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Pendleton
June 13, 2023

Oregon State University

USDA

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Map Key

- Pole Barn: *Registration, Welcome, Science Booths, Lunch*
- Parking
- Restrooms

- 8:40 AM Tours
- 9:30 AM Tours
- 10:15 AM Tours

Pendleton Station		
OSU/ARS FIELD DAY		
Tuesday, June 13, 2023		
Time		Event
7:30am	Registration Opens, Coffee & Donuts Available	
7:50am		Welcome and Introductions
	8:00-8:10	Francisco Calderon, OSU station overview
	8:10-8:20	Sam Birikorang, State of ARS-USDA
8:30am	*Head to Field Tours*	
8:40am	Option 1:	Winter Wheat Varieties with Dr. Ryan Graebner
	Option 2:	Synergy of growing spring peas and spring canola together with Dr. Don Wysocki & Dr. Hero Gollany
	Option 3:	How to control downy brome, jointed goatgrass and feral rye – The importance of herbicide mode of actions & stewardship - Dr. Judit Barroso
9:20am	*Move to next optional tour*	
9:30am	Option 1:	Spring Cereal Variety Testing, Spring Wheat Breeding, and Spring Wheat Seeding Rates with Dr. Ryan Graebner
	Option 2:	Winter Breeding trials with Dr. Bob Zemetra
	Option 3:	RDFA Update with Dr. Christina Hagerty
10:05am	*Move to next optional tour*	
10:15am	Option 1:	Winter Wheat Varieties with Dr. Ryan Graebner
	Option 2:	Winter Breeding trails with Dr. Bob Zemetra
	Option 3:	Carbon Center Update with Dr. Francisco Calderon-*inside new building*
11:00am	Scientist Booths open in pole barn	
12:00pm	Lunch	Sponsored by United Grain Corporation
12:40pm		Time to thank our Field Day Sponsors
12:50pm		Staci Simonich, OSU Dean of College of Agriculture
1:00pm	Ice cream social sponsored by the Wheat League	
2:00pm	2023 Field Day completed	

Field Presentations

Resistance to Group 2 Herbicides in Downy Brome Populations collected in 2021 from Wheat Fields

Victor Ribeiro[1], Judit Barroso[2] and Carol Mallory-Smith[1]
[1]Department of Crop and Soil Science – OSU; [2]Columbia Basin Agricultural Research Center – OSU.

The objectives of this study were to (1) conduct a survey of wheat growers to understand downy brome management in Eastern Oregon and (2) determine if 21 downy brome populations were resistant commonly used herbicides in wheat cropping systems. Survey results showed that winter wheat-summer fallow rotation (72%) was the most predominant cropping system. Only one field was tilled and none were irrigated. Pyroxasulfone + carfentrazone (10%) (Groups 15 and 14) and metribuzin (26%) (Group 5) were the most frequently used PRE and POST herbicides in winter wheat, respectively. Glyphosate (77%) was the most frequently used herbicide in fallow. Resistance screening findings indicated that all populations were susceptible to clethodim, quizalofop-P-ethyl, and glyphosate. Eighteen of 21 populations were resistant to Group 2 herbicides with different cross-resistance patterns (Table 1). Resistance to mesosulfulron-methyl (86%) and pyroxsulam (81%), were the most predominant followed by propoxycarbazone-sodium (67%), sulfosulfuron (67%), and imazamox (43%).

Table 1. Cross-resistance to Group 2 herbicides. Blue or yellow indicates resistant and susceptible populations, respectively. Resistance bases on 1X (>20% survival).

Populations	Group 2 Herbicides				
	Beyond	Osprey	Olympus	PowerFlex HL	Outrider
GIL1	S	R	S	R	R
GIL2	S	S	S	S	S
GIL3	R	R	R	R	R
MOR1	R	R	R	R	R
MOR2	R	R	R	R	R
MOR3	R	R	R	R	R
MOR4	R	R	R	R	S
MOR5	S	S	S	S	S
MOR6	R	R	R	R	R
MOR7	S	R	S	R	R
MOR8	S	S	S	S	S
MOR9	S	R	R	R	R
MOR10	S	R	R	R	S
SHE1	R	R	R	R	R
UMA1	R	R	R	R	R
UMA2	S	R	S	R	R
UMA3	S	R	R	R	S
UMA4	R	R	R	R	R
UMA5	S	R	R	S	S
UMA6	S	R	S	R	R
UMA7	S	R	R	R	R

Acknowledgments: We would like to thank the wheat growers for participating in this study, the Oregon Wheat Commission for funding this research, and County Extension agents, for their collaboration in identifying growers.

Postharvest control of Russian thistle (*Salsola tragus*)

Fernando Oreja[1], Judit Barroso[1], Jennifer Gourlie[1]
[1]Columbia Basin Agricultural Research Center (CBARC) – OSU

The effect of postharvest application timing and the stubble height on herbicide efficacy was evaluated at the Columbia Basin Agricultural Research Center (CBARC, Adams, OR) in two consecutive years (2020 & 2021).

