OREGON WHEAT COMMISSION

Since 1947

Annual Research Reports

2025-2026

Progress Reports

Pendleton, January 28, 2026

Weed Management Research in Wheat Cropping Systems of Eastern Oregon

Progress Project Report

Accomplishment by objective so far:

Objective 1: Maximize the use of pre-emergence herbicides based on timing of application, soil moisture, residue management, and seeding depth.

We established two trials in the fall of 2025, one in Pendleton and one in Moro. The Turbo-Max operation to create two contrasting residue conditions was conducted on September 3 in Pendleton and September 18 in Moro. Downy brome (*Bromus tectorum*) seeds were broadcast over the trial areas the same day, right after the tillage operation, to ensure a uniform infestation.

In the Pendleton trial, which was seeded on October 1, the three application timings of the pre-emergence herbicide Anthem Flex (4.75 fl oz/ac) were September 23 (pre-plant), October 2 (pre-emergence), and October 13 (early post-emergence). For the Moro trial, which was seeded on October 16, the corresponding application dates were October 7, 16, and 28, respectively. A glyphosate application was conducted across the entire trial area at the second Anthem Flex application timing at both sites.

Results from the first evaluation in the Pendleton trial indicate that the highest downy brome control was obtained with the Pre-plant application (Figure 1; lowest downy brome presence). Soil moisture and precipitation data have been collected, and these will be analyzed in the coming months to understand why the first application resulted in higher efficacy. The first sampling in the Moro trial will be conducted on February 2, 2026. Additional evaluations will be conducted throughout the growing season, and yield will also be collected.

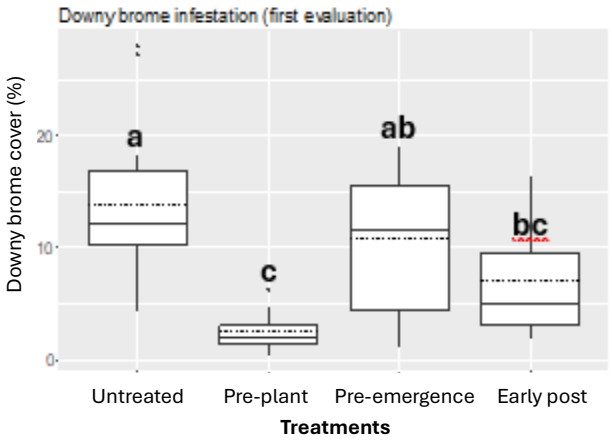

Figure 1. Percentage cover of the downy brome infestation in the Pendleton trial on January 26, 2026. Solid black line inside each box indicates the median, while the dashed black line indicates the mean. Boxes represent the middle 50% of the data. Different letters on top of the boxes indicate significant differences according to the Tukey test (p-value <0.05).

Objective 2: Optimization of post-harvest precision applications with Weed-IT systems.

We conducted two trials, one at CBARC (Adams, OR) and the other in a grower field south of Ione, OR. The primary weed species in both trials was prickly lettuce (*Lactuca serriola*). Both trials were sprayed around mid-August following wheat harvest. Plants in the Ione trial were considerably smaller than those at CBARC, and results differed markedly between trials.

At CBARC, no significant differences were observed among treatments. Spot-spraying applications with high and low sensitivity produced similar control to the broadcast application (Figure 2a). In contrast, in the Ione trial, the Weed-IT treatment with a low sensitivity setting

resulted in lower control than the Weed-IT with a high sensitivity setting and the broadcast application (Figure 2b).

These results indicate that when weeds are easily detectable, using a low sensitivity setting can substantially reduce herbicide use and application costs. At CBARC, herbicide savings with high and low sensitivity settings, relative to the broadcast application, were 45% and 98%, respectively. However, high sensitivity may be required when the crop has been recently harvested and weeds, such as prickly lettuce or marestail (*Erigeron canadensis*), have limited green tissue at the time of application.

