

WHEAT LIFE

The official publication of the Washington Association of Wheat Growers

JUNE | 2023

PAIN AT THE PUMP

Farmers hit with fuel surcharges
despite ag exemption

ALSO IN THIS ISSUE:

Limitations of cover cropping
in dryland agriculture

Dollar Sense: Rising interest rates bring
investment opportunities

New falling numbers test on horizon

USW spotlight: Ady Redondo, David Oh

Harrington artist uses buildings as canvas

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109 East First Avenue, Ritzville, WA 99169

The official publication of



**WASHINGTON
ASSOCIATION OF
WHEAT GROWERS**

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Wheat Life (ISSN 0043-4701) is published by the Washington Association of Wheat Growers (WAWG):
109 E. First Avenue • Ritzville, WA 99169-2394

Eleven issues per year with a combined August/September issue. Standard (A) postage paid at Ritzville, Wash., and additional entry offices.

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President's Perspective



It may be a pain, but NASS data is critical

By Andy Juris

The older I get, the more I'm convinced most of us (me included) stop maturing somewhere between ages 12 to 15. Adults must shave more often, but that's about the only major difference later in life. Thus, almost any social group we, as adults, participate in can be viewed through the lens of our high school experience. Perhaps the only exceptions to this rule are most mothers and a few select members of the clergy.

For example, in the theoretical high school of ag, we find many of the same characters also found in our younger years. Those kids with dreadlocks playing hacky sack on the front steps? The cover crops crowd. The future English majors worrying about world peace and polar ice? Those folks grow heirloom grains and make craft adult beverages. You could go on and on: the sports jocks who now drive ridiculously high pickups and talk loudly at auctions; the science geeks who are the CCAs; and, of course, Alex McGregor, the awesome school principal!

And then there are the "cool" kids. You know the ones who hung out by the side door and coughed their way through some cigarettes smuggled from somebody's dad. They had edgy hair, wore leather jackets and exuded the confidence of open rebellion ... these are the farmers who don't fill out their National Agricultural Statistics Service (NASS) surveys. While it may seem an easy club to join, it's actually quite exclusive! It requires a brash dislike of government, a smug joy at ignoring the surveys and phone calls, and scoffing disdain for any simp who would bow to the "man" and fill it out. They exude coolness and confident opinions and often prove it in their devil-may-care demands for higher Conservation Reserve Program (CRP) rental rates, better farm programs, and drought assistance. The Fonzie motorcycle gangsters of the ag world, ladies and gentlemen.

Got your attention? While the above may not necessarily be true in the extreme, I find many are more than willing to proudly discuss how they stick it to the "man" and ignore the surveys. So, what do these NASS folks do with this data? It turns out, a lot! Almost every aspect of the U.S. Department of Agriculture's (USDA) programs utilize NASS data. CRP rental rates, farm program and disaster payments, ag lending, market crop reports, crop insurance, and transportation are but a few of the areas affected. Worldwide, NASS is considered the gold standard in ag statistics.

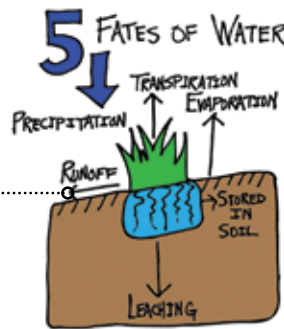
There's an old saying, "garbage in, garbage out." When CRP rental rates aren't what we like, there is a high likelihood no one filled out surveys in their county. USDA reports seem off? What is the quality of data they are getting from us? No ARC payment in your county? It's likely not enough folks responded.

Now, are the NASS surveys perfect? NO! They are often long, boring, repetitive and, at times, seem intrusive. But I've never met a NASS official who wasn't willing to discuss ways to streamline and simplify the process, and progress is being made. It's hard to fix what you ignore. Are you concerned about the government having and using your data? If you've had a cell phone, used the internet, had a bank account, and are alive to read this column, then I hate to tell you, your stuff is out there. If we, as an industry, want to see the programs we use improved and operating on realistic data, it is only reasonable for us to do our part. So let's quit the smoking, hang up the leather jacket, and join the math club. Usually they end up owning the car wash franchise the cool kids eventually work at anyway. ■

Cover photo: Sunrise from Steptoe Butte. Photo by Lori Maricle, Washington Grain Commission. All photos are Shutterstock images or taken by *Wheat Life* staff unless otherwise noted.

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Dollar Sense



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Non-Voting Membership						
Student \$75	X	X	X			
Industry Associate \$150	X	X	X			

WAWG's current top priorities are:

- ✓ Preserving the lower Snake River dams.
- ✓ Fighting mandatory climate/carbon regulations.
- ✓ Lobbying the state Legislature for a seasonal overtime exemption.
- ✓ Maintaining a strong, reliable safety net by preserving crop insurance and making sure farm commodity programs work.
- ✓ Maintaining a safe, sound transportation system that includes rail, river and roads.

If these priorities are important to you, your family and your farm operation, join WAWG today and help us fight.

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- National Wheat Grower updates
- State and national legislative updates



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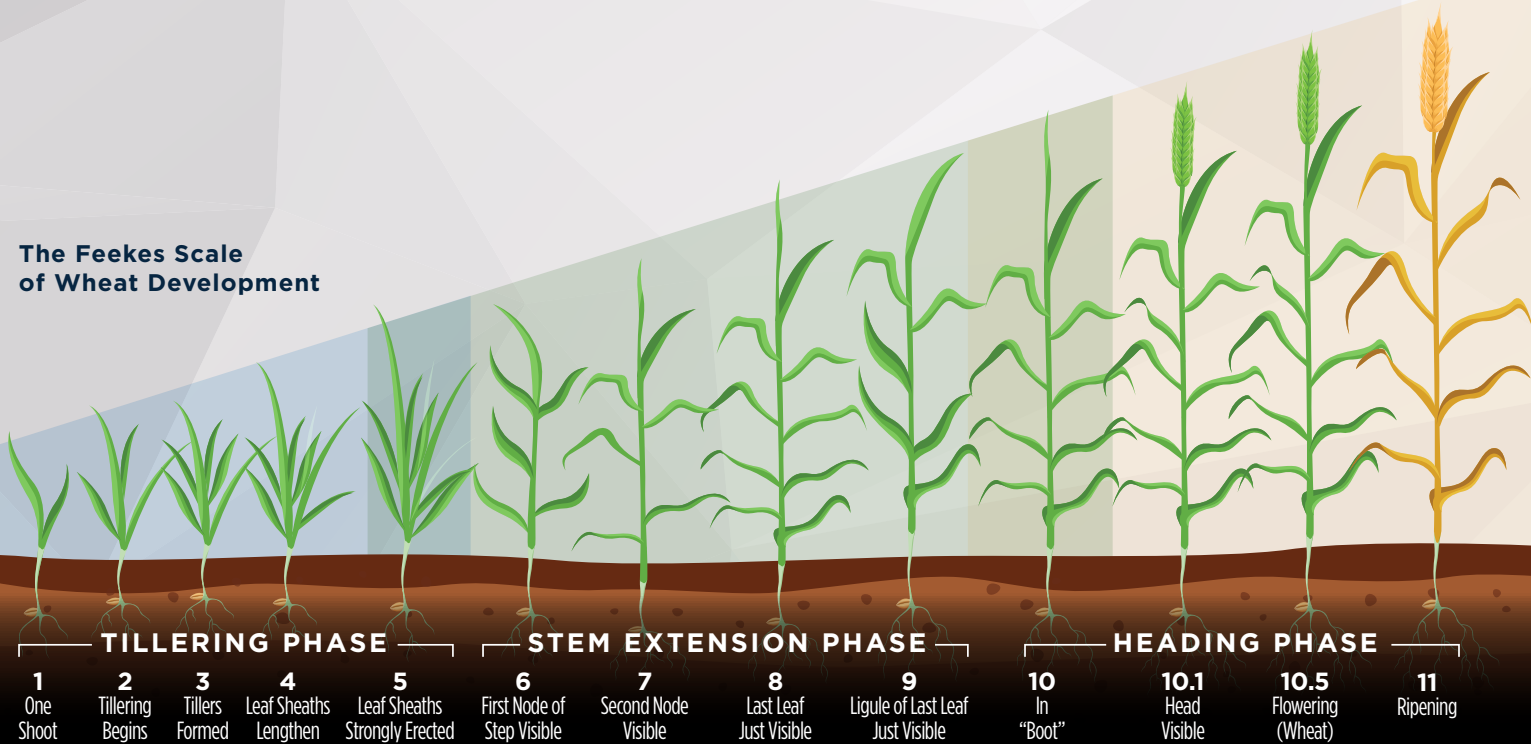
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WAWG at WORK

ADVOCATING FOR THE WHEAT FARMERS OF EASTERN WASHINGTON

USDA updates, budget are focus of May board meeting

After not meeting for several months, Washington Association of Wheat Growers (WAWG) board members had a lot of business to catch up on, including hearing from U.S. Department of Agriculture (USDA) agencies and reviewing next year's budget.

Kevin Davis, state agronomist with the Washington state office of the Natural Resources Conservation Service (NRCS), talked about the agency's web soil survey (websoilsurvey.nrcs.usda.gov/app/) that will be used to help rate the state's soils for enrollment in the Conservation Reserve Program (CRP); his effort to make practices more consistent in NRCS programs, such as CRP and the Environmental Quality Incentives Program; and some of the staffing issues the state NRCS office is dealing with.

Jon Wyss, Farm Service Agency (FSA) state executive director, also touched on staffing issues, telling the board that USDA's pay scale isn't keeping up with the private sector. Sign-ups for the most recent CRP enrollment were down about 18% from previous sign-ups. Some of the reasons producers gave for not enrolling in CRP were the current (good) price of wheat, poor stands reducing cost share, wanting to "clean up the ground," and the rental rate not being high enough.

Dennis Koong, regional director for the National Agricultural Statistics Service (NASS), said the agency is wrapping up data collection for the 2022 Census of Agriculture, which has seen one of the lowest responses in the agency's history. He encouraged producers to

take the time to fill out their NASS surveys as the data is used by other USDA agencies, including FSA, for producer programs.

Ben Thiel, director of the Risk Management Agency (RMA) regional office in Spokane, said the agency just finished their wheat T-yield and insurance review, something that happens every three years to make sure the premiums that come in match what is paid out in losses. The data will be published by June 30, but preliminary information indicates most producers will see a slight rate increase.

Counties reported a mixed bag when it came to wheat stands. While most areas have had decent rain, producers reported a lot of reseeded happening. Many producers also reported an unusual lack of cheatgrass so far this year.

In national legislation, Nicole Berg, past president of the National Association



HOUSE DINNER. Last month, along with several other Washington state agricultural stakeholders, Washington Association of Wheat Growers' Past President Marci Green met with U.S. Congressman and House Agriculture Committee Chairman GT Thompson over dinner in Spokane. The 2023 Farm Bill was the main topic of discussion, but the group also discussed the lower Snake River dams, crop insurance and farmers' safety net.



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of Wheat Growers, said everybody is gearing up for farm bill. One of wheat's priorities is an increase in the wheat reference price for the Price Loss Coverage (PLC) program, which currently sits at \$5.50. Lawmakers would have to find a way to pay for the increase, which could cost billions.

"How do we pay for what we want?" she asked the board. "We need to talk about how to talk to D.C. about this."

WAWG's executive director, Michelle Hennings, talked about her April trip to D.C. where she met with lawmakers on committees that would be involved in breaching the lower Snake River dams.

"We had a lot of great conversations," she said.

The final order of business at the May state board meeting was reviewing the proposed 2023-24 budget. WAWG is funded through a combination of membership dues, *Wheat Life* advertising and the Washington Grain Commission. The majority of the budget, 38.9%, is spent on legislative monitoring and education (both at the state and national level), public relations and transportation issues. The proposed budget is almost the same as last year.

The next WAWG state board meeting is scheduled for June 13 at the Wheat Foundation building in Ritzville. ■

Northwest winter wheat production down 14%

From the National Agricultural Statistics Service

Based on May 1, 2023, conditions, production of winter wheat in Washington was forecast at 99.8 million bushels, down 19% from 2022. Yield was expected to average 57 bushels per acre, down 11 bushels from last year. Growers planted an estimated 1.80 million acres in the fall of 2022, down 50,000 acres from the previous year. Harvested acres were forecast at 1.75 million acres, down 50,000 acres from 2022.

In Idaho, production was forecast at 60.9 million bushels, down 5% from 2022. Yield was expected to average 87 bushels per acre, down 3 bushels from last year. Growers planted an estimated 770,000 acres in the fall of 2022, unchanged from the previous year. Harvested acres were forecast at 700,000 acres, down 10,000 acres from 2022. ►



FARM FAIR. In May, the Washington Association of Wheat Growers shared wheat's story with approximately 1,000 Spokane-area 4th and 5th graders at the Northwest Natural Resources Institute Farm Fair. Thanks to Public Information Committee Chair Marci Green and Wheat Ambassador Shaley Tiegs for sharing their knowledge!



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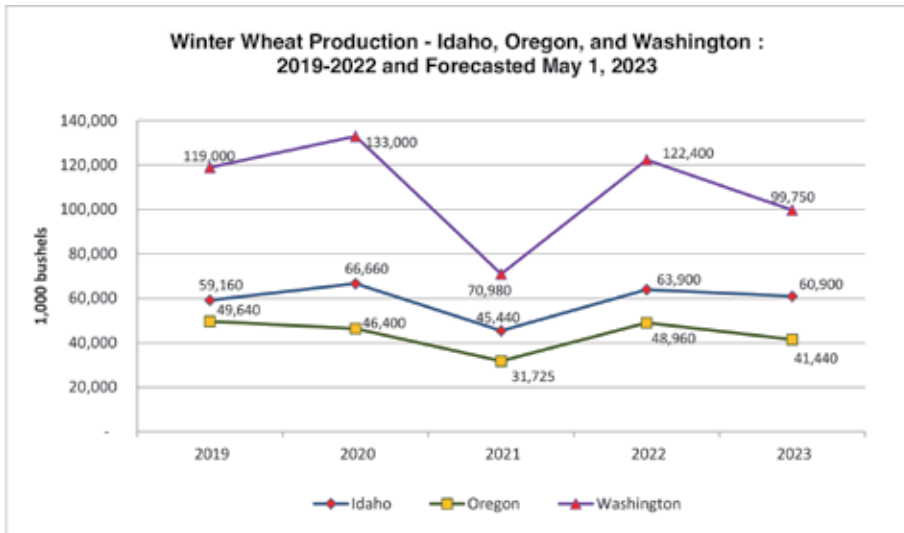


NAWG testifies in farm bill hearing

In May, National Association of Wheat Growers (NAWG) President and Klamath Falls, Ore., wheat farmer Brent Cheyne testified in front of the Senate Agriculture Subcommittee on Commodities, Risk Management and Trade during the “Commodity Programs, Credit, and Crop Insurance – Part 1: Producer Perspectives on The Farm Safety Net” hearing.

“With the rising input costs, decreasing net farm income, and the smallest winter wheat crop since the 1960s, it is very important that we take this opportunity to enhance the farming safety net,” Cheyne said. “The commodity, crop insurance and trade programs play an important role in preserving rural economies, keeping food supplies stable, and keeping farmers on their family land.”

Cheyne emphasized NAWG’s number one farm bill priority is protecting the crop insurance program. In discussing crop insurance, Cheyne highlighted that the cost of purchasing crop insurance has risen in recent years and urged Congress to enable more reasonable premiums for higher coverage levels. Cheyne also discussed NAWG’s request for Congress to make a meaningful increase in the wheat Price Loss Coverage (PLC) reference price and double funding for the Market Access Program (MAP) and the Foreign Market Development program (FMD). The current wheat PLC reference price has never changed, and prices have risen to the point that it would take a 38% decrease before triggering a payment. Likewise, funds for trade promotion programs like MAP and FMD have lost their effectiveness from inflation and sequestration. Funding has been



In Oregon, production was forecast at 41.4 million bushels, down 15% from 2022. Yield was expected to average 56 bushels per acre, down 12 bushels from last year. Growers planted an estimated 750,000 acres in the fall of 2022, up 20,000 acres from the previous year. Harvested acres were forecast at 740,000 acres, up 20,000 acres from 2022.