Paraquat provided the greatest control in both years, regardless of weather conditions, with no differences in application timing or stubble height. The efficacy was 100% and 98% in 2020 and 2021, respectively.

The control with **glyphosate** and **Huskie (bromoxynil + pyrasulfutole)** was similar with both herbicides and years, but higher in 2020 compared to 2021 (89% with glyphosate and 91% with Huskie in 2020, and 75% and 69% in 2021, respectively). In 2020, a more "normal" year than 2021, there were no differences among application timings for any of these herbicides (Figure 1a). However, in 2021, a drier year than 2020, application timing affected the herbicide control efficacy. The control in both treatments was reduced when the herbicides were applied 1 WAH. For glyphosate, the control was 30% lower than in the other application timings (51% vs. 83%) and for Huskie, the control 1 WAH was only significantly lower than the application made 2 WAH (60% vs. 77%) (Figure 1b). Under this scenario, an application as soon as possible after harvest could be desirable to prevent significant water loss.

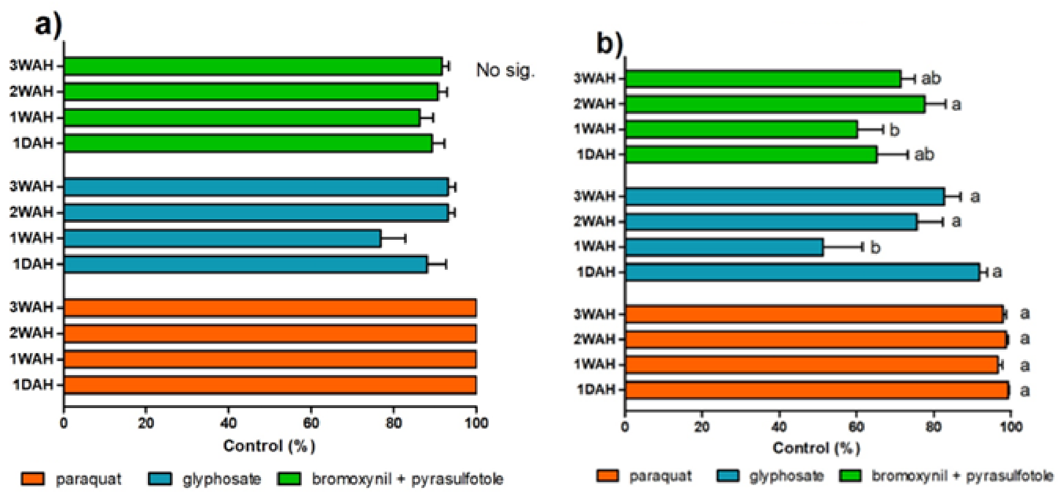

Figure 1. Control of Russian thistle (%) at CBARC, Adams, OR, with different herbicide treatments applied 1 day after harvest (DAH), 1, 2, and 3 weeks after harvest (WAH) in a) 2020 and b) 2021. Bars are the means and whiskers the standard error of the mean. Different letters mean differences among application timings for each herbicide, according to Tukey's multiple comparison test ($p < 0.05$).

Acknowledgements: This research was funded by the USDA-NIFA project titled Integrated and Cooperative Russian thistle (*Salsola tragus*) Management in the Semi-Arid Pacific Northwest (Project No. ORE00339).

Effect of stubble height and plant size on Russian thistle dispersion

Fernando Oreja[1], Judit Barroso[1] and Jennifer Gourlie[1]
[1]Columbia Basin Agricultural Research Center (CBARC) – OSU

An experiment was conducted in two consecutive years (2020 and 2021) at the Columbia Basin Agricultural Research Center (CBARC) (Adams, OR) and in a grower's field near Ione, OR in 2020.

At both sites, the dispersion rate increased with time. At CBARC, a higher plant dispersion was observed with plants growing in short stubble than in tall stubble. In 2020, dispersion in short stubble was 66% compared to 14% in tall stubble, and in 2021, the values were 53% in short stubble compared to 20% in tall stubble (Figure 1). Near Ione, dispersion in trampled stubble was 88% compared to 43% in standing stubble and big plants were more dispersed than small plants (86% vs. 48% respectively) (Figure 2).

For growers that struggle to control Russian thistle post-harvest, leaving the stubble tall at harvest, could reduce Russian thistle dispersion in their and neighboring fields. Preventing plants from becoming big (e.g. mowing) as part of an integrated weed management program could also reduce dispersion.

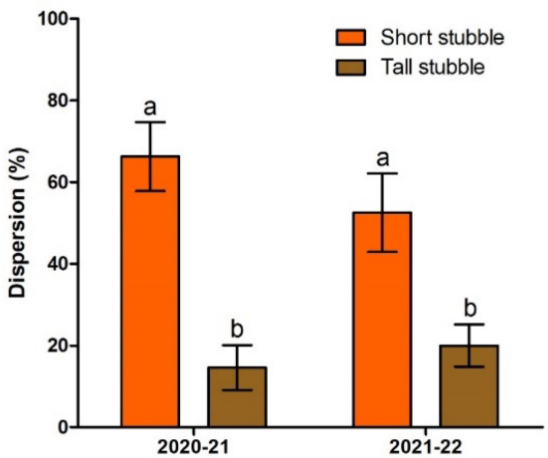

Figure 1. Dispersion of Russian thistle (%) at the final evaluation time (April 21 in 2021 and May 26 in 2022), at CBARC, Adams, OR, within to different stubble heights (short and tall) in 2020-21 and 2021-22. Bars indicate the means and whiskers indicate the standard error of the mean. Bars with the same letters are not significantly different according to Tukey's multiple comparison test ($p < 0.05$).