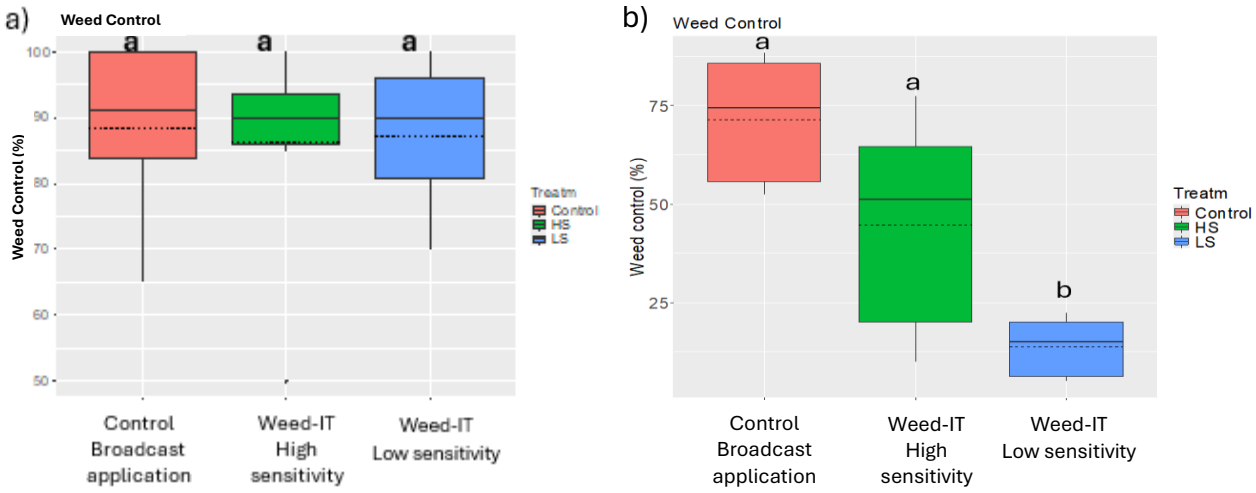

Figure 2. Total weed control (including all weed species) in percentage of: a) trial at CBARC, Adams, OR, and b) trial south of Ione, OR. Solid black line inside each box indicates the median, while the dashed black line indicates the mean. Boxes represent the middle 50% of the data. Different letters on top of the boxes indicate significant differences according to the Tukey test (p-value <0.05).

Objective 3: *Evaluate new cases of herbicide-resistant weeds and study alternative solutions*.

We are studying how the plant growth stage can affect the efficacy of alternative herbicides to control marestail (also known as horseweed) and hairy fleabane (*Erigeron bonarensis*). We are only missing the 2X rate for the second round with plants in the bolting stage. Results from Round 1 in the greenhouse and Round 2 in a growth chamber (because the greenhouse is being renovated) indicated that Huskie® (bromoxynil + pyrasulfotole), Sharpen (saflufenacil), and glufosinate herbicides can control marestail at the rosette stage very well (>95% control), followed by dicamba and metribuzin herbicides, with around 75% control. With respect to hairy fleabane, only Huskie provided very good control (>95%) at the seedling and bolting stage. At the seedling stage, hairy fleabane was controlled with glufosinate (> 95%), dicamba (>80%), metribuzin, and saflufenacil (>75%). However, these herbicides were below 70% control when the hairy fleabane was at the bolting stage, except for saflufenacil, which reached 75% control. Table 1 presents the herbicides and application rates evaluated in this study, and Figure 3 shows graphs summarizing the main results.

We also helped to confirm resistance to Imazamox in several downy brome from Umatilla County and currently, we are screening a couple of prickly lettuce populations from Morrow County against several herbicides (2,4-D, dicamba, and bromoxynil + pyrasulfotole).

Table 1. Alternative herbicides to glyphosate used for marestail and hairy fleabane control study. Note: We used three herbicide rates in the study: 0X, 1X, and 2X. The rate indicated is the 1X.

Hercibides (a.i.)	Round	Trade name	Rate (oz/ac)	Weed species listed
Glufosinate	1 & 2	Forfeit® 280	29	Yes*
Clopyralid	1	Stinger®	5	Yes
Haluxifen + florasulam	1	Quelex®	0.75	Yes
Metribuzin	1 & 2	Metribuzin 75	6	No
Pyraflufen	1 & 2	Vida®	1	Yes (suppression)
Bromoxynil + pyrasulfotole	1 & 2	Huskie	14	No
Saflufenacil	1 & 2	Sharpen	1	No
Dicamba	1 & 2	Dicamba DMA salt	12	No
2,4-D	2	2,4-D LV6	1.2 pints/ac	No

*Marestail/Horseweed was listed when Yes is indicated. However hairy fleabane was never listed.

