WHEAT BRIE Summer (Fall 2022



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*On the cover: Wheat variety trial photo courtesy of Dave Deken.* 

SHOW

# Hard Red Winter Wheat DEMAND HIGHER FROM ECUADOR & PERU

for Oklahoma varieties

Representatives from Ecuadorian and Peruvian milling industries signed letters of intent to purchase Oklahoma, Minnesota and Idaho wheat over the next year. The Memorandum of Understanding was signed on a goodwill trade mission, and will source multiple variety classes for different uses within the Ecuadorian and Peruvian region.

The millers were brought to the United States by the U.S. Wheat Associates. The mission demonstrates consumer preferences for high quality U.S. wheat products. On average, Ecuador imports 53.2 million bushels of wheat, while Peru imports 75.3 million bushels of wheat each year.

More than half of the total wheat imports in Ecuador are used for feed. The other half of their usage is distributed between 75% for bread, 15% for pasta and 10% for cookies, crackers and other products.

In Peru, 68% of wheat goes into the flour market for bread making, 19% goes into pasta manufacturing, 10% goes into the cookies and cracker sector and 3% is used for small-scale family use.

During this delegation, discussions took place on higher protein wheat with functionality needs for both bread and pasta uses. Studies on Hard Red Winter (HRW) wheat varieties suitable for pasta blends were discussed and were based on research conducted by the Oklahoma State University Wheat Research program and the Wheat Marketing Center in Portland, Oregon.

New wheat varieties coming out of the OSU wheat research program show better performance characteristics with extensibility and extrusion processes for pasta making. With greater demand, these markets are looking at HRW options compared to Soft White Wheat (SWW) varieties that have been used in the past.

Participants discussed better functionality traits for bread flours as well as the need for longer stability times that require less additives. OSU researchers are working on these inquiries and hope to have new varieties within the next couple of years that lessen the dependence on Hard Red Spring (HRS) or Canadian spring wheat varieties often used for blending in bread flours.

While on tour of northwest Oklahoma, the delegation had a formal signing

ceremony in Waukomis with Oklahoma Secretary of Agriculture Blayne Arthur; USW/Santiago Technical Specialist Andres Saturno; U.S. Wheat Associates Vice Chairman and Oklahoma Wheat Commission Chairman Michael Peters, Okarche; and National Association of Wheat Growers Treasurer and Oklahoma Wheat Growers Association (OWGA) President Keeff Felty, Altus. Several different purchasing groups from Ecuador and Peru attended, along with several other OWGA and OWC board members. Before the signing ceremony, the delegates toured Enid companies Co-Mark Equity Alliance, ADM Grain Company, Enid Brewing Company, Chisholm Trail Milling and Consolidated Grain and Barge.



This beautiful artisan bread display was created by Kelly Holder, Pastry Chef and Culinary Instructor at Autry Technology Center, Enid. She used flour products from the Chisholm Trail Milling Co., Enid, for the display for the trade reception and signing of the memorandum of understanding.

## **Memorandum of Understanding**

This Memorandum of Understanding is made and entered into by and between the Ecuadorian and Peruvian Millers, the Oklahoma Department of Agriculture, Food and Forestry (hereinafter "ODAFF") and the Oklahoma Wheat Commission hereinafter the "OWC" and, together with the Ecuadorian and Peruvian Millers, are collectively referred to as the "Parties", and is effective as of August 3, 2022.

WHEREAS, (Ecuador, Peru) and the United States enjoy a close and longstanding partnership built on a shared dedication to freedom, democracy, and a market economy;

WHEREAS the Parties wish to foster mutual understanding and cooperation so as to strengthen their trade relations and friendship;

WHEREAS, (Ecuador and Peru) between both countries have purchased a total of 4,508,000 metric tons (165,640,599 million bushels of U.S. wheat since 2015) resulting in the purchase of U.S. agricultural wheat products worth U.S. \$1.2 billion dollars, and the enhancement of friendship and mutually beneficial trade relations between Ecuadorian/Peruvian millers and the United States;

WHEREAS, with U.S. agricultural exports and Oklahoma wheat enjoying an excellent reputation in Ecuador and Peru, with several Agricultural Trade Goodwill Missions that have been sent to the United States since 1965;

WHEREAS, due to its high-quality functionality characteristics, the U.S. remains one of Ecuador and Peru's largest sources of Hard Red Winter wheat;

WHEREAS, in addition to visiting the states of Oklahoma, Minnesota and Idaho, the 2022 Technical Team is supplying a letter of intent planning to make future purchases for the 2022-2023 marketing year of Oklahoma and U.S. Wheat, with the value of the estimates to be \$149 million dollars.

WHEREAS, the State of Oklahoma is a major wheat producing state, and through the ODAFF and OWC, are full supporting members of U.S. Wheat Associates, and join them in recognizing the importance of our relationship with the Ecuadorian and Peruvian millers.

NOW, THEREFORE, the Parties mutually understand and declare that:

Oklahoma and the Ecuadorian and Peruvian millers are important links in the vital industry that produces, processes and delivers healthy, and nutritious wheat food products for the people of Ecuador and Peru.

Oklahoma and the Ecuadorian and Peruvian millers recognize that there is value earned and returned to each party by working together to advance the industry from all.

Oklahoma and the Ecuadorian and Peruvian millers do hereby affirm their promise to one another to support and foster the relationship between the U.S. and Ecuadorian/Peruvian wheat food industries and to partner together to promote the general welfare and prosperity of each other.