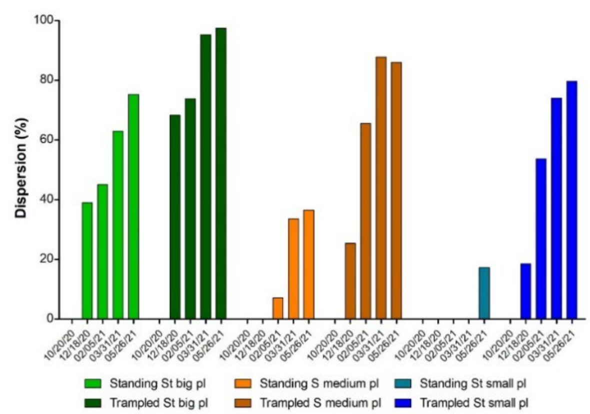

Figure 2. Russian thistle dispersion (%) near Ione for different plant sizes (small, medium and big) and stubble height (standing and trampled). Bars indicate the means.

Acknowledgement: This research was funded by the USDA-NIFA project titled Integrated and Cooperative Russian thistle (*Salsola tragus*) Management in the Semi-Arid Pacific Northwest (Project No. ORE00339).

Study of Alternative Herbicides to Glyphosate in Fallow-Based Cropping Systems

By Judit Barroso[1] and Jennifer Gourlie[1]
[1]Columbia Basin Agricultural Research Center (CBARC) – OSU

Effective weed management is a key element of successful wheat production. In an effort to maintain glyphosate (group 9 herbicide, EPSP synthase inhibitor) as a viable herbicide option for as long as possible in the wheat/fallow systems of the Pacific Northwest, we conducted trials over two years in fallow, at seeding time, and post-harvest to evaluate potential good tank-mix partners and alternative herbicide options to glyphosate. The experiments were RCBD with four replications. Target weed species were primarily grasses for the fallow and seeding time trials, although broadleaf weeds were also evaluated when they were significant and uniformly distributed. Target weeds for the post-harvest trial were primarily broadleaf species like Russian thistle and lambsquarter. Studied treatments included saflufenacil (Sharpen), glufosinate (Forfeit 280), clethodim (Clethodim 2E), pyraflufen (Vida), flumioxazin+pyroxasulfone (Fierce), tiafenacil (Reviton), and combinations of some of those herbicides. Results showed no significant difference between Sharpen at the 2 fl oz/A and 4 fl oz/A rates. In the fallow trials, all treatments showed good control (75% +) of grasses, except for Vida and Reviton + Vida. In the seeding time trials, glyphosate alone and in combination with Reviton and Vida showed the best control (80% +). The post-harvest trials showed different results for 2021 and 2022. In 2022, a wet year, the control in all treatments was similar to glyphosate except for single applications of Reviton and Vita. In 2021, a dry year, only Reviton + Glyphosate and Fierce + glyphosate provided similar control than glyphosate consistently for the studied species.

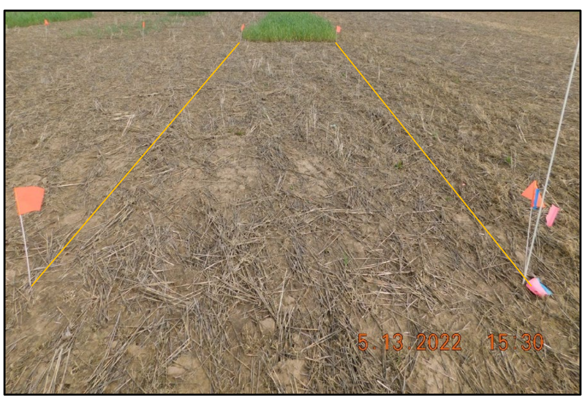

Image 1. Fallow trial in 2022 showing the treatment of Fierce EZ (flumioxazin+pyroxasulfone) + Clethodim 2E (clethodim).

Image 2. Spring wheat trial in 2022 showing the treatment Reviton (tiafenacil) + Gly Star 5 Extra (glyphosate).

Acknowledgments: This research was possible thanks to the funds received from the Oregon Wheat Commission. Authors also thank Kyle Harrison and Alan Wernsing for their assistance with these trials.