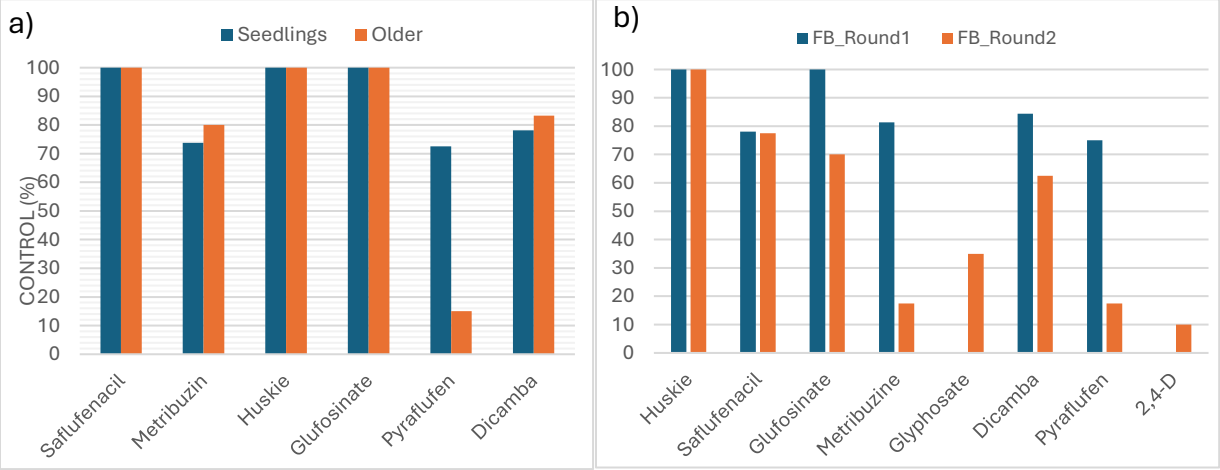

Figure 3. Percentage of control based on a visual evaluation 3weeks after treatment for: a) marestail (also known as horseweed), and b) hairy fleabane. The blue bars are results from Round 1 (young seedlings) and the orange bars are results from Round 2 (older seedlings for marestail and bolting growth stage for hairy fleabane).

Objective 4: Communicate results to wheat growers, crop advisors, industry reps, and other stakeholders.

I have participated in the following extension events as a speaker so far:

1. CBARC's updates. Walla-Walla County Conservation District. Walla-Walla, WA. January 21, **2026**. (≈ 50 attendees).
2. Precision spraying. Pacific Northwest Direct Seed Association. Cropping System Conference. Kennewick, WA. January 13, **2026** (≈ 85 attendees).
3. Updates on Hairy Fleabane Control & Use of Precision Sprayers. Wasco County Extension Event. The Dalles, OR. December 10, **2025** (≈ 22 attendees).
4. Updates of the Weed Program at CBARC. Morrow County Extension Event. OSU Extension Office, Heppner, OR. December 9, **2025** (≈ 22 attendees).
5. Late Season Weed Control. Oregon – Washington Pea Growers Association Annual Meeting. Milton-Freewater, OR. December 8, **2025** (≈ 20 attendees).
6. Updates on Marestail (Horseweed) Control & Use of Precision Sprayers. Hermiston Farm Fair, Hermiston, OR. December 4, **2025** (≈150 attendees).
7. Some Insights into Downy Brome Biology. Hermiston Farm Fair, Hermiston, OR. December 4, **2025** (≈150 attendees). Co-speaker with my post-doc.

8. Updates of the Weed Program at CBARC. Oregon Society of Weed Science Annual Meeting. Hood River, OR. October 22, **2025** (≈200 attendees).

I have been an author of the following extension publications so far:

1. **Barroso J.** Optimizing the Performance of Green-on-Brown Precision Sprayers for Post-Harvest Weed Control. Oregon Wheat Magazine, (In Press, February **2026)**.
2. **Barroso J.** OSU Weeds Program Update. Pendleton Station Newsletter. January **2026** https://agsci.oregonstate.edu/cbarc/outreach/newsletters
3. **Barroso J.** Optimizing the Use of Green-on-Brown Precision Sprayers. Weeders of the West Blog. October 22, **2025**. https://smallgrains.wsu.edu/weeders-of-the-west/2025/10/23/barroso/
4. Lyon D.J., **Barroso J**., Campbell J., Finkelnburg D., and Burke I. **2025**. Update of Best Management Practices for Managing Herbicide Resistance. PNW 754, 12 pages. *Role: Responsible for updating the manuscript with my most recent findings.*

I co-authored a scientific publication so far: Ribeiro V.H.V., Gallagher J., Mallory-Smith C.A., **Barroso J.,** and Brunharo C.A. **2025**. Multiple origins or widespread gene flow in agricultural fields: Regional population genomics of herbicide resistance in *Bromus tectorum*. Molecular Ecology Molecular Ecology 34(11). DOI10.1111/mec.17791. *Role: I provided funding for the research, contributed feedback to improve the manuscript, and edited the final version.*

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Oregon Wheat Commission Project Report

Add additional pages as needed

Project Overview

Title of Project: Improving Control of Wheat Stripe Rust

Commission Funding Amount: $ 12,000

Funding Year: 2025-2026

Final Report or Progress Report Progress

Research Results

Were there any major changes or adaptations to the project from what was described in the initial proposal? (describe if so)

There have been no any changes or adaptations to the project from the objectives and procedures described in the initial proposal. We have accomplished all studies scheduled for the 2025 growth season, we are on schedule for the experiments of the 2026 growth season.

