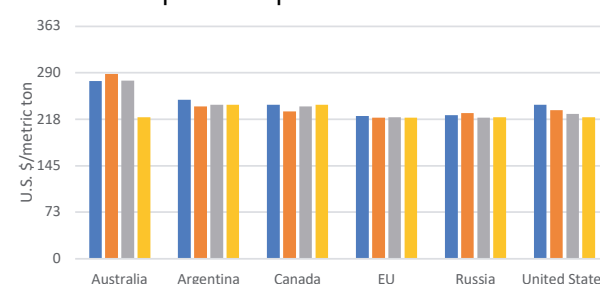
From a price perspective, it would appear that exports of U.S. wheat should be competitive heading into harvest. However, through the first two weeks of the marketing year, export inspections were running a bit behind the average pace necessary to hit USDA's export projection for the 2020/21 marketing year of 950 million bushels. While disappointing, the first couple of weeks'

**Figure 3**

**Panel A: December soft red winter wheat futures prices**



**Panel B: FOB export wheat prices**



SOURCE: INTERNATIONAL GRAINS COUNCIL. PRICES ARE APPROXIMATE AND DO NOT ACCOUNT FOR DIFFERENCES IN WHEAT CLASS OR PROTEIN (FOR EXAMPLE ARGENTINE PRICE IS FOR 12% PROTEIN UP RIVER, AND U.S. PRICE IS 11.5% PROTEIN HARD RED WINTER AT THE GULF).

activity actually means little to the overall export picture, and what is more critical will be the actual shipments as we move towards the second quarter of the marketing year, beginning Sept. 1.

White wheat sales the first couple of weeks of the current marketing year were running ahead of sales for the same period last year, with the largest purchasers being the Philippines, Korea, Japan and Yemen, in that order. Only Indonesia, however, had taken delivery of U.S. white wheat by mid-June, and that was from a sale made in the 2019/20 marketing year.

USDA will not forecast U.S. wheat exports by class until the July 10, 2020, WASDE. For the 2019/20 marketing year ending May 31, they estimated we exported 189 million bushels of white wheat, compared to 196 million in 2018/19. In July 2019, USDA had forecast 2019/20 exports of white wheat to be 190 million bushels, so while there was significant variation in their month-to-month forecasts for total wheat last year, their white wheat export forecast remained quite stable. ■

**Randy Fortenbery** holds the Thomas B. Mick Endowed Chair in Grain Economics at Washington State University. He received his Ph.D. in Agricultural Economics from the University of Illinois-Urbana/Champaign.