Testing for Herbicide Resistance and 'Beyond' - R.S. Zemetra

Developing a new wheat variety occurs in several general steps; crossing of parental lines, gene segregation, selection and testing. Testing is a critical component of variety development because it determines if the breeding line has the desired traits to be a new wheat variety. In the case of herbicide resistance all lines being considered for potential release need to go through efficacy testing. This involves having paired plots of each line, one sprayed with the herbicide and one unsprayed. Such a paired test allows the breeder to determine if there was any injury at the time of herbicide application and whether the yield is the same with or without herbicide. The goal is to have minimal injury at the time of spraying and have an equivalent or higher yield in the sprayed crop. To make sure the efficacy test is working, a negative (susceptible) 'check' variety and a positive (resistant) 'check' vaariety are included in the trial. If the negative check variety shows injury and dies it indicates the herbicide application worked. If the positive check variety shows injury then the level of acceptable injury needs to be adjusted in the test for all the breeding lines. The reason injury may occur on the resistant check cultivar is that the herbicide rate applied is usually 2X the normal rate to insure partially resistant (carrying one gene instead of two for resistance) lines are observed and don't 'escape' detection. Injury on the resistant check cultivar may also indicate that there may be an application timing issue with that herbicide.

Currently the OSU breeding program is conducting efficacy trials for Clearfield and Coaxium resistant breeding lines. The Clearfield efficacy trials have been run for many years and consistently show injury and death of the negative check variety and little or no injury on the positive check variety and most of the breeding lines. To be released a breeding line must be tested in three different locations over two years (giving 6 site/years of data) for evaluation prior to release. All currently Clearfield variety have gone through and passed testing. The OSU Coaxium trials have shown more injury in the positive check variety than expected. The injury in the breeding lines have been similar to the positive check variety so the breeding lines do show resistance equivalent to the check variety. There are differences in the rate of recovery among the lines that may provide additional information for selection. The response seen in the resistant check cultivar and the breeding lines may also be due to the rate of herbicide application (2X) and/or the date of herbicide application. In 2023, Clearfield and Coaxium trials had herbicide applied one day apart at all locations but little to no linjury was observed in the Clearfield trial while injury was observed in the Coaxium trial. This may indicate that growers need to insure that herbicide application for Coaxium lines does not go on late.

But what type of additional testing is needed before a herbicide resistant line is released? 'Beyond' efficacy testing, herbicide resistant lines should be tested for agronomic performance, disease resistance, and end-use quality just like any other breeding line before they are released. This testing needs to be done over several years at different locations to insure there are no 'escapes'. To make this testing possible in Oregon the Oregon Wheat Commission funds projects for testing agronomic performance (R. Graebner – OSU), disease resistance (C. Mundt – OSU, C. Hagerty – OSU, and X. Chen – USDA-ARS), and end-use quality (A. Ross – OSU and A. Kiszonas – USDA-ARS) of OSU breeding lines and other breeding programs' lines if they are in extension testing. This insures there are no surprises for wheat growers when they plant new OSU varieties. Without this level of multi-year testing by independent researchers, wheat producers growing an untested cultivar are basically participating in a large scale field based experiment that could have either really good or really bad results.

Resilient Dryland Farming Alliance

Pressing the boundaries of the dryland winter wheat production system to support family farm profitability and production resilience.

Oregon State University
Columbia Basin Agricultural Research Center

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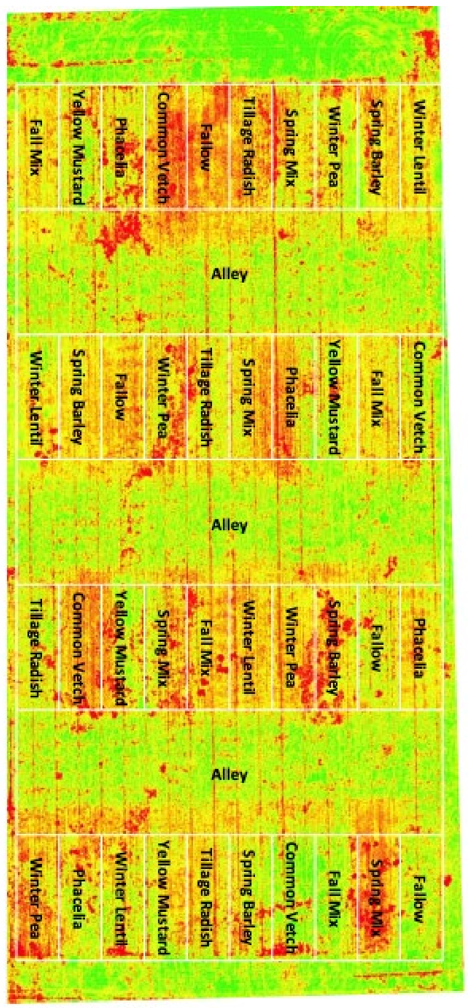
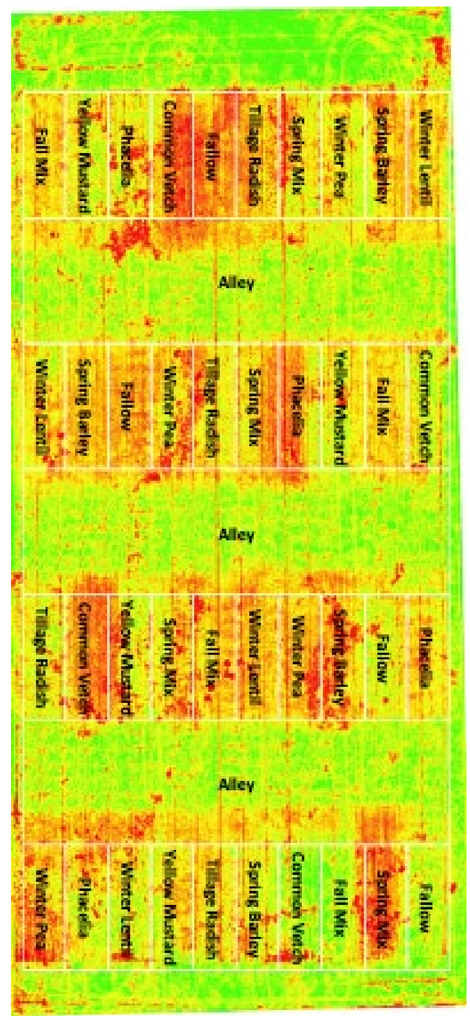
RGB