In WITNESS WHEREOF, the parties have signed this Letter of Intent

Oklahoma Department of Agriculture, Food & Forestry By: *Blayne Arthur*, Secretary of Agriculture

US Wheat Associates Oklahoma Wheat Commission By: *Michael Peters* U.S. Wheat Vice Chairman OWC President U.S. Wheat Associates By: *Andres Saturno* 

National Association of Wheat Grower's Oklahoma Wheat Growers Association

By: *Keeff Felty* NAWG Treasurer OWGA Board Member

Formal Signing with Intent to Purchase Oklahoma wheat from Ecuadorian and Peruvian millers with Oklahoma Secretary of Agriculture Blayne Arthur. Standing from left are Don Schieber, OWC Secretary, Kildare; R.J. Parrish, OWC Board member, District 1, Hunter; Jerry Wiebe, OWC Board member, District 2, Hooker; Daniel Quispe, Molicentro; Ivon Godines, Molino El Triunfo; Keeff Felty, OWGA President and NAWG Treasurer, Altus; Michael Peters, OWC President and Vice Chairman of U.S. Wheat Associates, Okarche; Lucia Garraza, Molitalia; Alejandro Jaramillo; Moderna Alimentos; and Manuel Jovanny Paez, Grupo Superior. Seated from left are Andres Saturno, Technical Specialist, USW Santiago; and Sec. Blayne Arthur.





Dillon Streber, Manager for Consolidated Grain and Barge (CGB) in Enid, shows Ecuadorian and Peruvian grain buyers the grading system used when collecting grain at the CGB Enid Terminal.



Buyers meet with CoMark Equity Alliance. From left are Troy Rigel, CoMark Equity Alliance; Daniel Quispe, Molicentro; Andres Saturno, Technical Specialist, USW Santiago; Alejandro Jaramillo, Moderna Alimentos; Manuel Jovanny Paez, Grupo Superior; Chris Fryer, CoMark Equity Alliance; Keeff Felty, OWGA President and NAWG Treasurer, Altus. Front row from left are Ivón Godines, Molino El Triunfo; Lucia Garraza, Molitalia; Michael Peters, OWC President and Vice Chairman of U.S. Wheat Associates, Okarche.





Buyers meet with Consolidated Grain and Barge. From left are Lucia Garraza, Molitalia; Mike Schulte, OWC Executive Director; Alejandro Jaramillo, Moderna Alimentos; Keeff Felty, OWGA President and NAWG Treasurer, Altus; Andres Saturno, Technical Specialist, USW Santiago; Michael Peters, OWC President and Vice Chairman of U.S. Wheat Associates, Okarche; Daniel Quispe, Molicentro; Manuel Jovanny Paez, Grupo Superior; Tim Bonnewell, CGB Quality Manager, Enid; Ivón Godines, Molino El Triunfo; Dillon Streber, CGB Manager, Enid.



Troy Rigel, with CoMark Equity Alliance in Enid, discusses segregation, quality and logistics for grain shipping used when buyers make tenders for Hard Red Winter wheat out of northern Oklahoma.

Buyers Meet with ADM Grain Company in Enid. From left are Michael Peters, OWC President and Vice Chairman of U.S. Wheat Associates, Okarche; Ivón Godines, Molino El Triunfo; James Lance, ADM Grain; Tyler Nabors, ADM Grain; Andres Saturno, Technical Specialist, USW Santiago; Scott Keller, ADM Grain; Alejandro Jaramillo; Moderna Alimentos; Manuel Jovanny Paez, Grupo Superior; Keeff Felty, OWGA President and NAWG Treasurer, Altus; Lucia Garraza, Molitalia; Daniel Quispe, Molicentro.



Buyers take a tour of Chisholm Trail Milling, Enid. From left are Manuel Jovanny Paez, Grupo Superior; Keeff Felty, OWGA President and NAWG Treasurer, Altus; Daniel Quispe, Molicentro; Corbin Johns, Technical Miller Chisholm Trail Milling; Lucia Garraza, Molitalia; Andres Saturno, Technical Specialist, USW Santiago; Ivón Godines, Molino El Triunfo; Michael Peters, OWC President and Vice Chairman of U.S. Wheat Associates, Okarche; Alejandro Jaramillo; Moderna Alimentos; and Brady Sidwell, Owner/Operator Chisholm Trail Milling, Enid. OWC

## OWC Board Member Michael Peters elected Vice Chairman of U.S. Wheat Associates



Congratulations to Michael Peters, Okarche, for being elected Vice Chairman of the U.S. Wheat Associates Board of Directors. He is joined by Darren Padgett, Past Chair, Grass Valley, Oregon; Rhonda Larson, Chairman, Grand Forks, Michigan; Clark Hamilton, Ririe, Idaho, Secretary-Treasurer; and Vince Petersen, USW President.

Michael and his wife, Linda, currently farm approximately 2,800 acres with 2,100 acres in wheat production. Peters serves on the Mid-Oklahoma Coop board of directors and on the Plains Partners Coop Board, a division of CHS, and is a member of the Okarche Rural Fire Fighters' Association Board. He has also served as President of St. John's Lutheran Church.

He currently serves as a Commissioner and Chairman of the <u>Oklahoma Wheat Commission</u>. USW is the national marketing entity for American wheat to "develop, maintain and expand international markets to enhance wheat's profitability for U.S. wheat producers and its value for their customers." USW activities in more than 100 countries are made possible through producer checkoff dollars managed by 17 state wheat commissions and cost-share funding provided by USDA's Foreign Agricultural Service. USW maintains 15 offices strategically located around the world to help wheat buyers, millers, bakers, wheat food processors and government officials understand the quality, value and reliability of all six U.S. wheat classes. For more information, visit www.uswheat.org. OWC



USW board of directors from left are Vince Peterson, USW President; Rhonda Larson, Chairperson, Minnesota; Darren Padget, Past Chairman, Oregon; Clark Hamilton, Secretary-Treasurer, Idaho; and Michael Peters, Vice Chairman, Okarche.