Describe the outcomes of the research project. What was learned from the research work?

1) During the 2025 growth season, we identified three races of the wheat stripe rust pathogen from 20 samples collected from Oregon with PSTv-37 still as the most common race.
2) In 2025, we evaluated 456 breeding lines from Margaret Krause's wheat breeding program, 166 entries in the PNW winter and spring wheat variety trial nurseries, 60 entries in the west uniform regional winter and spring wheat nurseries, and hundreds of breeding lines from private companies in six field locations and in the greenhouse with five races for resistance to stripe rust.
3) We made acurate forecasts for stripe rust for the 2025 growth season, conducted field

Are there any recommendations for Oregon Wheat producers/ the Oregon Wheat Commission as a result of this research project? (describe if so)

The results of stripe rust races in Oregon, the PNW, and the country are used by the breeding programs to select germplasms carrying effective genes for developing wheat varieties for resistance to stripe rust; and also used by our program to select predominant races and isolates representing different race and genetic groups for use in the greenhouse tests for screening breeding lines with effective resistance to stripe rust.

The results of screening wheat breeding lines for stripe rust resistance are used by the breeding programs to release new varieties with adeqaute resistance to stripe rust for growers to planting for reducing fungicide cost.

The stripe rust forecasts, updates, and recommendations made during the 2025 crop season helped growers to prevent unnecessary use of fungicides in fields planted with resistant varieties as stripe rust was light in 2025, saving growers millions of dollars. For 2026, because stripe rust started early and widespread, we have recommend that growers should check their fields and apply fungicides at the time of herbicide application to control stripe rust. The data of screening wheat germplasm, testing fungicides for efficacy on control of stripe rust, and testing commercial varieties for yield loss and fungicide response are used to help implemente appropriate methods for managing stripe rust based on individual varieties

Oregon Wheat Commission Project Report

Add additional pages as needed

Project Overview

Title of Project: Breeding High Quality Hard Red Spring Wheat for Oregon

Commission Funding Amount: $ 2,000

Funding Year: 2025-2026

Final Report or Progress Report Progress

Research Results

Were there any major changes or adaptations to the project from what was described in the initial proposal? (describe if so)

No major changes have been made to the project.

Describe the outcomes of the research project. What was learned from the research work?

One out of eight planned trial locations have been planted, and the final locations should be planted by the end of April..

Are there any recommendations for Oregon Wheat producers/ the Oregon Wheat Commission as a result of this research project? (describe if so)

No recommendations have been made based on this research.

Oregon Wheat Commission Project Report

Add additional pages as needed

Project Overview

Title of Project: Wheat and Barley Variety Testing for Oregon

Commission Funding Amount: $ 173,400

Funding Year: 2025-2026

Final Report or Progress Report Progress

Research Results

Were there any major changes or adaptations to the project from what was described in the initial proposal? (describe if so)

No major changes have been made to the project.

Describe the outcomes of the research project. What was learned from the research work?

Of the trials originally proposed for the 2024-2025 growing season, most have been planted, and we expected that the remainder will be planted in the next month. All planted trials are growing well, with no issues that could have a major impact on the quality of results from these locations.

Are there any recommendations for Oregon Wheat producers/ the Oregon Wheat Commission as a result of this research project? (describe if so)

No recommendations will be made until after harvest.

Oregon Wheat Commission Project Report

Add additional pages as needed

Project Overview

Title of Project: Disease screening of winter wheat 2026

Commission Funding Amount: 30,000

Funding Year: 2 of ?

Final Report or Progress Report Progress

Research Results

Were there any major changes or adaptations to the project from what was described in the initial proposal? (describe if so)

No

Describe the outcomes of the research project. What was learned from the research work?

This work is ongoing. We are evaluating soilborne wheat mosaic virus in Irrigon, Fusarium crown rot in Moro, and stripe rust at Ruggs (Krause trial) and CBARC (Graebner trial). Other diseases will be screened this spring, opportunistically.

Are there any recommendations for Oregon Wheat producers/ the Oregon Wheat Commission as a result of this research project? (describe if so)

We communicate results with Graebner and Krause. Regarding stripe rust: growers have been alerted to the first occurrence of stripe rust in the region. These disease notes will assist Krause in making selections and Graebner for making variety recomendations in the presence of specific disease.