## History buffs take matters into their own hands to address lack of resources

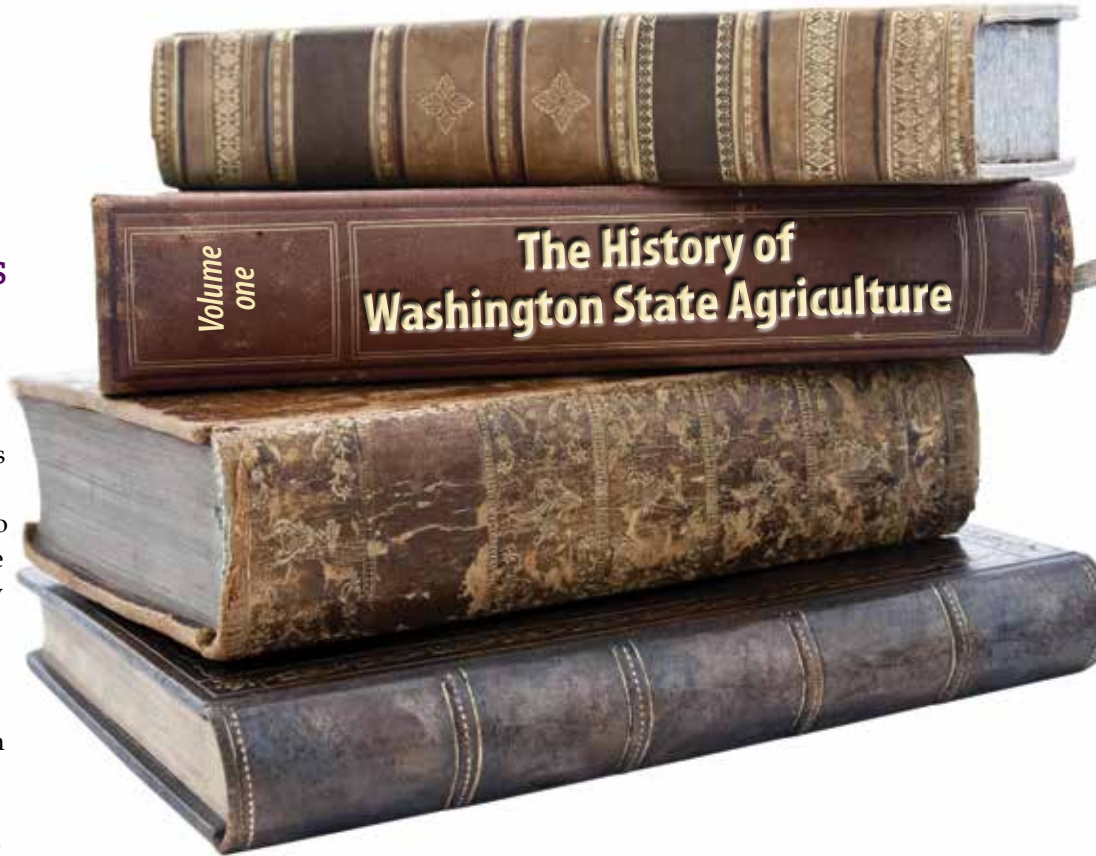
By Trista Crossley

Most Washington residents know agriculture is important to the state's economy, but not many really know the industry's history. That's about to change thanks to an effort led by the state's foremost encyclopedic history website and the melding of a couple of history-loving minds.

Marie McCaffrey, executive director of historylink.org, said she's been thinking about the lack of information on the state's agricultural history for years. McCaffrey started the website 20 years ago as a nonprofit corporation to provide free, fully sourced, authoritative essays that chronicle Washington's history.

"We wanted to make the history of agriculture available to all students in Washington state so they could learn the history of agriculture, which we believe is really, really important," McCaffrey said. "There's a lot of stuff on agriculture, but not on the history of agriculture. That was our first goal. Then our larger goal, since we are an encyclopedia of Washington history, was that we wanted to do it not as an article but get in-depth on the subject."

The result of McCaffrey's efforts goes on display this summer as a history curriculum focused on Washington state agriculture, primarily for middle school students. Teachers will be able to download lesson plans supported by video and other source materials. There will be four overall history lessons that concentrate on 60-year time periods beginning in the 1840s. The state's top commodities, such as wheat, dairy, apples, wine and potatoes, will have their own lessons. Other



lessons will focus on overarching themes such as irrigation and transportation. All material will be available at historylink.org.

But the path to get to this point was anything but direct.

At first, McCaffrey made little headway raising money for the project. Then, she was introduced to a friend of a friend who was also a bit of a history buff. This friend not only grew up on a farm, but she also happens to head a company that has a lot of experience making agricultural videos.

"This was a project idea that I've had in the back of my mind for long time," said Kara Rowe, CEO of North by Northwest, a digital video studio in Spokane. "I didn't know how to make it take shape. I did know that for all the work of agriculture, in the history of Washington, agriculture was missing. We have all this great history on aerospace, on technology, but the foundation of the entire state since European settlement is missing, from textbooks, from school curriculums."

McCaffrey and Rowe turned to Alex McGregor, a well-known Eastern Washington wheat farmer and Washington state agricultural history expert, for advice. McCaffrey said they met several times with McGregor who offered his take on the project and then recommended a third partner. Enter Jennifer Kilmer, director of the Washington State Historical Society (WSHS).

"We were excited to get involved," Kilmer said. "We have robust collections around agricultural history in Washington, and we are excited to bring those to bear to this set of materials. Our mission is to partner with communities to explore how history connects us all. In that way, this project was a natural for us because it involved strong partnerships."

The project started to get momentum. A \$20,000 grant from the Peach Foundation, matched by funding from the wheat and dairy industries, gave the group enough money to cover the first two commodities, wheat and dairy, as prototypes. In 2019, the Washington State Legislature included funding in the budget for the project through the office of the Superintendent of Public






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Instruction. Funding was also provided by other sources, including the farm bureau and the ports.