NDVI



NDRE

UAS technology can assist in identifying signatures of cash crop performance following cover crop treatments

THANKS to Drew Leggett of BMCC for image collection!

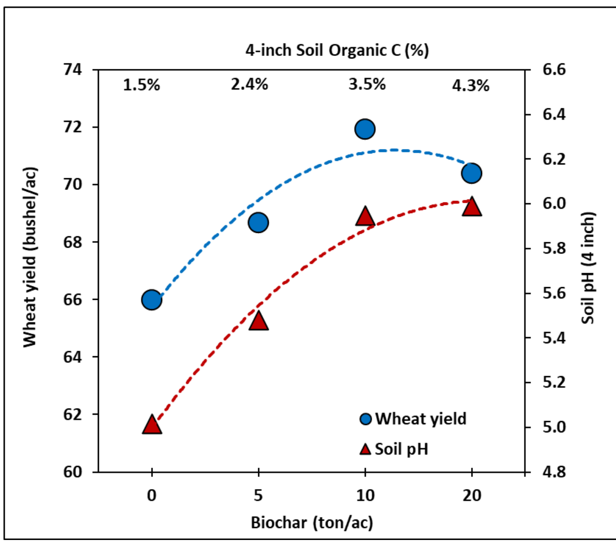
Poster Presentations

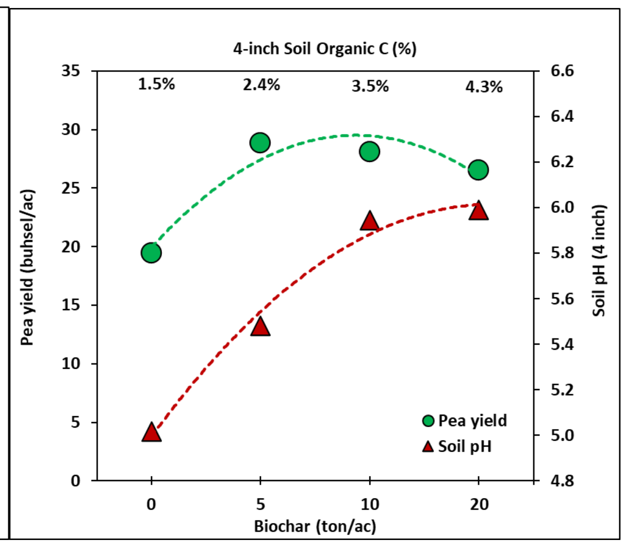
Biochar Effects on Wheat and Pea Productivity Persist

Stephen Machado, Larry Pritchett, Linnea Kriete

Oregon State University, Columbia Basin Agricultural Research Station

Biochar, charcoal produced from pyrolysis and resistant to decomposition, can potentially improve soil health. This study evaluated the effects of biochar derived from forest wastes on crop yields, soil pH, and nutrient dynamics. Amending soil with biochar sequesters carbon (C) that would have been lost to the atmosphere as CO_2 through burning or natural decomposition, where it would contribute to global warming. Biochar, which contained 90% carbon (C), 0.18% nitrogen (N), C:N of 500, and a pH of 10.6, was applied only once to field plots in a winter wheat-spring pea rotation in 2013 at rates of 0, 5, 10, 20 tons per acre. Grain yields of wheat and peas were measured in 2014, 2015, 2016, 2017, and 2018 without further additions of biochar. Soil organic carbon (SOC), soil pH, NO_3, NH_4, P, K, and S were determined after harvest in 2013. Increasing biochar increased grain yield and the yield increase has persisted for 4 years even without further biochar applications. Biochar increased SOC by 115% and pH by 1.2 units (4.7-5.9) but did not influence other nutrients. Results indicated that biochar has the potential to increase grain yield of wheat and spring peas while sequestering C. Increasing pH may have increased nutrient use efficiency resulting in higher crop yields. The study continues.