Nationally, production was expected to be 1.13 billion bushels, up 2% from 2022. Yield was forecast at 44.7 bushels per acre, down 2.3 bushels from last year. Growers planted an estimated 37.5 million acres in the fall of 2022, up 4.23 million acres from the previous year. Harvested acres were forecast at 25.3 million acres, up 1.83 million acres from 2022.

U.S. white winter wheat production is forecast at 210 million bushels, down 11% from last year. Of this total, 10.2 million bushels are hard white and 200 million bushels are soft white. U.S. hard red winter, at 514 million bushels, is down 3% from 2022. Soft red winter, at 406 million bushels, is up 21% from 2022. ■

Production due for 2022 ARC-IC farms

Producers who elected to participate in the 2022 Agriculture Risk Coverage-Individual program are required to provide their harvested yields for planted covered commodities for each year of the benchmark period (2016-2020) and for the 2022 crop year. The deadline to submit production evidence for the 2022 contract year is July 15, 2023.

Producers may submit production records by:

- Self-certification on the CCC-863.
- Commercial receipts, warehouse settlement sheets, load summaries, etc.
- RMA production and yield data.
- Measurement service or appraisal records.

While yield certification will be accepted solely upon producer self-certification, producers are expected to be able to provide production records to the Farm Service Agency upon request from the county committee or in the event they are selected for review. ■



Jeron Chatelain
Research Associate

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FRANKLIN COUNTY MEETING. Last month, Franklin County growers met in Kahlotus, Wash., to discuss county business and plan the yearly potluck barbecue. The event will coincide with the Washington State University variety trial crop tour on June 1. The barbecue will be at 3 p.m. at Dana Herron's shop in Connell. Meat will be provided, so growers are asked to bring sides and/or dessert. The crop tour begins at 5 p.m. RSVP to Ben Cochrane at (509) 948-3235.

unchanged for over 20 years, and the dollars do not go as far as they once did.

"NAWG knows that these requests require money. However, the farm bill has received spending cuts in the past," said Cheyne. "It is essential to keep food supplies stable and rural economies thriving ... It would be a waste of an opportunity to not make these investments in the farm bill."

As Congress continues to have hearings on programs authorized under the 2018 Farm Bill, NAWG looks forward to working with the members to help craft a farm bill that works for wheat growers in the U.S. ■

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Bruce Nelson, Whitman County Farmer

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Hearts in Harrington Fund

A HOMETOWN STORY

Growing up in small, rural communities offers unique interconnectedness and support, deeply shaping the lives of people who live there. Janis Schultz Miller grew up among the swaying wheat fields of her family's farm in Harrington, Washington, instilled with a heritage of deep appreciation for the land and for the people in her community.

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Janis Miller established the Hearts in Harrington Fund in December 2021 to benefit the town of Harrington in Lincoln County. The fund was established to grow and continually address priority issues in the community. Through the generosity of community members like Janis, the fund will transform lives in Harrington for generations to come.

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It's all about what Harrington has given to me; it's the sense of belonging, the feeling of home and support from all the people there."

Janis Miller



Janis and Dick Miller on their wedding day



Learn more about this story of community generosity at innovia.org/heartsinharrington

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POLICY MATTERS

Farm input costs expected to rise 4% in 2023

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Alongside historic inflation across the broader U.S. economy, the highest in over 40 years, farmers and ranchers across the country experienced their own version of inflation: soaring land values, cash rents, fertilizer, fuel, chemical, animal feed, machinery, and interest expenses, among many others. The U.S. Department of Agriculture's (USDA) February 2023 Farm Sector Income forecast projected total farm production expenses in 2023 at nearly \$500 billion, up 4% from the prior year, but up \$87 billion, or more than 28%, from two years prior. In fact, the increase in farm production expenses from 2020 to 2023 represented the sharpest two-year increase in farm input costs of all time.

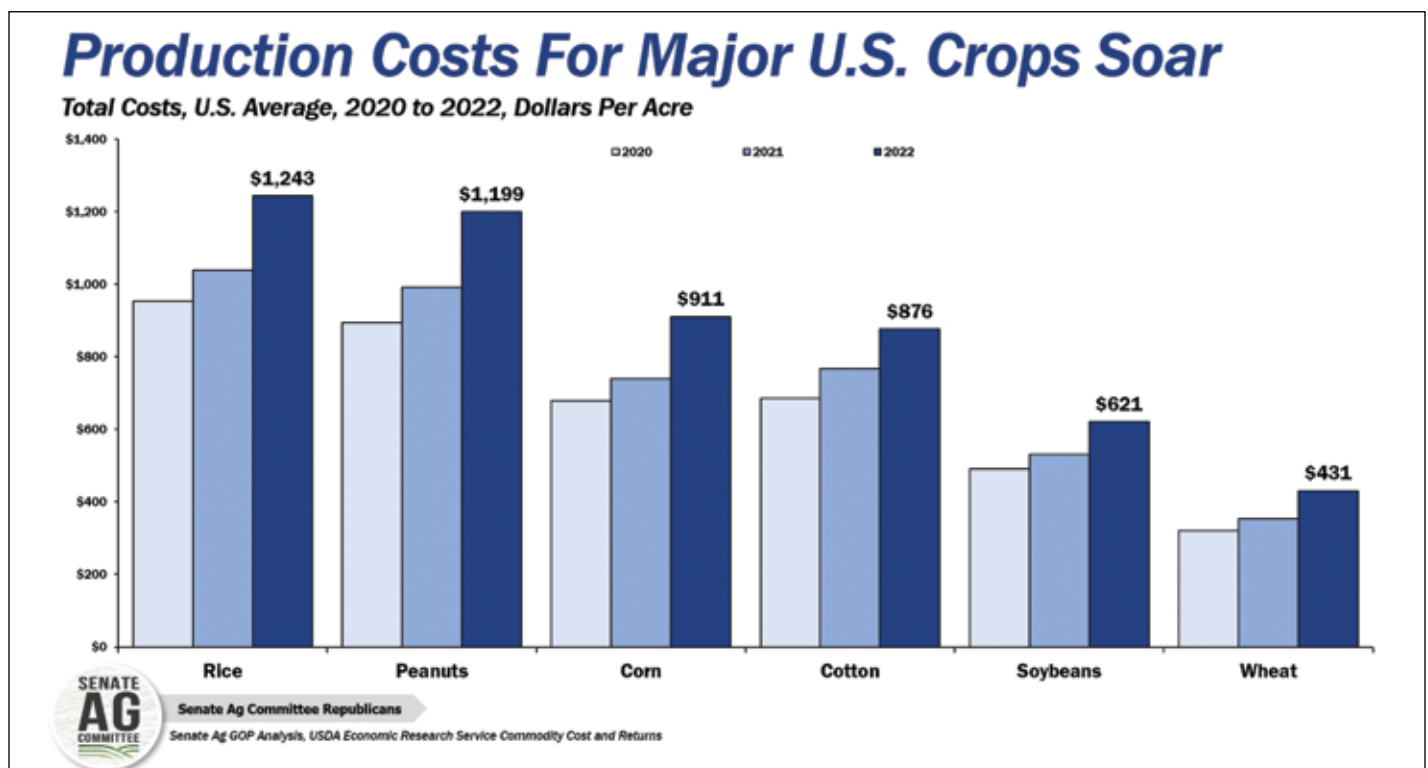
In May, USDA's Commodity Costs and Returns reconfirmed that input costs for all major crops were indeed at a record in 2022, ranging from \$431 per acre for wheat, \$621 per acre for soybeans, \$876 per acre for cotton, \$911 per acre for corn, and at or above \$1,200 per acre for both rice and peanuts. Livestock producers also experienced record- or near-record-high costs of production with cow-calf

costs at nearly \$1,700 per head, hogs at \$106 per head, and milk at \$28 per hundredweight.

To provide some perspective on the inflationary pressure farmers continue to face, this analysis will review recent developments in farm input costs since USDA first released its estimate of 2023 farm production expenses in February 2023.

Starting with fertilizers and diesel fuel, USDA's Illinois Production Cost Report reveals that the cost of urea, potash, along with nitrogen- and phosphate-based fertilizers, reached an all-time high in May or June of 2022 — approximately one year ago. The price for farm diesel reached an all-time high in late June 2022 at \$5.30 per gallon. Compared to their all-time high, it is true that the cost of fertilizers and fuel are approximately 15% to 30% lower than year-ago levels.

But ... it's also true the cost of fertilizers and fuel remain well above their historical averages. Compared to mid-January 2021, the cost of anhydrous ammonia is up nearly 130%, the cost of phosphate-based fertilizers is up approximately 60%, and potash prices are up nearly 70%. ▶





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Similarly, diesel fuel prices remain 63% higher than their January 2021 levels.

Higher input costs also increase the borrowing needs of farmers. To combat inflation, the U.S. Federal Reserve began the most aggressive rate-hiking cycle in modern history, raising rates from near zero in March 2022 to a 16-year high. As a direct result, average farm interest rates have increased from a low of nearly 3% in late 2021 to an average of 7.4% in the first quarter of 2023, an increase of 143% in just over a year's time. Using the average-sized, USDA-guaranteed operating loan of nearly \$330,000 as an example, the rise in interest rates would result in interest expenses increasing from \$9,900 in 2021 to more than \$24,000 on the same-sized operating loan today (based on yearly amortization and excluding patronage).

Continued strains in the banking sector will tighten access to credit. With the Federal Reserve announcing a 25-basis point increase in the federal funds rate, the 10th increase since March 2022, for farmers seeking access to credit, the only direction for farm interest expenses to go is up. More concerning, given the pace of rate hikes, is that nearly 80% of non-real estate farm loans originating in the second half of 2022 or later have a floating interest rate.

The story is the same across agriculture. While higher interest rates may slow the rate of growth in asset values, the increases in farmland prices or cash rents for cropland and pasture are well documented. Livestock feed prices remain elevated, and only one other time in the cattle cycle history have feeder cattle gone for more than \$200 a hundredweight. Machinery Pete forecasts used tractor and combine values will remain at record highs in 2023.

For more than 20 consecutive months, the year-over-year growth rate in U.S. average hourly earnings has paced at an average increase of 5.1%. Similar (or higher) growth has been experienced in wages reported in both the Occupational Employment Survey and the H-2A program's adverse effect wage rates. With close to 10 million open jobs across the economy, equivalent to 1.6 jobs per unemployed worker, labor expenses will continue to weigh heavy on a farmer's general ledger.

The challenge with rising farm input prices is price stickiness — meaning farm input costs are not likely to decline sharply and may, in fact, have reached a new normal. As evidence, consider that USDA's prices paid index for commodities, services, interest, taxes and farm wages has experienced a year-over-year decline fewer than 14% of the time across a time period spanning more than two decades. Sure, some prices may come down, but agricultural production costs are unlikely to retreat significantly anytime soon, and 2021 and 2022 are more than likely to be closer to the new normal than outliers to the U.S. farm economy. ■

CBO releases scoring baseline for 2023 Farm Bill spending

In mid-May, the Congressional Budget Office (CBO) released an updated budget outlook that is likely to be the scoring baseline for the 2023 Farm Bill. An analysis from the republican side of the Senate Agriculture Committee calls the farm bill potentially, "the first trillion-dollar farm bill in U.S. history." Total spending is projected at \$1.51 trillion, driven mainly by an increase in Supplemental Nutrition Assistance Program (SNAP) costs.

When enacted, the 2018 Farm Bill had a price tag of \$867 billion. This updated outlook represents a 74% increase between the two farm bills. Outlays for the Supplemental Nutrition Assistance Program (SNAP) are projected at \$1.223 trillion. The increased spending is largely due to an estimated increase in SNAP participation. On the agriculture side, spending on crop insurance is projected to be \$101 billion, while spending on conservation programs is projected to be \$60 billion. Spending on commodity and related programs, such as the Agriculture Risk Coverage and Price Loss Coverage programs, is set at \$69 billion. ■

Vilsack sends letter to STB

In mid-May, Agriculture Secretary Tom Vilsack sent a letter to members of the Surface Transportation Board (STB) expressing appreciation for the work the board has done over the past year to alleviate rail service deterioration, but said there is more work to be done.

Vilsack pointed to the railroads' use of precision-scheduled railroading and their reductions in workforce and assets, an operating model that doesn't leave a sufficient buffer in labor and assets for the railroads to handle unexpected spikes in demand. He encouraged the board to move forward on making changes to the use of private cars and reciprocal switching; provide clarity on the railroads' common carrier obligation; and collect additional first-mile/last-mile service data.

"... The railroads should not be able to continue to operate without buffer for unexpected demand, make historic profits, and engage in enormous stock buybacks, all while providing subpar service to agricultural shippers and disregarding safety," the letter closes. "STB can and should counteract these negative trends in rail transportation by increasing competition and improving oversight with enhanced data. The board should also ensure the railroads balance their focus on shareholders with their duty to provide high-quality, common carrier rail service to the nation." ■



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Washington state is known for its fertile soils and diverse agriculture, with wheat being one of its premiere crops. For centuries, wheat has been a staple in the region and has played an important role in the economy and culture of the state. In recent years, the region's wheat has also found its way into the world of craft spirits, particularly whiskey and other wheat-based spirits.

Wheat spirits are produced by fermenting and distilling wheat grains, much like other spirits such as bourbon and rye. However, Washington wheat spirits are unique in that they are made from locally grown wheat, which has distinct characteristics due to the state's terroir. The local climate and soil contribute to the wheat's flavor and texture, resulting in a spirit that reflects the unique essence of the region.

One important step in the production of wheat spirits is the malting process. Malting involves soaking the grains in water and then drying them in a process called kilning. This process activates enzymes in the grains, converting the starches into sugars that can be fermented to produce alcohol. The malted wheat is then mashed and fermented before being distilled into spirits.

Washington is home to several distilleries that specialize in wheat spirits, including Dry Fly Distilling, which was founded in 2007. Dry Fly uses locally grown soft white wheat to produce its award-winning vodka and gin. The distillery also produces wheat whiskey, which is aged in oak barrels for at least three years. The result is a smooth, flavorful spirit that highlights the distinct characteristics of Washington wheat.

Dry Fly's commitment to using locally sourced ingredients extends beyond wheat. The distillery also sources other ingredients such as hops, apples and botanicals from local farmers and suppliers, creating a truly local product that supports the regional economy. This empha-



sis on local sourcing also ensures that the distillery has a consistent supply of high-quality ingredients unique to the region.

Washington's wheat farmers are also an integral part of the state's wheat spirits industry. Many of these farmers have been growing wheat for generations, and their knowledge and expertise are crucial to producing high-quality grains that are suitable for distilling. By partnering with local farmers, distilleries like Dry Fly can ensure that they have a reliable supply of high-quality wheat that is sustainably grown and harvested.

Washington wheat spirits are a unique and delicious product that showcases the region's rich agricultural heritage. By using locally sourced wheat and partnering with local farmers, the state's distilleries are able to create spirits that are truly unique to the region. These spirits are not only delicious but also support the local economy and promote sustainable farming practices. Next time you're looking for a high-quality spirit, consider trying one of these wheat whiskeys, gins or vodkas and experience the unique flavors of Washington for yourself. ■

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Pain at the pump

DESPITE EXEMPT STATUS, MANY WASHINGTON FARMERS ARE STILL PAYING FUEL SURCHARGE

By Trista Crossley
Editor, *Wheat Life*

Most Washingtonians are feeling some pain at the pump, but many growers are seeing red, as their on-farm fuel bills are costing thousands more than they should. The culprit is legislation, passed in 2021 and put into action in January 2023, that promised to exempt fuel used on the farm and in transporting farm products to market. That promise wasn't kept, and growers were left holding the bill while fuel suppliers, legislators and state agencies pointed the finger elsewhere.

The Washington State Legislature passed the Climate Commitment Act in 2021, which established a cap and invest program (also referred to as a cap and trade program). The cap and invest program requires covered entities that met a certain threshold, including many fuel suppliers, to purchase allowances equal to their greenhouse gas emissions. The legislation exempted emissions in

certain situations, including watercraft or maritime fuels combusted outside of Washington, emissions from fuels used in agricultural operations, emissions from fuels used to transport agricultural products to market on public highways, and aviation fuel. The cap and invest program went into effect in January 2023. Almost immediately, fuel suppliers began tacking on a fuel surcharge in preparation for their allowance purchases — a surcharge that is being passed to consumers.