## **2022 OWGA Annual Convention meets in Stillwater**

Approximately 60 people attended the **Oklahoma Wheat Growers Association** Annual Convention. Producers, elevator managers, extension specialists, custom harvesters, seed cleaners, Oklahoma State University scientists and economists, Oklahoma Wheat Commission Board members and staff, OWGA Board members and staff and **Oklahoma Department of Agriculture** officials gathered Aug. 24 at Meridian Technology Center in Stillwater. The meeting began with a tour at the OSU Magruder plots, hosted by Dr. Brian Arnall, OSU Plant and Soil Sciences **Professor and Precision Nutrient** Management Specialist.

Dr. Kim Anderson reviewed marketing strategies for producers to use when making marketing decisions on grain. He discussed opportunities that might arise depending on the Russian/Ukraine Conflict, plus the need for wheat in drought regions of Africa and Asia.

Dr. Brett Carver discussed potential late 2022 variety releases. The breeding has focused on resistance to field problems by raising more competitive varieties that help combat those issues.

Mike Schulte discussed increased market focus on different uses for individual varieties when looking at functionality. He also discussed a brief sales report for exports and current world issues, while talking about important research efforts being launched for promotion of whole grains for higher fiber intake.

Keeff Felty talked about farm bill priorities and future research needs for Oklahoma wheat.

OWGA staff members Jeff Hickman, Lori Peterson and Jami Longacre gave legislative and election updates.

OSU President Dr. Kayse Shrum, D.O., addressed the Oklahoma wheat industry at their 2022 Annual Meeting.



The history of the Magruder Plots The Magruder Plots are experimental winter wheat field plots at Oklahoma State

University established in 1892. They are the third longest-running field trial in the United States, following the Morrow Plots, established in 1876 at the University of Illinois at Urbana-Champaign (on corn), and the Sanborn Field, established in 1888 at the University of Missouri (on grain crops and forage). They are examples of longterm experiments.



Wheat industry leaders toured the Magruder plots on the OSU campus. The tour was hosted by Dr. Brian Arnall, OSU Plant and Soil Sciences Professor and Precision Nutrient Management Specialist.

#### The topics of discussion were during the meeting at Meridian Technology Center were:

- The Latest Reading on OSU Wheat Breeding, presented by Dr. Brett Carver, OSU Regents Professor, Wheat Breeding and Genetics
- Farm Strategy, LLC Presentation on Value-Added Opportunities for Wheat that Provides Better Baking Characteristics, presented by Forrest Hett, Entrepreneur and Market Analyst
- Overview of the 2022 Crop Diseases, presentation prepared by Dr. Mereim Aoun, OSU Entomology and Plant Pathology, Assistant Professor, presented by Dr. Brett Carver
- Damned If You Do, and Damned if You Don't, presented by Dr. Kim Anderson, OSU Agricultural Economics Professor Emeritus
- Wheat Is To Eat, Offering our Breadbasket to the World, presented by Mike Schulte, Executive Director of the Oklahoma Wheat Commission
- National Association of Wheat Grower's (NAWG) Update from Keeff Felty, NAWG Secretary
- OSU Update and Wheat Industry Pledge, OSU President Kayse Shrum, D.O.
- Legislative and Election Updates, Jeff Hickman OWGA Director; Lori Peterson, OWGA General Counsel; and Jami Longacre, OWGA Government Affairs Director
- Legislative and Election updates were also reported by OWGA staff members Jeff Hickman, Lori Peterson and Jami Longacre.



Keeff Felty and Dr. Brett Carver get ready for their upcoming presentation on the Latest Reading on OSU Wheat Breeding.



Lori Peterson, OWGA General Counsel; Jami Longacre, OWGA Government Affairs Director; and Jeff Hickman, OWGA Executive Director, discuss the upcoming 2023 Oklahoma legislative session.

#### **OWGA industry awards**

The Oklahoma Wheat Growers Association present its 2022 awards to Oklahomans who have invested their time in the wheat industry. "Mr. Wheat 2022" was awarded to the late Bob Howard, an OWGA board member whose guidance and friendship will be greatly missed. Accepting the award on his behalf was the Howard family.

Bob grew up farming and working with his dad and riding the ranch with his grandfather. Bob attended Friendship Public School until it was destroyed by fire his junior year. He was part of the first graduating class from Navajo Public School, where he served as 1964 class president.

In 1986, Bob was elected as Jackson County Commissioner for District 1, and again in 1994 — the first Republican elected in Jackson County. Bob served on the Jackson County Farm Bureau board for more than 30 years, the Jackson County Memorial Hospital board of trustees for more than 10 years and the Oklahoma Cattlemen's Association Board. He was a longtime OWGA board member and volunteered in nearly every position with the Altus First United Methodist Church.

The Distinguished Service Award was presented to U.S. Sen. Jim Inhofe. From Oklahoma soil to Capitol Hill, OWGA thanks Inhofe for his support and advocacy toward Oklahoma wheat producers. Accepting on his behalf was agriculture policy advisor Ryan Sproul.

Inhofe is the ranking member on the armed services committee, a member of the environment and public works committee and the small business committee. He is a committed supporter of our infrastructure as the committee's senior member on the environment and public works.