Oregon Wheat Commission Project Report

Add additional pages as needed

Project Overview

Title of Project: Utilizing Fungicides in the absence of Foliar disease for

Commission Funding Amount: 10,000

Funding Year: 2 of 3

Final Report or Progress Report Progress

Research Results

Were there any major changes or adaptations to the project from what was described in the initial proposal? (describe if so)

no

Describe the outcomes of the research project. What was learned from the research work?

We have conducted two years (one location with 4 reps) of this work with non-repeatable results. Lack of consistency in results is likely due to differing stripe rust pressure from year 1 to year 2; along with differing stripe rust races interacting with cultivars. We are hopeful a third year of this work will clarify the result, increase our confidence, and allow us to publish in a very high quality journal.

Are there any recommendations for Oregon Wheat producers/ the Oregon Wheat Commission as a result of this research project? (describe if so)

For now, our recommendation is to spray when disease is present (visible). We look forward to wrapping up this study so we can directly address plant health effects of fungicide with original data collected in our environment.

Oregon Wheat Commission Project Report

Add additional pages as needed

Project Overview

Title of Project: Bringing ‘Successor’ spring feed barley to Oregon

Commission Funding Amount: $ 1,500

Funding Year: 2025–2026

Final Report or Progress Report Progress

Research Results

Were there any major changes or adaptations to the project from what was described in the initial proposal? (describe if so)

N/A

Describe the outcomes of the research project. What was learned from the research work?

There has been little movement on from industry to bring the 'Successor' spring feed barley to market over the past two years. Mid Columbia Producers, who had initially expressed interest in it, was acquired by Northwest Grain Growers (NWGG). Conversations with NWGG personnel over the past year have suggested that the company currently has limited interest in working with barley.

The $1,500 in funds from the Oregon Wheat Commission (OWC) was intended to pay the charges associated with storing Successor foundation seed with the Washington State Crop

Are there any recommendations for Oregon Wheat producers/ the Oregon Wheat Commission as a result of this research project? (describe if so)

N/A

Oregon Wheat Commission Project Report

Add additional pages as needed

Project Overview

Title of Project: Developing improved winter wheat cultivars for Oregon

Commission Funding Amount: $ 257,899

Funding Year: 2025–2026

Final Report or Progress Report Progress

Research Results

Were there any major changes or adaptations to the project from what was described in the initial proposal? (describe if so)

There have been no major changes or adaptations to the project from what was described in the initial proposal.

Describe the outcomes of the research project. What was learned from the research work?

Objective 1 – To develop new SWW, HRW, and winter club wheat cultivars adapted to high rainfall, low rainfall, and irrigated regions that have superior biotic/abiotic stress resistance/tolerance.

Marketing of new SWW variety releases 'Gale' and 'Mallory CL+' has continued throughout the 2025–2026 funding cycle. The breeding program presented on these releases at the Hermiston Farm Fair in December of 2025. These varieties as well as one other OSU SWW release, five OSU SWW experimental lines, two OSU winter club experimental lines, three

Are there any recommendations for Oregon Wheat producers/ the Oregon Wheat Commission as a result of this research project? (describe if so)

Our recommendations are:

Growers in the Willamette Valley should consider trying out SWW variety 'Gale', available from Tualatin Valley Seeds, Ioka Marketing, and South Valley Feed and Seed. Gale won first prize in the Winter Wheat-Dryland category of the 2025 National Wheat Yield Contest with a yield of 186 bu/ac in Marion County. Gale ranks third in the Dr. Ryan Graebner's 2020–2025 high rainfall summary, with an average yield of 134.1 bu/ac, just behind 'AP Olympia' with 134.2 bu/ac and 'LCS Shine' with 139.1 bu/ac. Gale was ranked "Most Desirable" for end-use quality. Gale has shown strong resistance to stripe rust and improved resistance to Septoria compared with LCS Shine and 'Rosalyn'.

Growers in eastern OR who are interested in growing a SWW Clearfield variety should keep an eye out for Mallory CL+, which will be available to commercial growers soon. Mallory CL+ is the highest yielding and earliest heading Clearfield variety in Dr. Ryan Graebner's 2020–2025 low rainfall summary. Mallory CL+ has good stripe rust and Fusarium crown rot resistance as well as "Desirable" end-use quality.

Oregon Wheat Commission Project Report

Add additional pages as needed

Project Overview

Title of Project: Gene introgression and trait prediction for developing new and improved

Commission Funding Amount: $ 56,194

Funding Year: 2025–2026

Final Report or Progress Report Progress

Research Results

Were there any major changes or adaptations to the project from what was described in the initial proposal? (describe if so)

There have been no major changes or adaptations to the project from what was described in the initial proposal.