“The law clearly states growers shouldn't be paying a surcharge for fuel used on their farms, but when the law went into effect, there was no practical way to put that exemption into practice,” explained Michelle Hennings, executive director of the Washington Association of Wheat Growers (WAWG). “Most fuel suppliers are selling to distributors who then sell the fuel to growers. Without that direct line of sight, there is no way for the fuel supplier to know where the fuel is going. It quickly became apparent





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that the state was less interested in fixing this problem than passing the responsibility off to others.”

Andy Juris, WAWG president and a grower from Klickitat County, estimates the fuel surcharges will cost his operation an additional \$11,000 this year. Other wheat farmers are reporting similar amounts.

“As a farmer, it is extremely frustrating to see state agencies and legislators who championed this legislation now react with complacency and apathy when it comes to enacting the exemptions clearly written into the law,” he said.

The Washington State Department of Ecology (Ecology) is the state agency responsible for implementing and managing the cap and invest program. They are also tasked with determining a method for exempting fuels used to transport ag products on public highways for the next five years. According to Luke Martland, Ecology’s Climate Commitment Act implementation manager, through rulemaking and training, fuel suppliers are aware there is no compliance obligation for emissions from exempt fuels.

“We do not think fuel suppliers should be imposing surcharges for those fuels because they do not have a compliance obligation on those fuels. This is what we’ve always said,” Martland explained. “We’ve always been clear that there’s a requirement that they report all their emissions, including those that are exempt, but there’s no compliance obligation for fuels that are exempt, and therefore, we don’t understand why they are imposing surcharges because they don’t have a compliance obligation.”

In January, Ecology published interim guidance for tracking and documenting exempt fuels, but many in the ag industry felt Ecology was missing the point, specifically

that many fuel suppliers didn’t have the line of sight to know where their fuel was being used. Martland acknowledged that line of sight is an issue, especially when fuel distributors are the middlemen, but said Ecology has tried to work with fuel suppliers and given them suggestions and tools to use.

“It’s up to the fuel supplier, though, under the law, to figure that out because they have a responsibility to report their fuels accurately, which means those fuels that are exempt,” he said. “We tried to give them tools. We understand it may be more complex, but it’s up to them, under the law, to track those fuels, those emissions, designate whether they are exempt or not, and document them.”

Martland does acknowledge Ecology’s responsibility in implementing an exemption mechanism for fuels that are used in the transportation of agricultural products on public highways. The department has expanded that definition to include barging on the Columbia-Snake River System. Ecology will likely

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assemble a workgroup over the summer to work with stakeholders and “figure a way forward.”

The agricultural industry worked throughout the 2023 Legislative Session to try to find a fix for the issue. Rep. Joe Schmick (R-Colfax) introduced legislation that would have required the state to reimburse growers monthly for carbon fees paid on exempt fuel. It was referred to the House Environment and Energy Committee but failed to pass.

In April, Sen. Mark Mullet (D-Issaquah) introduced a bill that created a rebate fund for farmers who had paid a carbon fee on fuel. WAWG was opposed to the bill as there were a number of issues with it. Rebates would not have been available until 2024, the bill didn’t specify when the rebates had to be issued, and the rebate amount would be based on a percentage of the auction price at the time the fuel was purchased, not the actual amount of the surcharge. The bill would have also prohibited fuel suppliers and distributors from disclosing the amount of the carbon surcharge on fuel invoices. The legislation received widespread opposition from many quarters, including exempt fuel users, fuel suppliers, Ecology and the Governor’s Office. As a result, the scheduled public hearing on the bill was cancelled.

One of the reasons the rebate idea has proved unpopular with the administration and legislators, according to Martland, is because the fuel surcharge money isn’t going to the state or to the department.

“The folks that have the money from surcharges on exempt fuels are the fuel suppliers. They are charging more, even though they don’t have a compliance obligation. They are pocketing that money. They have the

surcharges. The state doesn’t. Ecology doesn’t. It is up to them to comply with the law and not be imposing surcharges on exempt fuels. We have done everything we can to work with them to make that clear,” Martland said.

The legislative session ended in April with no clear resolution to the issue. While some fuel suppliers and distributors, such as BP, Christensen and Connell Oil, have implemented steps to exempt agricultural users, there is still no industry-wide solution. Growers are being encouraged to keep all fuel receipts while the ag industry, including WAWG, continues to work to find a solution. ■

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PNWVT	2019	2020	2021	2022
Control Varieties		lbs/ac (rank)		
Athena	4,344 (18)	4,015 (15)	3,698 (12)	3,025 (14)
Dwarf Essex	--	3,698 (23)	3,279 (27)	2,751 (26)
Ericka	3,829 (25)	3,516(25)	3,219 (28)	2,273 (29)
Rubisco Seeds' Hybrids		<i>Data courtesy of University of Idaho</i>		
Kicker	–	4,792 (1)	4,701 (1)	4,383 (1)
Mercedes	5,145 (1)	4,419 (6)	4,359 (3)	3,756 (5)
Plurax CL	4,959 (2)	4,717 (2)	4,465 (2)	3,411 (8)
Phoenix CL	4,900 (4)	4,611 (3)	4,043 (5)	3,398 (9)
PNWVT Mean	4,470	4,085	3,726	3,158
LSD (p=0.05)	287	253	228	280
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It's all about the water

RESEARCH EXPLORES LIMITATIONS OF COVER CROPS IN DRYLAND FARMING

By Andrew McGuire

Washington State University Extension, Center for Sustaining Agriculture and Natural Resources

I have seen it work. As a graduate student, I researched cover crops in a California dryland wheat system, comparing a wheat-fallow system to one with a cover crop replacing fallow (McGuire et al., 1998). A wet winter allowed for successful wheat yields in both systems. However, research results suggest that this is often the exception in dryland agriculture. More often, water use by the cover crop reduces the yield of the following cash crop.

This is a problem for improving soil health in these systems. Restoring soil organic matter levels is difficult with long periods of fallow without the addition of plant material to the soil for processing by microbes. Regenerative agriculture has proposed several solutions to this cover crop problem. First, cover crops may allow for greater infiltration rates, thereby saving enough water from running off to make up for the water used to grow the cover crop. Some claim that multispecies cover crops use water more efficiently than monocultures. Finally, it is claimed that planting cover crops could promote more rainfall, thus compensating for the water use by the cover crop.

Let's explore the evidence for these claims and an alternative that may be more effective than cover crops in some dryland cropping systems.

It's all about the water

Unlike crops in rain-fed regions, dryland crops cannot be produced using growing season precipitation alone; they must also use stored soil water (Robinson and Nielsen, 2015). This is where cover crops become a problem rather than a solution.

Water from precipitation is destined for one of five pathways:

- Water can run off. Improved infiltration can reduce runoff.
- Water can leach below the root zone. Crops or cover crops can intercept this water, but if too much water falls too quickly, they cannot prevent leaching.
- Water can evaporate. Covering the soil with living or dead plants can reduce evaporation by blocking wind and sunlight.
- Water can be transpired through plants. In any region, biomass produced will be proportional to water

used. Management should aim to divert more water through transpiration.

- Water can be stored in the soil. This water is subject to either transpiration or evaporation.

Cover crop biomass — roots, root exudates and shoots — is needed to obtain many of the benefits of cover crops: weed suppression, soil organic matter, nutrient scavenging and soil biology activity. Even erosion control requires a minimum amount of biomass to protect the soil. However, biomass production uses water. So, in dryland systems, cover crops are a trade-off of water use for biomass. If a cover crop uses more water than is gained through increased infiltration, reduced runoff or increased soil storage, the following crop yield will be reduced. The timing of cover crop water use relative to precipitation timing and amounts can determine the outcome. Let's look at what researchers have found.

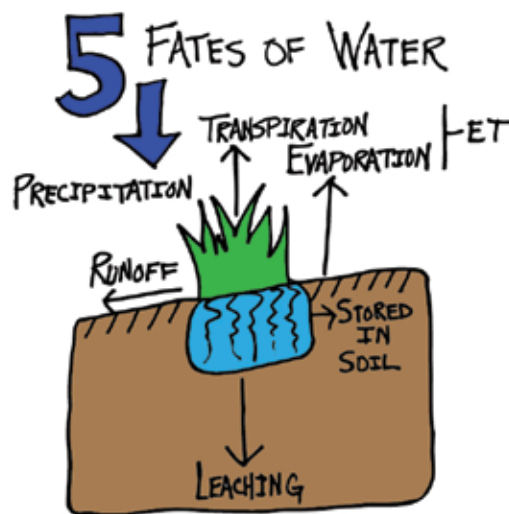


Figure 1. To avoid yield loss from cover crop's water use, the key factors are the timing, quantity and relative differences of precipitation, transpiration, evaporation, soil water storage, leaching and runoff.

Meta-analyses find cover crops deplete water before cash crops

A few recent meta-analyses look at cover crops in dryland cropping. Adil et al. (2022) found, compared to fallow management, cover crops:

- Reduced soil water at wheat planting (240 observations). ▶

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Another analysis of 38 studies (Garba et al., 2022) found yields decreased by an average of 11% after cover crops in temperate dryland environments. Overall, they estimated that an annual precipitation of 27" is needed to avoid reduced crop yields following cover crops. Although crop yield may not be the only relevant factor, this aspect of cover cropping adds risk to a cropping system that is already risky because of highly variable annual precipitation.

Cover crops in the Palouse?

A threshold of 27" eliminates nearly all the dryland cropping region from Eastern Washington (see Figure 2), but averages like this do not consider many regional climate differences. Unfortunately, local research suggests the threshold may apply here.

- Doing on-farm research (12-17" of annual precipitation), Roberts (2018) found that cover crop's use of water put fall crop germination at risk. The farmers in this study decided to pursue companion crops instead.
- On-farm research in Douglas County (9-12" annual precipitation) found that cover crops reduced soil water levels compared to fallow. (Michel, 2022)
- More on-farm research at five sites in southeast Washington (12-25" annual precipitation) tested spring cover crops in place of fallow (Thompson, 2014). Fallow ground, even without residue cover, evaporated less than half of what the cover crop used. This resulted in much

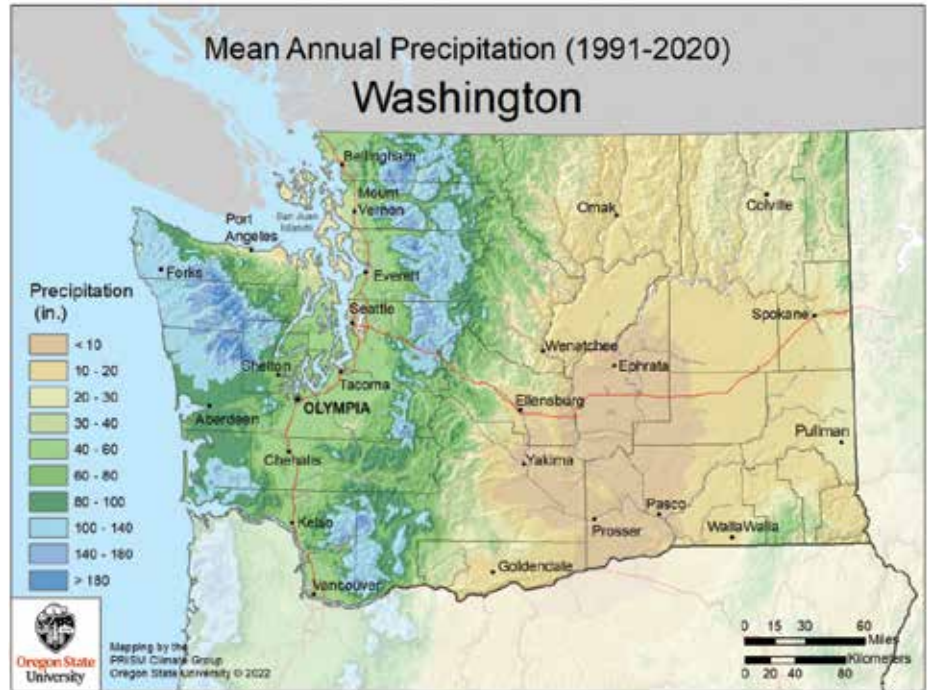


Figure 2. Washington state’s annual precipitation zones. In Eastern Washington, the 27" threshold is only met near the border with Idaho.

higher soil water levels after fallow than after the cover crops.

- Research from the University of Idaho (Kahl et al., 2022) found that a cover crop grown for forage reduced soil water by 2-4" compared to fallow. A model estimated that this would reduce following wheat yields in 50% of years.

In a similar Mediterranean climate in Southern Australia, Rose et al. (2022) reviewed the research and concluded that the benefits of cover crops do not balance the risks of water use and effects on dryland cash crops.

Even where cover crops can be grown in dryland systems without affecting cash crop yields, the benefits will only become discernible in the long term because biomass production will be limited to save water. There is also the possibility of reversals of soil benefits resulting from drought years (Simon et al., 2022). It seems the conclusions of the meta-analyses are applicable here.

Details matter

As mentioned before, the timing and amount of precipitation can shift the results in favor of cover crops. When cover crops are growing during the rainy season (see Figure 3 on page 30) as practiced in California, they may be grown without adversely affecting soil water if they are terminated on time (DeVincentis et al., 2022). In the Garba et al. meta-analyses (2022), using cover crops in climates with significant rainfall during the cropping season had positive effects on crop yield. The opposite was true of climates with mostly winter precipitation.

Improved infiltration?

One suggested solution is that improved infiltration from cover cropping will make up for the water that they use. This can be the outcome, but only in specific conditions where significant rain falls on the growing cover crop or



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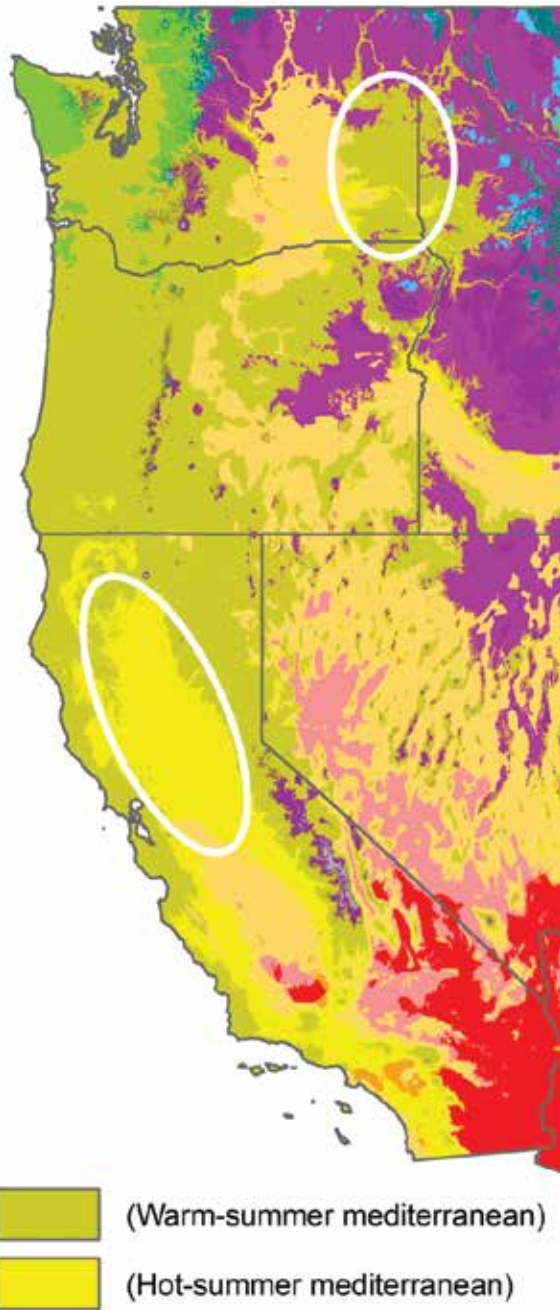


Figure 3. For cover crops, the critical difference between the Mediterranean climates of California and Washington is not summer temperatures but winter. California’s warmer winter allows cover crop growth while the colder winters in Washington do not. Because of this, cover crops in Washington often reduce following crop yields, while in California, they often do not.

its residues. In all the negative results provided above, we can assume that improved infiltration did not replenish water used by cover crops. A two-year study in Kansas found cover crops increased the efficiency of precipitation storage over fallow, but this did not make up for the water used by the cover crops (Kuykendall, 2015).