Biochar effects on wheat and pea grain yields

For more information, contact Stephen Machado: stephen.machado@oregonstate.edu, 541 215 3665

Grain Mineral Density of Pacific Northwest Winter Wheat

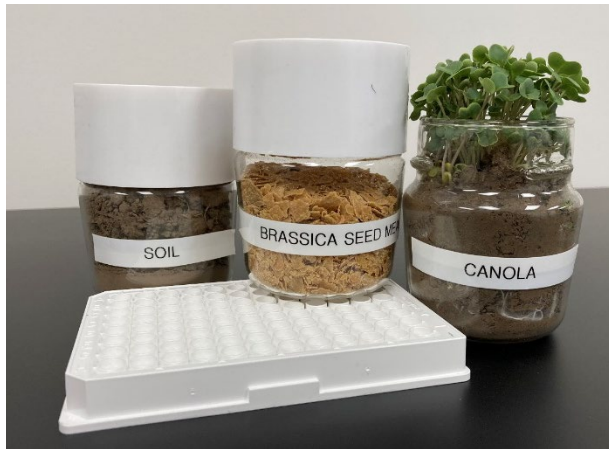
Curtis B. Adams[1], Teepakorn Kongraksawech[2], Andrew Ross[2], Ryan Graebner[2], Juliet Marshall[3], Xi Liang[3], Clark Neely[4], Catherine L. Reardon[1], Dan S. Long[1]

[1]USDA-ARS, [2]Oregon State University, [3]University of Idaho, [4]Washington State University

The U.S. Pacific Northwest (PNW) region is a major exporter of cereal grains, including multiple market classes of wheat, but particularly soft white winter wheat. Much of the product is exported to Asia, including to developing nations with populations that are afflicted by mineral nutrient deficiencies. Billions of people worldwide experience mineral deficiencies, especially Zn and Fe, particularly in regions with predominantly cereal-based diets. One route to improve human nutrition is enhancing mineral density of diet staples, such as wheat. But for *winter* wheat produced in the PNW, there is hardly a baseline of knowledge on mineral density, though one report suggested that soft white *spring* wheat produced here had declined in mineral density over time (due to selection for low ash), while hard red spring wheat had not. Therefore, the objective of this study was to gain a better understanding of grain mineral density (P, K, Mg, Ca, Mn, Fe, Zn, and Cu) of PNW winter wheats, including testing for differences among N fertilizer rates and wheat varieties, and making comparisons among wheat market classes (soft white and hard red) and many production sites (in Oregon, Idaho, and Washington). To provide a broader perspective, the average mineral densities for each test site were also compared to standard densities obtained by synthesizing worldwide data reported in the scientific literature. Among agronomic factors affecting grain mineral densities, N fertilizer typically had little impact, while wheat variety and production site had greater effects. For example, in a two-year test involving four N rates, four wheat varieties, and two sites, grain Zn differed by up to 7.5%, 13%, and 27% among those factors, respectively. In comparisons of many wheat varieties at six production sites, statistical differences among varieties in mineral density were widespread. The differences were often substantial enough to provide a basis for breeding more nutritious wheat varieties, depending on specific mineral uptake heritability. In five side-by-side comparisons of soft white and hard red winter wheat variety trials, there was no evidence that these market classes systematically differed in density of any tested minerals. When mineral results for all test sites were compared to worldwide standards derived from the literature, individual minerals at individual sites differed from the standards, but there were few differences on average. The exceptions were grain P and K, which were commonly lower in grain from PNW sites than the standards. Since much of PNW wheat is processed (i.e. milled and refined) before consumption, samples from two variety trials were milled to produce straight-grade flour (the most commonly consumed flour product), enabling calculation of mineral reduction with processing. The minerals most negatively affected by processing were P, Mg, Mn, Fe, Zn, and Cu, with reductions ranging from roughly 50% to 90%. Percent reductions in individual minerals were comparable for hard red and soft white wheats. Overall, these results illustrate that the mineral density of PNW winter wheat is comparable to wheat generally, with no evidence that soft white winter wheat was less nutritious in minerals. The natural variation in grain minerals that exists among sites and wheat varieties can be utilized to customize or enhance wheat nutritional profile. Importantly, consumption of whole-grain wheat products should be expanded and promoted to preserve and utilize the inherent nutrition of wheat in relieving human mineral deficiencies.

SaxAPIL: A novel biosensor for the detection of isothiocyanates in soils and plants

Kate Reardon[1†], Kristin Trippe[2], Viola Manning[2]
[1]USDA-ARS Pendleton Oregon, [2]USDA-ARS Corvallis Oregon
[†]Catherine.Reardon@usda.gov



The biosensor can detect ITCs in seedlings, seed meals, and soil with recently incorporated brassica cover crops. Shown is the microplate used for the bioassay.