Inhofe has a long history of public service, beginning with his service in the U.S. Army. Before being elected to the U.S. senate in 1995, he served in the U.S. House of Representatives, the Oklahoma house and senate and as the Tulsa mayor. This past year, Inhofe secured \$500,000 for USDA's Ag Research Service in Stillwater. A wheat genetics project received \$125,000. This funding from Inhofe was vital to USDA's research programs and is key to their survival.

The "Wheat Promoter of the Year" was awarded to Erich Wehrenberg. Wehrenberg continues to be a great asset to wheat producers around the state and does a tremendous job managing the field and research services at Oklahoma State University.

Congratulations to these outstanding award winners. OWC



From left are Keeff Felty, OWGA, presents Renee Howard, wife of the late Bob Howard, with the "Mr. Wheat" award, along with his family, Erin and Ryan Howard and their daughters, Alexandra and Samantha; Brent & Jennifer Howard and their daughter, Estelle; and Chrystle Howard Kruska and her daughters, Elliott and Emma.



OWGA President and NAWG Treasurer Keeff Felty, Altus, presents the Distinguished Service Award for Senator Jim Inhofe to his Agricultural Policy Adviser Ryan Sproul.

Erich Wehrenberg accepts his 2022 "Wheat Promoter of the Year" from the OWGA President and NAWG Treasurer Keeff Felty, Altus.



## INCREASED GLUTEN QUALITY VARIETIES coming soon to a wheat field near you

Story and photos by Lacey Vilhauer, High Plains Journal field editor

Type the word gluten — the protein found in wheat, barley and rye — into any internet search engine and the first web page that pops up is the Celiac Disease Foundation and questions such as, "What does gluten do to your body" and "What is gluten and why is it harmful."

Gluten has been labeled unhealthy or even dangerous over the last decade, however, it does not deserve this bad rap. While gluten is damaging to those who have celiac disease — an autoimmune disease that only 1% of the world population suffers from — for the other 99% of the world, gluten is safe and provides fiber and nutrients.

Additionally, the American Heart Association published data in 2017 that concluded people who ate foods containing higher amounts of gluten were at lower risk of diabetes than those who did not. The Harvard School of Public Health released data from one of it studies that found the individuals who ate high-gluten diets were at decreased risk of health disease compared to other participants that ate low-gluten diets. What's more, there is just no substitute that can equal the taste and texture of a perfectly baked pizza crust or flaky, buttery biscuit made with wheat flour. The summary for those consumers gluten is healthy, natural and absolutely delicious.

In fact, Oklahoma State University Wheat Genetics Chair Brett Carver has been working tirelessly to develop new wheat varieties through OSU's Wheat Improvement Team that have better gluten strength to produce higher quality bread products, while maintaining elevated yields and disease resistance. This combination could be a winner as many bread products need extra gluten added to the dough during the baking process to increase the gluten strength. These new varieties will not need additional gluten, adding value to the wheat and flour produced from it.

"Simply stated, a truly unique combination of wheat quality in a high-performance wheat variety provides value-capturing opportunities to farmers, millers and bakers as long as the genetics are maintained and delivered throughout the supply chain in its purest form," Carver explained. "Consumers will see value through a cleaner label on various wheat food products."

#### New varieties on the horizon

Carver said the team currently has about a dozen candidates they have been studying. He plans to sort through all the data collected during the 2021-22 crop season and combine that with data from the past four to six previous seasons. Several varieties will be selected to be released over the next two seasons — starting in fall 2022.

"The bar we normally set for gluten strength and overall dough quality places OSU varieties in a position of desirability among the millers and bakers," Carver explained. "Some of the candidates, three to be exact, exhibit a level of gluten strength currently not present in any commercially available Hard Red Winter or Hard White wheat varieties. That is a higher bar than normal for us, but now that we know how high the bar can go, we will attempt to repeat this level of success in near-term releases, possibly over the next five years."

Carver said OSU's new line of wheat varieties were born from crossing the university's popular Gallagher variety — known for its early maturity, disease

resistance and exceptional forage yield



— by Snowmass, a variety developed by Colorado State University.

"We chose Snowmass because it was confirmed to possess a novel, but naturally occurring glutenin subunit labeled Bx70e," Carver said. "The Snowmass agronomic performance was desirable in parts of Oklahoma, particularly in the far western regions. We considered Snowmass to be the most effective carrier of Bx70e that would impose minimal decline to productivity in Oklahoma. Gallagher was one of four 'recipient' non-Bx7oe varieties considered to provide wide adaptation and above-average dough quality, and thus a suitable genetic background to deploy the gene conferring Bx70e presence. Our intent was to squeeze as much yield potential out of the Gallagher background while maintaining the unusual level of gluten strength."

A variety currently called "OK15MASBx7 ARS 8-29" was born from this crossing of Gallagher and Snowmass and is expected to have even higher yield than Gallagher with the increased gluten properties. Carver feels confident he has reached his goals with 8-29, but has made more advancements with four other derivatives of 8-29 that are being considered for release. He also said another recipient, an experimental line named OK10130, produced another super-strong gluten progeny called 6-8, that may be licensed and marketed alongside the 8-29 variety.

## More than a decade in the making

Carver said these new varieties have been in the works for about 10



to 11 years from the initial crossing stage to release. He said the first major challenge was that progenies confirmed by genetic markers to have the novel Bx7oe subunit did not necessarily result in added gluten strength.

"Once novel strength was thought to exist, more parties became involved in the quality testing phase to validate the level and utility of gluten strength," he said. "For that, we relied on quality labs in the public and private sectors, and the results were not always consistent, and thus it took more tests to select the truly best genetic combinations. This level of quality testing was uncharted territory for us, even with the emphasis we traditionally place on wheat quality."