One problem is the low biomass production of cover crops due to low precipitation or through early termination to reduce water use (Ghimire et al., 2023). In an eight-year Montana study, cover crops produced less than 1.5 dry tons per acre of biomass (Dagati and Miller, 2020). Because of this, it may take several years before any soil improvements can be measured, including for infiltration.

Do cover crop mixtures help?

Another claim by some in regenerative agriculture is that cover crop mixtures use water differently than monocultures (see examples in Nielsen et al., 2015). Several tests of this hypothesis have been done in dryland conditions (Kuykendall, 2015; Nielsen et al. 2015). With up to 10 species in tested mixtures, the diversity of the cover crop in both studies made no difference in water use. This conclusion is supported by our 2020 systematic review of cover crop mixtures vs. monocultures (Florence and McGuire, 2020). In the 18 comparisons of water use we found, there were no differences between the water use of the best cover crop mixtures and that of the best monocultures.

Plants make rain?

Finally, some claim that vegetation itself can produce more precipitation. As often is the case, there is a grain of truth here. Transpiration by plants moves water into the atmosphere. And that water returns to the soil as precipitation. However, the process remains local only if the air mass stays in the area. This occurs only in humid regions like the Amazon and Congo (Staal et al., 2018). Stretching this tropical rainforest effect to the Great Plains or other arid regions is not supported; irrigation has not increased rainfall in the arid West, nor have large reservoirs of evaporating water changed the surrounding rainfall.

Another effect of plants is called fog combing. As a Peace Corps volunteer in Ecuador, I saw this many times with eucalyptus trees making the soil beneath them wet while the surrounding soil was bone dry. Sometimes, the trees were dripping as if it were raining. Fog combing occurs when humid air moves through vegetation, allowing continuous condensation that builds up and drips to the ground. It happens in rainforests and in the California redwoods. It requires a unique combination of humidity, air temperature and wind speed with some plant-specific factors. A study in Northern Germany (far from dryland conditions) looked to see if cover crops could comb fog. Although conditions were thought to be conducive to fog combing, they found no evidence of it in two years of monitoring cover crops (Selzer and Schubert, 2022). ▶

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A workable alternative to cover crops

Cover crop use of water in dryland agriculture presents a series of trade-offs:

- Water use for biomass production and associated soil health.
- Water use and cash crop yield.
- And so, soil health vs. cash crop yield.

Most of the time, the benefits of cover cropping do not overcome their downsides and so are not commonly used in dryland cropping. However, there is a feasible alternative: in their meta-analysis, Adil et al. (2022) concludes that the best practice for soil water conservation and dryland crop production is no-till with retained crop residues. Managed well, crop residues can protect the soil from erosion, maintain some level of soil health, and conserve stored soil water. ■

The original article is posted on CSNAR's website at csanr.wsu.edu/wateruselimitationscovercrops/. Visit link for a full list of references. Comments are encouraged.

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Rising interest rates uncover investment opportunities

By Trista Crossley
Editor, *Wheat Life*

While it may be hard to find the bright side of rising interest rates — just ask a Washington wheat farmer who's already dealing with high input costs — there are investment opportunities to be found.

According to Jordan Thayer, a financial advisor with Morgan Stanley, banks may charge more for loans, but they will also raise the interest rates they pay on savings accounts in order to appeal to new customers and to keep existing customers. Additionally, Certificates of Deposit (CDs), Treasury bills and bonds are all paying higher interest rates than they were just a couple of years ago. For growers who are looking for a relatively safe place to park some money, rising interest rates are presenting some opportunities.

"Growers can consider these as options as they transition into retirement," Thayer said. "Whether they pass on the farm to the next generation or sell land and assets, they can put the proceeds into a variety of investments that pay them a decent interest rate in return."

CDs benefit from being insured by the Federal Depositor's Insurance Corporation, up to \$250,000 for individual accounts and \$500,000 for joint accounts. However, growers need to consider how long they want to hold the CD. For example, if a grower purchases a 10-month CD, they need to be prepared to leave the money in that CD for the full 10 months in order to get all of the interest earned. There are usually penalties if the money is withdrawn before the term of the CD is over. More information about CDs can be found at [fdic.gov/resources/deposit-insurance/understanding-deposit-insurance/](https://www.fdic.gov/resources/deposit-insurance/understanding-deposit-insurance/).

Another investment option is Treasury bills. A Treasury bill is a short-term, U.S. government debt obligation backed by the Treasury Department that matures back into cash in one year or less. Treasury bills help fund short-term government operations. While not appropriate for everyone, a Treasury bill is a conservative way to earn interest on conservative spending cash that isn't needed within a year. Once a Treasury bill is purchased, the cash is no longer liquid and needs to sit in the Treasury bill until it "matures" back to cash.

As Thayer explained, when growers transition into retirement, they'll need liquid cash to pay their bills (a short-term bucket); money invested for expenses expected in the next one to five years (a medium-term bucket); and money that can continue to grow over a five-year period and beyond (a long-term bucket). He considers stock and land investments to be long-term investments as their value tends to appreciate over time. Treasury bills should be considered a short- or medium-term investment.

"There are several benefits of Treasury bills," Thayer said. "They come with a government guarantee of repayment at the maturity date, and interest rates are much more worth considering than they were just a few years ago. There are negatives as well, including short-term price fluctuations that may affect the amount you receive if you try to sell it early."

More information about Treasury bills is at [treasurydirect.gov/marketable-securities/buying-a-marketable-security/](https://www.treasurydirect.gov/marketable-securities/buying-a-marketable-security/). Treasury bills can be purchased directly from the U.S. Treasury. Thayer said it's a bit of a process (you have to open an account and participate



Jordan Thayer

This is the first of four financial advice articles that will be appearing in the next few issues of Wheat Life. The information in this series is presented in partnership with Jordan Thayer, a financial advisor with Morgan Stanley who works with growers in Eastern Washington.

Thayer is scheduled to be a break-out session speaker at the 2023 Tri-State Grain Growers Convention in November.




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in the auctions), but it's a direct method of buying them from the government.

Growers can also open an account at an online brokerage and purchase Treasury bills for a small commission. Buying Treasury bills through a broker or financial advisor also incurs a small commission. Ideally, a grower is purchasing them through an advisor as part of a larger financial plan and investment portfolio. Typically, financial advisors have access to the full market of Treasury-issued securities and can find many different kinds to fit the desired timeline and dividend rate.

Growers who are interested in taking advantage of high interest rates should consult with a trusted financial advisor. Everyone's situation is different, and it's important that an advisor understands your unique circumstances and concerns and suggests investments that accommodate them. CDs and Treasury bills are basic investments, but applying them properly in the context of one's retirement plan requires balancing several factors, including risk, timelines and economic conditions.

"You want to ensure an advisor you consult adheres to your best interests, meaning they legally put your interests above their own," Thayer said. ■

Jordan Thayer is a financial advisor with the Global Wealth Management Division of Morgan Stanley in Seattle, Wash. The information contained in this article is not a solicitation to purchase or sell investments. Any information presented is general in nature and not intended to provide individually tailored investment advice. The strategies and/or investments referenced may not be appropriate for all investors as the appropriateness of a particular investment or strategy will depend on an investor's individual circumstances and objectives.

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GIS specialist maps a 37-year career

Dwaine Schettler, Washington Farm Service Agency

By Trista Crossley
Editor, Wheat Life

Mapping **Dwaine Schettler's** 37-year career with the Farm Service Agency (FSA) is relatively straightforward; it's the side trails that are unexpected.

Schettler is a program specialist at the Washington state FSA office, focusing on geographic information systems (GIS) and compliance. He was born and raised in Waterville, Wash., and graduated from Spokane Community College with a degree in biomedical electronics. He didn't get very far down that trail before returning to Douglas County in 1981 and going to work for a local farmer, Don Ogle, instead.

"Originally, when they were selling us on biomedical electronics at school, the idea was we'd be working in a hospital environment, maintaining electronics that are used in a hospital. In the late 70s, early 80s, many hospitals owned their own equipment. Then, rather than purchasing equipment, hospitals began basically leasing equipment," Schettler explained. More and more, the leased equipment was being serviced by company representatives who traveled from place to place. "That just wasn't appealing to me, living out of a suitcase."

As a farmhand, Schettler worked on Ogle's 3,000 acres, which was primarily in a wheat summer fallow rotation. Ogle was nearing retirement age, and the pair were working on a process for Schettler to take over the farm. In 1985, the Douglas County FSA office contacted Schettler and asked him to do some part-time fall/winter fieldwork. In 1986, the county office had a full time position open up. With Ogle's encouragement, Schettler switched course again.

"I got hired on at the county office full time in March 1987," Schettler said. "My primary duties were compliance, which I had basically been doing, then I also got assigned to the various disaster programs we had back in the late 80s. I worked in the county office in various roles until May of 2003. That's when FSA introduced GIS or digital mapping. I got hired at the state office to be the GIS specialist and head the mapping project for the state."

In 2003, FSA began converting all of their farm records (basically black and white photographs) into digital records. The agency hired contractors to transfer the records from county offices, but then FSA employees had to groundtruth the contractors' work. Using aerial imagery to calculate the acreage, Schettler said digital records



are usually accurate to within one meter. Every two years, FSA gets updated imagery that they compare to previously established field boundaries.

"Especially with CRP (Conservation Reserve Program), this is where we recognize whether or not somebody has established their practice to the line they should have, or if they have inadvertently encroached on CRP lines," he explained. "We then use that under our compliance process to make sure we are not issuing payments to producers on inaccurate acreage."

Schettler feels fortunate to have joined the FSA team when he did. At the time, the Douglas County office had four other program technicians, and each of them specialized in a particular program. As new hires were scaled back and the number of FSA programs increased, employees increasingly have had to learn multiple programs.

"We basically have to know something about everything," he said.

While FSA is his day job, Schettler has found time to explore some side interests. He's been a reserve police officer, a volunteer firefighter, an emergency medical technician, high school and Little League baseball coach, and a high

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school and junior college baseball umpire. He and his wife of 38 years, Bobbi, are also quilters, donating many of their quilts to organizations and groups for fundraisers. They have one son, Chad, who works as a 911 dispatcher in Kalispell, Mont.

The conversion to digital files in 2003 is only one of the changes Schettler's mapped. Another major change that's currently happening is a switch to an environment where producers will be interacting with FSA electronically instead of going into a county office to fill out forms. It's a change initiated by COVID-19.

"That is going to be a challenge for both farmer and county office, because the county offices have always been very producer oriented," he explained. "The other thing that is a huge change is when I first started with the agency, probably 80% of the employees in the state had a tie directly back to the farm. Today, we don't see that kind of tie back. It seems like more and more of the newer employees have little ag in their background. From that standpoint, it makes it more challenging for producers and employees to be able to talk to each other."

Schettler says he misses working on a farm, but recognizes that it's not an occupation for everyone, no matter how rewarding it can be. He still finds his work with FSA challenging and rewarding, even after three decades.

"When we build maps or layouts for display or to give out to producers, there's somewhat of an artistic element you get to partake in, which I enjoy," Schettler said. "The software and processes that we use in GIS are very analytical, and I'm a very analytical and numbers-based person. It fits my personality. Once I began as a GIS specialist, it filled that hole for me. I really enjoy what I do." ■



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BOB's BOY INC.

Miles, Randy and Susan Mittelstaedt with cousin, Dennis Parks

How do you align a family's name (Mittelstaedt) that, in German, means "middle of a city or state," with living in the heart of Washington? Well, five generations of farming later, it seems to work quite well. Better yet, how does a North Carolina girl wind up marrying a farmer from the densely populated metropolis of Waterville (pop. 1131)?

Susan explains, with the lingering sweetness of her North Carolina voice, "American by birth, southern by the grace of God, and marryin' by choice" ... or something close to that as I remember she told me.

And, oh, the name BOB's BOY INC ... Bob is Randy's dad. You know, like in NASCAR. There is LeRoy's Boys ... That's what Darell and Micheal Waltrip call their organization.

"It only seems right to name the farm in the same manner to honor the family. Son Miles has finished at WSU and now works full time on the farm. Daughter Meredith will be there in the summers, too, when WSU lets out . So, we are very family farm oriented."

Susan and family, you definitely are fun to have around!

I have a feeling we might see number 17 painted on that truck.

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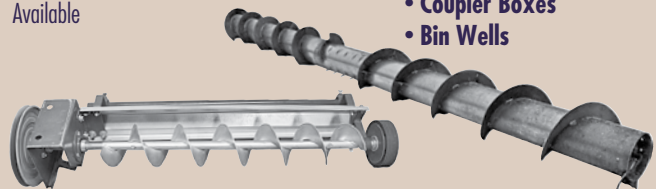
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Edwall, Wash., grower Kevin Klein seeds canola.
Photo by Lori Maricle, Washington Grain Commission.



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By Ben Barstow



I have a confession to make, and it is about research. A long time ago, before the internet and before GMO soybeans and corn, I worked in ag research. I packaged seed for variety trials, counted the nodes on pea plants, and slit open thousands of green canola pods, looking inside for insects. I worked as a research technician for a weed scientist who did Extension, then I was county Extension faculty who did research. The importance of keeping all possible bias out of research data was drilled into me at every step. “This is ultimately some farmer’s livelihood — if we tell them something works when it doesn’t, we may have just caused someone to lose their family farm.” I have seen ag research from the inside at land-grant universities in the Southwest, Midwest and the Pacific Northwest. I saw the same thing everywhere: A lot of dedicated people doing their absolute best to improve agricultural production for everyone.

In my experience, research does not simply continue because some researcher likes the job security. It continues because there are problems to be fixed and improvements to be made, and our land-grant university researchers are dedicated to fixing and improving. And it is slow going. Research takes a long time to produce reliable results. It takes years of a graduate student’s life, years of working every day, most nights and most weekends on a thesis that ultimately gets boiled down to just a few scant words. For example, “It takes less than one wild oat plant per square foot to reduce wheat yield.” Count the words in that statement. Those few words are the product of years of painstaking work.

Everything else seems to come so quickly in our lives that the slow pace of research makes it seem like nothing is happening, like we are spending a lot of money for nothing. That is compounded by the fact that a lot of research leads to conclusions like, “We can’t tell if it works or not,” or, “The difference is not enough to measure.” I understand. Those kinds of “nonresult” results are frustrating for everyone. You feel like you have spent time and money and have nothing to show for it.

The other hazard of ag research is that if research does solve some problem, it is quickly taken for granted. Bacterial leaf blight, stinking smut, dwarf bunt, flag smut, Septoria blotch, loose smut are all diseases that are controlled by resistant wheat varieties or seed treatments, and we never even think of those diseases. Past research has shown which genetic lines are not resistant, and they are out of sight and out of mind. We also have

genetic resistance for strawbreaker foot rot, powdery mildew, Cephalosporium Stripe, snow mold, rusts, two insect species, and some nematode species. Despite the seemingly slow pace, we have come a long way from the first Washington wheats, the Bluestem and Turkey Red varieties of 100 years ago.

Good research that produces reliable information is slow and expensive, and on top of that, you can’t stop. Cereal rusts are a prime example. Because the rust fungi are constantly evolving and changing, sooner or later, rust will evolve to overcome the currently available resistance. We must continue the screening, testing and searching for new resistance to keep up with the changing pathogen.

And some research problems are tougher than others. Some important ag problems seem to defy solutions. After 10 years of diligent work, we still don’t know for sure what exact conditions cause late maturity alpha-amylase, the sneaky, invisible cause of low falling numbers. Rhizoctonia, Take-all and Pythium are all diseases that have seen their share of research dollars. But just because a disease may be labeled incurable now doesn’t mean it will forever be incurable. That’s the beauty of patient, successful research.

The table below shows the top producer-ranked project proposals at this year’s Washington State University (WSU) Research Review. These are the topics our check-off dollars are focusing on today, so that we can continue successful production into the future.

Ranking	Project title
1	Field Breeding Soft White Winter Wheat
2	Weed Management in Wheat
3	Molecular Technology for Winter Wheat Improvement
4	Herbicide Resistance and Susceptibility in Wheat and Weeds
5	Control of Stripe Rusts in Wheat and Barley

The 33 Washington State University field days going on right now throughout wheat country are your opportunity to see the latest variety improvements, some of which may soon be at a seed dealer near you. If you missed the list in the *May Wheat Life*, it’s available at smallgrains.wsu.edu/variety. It’s always a busy time to break away and go to these things, but I think it’s worth it to make the time to take a look. ■

Reaching a new landmark

The development of a new diagnostic test to manage low falling numbers post-harvest



By Amber L. Hauvermale

*Research Assistant
Professor, Washington
State University*



By Alison L. Thompson

*Research Geneticist,
USDA-ARS*



By Camille M. Steber

*Molecular Geneticist,
USDA-ARS*

An alternative to the falling numbers test may soon be born from a multisector collaboration including producers, Washington State University (WSU), U.S. Department of Agriculture's Agricultural Research Service (USDA-ARS), and industry partners.