"We started working in 2018 to get support for the 2019 Legislative Session," McCaffrey said. "We spent the summer working, putting supporters together. We got a lobbyist who did pro bono work for us. I just went and lobbied everyone personally. We got it passed by the skin of our teeth."

Once the funding was in place, an advisory committee was formed to help structure the project. HistoryLink is responsible for writing the essays. North by Northwest is responsible for putting together videos, and the WSHS is putting together online galleries of historical photos and objects to go with the curriculums—which are being developed by a third party—and helping push the project out to teachers and educators across the state.

While essays might be the old-school way to learn about a subject, Rowe feels today's students respond especially well to video as a means of learning.

"Sitting down and watching the history in front of you through moving images, people's personal testimony and seeing the emotion in their story... there's just something about that that you can't get from any other medium," she explained. "That's what makes video so compelling and an important part of the project. Then, when students start reading essays and seeing artifacts, it makes a full circle."

Part of counting this project successful, for Kilmer, will be seeing the curriculum get widely adopted.

"The other thing we were excited about this project is that there are materials designed to address some subjects that have not been historically taught in this area," she said. "They'll be looking at indigenous people and their role in agriculture; labor and immigrant farmers; and the impacts of globalization. I think success would also be students getting a more interconnected view of agricultural history, and how important it is to broader subjects in our state's history."

McCaffrey is proud of the project, but she isn't done yet.

"I consider this step one. The first part will be done, and I'm proud of it, and I hope it gets used," she said. "We've got a really strong package we are going to release, but there's a lot more I want to do. We will be continuing on through 2021, writing more articles on agriculture."

The entire project will be available at [historylink.org](http://historylink.org),



at the top of the page under the "Education" and then "Curriculum Materials" link. The wheat portion is currently available at that link, as well as on the Washington Wheat Foundation website at [wawheat.org/history-of-wheat-farming-in-washington](http://wawheat.org/history-of-wheat-farming-in-washington). ■



# HistoryLink essay: Wheat farming in Washington

*Here's an excerpt from the HistoryLink essay on the history of wheat farming in Washington by Jim Kershner. The essay is part of the ag history project's wheat curriculum and can be found at [historylink.org](http://historylink.org). Reprinted with permission from HistoryLink.*

...(Sir George) Simpson himself would be responsible for the first systematic wheat-growing in what would later become the state of Washington. He brought seed wheat with him to the company trading post at Fort Vancouver (where the city of Vancouver in Clark County later grew up). By 1833, the post was harvesting 3,000 bushels of wheat, and a visiting naturalist noted that "wheat thrives astonishingly; I never saw better in any country" (Scheuerman and McGregor, 13). The trading-post farmers had discovered that English wheat varieties produced abundantly in the somewhat similar maritime climate of what would become western Washington. Meanwhile, Simpson sent a bushel of seed wheat to Fort Colville, near today's Kettle Falls in northeastern Washington. By 1827, Fort Colville was reaping 200 bushels of wheat and barley. It was the first harvest of what would later become eastern Washington's premier crop, although it would take some experimenting to find strains that were best suited to this much-different climate.

On the west side of the Cascades, the Hudson's Bay Company had also established a farm on the Cowlitz Prairie along the Cowlitz River south of Chehalis. By 1841, the Cowlitz Prairie farm was producing 8,000 bushels of wheat. Simpson described the Cowlitz Prairie soil as "the best quality for growing wheat, consisting of a fine rich loam, running at the depth of 15 inches, into a subsoil of stiff clays" (Scheuerman and McGregor, 25). East of the mountains, near the current site of Walla Walla—in what would later become the heart of Northwest wheat country—missionaries Marcus (1802-1847) and Narcissa (1808-1847) Whitman established a mission in 1836, and they had brought with them a jar of seed wheat. They evidently discovered favorable conditions for growing wheat, because the Whitmans were milling their own wheat flour by 1841.