After more than a decade, Carver is excited to introduce these new varieties to producers over the next few years and bring additional value to the wheat grown in Oklahoma and surrounding states. "What really brings satisfaction to me is to show unending versatility of the Hard Red Winter wheat class, that with relatively small tweaks in the genetics can produce extremely surprising and valuable results to those who produce and process it," Carver said. "We need more research in wheat molecular genetics to help us make those tweaks more efficiently."

As for future wheat breeding developments, Carver plans to continue his streak of improved varieties that perform well in the High Plains environment.

"The next breeding cycle has already produced progenies of the 8-29 and 6-8 varieties, in which we will attempt to identify the same exceptional gluten strength combined with even higher yielding capability, and perhaps with other surprises added in for special effect," he explained. "We can now expect that from Hard Red Winter wheat, a traditional U.S. wheat class with untraditional capability from farm to table."

*Lacey Vilhauer can be reached at* 620-227-1871 or <u>lvilhauer@hpj.com</u>.

## OSU scientist discovers a wheat gene that ncreases arain wield

By Alisa Boswell-Gore

uilding the genetic makeup for the ideal wheat crop is no easy task.

Just ask <u>Liuling Yan</u>, the Dillon and Lois Hodges professor of wheat molecular genetics and breeding in the <u>Oklahoma State University Department</u> of <u>Plant and Soil Sciences</u>, who recently discovered the TaCol-B5 gene in wheat plants.

What makes this gene so special?

It enhances wheat yield by more than 10% – a significant increase in the world of wheat production.

Due to a rapidly growing human population and climate change, there is a need for crop varieties that produce high yields with limited amounts of artificial fertilizers and pesticides and that are more resilient to unpredictable weather.

Getting the most out of yield with cereals is a tall order with scientists having to create a delicate balance among genetic traits within wheat, such as seed size, seed number and head number. Scientists are creating this delicate balance within a highly complex genetic system in which 80% of genetic sequences are highly repetitive, and few genes have been connected to a specific plant characteristic, so figuring out what gene accomplishes what trait is no small feat. This makes assembling the genetic jigsaw puzzle that makes the most optimal wheat cultivar a complicated task, to say the least.

That's why discovering genes like TaCol-B5 is so important for feeding the world. The direct effect on grain production makes it an excellent candidate for getting the most out of one's wheat crop – literally.

"As I see it, this is a watershed discovery in the world of plant genetics," said <u>Scott Senseman</u>, associate vice president of OSU Ag Research. "The possibility of having a greater than 10% yield increase through the activity of one gene in a wheat crop is a development that pushes the Green Revolution that Dr. Norman Borlaug started decades ago into another realm. With this discovery and its application, it could mean the difference between people having food and going hungry. It is difficult to find a discovery more impactful than that."

The TaCol-B5 gene, which was discovered in wheat cultivar CItr176 from Mexico, increases the number of spikelets (a group of seed-producing flowers) on a wheat spike by more than three, which is significant when the spikes on a wheat plant usually only totals about 15-25 spikelets. The gene was also able to increase the number of fertile tillers (spikes with seeds) per plant. Liuling Yan, a wheat molecular geneticist at Oklahoma State University, has discovered and cloned the TaCol-B5 wheat gene, which increases wheat yield by more than 10%. (Photo by Todd Johnson, OSU Agricultural Communications Services)

"We need more evidence of the genetic traits in wheat cultivars," Yan said. "We could have stopped with the what, but we continued on to the why, and the why is where the story is. The why is the mechanism behind how science works. It wasn't enough to discover this gene. Understanding its genetics gave us the why of why this cultivar produces more."

Yan's research colleagues on the project included OSU Ph.D. student Xiaoyu Zhang; visiting scientist Haiyan Jia, a professor in wheat genetics from Nanjing Agricultural University in China; and <u>Brett Carver</u>, Regents professor and wheat genetics chair in agriculture at OSU.

Yan's research involved trying to find out what other wheat cultivars the TaCol-B5 gene resides in, and he discovered is that this gene is rare, residing in only about 2% of wheat across the world. Before Yan and his colleagues discovered the genetic markers of this variant, scientists had no means of locating it within wheat plants.

Yan and his fellow scientists cloned the gene and placed it into a cultivar called Yangmai18, a cultivar with average yield rates. Research showed an average yield increase of 11.9% in the genetically modified plant, with the most significant yield increase of 19.8% in another progeny line. These experimental lines were not intended for commercial use but for understanding how the gene operates.

"When we breed a wheat variety, we go from the parent generation to the offspring generation. Producing a 5% increase in yield would qualify for releasing a new variety," said Carver. "Now, switch over to this gene. We're saying this gene can increase yield by nearly 12%. And that's one gene. That is noteworthy. Are we going to get 12% every time we breed with that gene? We don't know that for sure, but this gives us targets now for changing and improving yield on a molecular level. It's a tool that we can now use to supplement and perfect what we do in the field."

Due to Yan identifying the gene's genetic markers, the gene has now also been identified in its naturally occurring state in the Billings wheat cultivar, and there is potential for locating it in other cultivars as well. *continued on next page ...* 

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**OSU scientist discovers gene** *continued from page 11 ...* 

"In future breeding cycles, we will be tracking the gene in the Billings plant using Dr. Yan's genetic markers as a means to locate it and affirm its presence," Carver said.

Over the course of his career, Yan has cloned several wheat genes, including the <u>TaOGT1 gene</u> <u>breakthrough</u> this time last year. His research on the TaCol-B5 gene was recently published in <u>Science</u>, a scientific magazine published by the American Association for the Advancement of Science. According to Science representatives, only 1% of the papers published in the journal are ag research related.