Describe the outcomes of the research project. What was learned from the research work?

Objective 1 – To develop wheat breeding lines of SWW, HRW, and winter club wheat carrying genes for improved disease resistance and PPO reaction.

To aid in the selection process following the 2025 harvest, molecular marker technician Hilary Gunn ran the following markers during the month of August:

RHT-B1 and RHT-D1 (plant height); Vrn-5A, AHVRN-B1, and Vrn-D1 (vernalization); Ppd-A1 and Ppd-D1 (photoperiod sensitivity); PibaD1 and PinB (soft/hard); Red-A1, Red-Nor17, and

Are there any recommendations for Oregon Wheat producers/ the Oregon Wheat Commission as a result of this research project? (describe if so)

As the research described supports the OSU winter wheat breeding program, our recommendations would be the same as those listed in the progress report for the project "Developing improved winter wheat cultivars for Oregon", which are as follows:

Growers in the Willamette Valley should consider trying out SWW variety 'Gale', available from Tualatin Valley Seeds, Ioka Marketing, and South Valley Feed and Seed. Gale won first prize in the Winter Wheat-Dryland category of the 2025 National Wheat Yield Contest with a yield of 186 bu/ac in Marion County. Gale ranks third in the Dr. Ryan Graebner's 2020–2025 high rainfall summary, with an average yield of 134.1 bu/ac, just behind 'AP Olympia' with 134.2 bu/ac and 'LCS Shine' with 139.1 bu/ac. Gale was ranked "Most Desirable" for end-use quality. Gale has shown strong resistance to stripe rust and improved resistance to Septoria compared with LCS Shine and 'Rosalyn'.

Growers in eastern OR who are interested in growing a SWW Clearfield variety should keep an eye out for Mallory CL+, which will be available to commercial growers soon. Mallory CL+ is the highest yielding and earliest heading Clearfield variety in Dr. Ryan Graebner's 2020–2025 low rainfall summary. Mallory CL+ has good stripe rust and Fusarium crown rot

Oregon Wheat Commission Project Report

Add additional pages as needed

Project Overview

Title of Project: Additive Effects of Foliar Nitrogen with Fungicides in Winter Wheat

Commission Funding Amount: $ 8,281

Funding Year: 2025-2026

Final Report or Progress Report Progress

Research Results

Were there any major changes or adaptations to the project from what was described in the initial proposal? (describe if so)

Due to space and equipment limitations at the Sherman Experiment Station the planned large plots were changed to smaller plots that will be harvested with a plot combine that will provide more accurate data. Due to using smaller plots the number of plot replicates increased to 6 from the original 4 that were planned.

Describe the outcomes of the research project. What was learned from the research work?

At this time plots still need to be treated with fungicide and fertilizer later this spring, likely in May. There are no results yet to share on this research project.

Are there any recommendations for Oregon Wheat producers/ the Oregon Wheat Commission as a result of this research project? (describe if so)

There are no results yet to share on this research project.

Oregon Wheat Commission Project Report

Add additional pages as needed

Project Overview

Title of Project: Foliar and Seed Applied Nitrogen fixing biofertilizers in wheat

Commission Funding Amount: $ 4,300

Funding Year: 2025-2026

Final Report or Progress Report Progress

Research Results

Were there any major changes or adaptations to the project from what was described in the initial proposal? (describe if so)

The original plan was to examine the biofertilizer product Mycogold and Envita. Unfortunately due to changes with state registration, I was not able to acquire Envita to apply as it is no longer registered for use in Oregon. Instead I was able to apply another similarly acting foliar product, Utrisha, which I have also tested in previous years of research.

Describe the outcomes of the research project. What was learned from the research work?

Both a seed (Mycogold) and foliar (Utrisha) applied biofertilizer product were examined in winter wheat under an unfertilized and fertilized treatment. Yield was significantly increased with the addition of fertilizer, increasing by about 20 bushels. There was also a significant yield response from using Utrisha and MycoGold with 57 lbs of nitrogen fertilizer with an increase of 6 to 7 bushels/acre. Utrisha applied with 57 lbs of nitrogen fertilizer provided the highest return on investment, generating $28.98 more per acre than the control treatment. Mycogold generated a return on investment of $20 more than the control. Fertilizer significantly increased soil and wheat tissue nutrients, but there was no significant responses

Are there any recommendations for Oregon Wheat producers/ the Oregon Wheat Commission as a result of this research project? (describe if so)