## Spreading From Walla Walla

Wheat continued to be grown west of the Cascades in both Oregon and Washington as more farmers arrived. Yet after the 1855-1856 Indian wars, wheat farmers began pouring into the Walla Walla and Touchet valleys. The first crop in the Touchet Valley was raised in 1861 on Whiskey Creek near Waitsburg, some 15 miles northeast of Walla Walla, and a few years later, the Walla Walla area would be boasting of its wheat supremacy. In 1864, a Walla

Walla newspaper mentioned that five flour mills were in operation in town and that the "local flour was superior to that produced in the Willamette Valley" (Brumfield, 30). By 1866, so much wheat was being harvested in Walla Walla that the Washington territorial government declared that "wheat cannot be purchased anywhere in the United States at what it is now being sold for daily at Walla Walla, 60 cents per bushel (60 pounds)" (Durham). ■

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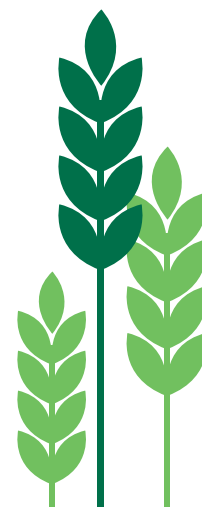
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## National survey focuses on nonoperator landlords

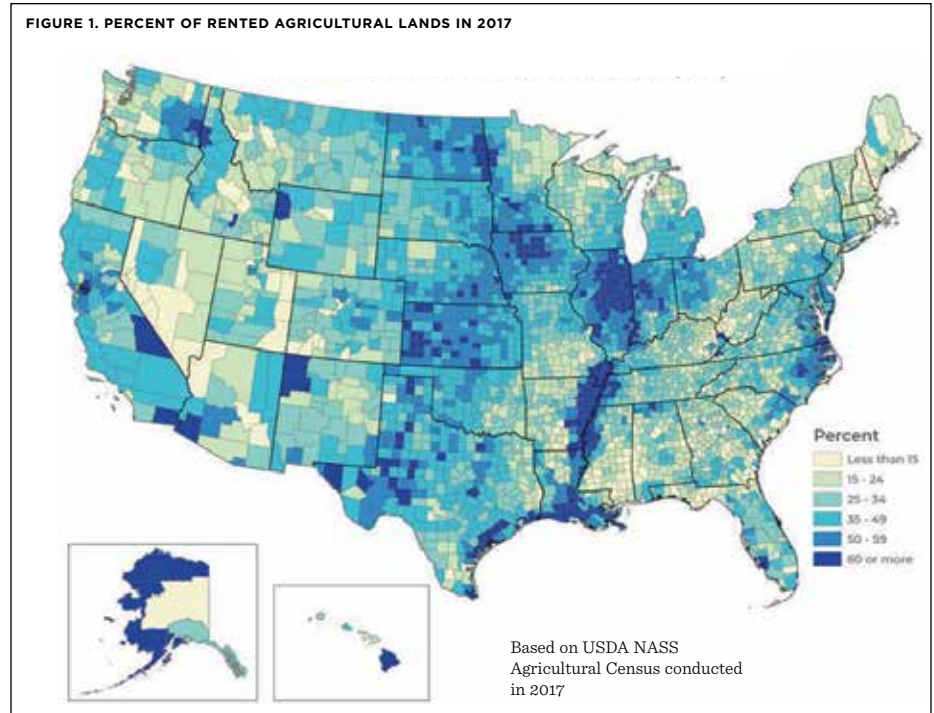
Did you know the average age of Washington nonoperator landowners (NOLs) who rent their agricultural land is 69; 79 percent of them don't live on the land they rent; and only 31 percent helped their parents farm?

Those numbers are from a survey done by American Farmland Trust (AFT), which is a national non-profit organization focused on three things: protecting agricultural land, promoting environmentally sound farming practices and keeping farmers on the land. The organization is staffed by farmers, policy experts, researchers and scientists and governed by a board of directors.

With nearly 40 percent of U.S. farmland leased, AFT realized they needed a better understanding of NOLs. They began surveying landowners in 11 states in 2018, including Washington state. According to the results, among respondents, many do not know who the next owner of their land will be, particularly for those owning land in Iowa, New York and Ohio. Yet, a majority of respondents indicate that their land management decisions are greatly influenced by their commitments to future generations of their families.