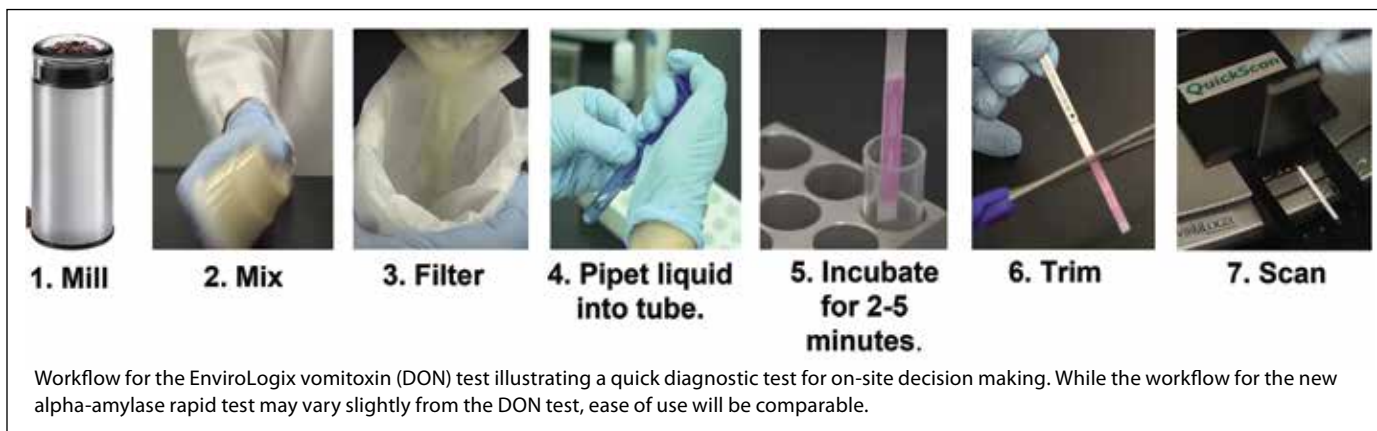
The wheat industry uses the falling numbers test to detect elevated alpha-amylase enzyme levels in wheat grain to determine quality and assign economic discounts based on market dynamics. Low falling numbers is caused by preharvest sprouting (PHS), a result of rain after grain maturity, or late maturity alpha-amylase (LMA), a result of cool temperatures and/or large temperature swings during grain filling.

While the frequency of low falling number events over the past decade has increased in the Pacific Northwest, most are localized and appear to occur in geographic "hot spots." However, in 2016, the falling numbers (FN) problem in the U.S. was widespread, impacting farmers in Idaho, Oregon, Colorado and Montana, as well as those in Washington. These weather-related FN events, caused by PHS and or LMA, cost Washington farmers alone more than \$140 million in lost revenue. In response to the collective grower outcry resulting from the 2016 FN crisis, a "Falling Number Summit" was organized to give producers and those in the wheat industry a platform to communicate concerns and needs to university and USDA researchers. The following top priority needs were identified: (1) improve the FN test; (2) develop alternatives to the FN test; (3) breed for resistance to PHS and LMA; and (4) improve communication and coordination between researchers and the industry.

The quest for a rapid alternative test began at the Falling Number Summit in 2017. At this meeting, a more rapid and accurate test emerged as a top priority. This is because the FN method isn't fast enough to enable segregation of high and low FN grain as it arrives at the elevator. Segregation at the elevator is critical because, like rotten apples, it takes very little low FN grain to spoil a lot of sound grain. Paul Katovich of HighLine Grain Growers made clear the need for a "red light/green light" test to preserve the value of sound grain in a bad season. Alex McGregor of The McGregor Company thought an immunoassay might be a viable option for a rapid alternative test. Immunoassays are used ubiquitously in medical settings for a wide range of applications and are becoming more routine in crop testing. However, the primary reason this technology is a good alternative to the FN test is because it is specific, sensitive and quantitative.

McGregor and the Washington Grain Commission (Mary Palmer Sullivan and commissioners) worked with Jim Moyer, WSU's College of Agricultural, Human, and Natural Resource Sciences associate dean of research in 2017, and others at WSU to spearhead a project on the immunoassay. Funds from the Orville A. Vogel Wheat Research Fund and industry support were used to jump start the project until additional resources from USDA-ARS and other extramural sources could be secured. The show of support from all wheat industry sectors was critical and demonstrated the collaborative effort required to develop solutions to complex industry problems.

Research efforts at WSU started in 2018 with the antibody development and immunoassay platforms that served as the proof-of-concept needed to attract EnviroLogix Inc. as a collaborator. EnviroLogix is a company that develops tools for the crop industry (envirolgix.com) and



specializes in the production of affordable diagnostic tests, including immuno-products using antibodies. An example is the vomitoxin (DON) test used to prevent contamination of wheat grain with Fusarium Head Blight.

Since the partnership with EnviroLogix in 2020, interviews and surveys have been conducted with representatives from the wheat industry who are targeted users. Initial feedback informed the FN research team (Drs. Arron Carter, Amber Hauvermale, Drew Lyon, Andy McCubbin, Clark Neely, Michael Pumphrey, Zhiwu Zhang, Byung-Kee Baik, Kim Garland-Campbell, Xianran Li, Camille Steber, and Alison Thompson) that a diagnostic test should be used for grain segregation at harvest to maintain high FN from point of origin to point of delivery.

Representatives from EnviroLogix visited in April 2023, where industry partners conveyed to them that there is a market and end-user need for their product as a pre- and post-management tool for the falling numbers problem. EnviroLogix is targeting a test to be cheaper, faster and more accurate than the current test, with a five-minute run time, an estimated capital equipment cost of \$10,000 or less for the digital reader, and a per-test con-

sumable cost estimated to be less than the FN test. For growers, this may mean less delay at the elevator during harvest and reduced spoiling of otherwise quality grain.

Researchers hope to begin preliminary beta-testing with cooperators this summer to develop a workflow that can be used efficiently to segregate low FN grain at the elevators. Further collaborations with EnviroLogix are ongoing to develop additional, higher-throughput tests to aid breeders with PHS- and LMA-resistant variety development. The success of the project will depend on continued research efforts, collaboration and improved communication throughout this multisector team. To help achieve these results, Washington growers can participate in the following ways:

- Attendance at conferences/meetings to receive updates on causes of low FN and provide feedback on preliminary tests and methods.
- Participating in surveys when given at meetings.
- Encouraging your elevators to participate in preliminary tests as available.
- Letting the research team know when you have a FN problem (ahauvermale@wsu.edu). This information is critical for obtaining important trial locations and grain samples. ■





Outsmarting cheatgrass

TROUBLESOME WEED HAS SOME TRICKS UP ITS SLEEVE

By Samuel Robert Revolinski

Postdoctoral Research Associate, Washington State University

My name is Samuel Robert Revolinski. I am a postdoctoral research associate at Washington State University (WSU) working with the applied research weed scientist Ian Burke on understanding genetic variation in weeds that drive adaptive traits. With my entire Ph.D. dissertation written on cheatgrass (*Bromus tectorum L.*), a nearly obligate self-fertilizing weed, I am an expert in understanding the genetic variation underlying adaptive traits in self-fertilizing weeds.

Implicitly, many of the best management practices (BMPs) for reducing herbicide resistance in weed populations are focused on reducing genetic variation in weed populations that drive the occurrence of herbicide resistance. However, herbicide resistance is not the only adaptive trait in weeds that is controlled genetically. Cheatgrass populations have massive amounts of genetic variability within and between farm fields, and thus, adaptive ability between and within farm fields. For example, in Moscow, Idaho, two cheatgrass genotypes collected from the same farmer's field began flowering 26 days apart in controlled, replicated, greenhouse trials. Thus, genetic variation in weed populations can be detrimental to farmers in other ways.

Herbicide applications in wheat are often timed for specific maturities of the crops and weeds to be effective, so when weeds like cheatgrass vary up to a month in flowering time within a single farmer's field, postemergence herbicide applications become less effective. In fact, four out of five cheatgrass samples that are suspected of glyphosate resistance sent by farmers into the herbicide resistance screening program at WSU are not actually

glyphosate resistant. Likely, the perceived resistance is due to variation in emergence or flowering time of the cheatgrass present within the farmer's field that allowed those genotypes to escape the herbicide application.

The mechanisms that maintain adaptive genetic variation in self-fertilizing species were unknown until recently. In outcrossing species such as humans, the mechanism thought to maintain genetic variation in adaptive traits is called "the heterozygote advantage" or "over dominance." In plain English, this means that having a single copy of a mutation rather than two or zero copies of the mutation lead to the most adapted genotype. For example, in humans, having a single copy of a mutant hemoglobin gene can lead to 89% increase in resistance to malaria, but two copies of the mutation lead to sickle cell anemia. Thus, in areas with high incidence of malaria, individuals with a single copy of the hemoglobin gene are the most likely to survive, which in turn, always makes sure that the sickle cell trait mutations and the normal gene are always present in the population. However, in self-fertilizing species, there are no heterozygotes (single copies of mutations in individual plants), thus the heterozygote advantage cannot explain the genetic variation present in populations of self-fertilizing weeds such as cheatgrass.

Recently, with the help of Dr. Richard Gomulkiewicz, a highly influential evolutionary biologist/mathematician at WSU who unfortunately recently passed away, we were able to use stochastic simulations to explain the variation present within farm fields for self-fertilizing weeds. What we found is that specific farms act as a refuge for cheatgrass genotypes that are adapted to the farm, then migration between farms maintains the varia-

tion present within farms. Without farm-scale selection of the weeds and migration of seeds between farm fields, there could not be variation present for self-fertilizing weeds. This means that the adaptive ability of cheatgrass relies on migration of seeds between sites. If there was no migration of seeds between farms, cheatgrass genotypes would have little genetic variation to adapt to management strategies. Thus, managing cheatgrass in the long term requires that migration between farm fields is considered.

The migration of cheatgrass seeds between farm fields can occur through a few different mechanisms but is primarily driven by agricultural activity. Although migration of cheatgrass seeds between fields can occur through migration on wildlife, such as birds or deer, human activities associated with farming transports large numbers of seeds directly between fields. Birds can transport plant seeds for thousands of miles, but the frequency of migration between specific sites is rare and inconsistent. Deer can transport cheatgrass seeds more consistently between nearby crop fields, but they lack the ability to transport seeds long distances across a region. Due to shared farming equipment and single families operating multiple farms, cheatgrass has found reliable transportation between farm fields. Not only does cheatgrass hitch rides with the actual farm equipment, but it also hitches rides on the vehicles towing the farm equipment, especially in dry environments like the inland Pacific Northwest (PNW). Likely, the ability of cheatgrass to continually adapt to farming in the inland PNW is maintained by an interconnected series of migration networks resulting from the migration of cheatgrass

seed between farm fields. This is facilitated by the sharing and/or transportation of farming equipment.

For Washington wheat growers, the findings of the simulation are both good and bad news. The good news is that a mechanism maintaining variation for adaptive traits in cheatgrass has been identified, but the bad news is that migration is difficult to manage, and that without managing migration, adaptive variation within cheatgrass populations at individual farms will be indefinitely maintained in cropping systems of the inland PNW.

The most obvious way to minimize migration of cheatgrass seeds between farm fields is thorough cleaning of agricultural production equipment and vehicles between uses in different sites. However, maintenance of adaptive variation in weeds is not the only reason to clean your farm equipment and vehicles that travel between sites. Seeds of weeds not yet introduced into a site or weeds containing herbicide resistance genes can also be introduced to farm fields through human-mediated migration via farm equipment and vehicles. For Washington wheat farmers, the results of the simulation provide just another reason to clean vehicles and agricultural equipment traveling between farms.

Reducing migration of cheatgrass seeds between farm fields is no silver bullet for management of cheatgrass, and there likely will never be an all-encompassing solution to cheatgrass management. Rather, thoroughly understanding the biology of cheatgrass and the use of various tools, including cleaning agricultural equipment and vehicles, should be used cumulatively to improve the effectiveness of cheatgrass management by Washington wheat growers. ■



Four cheatgrass panicles from four separate genetic lineages collected on the same day at Central Ferry after 1,350 Growing Degree Days since Jan. 1. The differences in panicle colors are due to the genetic variation underlying the time it takes for the lineages to flower and ripen. With many of the cheatgrass lineages present in a single farmer's field, cheatgrass management is difficult for wheat growers where multiple genetic lineages are present in their fields. Photo courtesy Ian Burke, Washington State University.



Adrian "Ady" Redondo

U.S. Wheat Associates (USW) - South Asian Regional Office, Manila, Philippines.

USW NEWS

Inspired to Help by Hard Work and a Hero

Growing up on his grandparents' small farm in the Philippines, Ady Redondo learned that hard work is a great motivator. At his elementary school, lessons about a Batangueño hero added inspiration to Redondo's interest in science. "There is a local hero, Maria Orosa, the first Filipino woman scientist, who comes from the hometown of my mother," he said. "She used her wits and science to help the victims of WWII. She inspired me to study food science instead of information technology."

Among Orosa's inventions is the protein powder soyalac that she smuggled into prison camps during the war.

More online

<https://bit.ly/3LkonXa>

WGC Exclusive | Ady Redondo

Teaching Industry How

to Weigh, Measure & Automate for Market Growth

Don't let the hairnet fool you, this is no small-town lunch counter.

"These [USW] guys really know their wheat," says Elver Lagamon, national sales manager for RFM Corporation in Manila.

But if you are a small-town baker in the Philippines who is interested in scaling up your production, you are just the type of person the U.S. Wheat Associates (USW) technical programming staff wants to talk to.

In Manila, this is Ady Redondo and Gerry Mendoza. These two are the milling and baking experts who maintain the market for U.S. wheat and find new ways for bakeries to expand in the Philippines.

Continued, next page



EXPERT PROFILE

Highlight

U.S. wheat in the Philippines

Your wheat in action.



Pandesal

A soft and airy flour roll, pandesal is Spanish for "salt bread" and is a common breakfast bread.



Go-To Snack

Filipinos eat about six times a day. Between-meal snacks are commonly wheat-based, like SkyFlakes brand crackers.

Growing middle class eats wheat

Wheat-based foods are seen as premium products and to show their status, consumers are eating more wheat.

MILLING NEWS Industry Insights - U.S. Soft White Wheat

The 'Manila Five' Buy 100% U.S. Wheat

origin, including two types of soft white: high and low protein. RFM Corporation, the purchasing arm for the five mills, was the first mill to open in the Philippines and hasn't changed its contract specs much over the last 10 years because U.S. wheat has been very consistent. "The quality and logistics of the U.S. — if the weather is good — is like clockwork," Stephen Uy said. He runs the flour division for RFM. The company started using SRC (solvent retention capacity) in 2018 with the help of the USW technical staff. In addition, the USW crop quality report allows them to better adjust the grist for the new crop year. "What we need is help marketing U.S. as the standard, that it's really safe," says Uy. The mills need help reaching the craft bakers and getting them to understand where their wheat comes from is important. ■

There are five mills on the river system near Manila that band together to purchase wheat. They work together so they can buy enough volume to order their own freight ship. And together, they buy about 500,000 tons a year. They want their own ship so they can spec 100% U.S.



American Wheat Quality Seal - used by at least four commercial Filipino bakers.

“USW puts words into action.”

Top food brands in Manila rely on the value of USW technical expertise

Continued from previous page.

Redondo joined USW in June 2019 and has been an emerging powerhouse in promoting U.S. wheat in the region.

Promotional efforts, like the American Wheat Quality Seal, have helped drive public awareness, but the main resource the country’s emerging baking industry needs is education. And this is another game strategy in which Redondo shines. Redondo’s skills are a valuable resource at all levels of the industry, from home kitchen entrepreneurs learning inventory management to the largest cracker manufacturer in the country looking to dial in their equipment.