Isothiocyanates (ITCs) are natural, biotoxic compounds produced by cruciferous plants. These compounds are formed by an enzymatic reaction between plant glucosinolates and the enzyme myrosinase. ITCs are biologically active against microbes (antimicrobial) and nematodes (antinematicidal) and have been shown to reduce weed seed germination (2, 3, 5). Farming practices such as green manuring or biofumigation with brassica seed meals (or plant residues) exploit the formation and bioactive properties of ITCs. In fact, biofumigation with certain brassica seed meals has been shown to not only reduce the soil pathogens currently present in soil but also promote soil biology capable of suppressing newly introduced pathogens (6). Although several benefits are attributed with these cropping practices, ITCs can also have negative impacts on crops by inhibiting seed germination and root growth (1, 5). Several factors influence the amount and persistence of ITCs in the soil including the composition and concentration of the glucosinolates, the plant developmental stage, and environmental conditions. Current methods to determine the amount of ITC in the soil include chemical extractions and expensive scientific equipment. Recently, USDA-ARS scientists at Pendleton Oregon and Corvallis Oregon developed a biosensor to detect ITCs (4). The biosensor is a genetically modified microbe that emits photons (light) when exposed to different types of ITCs. Currently, the biosensor construct requires scientific equipment (luminometer) to measure the emission of light (luminescence), but there are opportunities increase the amount of the light production. The biosensor can detect concentrations of the ITC sulforaphane as low as 1-2 µM in addition to naturally-formed ITCs in seedling extracts of daikon, broccoli, radish, and kale. For soil amendments, mustard plant residues added as either seed meals or incorporated cover crop produce measurable ITC levels. This tool can be advantageous in determining plant-back dates where the question of soil ITC concentration is whether it is *too hot or not.*

References

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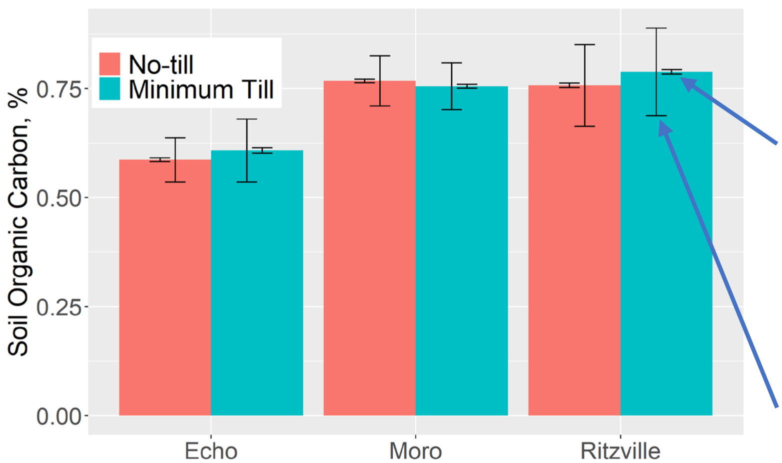
Will no-till increase soil carbon compared to minimum tillage in low rainfall winter wheat—fallow?

Stewart Wuest USDA-ARS, Pendleton Oregon

Monthly soil samples (0 to 8 inches) for three years at three long-term replicated experiments.



Standard error of the mean: Confidence level given the large number of samples that went into this average value. (We took *lots* of samples spread over three years.)

Standard deviation: The average amount each measurement differed from the mean. (A big problem for accuracy).

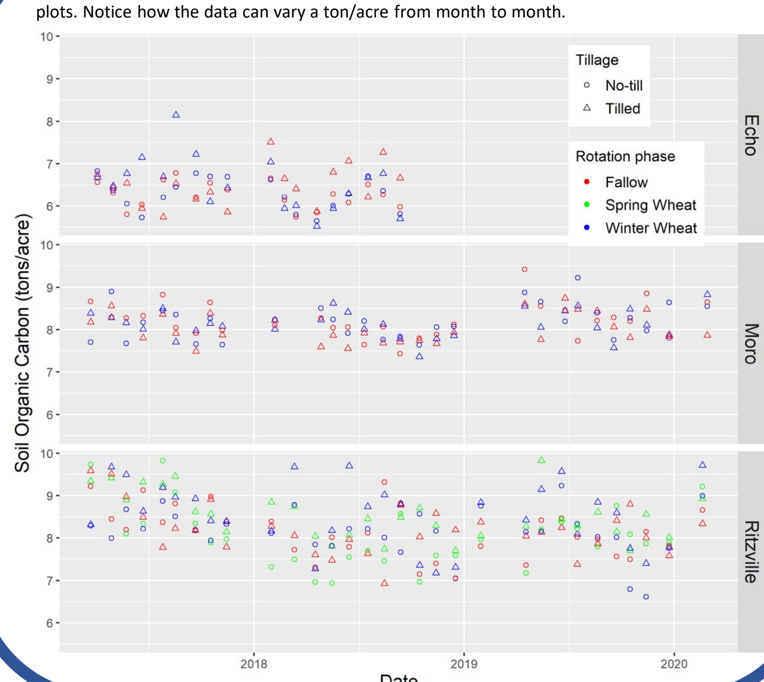
Minimum Tillage: Undercutter sweep at the Echo, OR site.

Take home message:

- Soil carbon measurements were highly variable by season and year.
- Effects of tillage on soil carbon were very small with an average 2.45% (relative) more carbon in the tilled treatments.
- Judicious tillage can help us combat herbicide resistance without substantial effects on soil carbon in low rainfall areas.

Messy Data

This is what went into the bar chart. Each symbol is the average from three or four replicate plots. Notice how the data can vary a ton/acre from month to month.