A little closer to home, AFT surveyed 306 Washington NOLs who owned 25 acres of farmland or more. The survey found that Washington landowners most often (40 percent) rent their land to a relative or family member, while 34 percent rent to neighbors, friends and family, and the rest (24 percent) rent to someone who is not related nor a friend of the family. The majority (66 percent) of lease agreements are written, and most are a sharecrop agreement (76

FIGURE 1. PERCENT OF RENTED AGRICULTURAL LANDS IN 2017



percent). Additionally, landlords have typically been renting their land to the same operator for an extended period of time, with the median length of time being 15 years. Other Washington survey results include:

- NOLs own a median of 416 acres, of which they rent out 320 acres.
- Forty-five percent of NOLs' land has been in their family for 71-102 years, while 15 percent has had the land in their family for more than 120 years.
- Forty-seven percent believe that the next owner of the land will be a relative who will rent it out.
- The top three qualities most frequently cited as "somewhat important" or "very important" when evaluating current or potential farm operators are trustworthiness at 99 percent; they care about my land at 98 percent; and they are financially responsible at 97 percent.
- The top factors considered when making management decisions are keeping land in farming; soil quality; needs of the farm operator leasing my land; need for income from the land; future generations of my family; water quality; the neighboring landowners; wildlife habitats; and the surrounding community(ies).

To read the full report and to see other Washington state results, go to [farmland.org/NOLS](http://farmland.org/NOLS). The other states surveyed were Arkansas, California, Illinois, Indiana, Iowa, Kansas, New York, North Carolina, Ohio and Texas. ■

Source: Petrzalka, P., Filipiak, J., Roesch-McNally, G., and Barnett, M. J. 2020. *Understanding and Activating Non-Operator Landowners: Non-Operator Landowner Survey Multi-State Report* American Farmland Trust [farmland.org/NOLS](http://farmland.org/NOLS).



# Calling all cooks!

The Washington Association of Wheat Growers (WAWG) is putting together a new cookbook for readers and cooking enthusiasts to enjoy! *Wheat Life* readers are encouraged to submit their favorite recipe(s) of any kind.

The cookbook will feature main dishes, desserts, appetizers, soups and sides.

Please fill out the form to the right (attaching additional pages as necessary) and scan and email it to [chauna@wawg.org](mailto:chauna@wawg.org).

You can also mail or fax the form to the address below.

Another option is to fill out the pdf form at [wawg.org/grower-education/2020-wawg-recipe-book/](http://wawg.org/grower-education/2020-wawg-recipe-book/), and then save and email it to [chauna@wawg.org](mailto:chauna@wawg.org)

For more information, please contact Chauna at the WAWG office, (877) 740-2666 or [chauna@wawg.org](mailto:chauna@wawg.org).

*Submissions need to be received no later than Aug. 31, 2020.*

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**Submitted by:** \_\_\_\_\_  
**City and state:** \_\_\_\_\_  
**Contact Phone:** \_\_\_\_\_  
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*(Recommended abbreviations are c, tsp, Tbsp, pkg, qt or pt.)*

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# THE BOTTOM LINE

## Transforming the black swan into a phoenix

By Dr. David M. Kohl

The suddenness of COVID-19 is much different than other black swan events such as 9/11 and the Great Recession of 2008/09. The final assessment of the full impact for most of society and businesses around the globe is far from complete. The U.S. agriculture industry, with its global reach, will be on the forefront of these paradigm shifts.

For producers, agribusinesses and society, this black swan will evolve through three phases. The initial stage was the dirty bird, causing mass disruption and volatility in nearly every segment of the agribusiness and business industries, as well as personal economic well-being.

As economies start opening up, the angry bird will emerge. In this stage, there will be widespread social, political and economic anguish. Expect this phase to last from six months to a year or longer as the new rules of the road for government, business, industry and society are unveiled.

The third stage will be the mythical bird known as the phoenix, which rises from the ashes of its predecessor. Strategic thinkers and entrepreneurs will align and position their businesses to rise from the potential economic destruction to become stronger, more agile, innovative and aligned with new markets in the U.S. and globally. This pathway from current conditions through the phoenix stage will result in both financial and emotional roller coasters. Consumer behavior of the global populace will quickly shift as government, business and industry develop new playbooks. Accelerated by mainstream and social media, economic volatility will be in extremes.