For commercial bakers hoping to expand, understanding of continuous machinery is critical. “Otherwise, you throw away a lot of dough,” Bien Ah said during an interview in January. He is a past president of the Filipino-Chinese Bakery Association Inc. (FCBAI). There isn’t a local school for industrial baking; FCBAI and USW are it. “We cannot live alone in this world, you need to have friends. USW is the resource,” Ah said. “We are very proud to say we were the first to use the U.S. quality seal.”

Back on the commercial side, Redondo consults on the equipment lines. “Fine tuning temperature settings and other engineering fine tuning makes the baking lines more consistent, and consistency



CUSTOMER INTERVIEW

“USW is 100% accommodating” - Donna Lyn Mendoza (above, left), head of quality assurance and Monde’s microlaboratory consults with Ady Redondo and Joe Bippert near one of Monde’s five, 50-foot-long conveyor ovens at its commercial bakery in Manila.

means success,” says Keng Sun Mar, whose family founded Monde M.Y. San Corporation (Monde), maker of SkyFlakes and Fita brand crackers, among others. He consults often with USW, who, he says, “puts words into action,” and emphasized the importance that there’s a follow-through from USW after a discussion. The market leader in the Philippines for crackers is looking for quality and consistency, and quality control issues are a key place where USW service helps, he said.

“Exchange of information is critical,” Mar said. This is especially important at Monde, where they are hoping for continuous business success as the next generation takes over. ■

Greatest Strengths?

There’s no limit to Ady’s ability to add value to USW.

- Joe Bippert/USW Manila

evolve to weight-based measurements and adopt business management best practices and automation. ■

Industry Insights - RFM Corporation

Customer Mindset.

In order to spark interest and connect employees to finished products, RFM Corporation runs a recipe contest where the mill’s employees are challenged to be creative and allow them to visualize how the ingredients will become wheat-based products.

Because of the shortage of bakers who understand the science behind the craft, RFM also runs three, two-week baking courses with Manila-based chef Vanessa Pallagud. Baking students make their own recipe formulations, and USW technicians are the judges. The judging score cards were developed by USW for the Washington Grain Commission 60th Anniversary cake competition in 2016. ■

USW NEWS

Bonus Profile

Gerry Mendoza: Born to Teach and Share his Love for Baking

There is one thing that everyone who crosses paths with Gerry Mendoza agrees on: he is just a really positive, nice guy.

Mendoza joined USW in January 2016, but has been in the baking industry for over 30 years.

More online

<https://bit.ly/42bxYoA>

Tech Insights - Top Quotes



Gerardo “Gerry” Mendoza

Greatest strengths?

Teaching the fundamentals that translate into small business success.

How do you define success?

If what I do creates meaning or improves the lot of another person, that is success.

Who are your heroes?

I have many “everyday heroes.” I appreciate and acknowledge everybody will have a chance to be a hero in the eyes of others.

What do you do to destress?

Sharpen my cooking knives. I love cooking for my family and others. If you cut me, it’s not blood that’s coming out, it’s flour.

USW NEWS

Regional Profile

Southeast Asia has become one of the most important export markets in the world for U.S. wheat. The Philippines is the second-largest market for all classes of U.S. wheat and has been the largest importer of soft white and hard red spring wheat since 2013.

USW’s focus on increased technical service and assistance is paying dividends as the region’s demand for wheat continues to grow.



50% Home bakers make up half (50%) of the industry. The Filipino-Chinese Bakery Association Inc. (FCBAI)

Training Center runs 25 courses that range from bread and pastry to bakery management. They are a primary source of education, and USW teaches the FCBAI bakery science courses. The “old ways” of baking are still prevalent, which involves eyeball measuring and no recordkeeping or inventory management. FCBAI helps commercial bakers

WGC Exclusive | David Oh

How does
this expert
stay on
top of his
game?

“USW has many technical experts at several offices around the world. Sharing information between technicians is a good opportunity for me to bolster my expertise and skills, and to provide knowledge to others. I keep communicating with bakery experts to maintain and improve my bakery knowledge, skills, and stay up on bakery trends. My direct contact with bakery and noodle manufacturers and millers through technical training and technical servicing gives me the opportunity to highlight the value of using flour made from U.S. wheat.”

EXPERT PROFILE

Greatest Strengths?

David is very sincere and responsible and has a strong passion to learn about new things.

- Dongchan (Channy) Bae/USW Seoul

BAKING NEWS | Industry Insights - U.S. Soft White Wheat

Technical Programming Takeaway: Better Bread Through Science & USW

If you're looking for a wheat recipe MVP (most valuable player) in South Korea, David Oh is your man.

He's a food biotechnologist by training and spent the beginning decade of his career at SPC Group, most of this time at SPC's research institute developing food materials and recipe formulations. And Oh, he was just getting started.

He collected two additional certifications — Baking Science & Technology and Food Safety & Hygiene — from the American Institute of Baking (AIB), in 2010. His early career achievements include several bread improvers to enhance bakery product quality. You can find his work in pan bread, sweet buns, and frozen dough products. His bread improver for pan bread is currently used by SPC's Paris Baguette and Samlip, two popular bakery brands under the SPC umbrella. His special, sugar-free pan bread formulation is also sold under the SPC's Paris Baguette brand.

When looking at the flour formulations at SPC, he found most of their bread products are mainly made with U.S. wheat classes. When he later transferred to the USW technical service team, he expanded the U.S. wheat-foods footprint to include noodle and bakery manufacturers and flour mills in Korea by promoting the superior quality of U.S. wheat classes.

As a result of Oh's USW technical programs, Korean instant fried noodle manufacturers have continued to blend hard red winter (HRW), soft white (SW), and hard red spring (HRS) for their products. He helped two flour mills in Korea develop new formulations for bread flour using 100% U.S. wheat classes, especially HRW and SW. From Oh's USW bakery seminar in the Philippines, some Filipino bakers developed their own, Korean-style bakery products based on the recipes.

Oh has also published his food science research on optimal blending formulas for Korean-style baguettes in *The Bakery*, the largest baking magazine in Korea.

“I found working for USW as an opportunity for me to share my baking knowledge and skills that I have developed for most of my professional life, and an opportunity to share my passion for baking,” Oh said.

You can see the ripple effects of USW technical programming efforts on bakery shelves across Asia as technicians like Oh teach commercial bakers how

to make better bread through baking science. All featuring a star ingredient: U.S. wheat. ■



Shin Hak “David” Oh

U.S. Wheat Associates (USW) - North Asian Regional Office, Seoul, South Korea.

USW NEWS

Expertise Fermented in Korean Food Culture

The roots of David Oh's food technology career were literally and figuratively fermented in his childhood home in Seoul, South Korea. The Korean art of making “kimchi” fascinated Oh as a child.

“That interest stayed with me as a young person, so I chose to study food and biotechnology,” said Oh.

Oh joined USW in 2015 after 10 years at SPC Group, the largest baking company in Korea. His expertise includes 18 years in wheat.

“I am a hands-on person, and a technical sales position like this gives me the opportunity to share all of our experience and skills with our customers to help them improve their processes, customer satisfaction, and income using flour made from U.S. wheat,” he said.

USW is unique in having strong technical expertise available to customers in their mills and production facilities. This is a key part of Oh's work.

“I am excited to be part of Korea's thriving wheat food industry. I enjoy visiting our customers,” Oh said. “If they have concerns or need troubleshooting, we can be there with them, and that builds a stronger partnership for the future.”

More online
<https://bit.ly/41W4JGB>



USW Around the World

Dependable People. Reliable Wheat.

U.S. Wheat Associates (USW) is the export market development organization for the U.S. wheat industry. USW promotes the reliability, quality and value of all six U.S. wheat classes.



Up Next

Legends in Wheat: Peter Lloyd

This international man of milling travels the world to conduct technical support that helps prove the value of U.S. wheat to customers around the globe.

U.S. Quality Pulls Demand

USW technical expertise boosts product quality, value

The USW Seoul Office runs several programs for millers, noodle manufacturers, and cake developers to introduce participants to the value and the superior quality of U.S. wheat, and conduct blending studies to improve the quality of their final products.

Oh not only provides valuable technical information, but his efforts improve Korea's milling industry, says Kim Yang-il, R&D director of Daesun Flour Mills.

Drawing on his expertise in baking and

classes, and participants then test the blends to identify optimal formulations for their commercial products. From his research experience at SPC, bakery applications developed at USW courses, and the Korean Baking School, Oh has introduced new products, like whole wheat baked goods made with U.S. wheat flour, in four seminars to nearly 300 commercial bakers.

Soft white wheat is used in making cookies and cakes. In the noodle market, Australian wheat is widely used, but U.S. wheat holds about 60% of the instant ramen flour market. "I hope there will be a new U.S. wheat developed to replace Australian wheat for noodles," said Yang-il.

According to Lee Jae-kang, director of R&D for SajoDongAOne Co., a B2B milling company in Seoul, information from USW technical programs has influenced their long-term strategy of purchasing U.S. wheat. "USW's technical programming is a great reference for selecting the suitable U.S. wheat classes for product characteristics," Jae-kang said. ■



Korean-style walnut cookies 'Hodu-gwaja'

a higher understanding of food processing, Oh helps millers and food manufacturers improve the value of their products.

That effort takes many forms, like when Oh helped arrange seminars at the Korean Baking School in Seoul for bakers from commercial operations in the Philippines. Oh has conducted several baking, biscuit, and noodle production courses for technical managers where he demonstrates blended flour from U.S. wheat

Market Snapshot

Imports to S. Korea:	%
USA	48
Australia	43
Canada	8

Top 3 Products:	%
Noodles	48
Bread	20
Cookies/Cake	12



SPRING TRAINING?

Daehan Flour Mills Corporation - Oh evaluates noodles at a mill in Incheon, South Korea.

Tech Insights - Top Quotes

Behind the Scenes: Q&A with a USW Technician

We know it's not all flour dust and fresh pastries for USW technical experts. We asked David Oh for some insight on where he draws inspiration and what motivates him.

Who are your heroes?

From a very young age, I found my path by emulating my father's character — his sincerity and passion. Also, Roy Chung (USW/Singapore) has been an incredible mentor and teacher, and has been a brilliant guiding light in the path of my career. Not only has Roy helped hone my technical knowledge but showed me how to build relationships with customers, which has also helped me find success in all aspects of my life. I hope I will keep working at USW like Roy, my mentor, for the rest of my life.



What do you do to destress?

My lovely family is like an energy drink. To relieve stress, I go with my family to visit various tourist spots, enjoy leisure activities, and play with my sweet son every weekend.

What are two inspirational quotes you try to emulate/live by?

Be faithful in everything. And, live each day practicing absolute positivity and absolute gratitude.

What would you say to a Washington farmer?

I love providing superior U.S. wheat to our customers to make delicious wheat-food products. So, please keep trying to plant and produce high-quality wheat for our customers! ■

WHEAT WATCH

WASHINGTON GRAIN COMMISSION

U.S. projected to increase share of world wheat



By T. Randall Fortenbery
*Professor and Thomas B. Mick Endowed
 Chair, School of Economic Sciences,
 Washington State University*

On May 12, the U.S. Department of Agriculture (USDA) released their first World Agricultural Supply and Demand Estimates (WASDE) highlighting the 2023-24 marketing year. The May estimate pegs the U.S. wheat crop at 1.659 billion bushels this year, an increase of about 9 million bushels from the 2022 U.S. wheat harvest. However, because wheat stocks carried over from the 2022-23 marketing year are considerably smaller than those carried into 2022-23 from the 2021-22 marketing year, the total U.S. wheat supply for 2023-24 will be less than last marketing year by 3% (Figure 1). Despite the smaller supply estimate, the average U.S. wheat price is forecast to be \$8 per bushel for 2023-24 compared to an estimate of \$8.85 for the 2022-23 marketing year. USDA will provide U.S. estimates by wheat class for 2023-24 in the July WASDE.

Prior to the release of the May WASDE, the International Grains Council (IGC) had estimated total U.S. wheat production would exceed 1.8 billion bushels in 2023. However, the most recent IGC estimate assumes trend yields for U.S. wheat producers, and USDA used lower yields in the May WASDE to account for crop stress in the hard red winter wheat producing areas.

Note from Figure 1 that U.S. wheat consumption is nearly identical between the USDA and IGC estimates for 2023-24. The major balance sheet differences are in total U.S. production and forecasts for U.S. wheat exports in 2023-24. However, it is likely that future IGC estimates of U.S. production will fall in line with USDA as the impact of the Great Plains drought is fully realized, thus, at this point, the WASDE estimates likely provide the most accurate picture of the new crop year for U.S. wheat.

Expectations for global wheat markets suggest world wheat ending stocks will also decline in 2023-24. USDA currently estimates that total world wheat production this year will be 789 million metric tons, a slight increase

Figure 1: U.S. wheat balance sheet

(June/May WASDE, July/June IGC marketing years)
 Based MAY 2023 USDA, APRIL 2023 IGC in million acres/million bushels

Marketing Year	USDA 21/22	USDA 22/23	USDA 23/24	IGC 23/24
Beg Stocks	845	698	598	613
Imports	95	125	135	121
Acres Planted	46.7	45.7	49.9	
Acres Harvested	37.1	35.5	37.1	
% Harvested	79.4%	77.7%	74.3%	
Yield	44.3	46.5	44.7	
Production	1,646	1,650	1,659	1,815
Total Supply	2,587	2,473	2,393	2,550
Food	972	975	977	977
Seed	58	70	65	66
Feed and Residual	59	55	70	73
Exports	800	775	725	801
Total Demand	1,888	1,875	1,837	1,933
Ending Stocks	698	598	556	617
Stocks To Use	36.97%	31.89%	30.27%	31.92%
Avg. Farm Price	\$7.63	\$8.85	\$8.00	

SOURCE: USDA WASDE, INTERNATIONAL GRAINS COUNCIL (IGC)

over the 788 million metric tons they estimate were harvested in 2022. However, they also anticipate an increase in world wheat consumption, and the net result is a decrease in world ending stocks in spring of 2024 of about 1%.

IGC, on the other hand, currently forecasts world wheat production to be down year-over-year and total 787 million metric tons for 2023. However, like USDA, IGC projects an increase in world consumption of wheat this marketing year resulting in a projected decline in world ending stocks of 2% for 2023-24.

Figure 2 shows USDA and IGC world wheat ending stocks estimates over the last several years, including their forecasts for this year. While there are some differences in their annual estimates,¹ note that they generally are consistent in estimating whether the change in ending stocks from year to year represents a year-over-year decline or a year-over-year increase.

¹The differences are at least partly explained by differences in how the wheat crop year is defined. The USDA wheat marketing year runs from June 1 through May 31 the following year. IGC defines the wheat marketing year as running from July 1 through the following June.

IGC currently projects Ukrainian wheat production in 2023 will total 20.2 million metric tons, a decrease of 23% from the 2022 harvest. USDA is projecting a similar year-over-year decrease in Ukrainian wheat production (down 21%) but USDA is starting with a lower base production for 2022. USDA estimates Ukrainian wheat production in 2022 totaled only 20.9 million metric tons (compared to IGC's estimate of 26.3) and will fall to 16.5 million this year. Regardless, both estimates assume Ukraine will be less active in world wheat trade this year, with IGC predicting a decline in Ukrainian wheat exports of 23% year-over-year, and USDA projecting a decline of 33%.

Russian wheat production in 2023 is estimated by IGC at 83.6 million metric tons, a decline of 12% compared to 2022. USDA has a slightly smaller estimate for Russian wheat production (81.5 million metric tons), but still projects a year-over-year decline of 1%. Thus, both IGC and USDA anticipate Russian and Ukrainian wheat combined will represent a smaller total world market share in 2023-24 compared to the previous year (Figure 3).

In contrast to forecasts for Russia and Ukraine, both USDA and IGC expect the U.S. market share of world wheat trade to increase in 2023-24 compared to last marketing year. Even though USDA is forecasting total U.S. wheat exports to fall in 2023-24, the U.S. market share of total world wheat trade is expected to improve by about 0.7 percent. A similar percentage increase for the U.S. is forecast by IGC.