According to a perspective paper in Science, the discovery of TaCol-B5 is a "milestone toward enhancing yield in cereals" because it improves scientists' understanding of the molecular mechanisms that control yield-related genetic traits.

"Few scientists make the attempt to submit scientific papers to the Science journal, and currently, less than 7% of articles submitted make it through the rigorous publication process," Senseman said. "Historically, this journal has been one of the preeminent journals of the scientific community. It's particularly noteworthy when agricultural work is highlighted, and we are very proud to have one of our university's scientists featured in this publication."



## Jerry Wiebe newly appointed to serve on the Oklahoma Wheat Commission board

Oklahoma Secretary of Agriculture Blayne Arthur has appointed Jerry Wiebe to a five-year term on the Oklahoma Wheat Commission Board. Wiebe, a wheat producer from Hooker, will represent District 2, which includes Beaver, Cimarron, Ellis, Harper, Texas, Woods and Woodward counties.

"We are excited that Jerry has been appointed to the Oklahoma Wheat Commission board," said Mike Schulte, OWC Executive Director. "His knowledge and experience with wheat production as a farmer and active roles in his community will make him a valuable leader for the wheat industry on both state and national levels."

Wiebe's responsibilities as a member of the commission include working with the other members to develop and oversee the implementation of policy and programs, approve budget expenditures, direct the funding of research, market development and public education, represent district producer interests and promote Oklahoma wheat.

Jerry and his wife, Beth, farm irrigated and dryland wheat as well as corn, soybeans and grain sorghum in Texas county. He is a member of the Guymon Airport Board, the Aircraft Owners and Pilot Association and volunteers for Angel Flight South Central. Jerry is a



member and Sunday school teacher at the First Baptist Church in Guymon and has an agricultural economics degree from Oklahoma State University. He is a past officer and member of the Hooker School Board and the Texas County Fair Board.

He will join current commission members, Michael Peters, Okarche; David Gammill, Chattanooga; Don Schieber, Ponca City; and R.J. Parrish, Hunter. OWC promotes greater utilization of wheat in both domestic and international markets through research, market development and public education. OWC



## OSU 2022 wheat variety trial data – helping producers ensure success



The OSU wheat variety trial data for the 2021-22 wheat harvest has been completed. The OSU Small Grains Variety Testing program evaluates yield potential and quality characteristics of up to 50 commercially released wheat cultivars and up to five candidate cultivars at approximately 11 locations throughout Oklahoma.

Data to be collected include:

- Grain yield under dual-purpose
  and grain-only production systems
- Forage yield
- Resistance to disease
- Response to fungicide application
- Plant height
- Adaptability to no-till production
- First hollow stem date
- Heading and other agronomic traits as the opportunity arises

These research plots ensure farmers and ranchers have an opportunity to observe the newest genetics in research demonstration plots throughout Oklahoma. The OSU Small Grains Variety Testing Program is unique in that the plots are made possible with the teamwork of OSU extension and farmer cooperators that allow trials to be studied on privately owned land. At many universities, these efforts are restricted to research station plots only, but the OSU variety testing program goes the extra mile to ensure wheat varieties are tested by farmers for real world settings in Oklahoma wheat fields before the release.

OSU wheat variety plots have a distinctive difference with the influence that is put toward the nature of GrazeNGrain<sup>\*</sup> varieties. While dual purpose wheat gives producers more options for increasing profitability options on the farm, the primary purpose of having this kind of emphasis is to ensure minimal loss of grain production and quality if the OSU varieties are subjected to grazing.

Continued research shows grazing capacity of varieties in the OSU wheat research program is essentially linked to grain quality via optimized adaptation. The Small Grains Variety Testing Program promotes the public research made possible by the OSU wheat variety development program and the producer support made available through the OWC checkoff and the Oklahoma Wheat Research Foundation. We would like to thank the Oklahoma wheat producers for the continued funding that makes the public research programs, such as the OSU Small Grains Variety Testing Program, possible.

Harvesting results on the 2022 OSU wheat variety trials can now be found <u>online</u> or the OSU Department of Plant and Soil Sciences page at <u>www.wheat.</u> <u>okstate.edu</u>.

#### **Testing methods**

Seed was packaged and planted in the same condition as it was delivered from the respective seed companies. Most seed was treated with an insecticide plus fungicide, but the formulation and rate of seed treatment used is not confirmed in the location reports.

Plots were seven rows wide with 7.5inch row spacing and were sown with a Great Plains no-till drill modified for cone-seeded, small-plot research. Except for dryland locations in the Panhandle, plots were 25 feet long and trimmed to 19 feet at harvest with the plot combine. Panhandle dryland locations were 35 feet long at planting and trimmed to 29 feet at harvest. Wheel tracks were included in the plot area for yield calculation, for a total plot width of 60 inches.

Aside from the standard randomized complete block design with four replications used at most sites, the trials at Apache and Lahoma incorporated various elements of an intensive wheat management system in a replicated and randomized complete block design; additionally, standard management practices (non-intensive) were featured in a separate and adjacent block.

Plots received five gallons per acre of 10-34-0 at planting. The dual-purpose trials at El Reno and Walters, and forage trials were sown at 120 pounds per acre. The Goodwell irrigated trial was sown

at 90 pounds per acre and the other locations in the Panhandle (Balko, Hooker and Keyes) were sown at 45 pounds per acre. All other locations were sown at 60 pounds per acre. Grazing intensity, nitrogen fertilization, and insect and weed control decisions were made on a location-by-location basis and reflect standard management practices for the area.