What are some of the time-tested business and financial strategies to navigate this and future black swan events?

Sound financial record keeping systems that are accurate and transparent will increase in importance. Documentation of financial losses due to COVID-19 will be imperative, particularly if government, financial and economic assistance was accepted.

A three to four-year trend analysis

is also critical. This will bring a sense of how COVID-19 or government assistance has impacted farm profitability and balance sheet liquidity and equity.

Next, re-evaluate your business and personal goals. COVID-19 has been a punch in the economic solar plexus for many. One positive effect of the pandemic is that many individuals have re-evaluated what is important versus urgent in their short- and long-term business life. Over the next year, the goal may be about minimizing losses or possibly breaking even financially. Longer-term focus may be on aligning the business toward new market trends or shifting business operations. Be sure to consider your family and personal goals as well. Balance and focus are the keys to turning lemons into lemonade.

Utilize a cash flow statement to measure the variance between projections and actual results. Markets, particularly those that are heavily reliant on exports, can change quickly with uncertainty and volatility in trade agreements and government relations. Use cash flow projections and scenario planning to plot the boundaries of potential outcomes. A quarterly cash flow can be a good tool to assess gains and losses in marketing and risk management plans. If losses are expected, divide them into working capital and equity to calculate the burn rate. This exercise will provide logic for a very emotional financial situation.

One key strategy is to reach out to your agricultural lender, accountant and other advisors to assess options and alternatives. Your accountant will be a critical resource to determine deferred tax liabilities if partial or total liquidation is being considered. Resiliency, agility, innovation and an entrepreneurial spirit will be strategies for the post-COVID period and over the next decade. Balance sheet equity is the foundation for resiliency. Agility is enhanced by the development and preservation of working capital. On the income and cash flow statements, resiliency is knowing the cost of production and breakeven by enterprise. This, in turn, provides the ability to utilize marketing and risk management plans to generate a profit and mitigate potential losses. One has

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to be entrepreneurial enough to assess the economic and business landscape to position the business to capitalize on possible opportunities as they occur.

To plan and execute these strategies, your well-being is critically important. Heed the following prescription for business and life balance:

- Take time to meditate.
- Shut down the drama and hear the silence.
- Find your platform for peace.
- Set aside time to exercise both body and mind.
- Follow a good diet, but do not be afraid to indulge in some of your favorite excesses.
- Make sure you get plenty of restful sleep to replenish the mind and body.
- Maintain a positive network of support people.

- Seek life's little pleasures.

Transforming the black swan into a phoenix can be a positive or negative experience. Ultimately, it is your mindset with a positive support network that will determine the destination. ■