This study suggests that applying the recommended fertilizer rate with a biofertilizer product can increase return on investment. However, while these products gave a significant yield response and return on investment during this year, the last two prior years of research did not find any significant responses. The extra wet winter and early spring may have made these products more effective. Rainfall across Sherman County during this study ranged from 98% to 118% of the thirty year average. The past three years of research suggests that these products can be quite variable in their crop response. Producers should be cautious applying these products across entire fields and should test on smaller strips first. This study also supports that farmers should be careful not to under fertilize their fields expecting a stronger response from biofertilizer products. Often companies will state that fertilizer needs to be reduced to see a biofertilizer response. This study found that the lower fertilizer rate resulted in significantly lower yield that biofertilizers were not able to compensate for. When this trial was seeded there was 68 lbs per acre of residual nitrogen. For a total of 125 lbs of nitrogen where 57 lbs of nitrogen was added at seeding. In addition, the low nutrient levels in the unfertilized areas resulted in undesirable increases in soft white wheat protein. Overall, more research is needed by manufacturers of biofertilizers to minimize variability in expected crop performance

Oregon Wheat Commission Project Progress Report

Title of Project: OSU Cereal Quality Laboratory

Commission Funding Amount: $82,000

Funding Year: 2025-2026

Progress report

Research Results

1) Were there any major changes or adaptations to the project from what was described in the initial proposal?

No

2) Describe the outcomes of the research project and what was learned from the research work?

Through late 2025 we worked with Dr Krause to select SW lines to submit to the 2025-harvest iteration of the Pacific Northwest Wheat Quality Council (PNW WQC). Of the three lines selected OR2300026_AX and OR2190671 are tracking for Most Desirable ratings in the SW preferred list. OR2200083_CL+ is tracking at the high end of the Desirable category. If released OR2300026_AX would be among the best quality CoAxium-traited varieties released so far. Currently it is placed between Scorpion_AX and Nova_AX on the list. All three lines were well received by the cooperators in the 2025 harvest PNW Wheat Quality Council testing. From a *quality perspective only*, we support the advancement of these lines to release.

We continue to emphasize the value of the functionality screening we perform at early generations. We maintain that this allows the breeder more latitude for finding lines that combine good field performance with market class appropriate or better processing functionality and end-product quality. In FY2025-2026 approximately 5800 tests related to the wheat project were performed, of which about 3500 were directly related to early generation screening.

The lab has been continued to work with researchers from OSU and the University of Idaho. We continue to work with USDA and WSU Pullman on issues related to preharvest sprouting (PHS) and late-maturity amylase (LMA). As noted in the 2024-25 final report we have found a biochemical marker that appears to distinguish PHS from LMA. Validation work on this element of the project stalled during CY2025 because of staffing shortages related to us not being able to attract enough temporary workers, not a funding issue. The work recommenced at the end of CY2025.

A collaboration begun in FY2024-25 with Pullman-based scientists, Drs Amber Hauvermale and Alison Thompson, on anomalously low Falling Numbers (FNs) from wheat in the *absence* of increased amylase enzymatic activity also continues. We previously identified a flour functionality marker that distinguishes the non-enzymatically from enzymatically

driven low FNs. In the FY2025-2026 cycle we have sought peer review of our findings. This last initiative may be key to understanding occasional, but too frequent, anomalous low FN events. These low FN wheats without increased amylase activity suffered a hard freeze at the soft dough stage of grain filling. Dr Thompson is seeking USDA funds for a key piece of equipment to validate our hypotheses i) that this phenomenon is related to truncated starch synthesis during the freeze and ii) that, as it is not enzyme driven, it should not diminish crop quality although the phenomenon shows up as low FN.

Under the methods development objective, Dr. TK continues to collaborate with the PNW WQC cooperators and with technical experts within OSU to bring automated, machine-learning (AI) driven scoring, firstly of cookie top grain, secondly for scoring bread crumb grain, and thirdly for assessing loaf volumes. This work is proceeding.

Under the communication objective, Dr TK continues to integrate himself into the PNW Wheat Quality Council operations: continuing to edit and proofread the annual meeting book and edit, curate, and proofread the spreadsheets that are used for the preferred list rankings. Drs TK and Ross also contribute to the scrutineering of the rankings in the preferred lists on an annual basis, including CY2025. Dr TK also is a member of the Cereals and Grains Assoc. Soft Wheat Methods Technical committee and will likely move into a leadership role in CY2026.

Publications

-Wallace R., Baenziger P.S., Ibba I., Frels K., Bock J., Krause M., Ross A.S., et al. 2026. Towards a New Public Health Paradigm: Agriculture and Food Production for Health. Foods 15(3), 527; https://doi.org/10.3390/foods15030527.