Plots were harvested with a Winterstieger Delta small plot combine. Grain weight, test weight and moisture content were collected from each plot, and grain yields and protein concentration were corrected to 12%moisture content. Grain moisture at all sites was generally below 12%, and maximum and minimum grain moisture for all plots at a location typically ranged no more than 2%.

#### Data Interpretation

Yield, test weight and protein data for each location and regional summary





were analyzed using appropriate statistical methods. At the bottom of each table, the mean and least significant difference (LSD) values are reported. The LSD is a test statistic that aids in determining whether there is a true difference in yield, test weight and protein. In this report, one can be 95% confident that the difference between two varieties is real if the difference is greater than the LSD value. Data that is not significant is indicated by "NS."

For example, if the LSD value is four bushels per acre in a trial which Variety A yielded 30 bushels per acre and Variety B yielded 25, then Variety A would be considered to have a statistically higher yield. However, if Variety C yielded 27 bushels per acre, then Variety A and Variety C would be considered to have similar yield. In that same example trial, there is a 5% chance that the four-bushels-per-acre difference

Click here for report.

#### Miss Teen United States Agriculture promotes wheat research trials

Raylynn Kubik, the 2022 Oklahoma Teen Miss United States Agriculture, was on hand this past spring to promote the importance of the OSU Wheat Research Variety Trials in Kay County before summer harvest at the OSU Kildare Variety Test Plot.

Raylynn is a ninth grader who lives on her family's cattle ranch east of Newkirk. She was crowned Miss Kay County Free Fair, which then gave her the nomination of Kay County Teen Miss United States Agriculture, where she competed and received the 2023 Oklahoma Teen Miss United States Agriculture.

She is active in school with cheer, track, 4-H and church activities. Raylynn is on the superintendent's honor roll. She shows her horse at the national level with the Pinto Horse Association. She also shows cattle. During her reign, she will be advocating for agriculture and Ag in the Classroom programs across the U.S. while advocating for Women in Agriculture on her way to Nationals next July. Raylynn is the daughter of Ross and Heather Kubik in Newkirk.

between Variety A and Variety B does not truly exist, but could be caused by unaccounted random differences in fertility, moisture availability and diseases. To aid in determining varieties with the highest yield, test weight and wheat protein, values highlighted in light gray don't differ statistically from the highest value within a column. The performance of a variety may vary from year to year, even at the same location. Tests over two or more years and multiple locations more accurately predict variety performance. OWC



2022 Oklahoma Teen Miss United States Agriculture Raylynn Kubik, Newkirk, promotes the OSU Wheat Variety Research Trials of Kay County in Kildare. From left are Shannon Mallory Kay County Extension Educator & 4-H Educator; Brenda Medlock, Kay County Family and Consumer Sciences Educator; Kubik; Don Schieber, Variety Trial Cooperator and OWC Secretary; and Deputy Commissioner of Agriculture JanLee Rowlett.

## OSU Agriculture announces new leader of plant and soil sciences

Wade Thomason has accepted the position as head of the department of plant and soil sciences in the Oklahoma State University Division of Agricultural Sciences and Natural Resources. The Oklahoma A&M Board of Regents approved this action in June and Thomason began on Aug. 1.

Thomason served as professor and associate director for the School of Plant and Environmental Sciences at Virginia Tech University. His educational background includes a bachelor's degree in animal science, master's degree in plant and soil sciences and doctorate in soil science, all from OSU.

"Dr. Thomason's past experiences at Virginia Tech have prepared him well to take the reins of the department, and we are fortunate to have attracted him to Oklahoma State University," said Thomas G. Coon, vice president and dean of OSU Agriculture. "His career is marked by a dedication to the land-grant mission. He will provide leadership and foster innovation to help us achieve our goal of feeding the world." by Gail Ellis

Thomason is experienced in developing and delivering highly visible extension and research programs in the production and management of corn, small grains and sorghum for grain and silage.

"The plant and soil sciences faculty, alongside students and staff, are making a difference for Oklahoma producers and the body of science through their work," Coon said. "Productivity through research and extension programs, and excellence in the classroom is a way of life in the department, and they are positioned for even more growth in the coming years."

Among the many industry awards and honors Thomason has received, he was named a fellow of the American Society of Agronomy in 2017. Originally from Mangum, the OSU alumnus said Stillwater is a special place where he married his wife and acquired the education that launched his career.

"The team of excellent staff and faculty in the department of plant and soil sciences is a cohesive and welcoming group, and I look forward to supporting and championing their efforts," Thomason said. "As people have congratulated me on the news, 'welcome home' has been very appropriate." OWC



Wade Thomason is an OSU alumnus who is originally from Mangum. He began his new role as head of the department of plant and soil sciences on Aug. 1. (Photo by Todd Johnson, OSU Agricultural Communications Services)

# BAKING THE BEST with Best of Wheat



The 2022 "Best of Wheat" bread baking competition is scheduled for Sunday, Sept. 25 at the Oklahoma State Fair. It's always a fun event with an exciting display of breads from 12 categories within the junior and senior divisions.

The contest is sponsored by the Oklahoma Wheat Commission and Oklahoma State Fair. Judging will begin at 1 p.m. in the Creative Arts Building.