While the percent of total world wheat trade represented by the U.S. is expected to increase this year compared to last, actual export volume out of the U.S. is currently

Figure 2: World wheat ending stocks

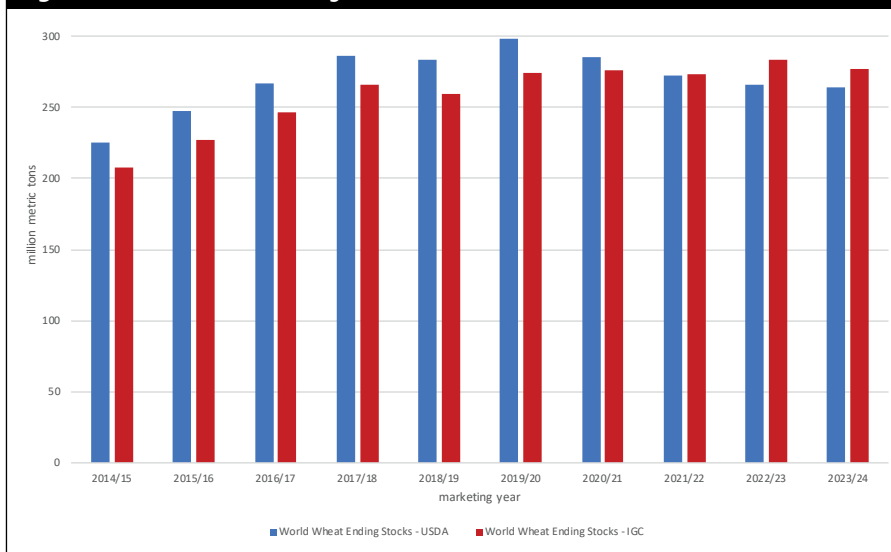
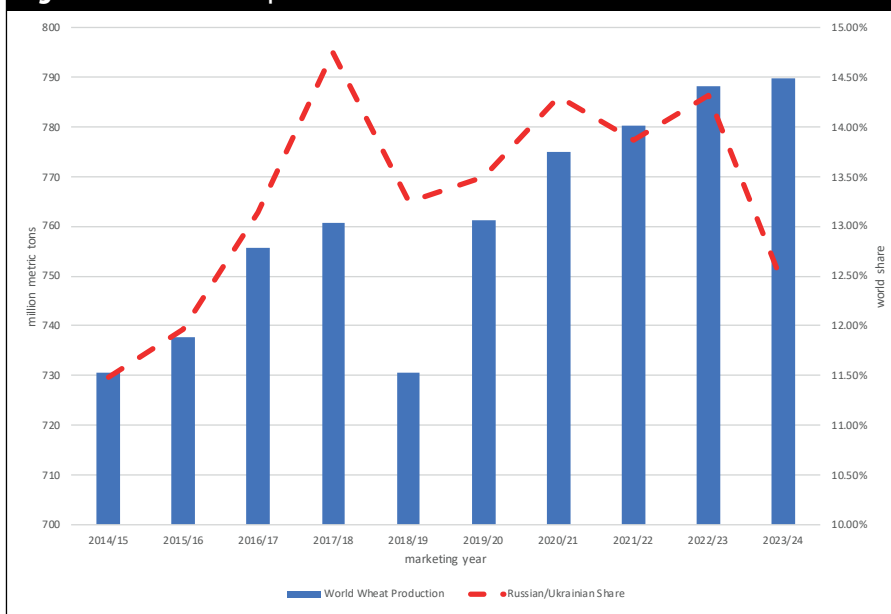


Figure 3: World wheat production vs. Russian/Ukrainian share



projected to decline 6% this year compared to last and be the lowest in 40 years.

IGC currently forecasts U.S. wheat exports will exceed last year's levels in 2023-24, and if export progress early in the marketing year starts to support the higher export estimate, then prices would likely respond in a positive way. However, in recent years, early forecasts from both USDA and IGC have tended to be overly optimistic. To support the USDA annual average price of \$8 per bushel, it will be important to see export pace consistent with the 725-million-bushel annual estimate sustained early in the marketing year, and for IGC's estimate to hold up, the pace must be ahead of what's needed to meet the USDA forecast. ■

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.

SIGNED

HARRINGTON'S BUILDINGS ARE FARMER'S CANVAS

PHOTOS AND STORY BY TRACEY KORTHUIS

Nestled among rolling hills in Lincoln County, Harrington, Wash., is a town with a small population but surprising momentum. Turn-of-the-century buildings are in the process of being renovated, including the Electric Hotel and the former U.S. Bank building. Local businesses line the main street — you can buy a pair of jeans, get coffee, play a round of golf, and have lunch afterwards, all within a few blocks.

One of Harrington's most charming features are the ghost murals — advertisements originally painted directly onto the red bricks of downtown buildings. Ghost murals are not unique to Harrington; they are common on small town main streets and urban historic downtowns. Many of Harrington's ghost murals harken back to the town's agricultural roots, advertising farm equipment manufactured by Caterpillar and John Deere. Just over 400 residents call Harrington home, and one of those is Gavin Wagner. Known locally for his artistic ability, Wagner has restored several of the faded building advertisements in downtown Harrington.

Wagner's interest in art began at an early age. His mom observed him drawing a unique type of smiley faces at the age of two. She encouraged him to hone his natural ability, gave him the tools to keep creating, and enrolled him in art classes. Wagner credits his interest in comic books, rather than formal classes, though, as strongly influencing his artistic style. Jim Lee and Todd McFarlane remain two of his favorite comic book illustrators — both are known for boldly drawn, incredibly detailed work. Wagner prefers to draw his own comics in black and white rather than in color and focuses on illustrating instead of writing dialog.

Wagner found another source of inspiration while spending time with his dad showing a 1928 Ford Sport Coupe at car shows in the late 1980s and 90s. It was at these shows that Gavin was first introduced to "Kustom Kulture." Kustom Kulture epitomizes the artwork and style of hot rod culture from the 1950s, 60s and 70s. Ed "Big Daddy" Roth was a nationally known custom car builder and illustrator who created a cartoon rat called Rat Fink. Rat Fink is usually portrayed in vibrant green, with bulging eyes and a mouth full of jagged teeth. Wagner enjoyed drawing Rat Fink and other hot rod-inspired characters created by Roth. Wagner has a lot of affection for the character to this day; one of his current personal projects is restoring a cast iron statue of Rat Fink.

Growing up, Wagner spent much of his time living in Spokane with his mother, but returned to Harrington to finish high school. In the 90s, while sports dominated small town high schools, Wagner continued to prioritize his artwork. He designed a comic book-inspired falcon as the mascot for the Sprague-Harrington Falcons. Wagner's falcon had defined muscles and a deter-



mined expression and was adopted as a symbol for the now-disbanded athletic co-op.

After high school, Wagner attended Spokane Falls Community College and went on to study graphic design in Tempe, Ariz. In addition to graphic design, Wagner began experimenting with painting in 2013. He accepted a few commissions to create murals for businesses, including gyms, a restaurant and a diesel truck parts company.

"Ever since I was a teenager, I wanted to illustrate comic books," Wagner said. "My style imitated the comic book greats that I looked up to and wanted to be. I'd say that some time in my 30s, I started trying to be more diverse in the work I was doing. I started using brushes and paints and working on canvases and incorporating welding and old barn wood to build signs. That turned into painting murals on walls and buildings. The stuff I do now seems to appeal to the masses, whereas I

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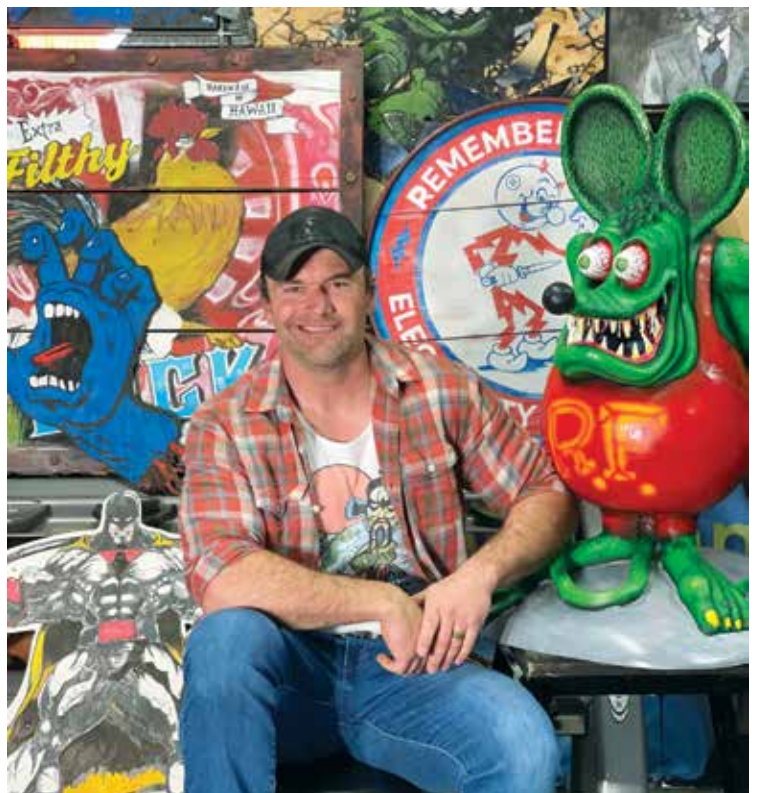
You can find Gavin Wagner’s art on several Harrington, Wash., buildings, including the black and white “hotel” and The Mercantile’s metal sign, both on the Electric Hotel (above). He also did signage for the Post & Office coffee shop (previous page). Wagner (below) and his brother are the third generation on their family’s wheat farm. He credits a cartoon rat, “Rat Fink,” as a major inspiration for his art.

still do the comic book stuff for the love of the art.”

When his brother, Travis, decided to return to Harrington and the family farm, Wagner found himself drawn back as well. The brothers are third generation wheat farmers, practicing minimal tillage on their farm ground. Over the years, they have learned to divide the labor based on their strengths. Of his brother, Wagner said, “He’s my brother, my business partner and my friend. I can’t imagine working with anyone else.”

In 2016, Wagner met his future wife, Kayla, who was teaching in Moses Lake. They dated long distance until she decided to move in with Wagner in Harrington. They married in 2018 and after commuting to Moses Lake until 2019, Kayla took an elementary school teaching job with the Davenport School District. They’ve remodeled Wagner’s grandparents’ house together, giving it a comfortable, modern update.

While agriculture hasn’t directly inspired Wagner’s work, the seasonal aspect of wheat farming allows him time to continue pursuing creative projects. ▶



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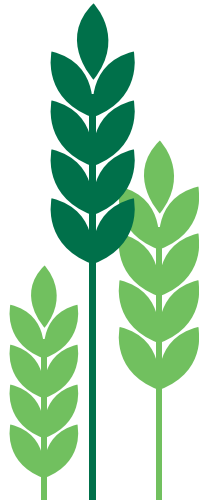
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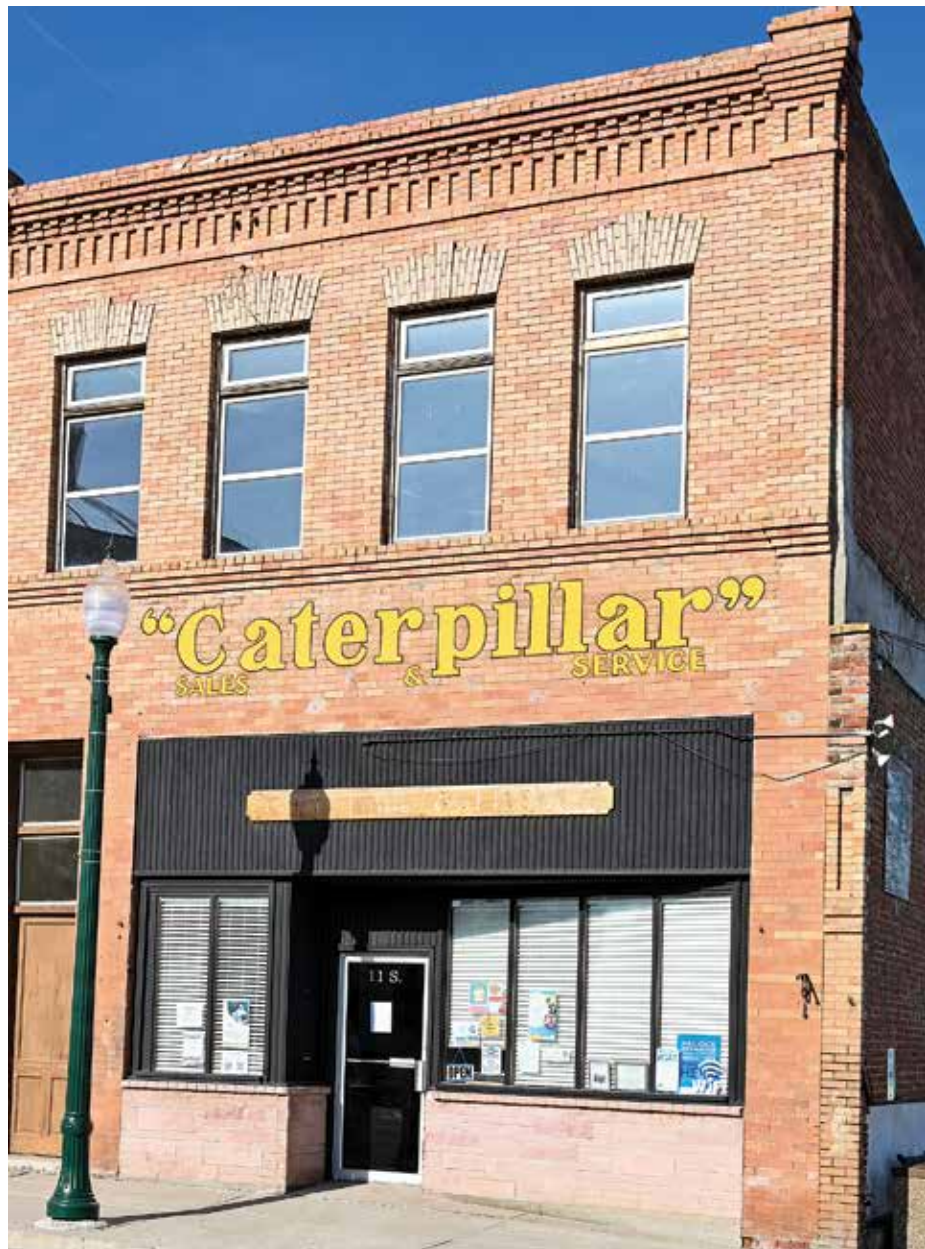
“All my life, I’ve drawn, painted, built and created one-of-a-kind pieces of art for the people who have meant the most to me,” he said. “It just makes me feel good when someone says to me, ‘Hey! I still have that drawing you did for me way back when. I framed it, and I look at it every day.’ If they’ve kept something that I did for them all this time, then that’s a pretty great feeling. For me, that’s priceless.”

Wagner has restored the Caterpillar advertisement on the front face of the Harrington City Hall building, the Ford and Goodyear murals on the Studebaker Garage, and the bold, black and white “hotel” on the front and side of the Electric Hotel.

Wagner’s process begins in Adobe Photoshop, where he creates the initial design. After his client approves the artwork, Wagner uses a laptop and a projector to paint the outline of the design onto the building, usually at night. Wagner uses a brand of paint specifically designed for outdoor sign painting. The oil-based enamel provides the durability and adhesion necessary for the longevity of the painting and comes in a vibrant range of colors. The time Wagner needs to complete restoration depends on the intricacy of the artwork and the weather.

Wagner has also created logos and signage for newer businesses in town, including the Post & Office coffee shop and The Mercantile. The Post & Office’s round, black and white logo is reminiscent of an old fashioned postmark, a nod to their building’s origins and to owner Heather Slack’s affinity for Harrington’s history. The Post & Office’s sign is painted low on the building, close to the sidewalk and often functions as an outdoor photo booth.

The signage for The Mercantile



Harrington, Wash., wheat farmer and artist, Gavin Wagner, has also restored the “Caterpillar” advertisement on the town’s city hall building.

presented some extra challenges because of that shop’s location in the storefront of the Electric Hotel. The Electric Hotel is on the National Register of Historic Buildings, and the building owners, Jerry and Karen Allen, wanted to exercise caution with painting directly on the building over the storefront. Wagner decided to create The Mercantile’s sign on a narrow piece of metal that would fit above the upper storefront windows. Using metalworking equipment in his farm shop, Wagner rounded the edges of the sign and prepared the back side for mounting to the brickwork of the hotel. For this project, Wagner used automotive paint because of the metal substrate. The wide-spaced, sans-serif font was chosen by The Mercantile owner, Julia Jacobsen.