-Gabriely M. Soncin Alfaro, Alecia M. Kiszonas, Sean Finnie, Xiaorong Wu, Liman Liu, Jayne Bock, Andrew S. Ross, Amber L. Hauvermale, Alison L. Thompson. 2026. Characterizing low falling number in the absence of elevated alpha-amylase activity in soft white wheat and the impact on Japanese sponge cakes. Cereal Chemistry. **In 2nd review**

Reports

-Ross A.S., Kongraksawech T. 2025. Selecting for Quality 2025: Routine, innovation, and history… Oregon Wheat. October 2025:

Presentations

-Vishal Singh, Mark Larson, Adam Heesacker, Nathalia Moretti, Hilary Gunn, Vivien Hansen, Christopher Mundt, Andrew Ross, Teepakorn Kongraksawech, Margaret R. Krause. Estimating realized genetic gain during three decades of soft white winter wheat breeding in Oregon. CANVAS 2025 Salt Lake City, UT, Nov 2025

Are there any recommendations for Oregon Wheat producers/ the Oregon Wheat Commission because of this research project?

We continue to recommend, as the Preferred Variety Lists assert, "*When making decisions between varieties with similar agronomic characteristics and grain yield potential, choose the variety with the higher quality ranking. This will help to increase the overall quality and desirability of Pacific Northwest (PNW) wheat*".

Oregon Wheat Commission Project Report

Add additional pages as needed

Project Overview

Title of Project: Quality of varieties & pre-release lines: Genotype & Environment 'G&E' study

Commission Funding Amount: $ 40,000

Funding Year: 2025-2026

Final Report or Progress Report Progress

Research Results

Were there any major changes or adaptations to the project from what was described in the initial proposal? (describe if so)

None

Describe the outcomes of the research project. What was learned from the research work?

These samples from Variety Testing were fully processed and the data analyzed. The region's cereal specialists met in conjunction with the PNW-WQC in late January and reviewed new entries for the "2026 Preferred Wheat Varieties Based on End-Use Quality" brochure. Eight new entries were added to the published list this year, nearly all with very high quality.

Are there any recommendations for Oregon Wheat producers/ the Oregon Wheat Commission as a result of this research project? (describe if so)

The recommendation is that if growers know of two or three varieties that might do best on their farm based on agronomics, to please choose the variety higher up on the Preferred Variety brochure to ensure that we continue to maintain and improve the quality of PNW wheat for the export market. The export market has very high quality standards that we have met because growers, breeders, Commissions, seed dealers, scientists have prioritized high quality along with good agronomics. It is vital to the PNW wheat industry that we continue to emphasize that high quality.

Oregon Wheat Commission Project Report

Add additional pages as needed

Project Overview

Title of Project: One-third the cost of the Miag pilot flour milling of PNW-WQC samples

Commission Funding Amount: $ 5,250

Funding Year: 2025-2026

Final Report or Progress Report Progress

Research Results

Were there any major changes or adaptations to the project from what was described in the initial proposal? (describe if so)

None

Describe the outcomes of the research project. What was learned from the research work?

The PNW-WQC samples were milled and analyzed by ~25 cooperators. The Council met in January and discussed the advantages and disadvantages of all samples based on quality labs, milling, and baking companies. New, up-and-coming lines were evaluated by end-users to get familiar with new releases and provide feedback to the breeder.

Are there any recommendations for Oregon Wheat producers/ the Oregon Wheat Commission as a result of this research project? (describe if so)

The recommendation is to use the comments from the Quality Council members for future breeding considerations. The lines submitted by OSU had high quality and had positive feedback from the Council.

Oregon Wheat Commission Project Report

Add additional pages as needed

Project Overview

Title of Project: Advancing wheat grain quality in Oregon state

Commission Funding Amount: $ 23,000

Funding Year: 2025-2026

Final Report or Progress Report Progress

Research Results

Were there any major changes or adaptations to the project from what was described in the initial proposal? (describe if so)

None

Describe the outcomes of the research project. What was learned from the research work?

Samples from the 2025 harvest were received and organized into 37 nurseries. The samples totaled 1090. Most samples have undergone setup (cleaning, measuring test weight, protein, moisture) and are in the process of being milled into flour.

Are there any recommendations for Oregon Wheat producers/ the Oregon Wheat Commission as a result of this research project? (describe if so)

The recommendation is to continue supporting the OSU Quality Lab and the WWQL to help Dr. Krause continue to make good selections for high quality varieties. OSU has a great reputation of releasing high quality varieties and with ongoing support of the quality labs and the breeding program, that will continue.