To be eligible for state competition, contestants must have won champion, reserve champion or bread machine class at their county "Best of Wheat" Bread Baking Contest. The judging is open to the public and all are encouraged to come see the wonderful breads that will be entered in this exciting competition. For more information on time and eligibility for entries, click below. OWC

<u>2022 county contest rules</u>

2022 state fair contest rules

## **2022 Junior Wheat Show entries submitted**



The 2022 Junior Wheat Show visual competition took place on Tuesday, July 18, at the Payne County Fairgrounds in Stillwater. This 2022 harvest season had a large number of entries given the environment of this crop-growing season. Forty-eight FFA entries and 27 4-H entries were submitted by students vying to be this year's top winner.

The program's intent is to promote the production quality of wheat and teach 4-H and FFA youth about wheat production, marketing and management.

Each year, more than \$16,000 in scholarships are given to the top 4-H and FFA winners. A maximum of \$6,000 may be awarded to an individual during their 4-H and FFA careers. The Oklahoma Junior Wheat Show is sponsored by the Oklahoma Wheat Commission, Oklahoma Wheat Research Foundation, Oklahoma Department of Career Technology Education, Oklahoma State University, Oklahoma Genetics Inc. and Westbred Seeds.

The top 25 samples in the 4-H and FFA visual divisions have been sent to the OSU Robert M. Kerr Food and Ag Product Center for milling and bake evaluations.

The 2022 Junior Wheat Show Banquet will be held on Thursday, Dec. 1, in Oklahoma City at the Embassy Suites By Hilton Oklahoma City Northwest, located at 3233 Northwest Expressway, Oklahoma City, OK 73112. The banquet will begin promptly at 6 p.m., and will be invitation-only for the top 25 4-H and FFA student winners, along with parents, 4-H educators and FFA instructors. **OWC** 







## **Chisholm Trail Milling** HOSTS FIRST BAKE AND MILL WORKSHOP



Chisholm Trail Milling hosted its first bread baking demonstration at Autry Technology Center after the Lahoma Field Day in Enid, giving producers the opportunity to see the continuing value-added focus of the Oklahoma State University variety development program. The workshop was put on by Brady Sidwell and Graison Gill, co-owners of Chisholm Trail Milling in Enid.

The workshop emphasized the importance of ingredients, especially high-quality flour and the significance it will play for producers in the future. The workshop used several identity



preserved varieties released by OSU emphasizing the end use quality value OSU wheat varieties provide, which, in time, will hopefully create more value to the producers growing them.

Sidwell operates several businesses including wheat seed sales, storage, a grain elevator operation and grain supply chain logistics. As one of Oklahoma's most innovative and progressive farmers, he brings a base of agronomic knowledge and expertise unrivaled in the industry. He is a steward, not just of his family's land and their heritage in the wheat industry, but of honest farming



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practices and the entailed tradition of ecological dedication.

The course was taught by Gill, who has several years of experience within the bread baking industry. Gill also owns New Orleans-based Bellegarde Bakery and has been baking professionally for 12 years. He was trained at the San Francisco Baking Institute under Michael Suas and Frank Sally. In 2020, he was a nominee for the Best Baker in America by the James Beard Foundation. His work has been featured in numerous publications, including the March 2019 cover of Food and Wine magazine. Corbin Johns, head miller for Chisholm Trail Milling, was also involved with the classes. He gave a mill tour after the baking classes. The Oklahoma native grew up in wheat country and graduated from The Culinary Institute of America. As a classically trained chef who grew tired of the tedium of kitchen life, he wanted to get more hands on with where our food comes from. He is devoted to taking high quality grain from Oklahoma's best farms and milling it into a wholesome and sustainable product.

"I look forward to learning everything I can about where we source our grain and who we source it from, and the process of turning it into a delicious and nutritious whole grain flour," Johns said.

Kelly Holder, culinary instructor at Autry Technology Center, also spent a great amount of time working to make the demonstrations possible in the Culinary Arts program at ATC and hopes to be able to continue highlighting new opportunities within the world of baking with the new product lines being created by Chisholm Trial Milling. Chisholm Trail Milling was successful in receiving rural development grant funding through a USDA application process to promote use and new market development opportunities for wheat commodities in northwest Oklahoma. Partners in supporting this project are the Oklahoma Wheat Growers Association, Oklahoma Wheat Commission, Oklahoma Wheat Research Foundation and OSU Public Wheat Research program. More about Chisholm Trail Milling and the flour products they offer can be found here at <u>this link</u>. OWC

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- Artisan bread products made at Chisholm Trail Milling and Bake Workshop, with different OSU wheat varieties and classifications.
- 2 Brady Sidwell, co-owner of Chisholm Trail Milling, discusses innovation for finding different uses for flour for breads, pastas, flat breads or frozen products based on characteristics and milling practices.
- 3 A display of the different flour lines being milled at Chisholm Trail Milling. Some varieties used for this workshop were Gallagher, Big Country and Ruby Lee.
- Chefs, ag producers and extension professionals listen to the Chisholm Trail Milling and Baking workshop hosted after the Lahoma Field Day.
- 5 Graison Gill, co-owner of Chisholm Trail Milling, working with students at Autry Technology Center Culinary Arts program in Enid.



# The future of the MEAT INDUSTRY

#### The Bread of Life

The golden wheat of summer days Raise up their heads to Heaven's rays, Waiting their time to come and feed Many hungry people in need.

From golden seed to golden bread, Their lives become ours, when we're fed. Eternal light from golden sun, We shine through broken bread — as one.

By John Alan Daubenspeck, Mustang



This future farmer is assessing the 2022 wheat crop on this fourth generation centennial family farm in northwest Oklahoma. Thank you, Weder family, for sharing the photograph.



**Oklahoma Wheat Commission** 8820 Silver Hill Drive Oklahoma City, OK 73132 405-608-4350 www.okwheat.org