**Dr. David Kohl** is an academic hall of famer in the College of Agriculture and Life Sciences at Virginia Tech in Blacksburg, Va. Dr. Kohl is a sought-after educator of lenders, producers and stakeholders with his keen insight into the agriculture industry gained through extensive travel, research and involvement in ag businesses. He has traveled nearly 10 million miles; conducted more than 6,500 workshops, speeches and seminars; and published more than 2,250 articles for leading publications. Dr. Kohl's involvement with ag businesses and interaction with key thought leaders provide a unique perspective into future trends of the ag industry and economy. This content was provided by  **Northwest**  
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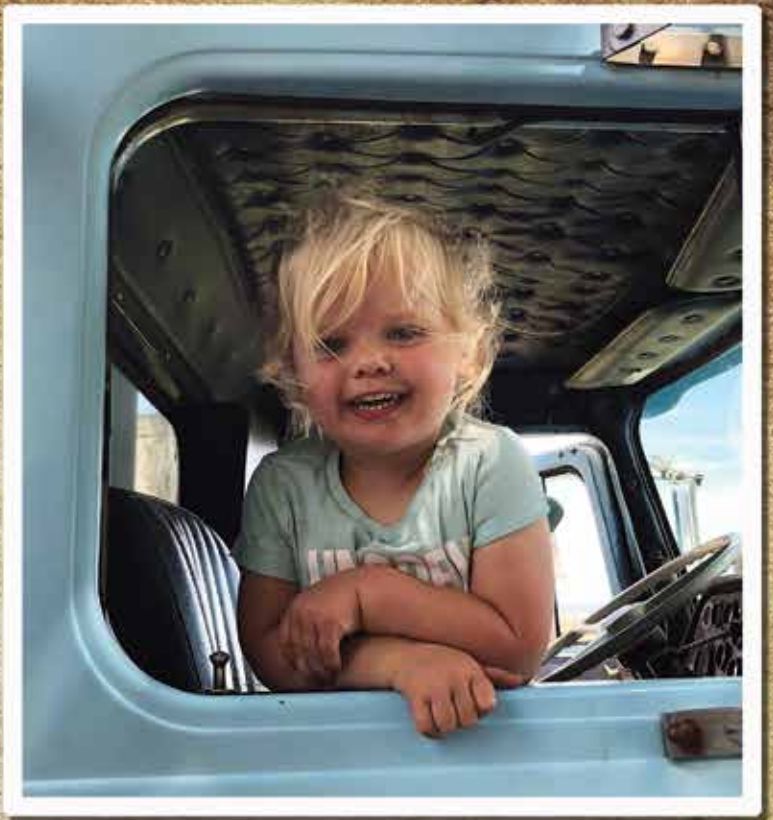
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Please include location of picture, names  
of all people appearing in the picture and  
ages of all children.



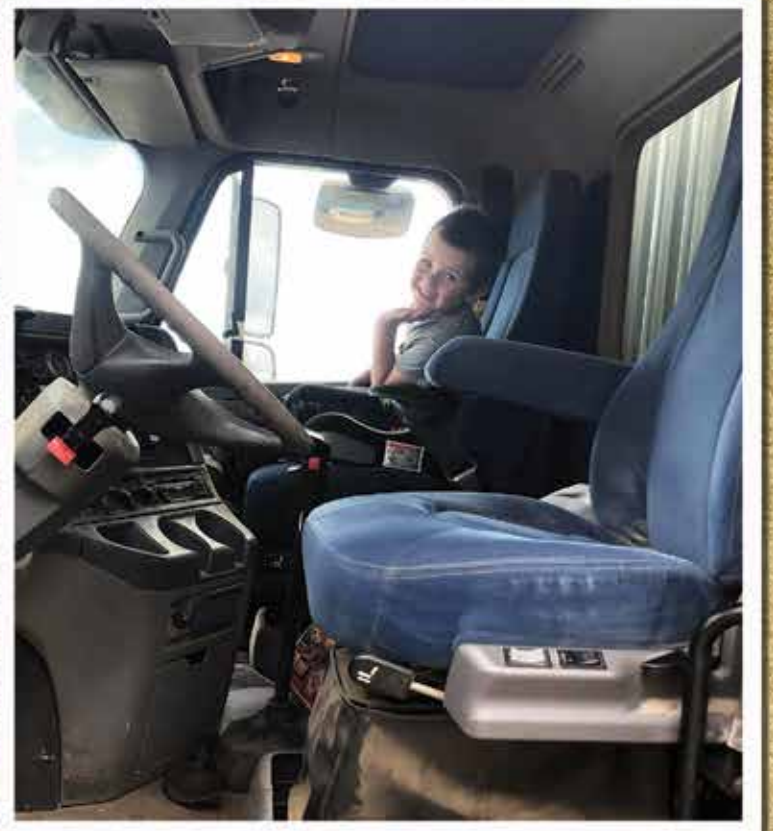
Clausen Farm between Colfax and Pullman.  
Photo by Christopher Clausen.



Gracie Steward (18 months) checking fields with  
dad Josh south of Harrington. Photo by Katie  
Steward.



Emmy Greene (2) loves lending a helping hand during harvest  
in Asotin County. Photo by Heidi Greene.



Carson Greene (5) is excited to haul canola with grandpa at  
Greene Ridge Farms in Cloverland. Photo by Heidi Greene.





Harvest south of Davenport. Photo by Cady Zellmer.



Ava (6) and Chloe (9) McCaw checking fields for hail damage after a storm last August near Waitsburg. Photo by John McCaw.



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