Of his ghost mural restorations and advertisements for the viable businesses of downtown Harrington, Wagner said, “Art is sort of my legacy. These signs will be around forever.” ■

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THE BOTTOM LINE

Tax changes are on the horizon

By Justin Hunt

CPA, Leffel, Otis, and Warwick, P.S.

Another tax season is finished, and if there is a lesson to be learned, it's that things never stay the same. There are some changes in the tax law coming over the next few years that will impact both agricultural producers' farm business and personal tax returns. Some of these changes are minor, but some of them are pretty significant when compared to the rules we had for 2022 tax returns. It's best to be proactive when looking at these changes to hopefully avoid any train wrecks come filing season.

Bonus depreciation

Since the Tax Cuts and Jobs Act (TCJA) in 2017, taxpayers have enjoyed the option to use bonus depreciation to accelerate depreciation on property acquired and placed in service during that respective tax year at a rate of 100%. This has allowed taxpayers to fully depreciate their property without respect to some of the limits put in place with Section 179 depreciation. This deduction is scheduled to phase out, with property placed in service during 2023 only eligible for 80%; 2024 at 60%; 2025 at 40%; 2026 at 20%; and 2027 will be at 0%. Section 179 depreciation limits have increased to \$1,160,000, so for many taxpayers, that limitation will not create an issue. For the larger producers, more creativity will be needed when looking for deductions in 2023.

Board for labor

For the corporate farm structure, board for labor has been an advantageous deduction. This deduction allows a farm corporation to write off 50% of groceries and various other living expenses as long as the employee lives on the farm premises and that the expense was for the convenience of the employer. The great benefit is that these expenses are not taxable to the employee as some other fringe benefits can be. Without further tax law changes, these expenses will no longer be deductible starting in the 2026 tax year. This doesn't mean that the business won't be able to pay for them; they just are not going to be deductible expenses any longer.

Business meals

Traditional business meals should not be confused with board for labor. These are meals that have a business purpose and do not have to be on the business premises. For the 2022 tax year, businesses were able to deduct the full cost of food and beverages purchased from a restaurant so long as they weren't lavish or extravagant. Starting Jan. 1, 2023, these meals once again become 50% deductible as they were in 2020 and prior years.

Overtime pay for ag workers in Washington state

As most Washington ag producers are aware, farm employers in the state are no longer exempt from paying overtime. Starting in 2022, overtime was to be paid on any time worked in excess of 55 hours. That number has moved to 48 hours in 2023 and will be at 40 hours for 2024. There are severe penalties for

those who choose to ignore the new laws.

Estate tax exemption

With the expiration of the TCJA at the end of 2025, the estate tax lifetime exemption is due to decrease. For 2023, the exemption is \$12,920,000 for single filers, and \$25,840,000 for married couples filing jointly. The exemption is about cut in half for 2026, moving to \$5,490,000 for single filers and \$10,980,000 for married couples filing jointly. These amounts are set to be indexed for inflation, and actual figures have not been released yet. For the farmer who owns a lot of real estate, these are going to be amounts to pay attention to as they could have major estate tax implications.

Mileage rates

Mileage rates are increased for 2023. As the cost of fuel and maintenance has increased over the past few years, so have the IRS mileage rates. At the end of 2022, the mileage rate was 62.5 cents per mile.

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For 2023, the rate has increased to 65.5 cents per mile. For those of you who have elected to use a mileage deduction or reimbursement for your vehicles, you will see added benefit this year.

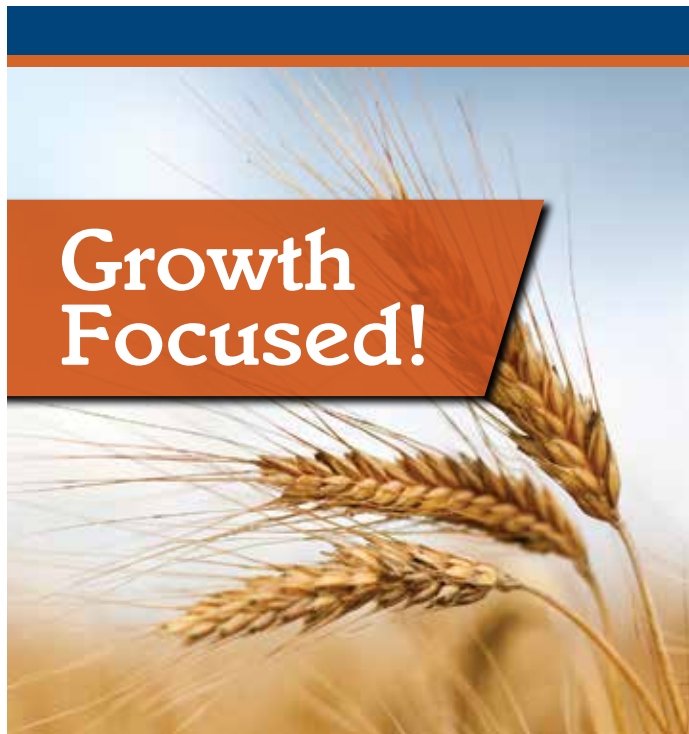
QBI deduction

For the pass-through entity and sole proprietor farmers, the Qualified Business Income (QBI) deduction has been a helpful tool to minimize tax since its implementation in 2017 with the TCJA. The deduction equals 20% of the qualified business income, with some exceptions. This is

another tax benefit that is due to sunset at the end of 2025 when the tax law expires.

Change can be good so long as we are prepared for it. While the bulk of these changes are scheduled to occur in the next few years, it is never too early to prepare. ■

Justin Hunt, CPA, is an employee at Leffel, Otis, and Warwick, P.S. He works out of the firm's Wilbur, Coulee City and Okanogan offices. He takes pride in the fact that the firm works with many family farms and ag-related businesses throughout the Pacific Northwest. For information, visit low.cpa.



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A 2022 summer storm rolling in over canola at White Farms in Walla Walla. Photo by Amy White.



These days, farming takes a team. Dad, Ian Youngren, on the farm in Lind. Mom is still at work, so dad is the cook tonight for Colter, Harper and baby Baylor. Photo by Mike Kramer.



Eliana Krug at Honn Farm in Endicott. This farm was homesteaded in 1899. Photo by Sarah Honn.

Email pictures to editor@wawg.org. Please include location of picture, names of all people appearing in the picture and ages of all children.



Your wheat life...

(Above) 2022 harvest at Moser Partners, which farms in Genesee, Idaho, and Johnson, Wash. Photo by Wade Moser.

(Right) Enjoying some duck hunting at Eagle Lake in Othello with "Bear" ready to retrieve. Photo by John McCaw.



HAPPENINGS

As of press time, the events listed here are being planned. However, you should check prior to the event for updates. All dates and times are subject to change.

JUNE 2023

1 WSU VARIETY TESTING CROP TOUR.

Horse Heaven, Wash., at 10 a.m. For information call Clark Neely at (814) 571-5682 or smallgrains.wsu.edu/variety/

1 WSU VARIETY TESTING CROP TOUR.

Connell, Wash., at 5 p.m. For information call Aaron Esser at (509) 659-3210 or smallgrains.wsu.edu/variety/

2 WSU VARIETY TESTING CROP TOUR.

Adams County, at 3 p.m. For information call Aaron Esser at (509) 659-3210 or smallgrains.wsu.edu/variety/

3 ROSALIA BATTLE DAYS. Community festival, parade, car show, vendors market, pin-up contest, fun run, kids activities, family games and more. Rosalia, Wash. rosaliabattledays.info

3 REARDAN MULE DAYS. Three on three basketball tournament, craft fair, poker ride, car show, parade. Reardan, Wash. reardanmuledays.com

6 WHEAT COLLEGE. 9 a.m. to 3 p.m. at the Palouse Empire Fairgrounds in Colfax, Wash. Lunch is provided. No charge. Register by calling (509) 659-0610 or print out and mail registration form at wawg.org/ammo-workshops/.

9 DEMOLITION DERBY

EXTRAVAGANZA. Combine demolition derby, parade, barbecue. Lind, Wash. lindcombinederby.com

9-11 PROSPECTORS' DAYS. Three on three basketball tournament, 10k run, classic car show, music. Republic, Wash. facebook.com/prospectorsdays.

10 SNAKE RIVER FAMILY FESTIVAL.

Celebrate the lifeblood of the Palouse and enjoy a free lunch and ice cream, music, favorite exhibitors, and kids' activities. Boyer Park & Marina, Colfax, Wash., 11 a.m. to 3 p.m. portwhitman.com/snake-river-family-festival.

13 WAWG BOARD MEETING.

Meeting starts at 10 a.m. at Washington Wheat Foundation Building, Ritzville, Wash. (509) 659-0610, wawg.org.

13 WSU VARIETY TESTING CROP TOUR. Moses Lake, Wash., at 8 a.m. For information call Andy McGuire at (509) 754-2011 or smallgrains.wsu.edu/variety/.

13 PENDLETON STATION FIELD DAY.

Event begins at 8 a.m. at Pendleton Station on Tubbs Ranch Road outside Pendleton, Ore. For information call Debbie Sutor at (541) 278-4405.

14 MORO FIELD DAY. Event begins at 8 a.m. at Sherman Station on Lone Rock Road outside Moro, Ore. For information call Debbie Sutor at (541) 278-4405.

14 WSU VARIETY TESTING CROP TOUR.

Harrington, Wash., at 10:30 a.m. For information call Aaron Esser at (509) 659-3210 or smallgrains.wsu.edu/variety/.

14 WSU WEED TOUR. Pullman, Wash., at 1 p.m. For info call Drew Lyon at (509) 335-2961 or smallgrains.wsu.edu/variety/.

15 LIND FIELD DAY. Event begins at 8:30 a.m. at the WSU Dryland Research Center in Lind, Wash. For information call Samantha Crow at (509) 677-32103671 or smallgrains.wsu.edu/variety/.

16 WSU VARIETY TESTING CROP TOUR.

Douglas County at 4 p.m. For information call Dale Whaley at (509) 888-6352 or smallgrains.wsu.edu/variety/.

16 PNWCA CANOLA VARIETY TESTING CROP TOUR. Douglas County, location and time TBD. For more information, contact Karen Sowers at (808) 283-7013 or pnwcanola.org.

16-18 ALL WHEELS WEEKEND. Car show, music, food. Dayton, Wash. historicdayton.com/all-wheels-weekend.

16-18 WENATCHEE RIVER BLUEGRASS FESTIVAL.

Adults/children workshops, food, vendors, live music. Chelan County Expo Center in Cashmere, Wash. cashmerecoffeehouse.com/wrbfest.htm.

17 SLIPPERY GULCH DAYS. Chamber breakfast, fun run, tractor show, parade, music, vendors, fireworks. Tekoa, Wash. slipperygulch.com.

17 SPRINT BOAT RACING. Enjoy 5 grass terraces, two beer gardens and a great atmosphere to watch fantastic racing in St. John, Wash. Fun for the entire family! Bring the lawn chairs, sunscreen and blankets. 10 a.m. to 5:30 p.m. or until racing is finished. webbsslough.com or (509) 648-8900.

ing is finished. webbsslough.com or (509) 648-8900.

17-18 UNION GAP OLD TOWN DAYS.

Civil war reenactment. Trading post, blacksmith shop, train rides, games and wagon tours. Fullbright Park in Union Gap, Wash. centralwaagmuseum.org/old-town-days-union-gap.asp.

20 WSU VARIETY TESTING CROP TOUR.

Fairfield, Wash., at 7 a.m. For information call Clark Neely at (814) 571-5682 or smallgrains.wsu.edu/variety/.

21 WSU VARIETY TESTING CROP TOUR.

Reardan, Wash., at 9 a.m. For information call Aaron Esser at (509) 659-3210 or smallgrains.wsu.edu/variety/.

21 WSU VARIETY TESTING CROP TOUR.

Almira, Wash., at 3 p.m. For information call Aaron Esser at (509) 659-3210 or smallgrains.wsu.edu/variety/.

21 UOFI VARIETY TESTING CROP TOUR.

Lewiston, Idaho, location and time TBD. For information call Doug Finkelnburg at (208) 799-3096.

22 WSU VARIETY TESTING CROP TOUR.

Mayview, Wash., at 10 a.m. For info call Mark Heitstuman at (509) 243-2009 or smallgrains.wsu.edu/variety/

22 PNWCA CANOLA VARIETY TESTING CROP TOUR.

Pomeroy, location and time TBD. For more information, contact Karen Sowers at (808) 283-7013 or pnwcanola.org.

22 PNWCA CANOLA VARIETY TESTING CROP TOUR.

Dayton, location and time TBD. For more information, contact Karen Sowers at (808) 283-7013 or pnwcanola.org.

23 WSU VARIETY TESTING CROP TOUR.

Eureka, Wash., at 9 a.m. For information call Clark Neely at (814) 571-5682 or smallgrains.wsu.edu/variety/.

23 WSU VARIETY TESTING CROP TOUR.

Walla Walla, Wash., at 1 p.m. For info call Clark Neely at (814) 571-5682 or smallgrains.wsu.edu/variety/.

23 PNWCA CANOLA VARIETY TESTING CROP TOUR.

Walla Walla, location and time TBD. Contact Karen Sowers at (808) 283-7013 or pnwcanola.org.

26 WSU VARIETY TESTING CROP TOUR.

Dayton, Wash., at 10 a.m. For information

call Clark Neely at (814) 571-5682 or smallgrains.wsu.edu/variety/.

27 WSU VARIETY TESTING CROP

TOUR. St. John, Wash., at 10 a.m. For info call Clark Neely at (814) 571-5682 or smallgrains.wsu.edu/variety/.

27 UOFI VARIETY TESTING CROP

TOUR. Genesee, Idaho., at 9 a.m. For information call Doug Finkelnburg at (208) 799-3096.

28 WSU VARIETY TESTING CROP

TOUR. Farmington, Wash., at 10 a.m. For info call Clark Neely at (814) 571-5682 or smallgrains.wsu.edu/variety/.

28 WSU VARIETY TESTING CROP

TOUR. Pullman, Wash., at 2:30 p.m. For info call Clark Neely at (814) 571-5682 or smallgrains.wsu.edu/variety/.

28 PNWCA CANOLA VARIETY

TESTING CROP TOUR. Pullman, location and time TBD. For more information, contact Karen Sowers at (808) 283-7013 or pnwcanola.org.

29 WILKE FARM FIELD DAY.

Davenport, Wash., at 8:30 a.m. For info call Aaron Esser at (509) 659-3210 or smallgrains.wsu.edu/variety/.

29 UOFI VARIETY TESTING CROP

TOUR. Camas Prairie, Idaho., at 9 a.m. For information call Audra Cochran at (208) 937-2311.

29 WSU VARIETY TESTING CROP

TOUR. Bickleton, Wash., at 1 p.m. For info call Hannah Brause at (509) 773-5817 or smallgrains.wsu.edu/variety/.

30 UOFI VARIETY TESTING CROP

TOUR. Bonners Ferry, Idaho., at 10 a.m. For information call Amy Robertson at (208) 267-3235. ■

Submissions

Listings must be received by the 10th of each month for the next month's *Wheat Life*. Email listings to editor@wawg.org. Include date, time and location of event, plus contact info and a short description.



Political advocacy is something many think they can never get involved in; the Washington Wheat PAC is out to change that.

The Washington Wheat PAC is a nonpartisan political action committee that is dedicated to supporting ag-friendly candidates.

The Washington Wheat PAC pledges to promote and support elected officials from all parts of the state who positively influence agriculture.

Why Support the Washington Wheat PAC?

Washington farmers are losing ground politically! The ability to protect our interests is slowly dwindling. Washington wheat producers need elected officials who know and understand the industry. Without these relationships our ability to remain competitive is at risk. Now is the time for the industry to join together and proactively influence legislation that directly impacts the Washington wheat producer.

Please join our efforts by supporting the Washington Wheat PAC. Your contribution will strengthen the network of elected officials who understand the wheat industry's goals and objectives by fighting for what is critical to the livelihood of our members.

Protect your interests by supporting farm-friendly candidates who can make a difference in Olympia.

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Please send form along with payment to PO Box 184, Ritzville, WA 99169. Checks should be made out to the Washington Wheat PAC.

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Winners also meeting industry-desired Top Quality by class can receive a cash award of \$250!

Go online: yieldcontest.wheatfoundation.org to see all the rules and enter.

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how we're doing

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