For details or a copy of the paper contact Stewart.Wuest@usda.gov

Wuest, S. B., Schillinger, W. F., & Machado, S. (2023). Variation in soil organic carbon over time in no-till versus minimum tillage dryland wheat-fallow. *Soil and Tillage Research*, *229*, 105677. https://doi.org/10.1016/j.still.2023.105677

Wintersteiger - DS Drill

The Wintersteiger – DS no-till air drill has been designed to plant multiple crops at once. With multiple sets of seed bins, seed runs & openers, wheat can be planted with an alternative crop with ease. The drill spacing is set for planting 12-inch wheat rows while inter-seeding an alternative crop 6-inches apart from the wheat rows. It is also set up for applying multiple dry fertilizer products at once. The DS Drill utilizes AgPro openers equipped with coulters to cut through the previous crop's residue allowing the seed openers to easily place seed right where it needs to be. This drill has been designed & engineered specifically for being a one-pass planting tool for intercropping alternative crops with wheat.

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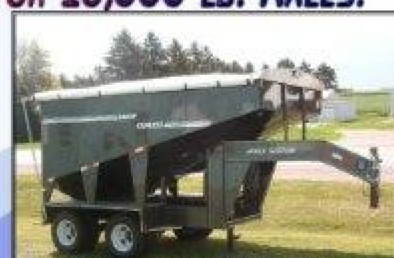
"25% corn flowed right through!"

"We could get twice the work done in half the time"

"I was going to buy another wagon but am I glad I bought this thing instead!"

Available with 10,000, 12,000 or 16,000 lb. Axles!


Shown with optional auger


Shown with optional roll tarp

"I have no problem pulling it in and out of the field."

"I could go 55 mph empty or full with no problem"

"I had to turn the controller down or it stopped me too fast."

"It emptied moist beans better than most of my wagons."

"I felt safer with my Grain Express than I did driving the neighbors semi."

"My Dad won't haul grain with anything else now."

Above are a few of the comments we received from proud owners of our new "Grain Express" gooseneck grain trailer. Our Grain Express is saving money and time for everyone who uses them. No hydraulics, great braking and fast unloading are just some of the reasons that more and more farmers are adding our Grain Express to their grain moving system. Call for more information and price on our new

"GRAIN EXPRESS"

K & O Mfg. Co., Inc.
1425 Black Forest Rd.
Hull, IA 51239
Ph. 712-439-2727
www.komfgco.com

BMCC Mobile Precision Agriculture Laboratory

What is it?

Precision agriculture (PA) careers are in hot demand locally and across the country from farm managers to agronomists to PA technicians. Blue Mountain Community College's (BMCC) Precision Agriculture Program aims to prepare students for these exciting and critical career opportunities.

The BMCC Mobile Precision Agriculture Laboratory (MPAL) allows Precision Agriculture instructor Drew Leggett to transform almost any location into an advanced technology open-air classroom. The MPAL is equipped with a Kubota RTV with autosteer and a variable rate, section-controlled sprayer, a John Deere Gator with autosteer, a generator, a TV monitor, computers that run advanced GIS and PA software, and advanced drone technology. In addition to the BMCC PA program, the MPAL will be used at area high schools to give students hands-on learning opportunities with advanced PA technologies.

Fundraising Opportunity

As a fundraising opportunity for the BMCC Precision Agriculture program, students are looking for opportunities to gain additional hands-on experience and better prepare themselves for the workforce. If you are interested in having a field grid or zone soil sampled or mapped with a drone, contact Drew Leggett (aleggett@bluecc.edu) for more information! The money goes into a dedicated BMCC Foundation account for the PA program and supports students via scholarships and travel money for conferences as well as purchasing and maintaining equipment.

QuickDraw
SPRAY TENDER SYSTEM 3000

Keeping your sprayer spraying is what SureFire was focused on when it released QuickDraw in 2014. Seven years and thousands of batches later, QuickDraw 3000, released in 2020, features a faster, bigger and brighter display. In 2021 additonal new features and models are available. All with the goal to make mixing and loading your sprayer even easier. These include new 9-product model, auto start iGX Honda transfer pump, carrier blending and automated air purge.

4 Product

3 - 1" Port Valves, 1 - 1 ½" Port Valve

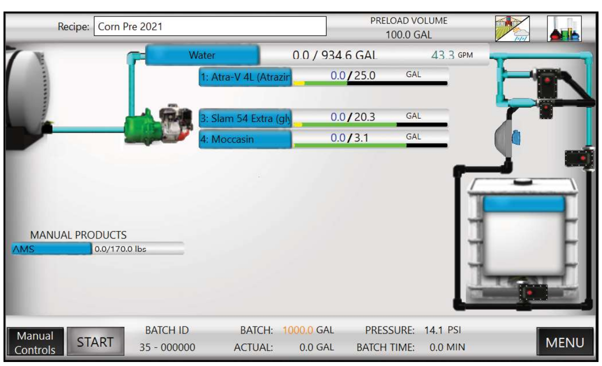
6 Product

5 - 1" Port Valves, 1 - 1 ½" Port Valve
3 - 1" Port Valves, 3 - 1 ½" Port Valve

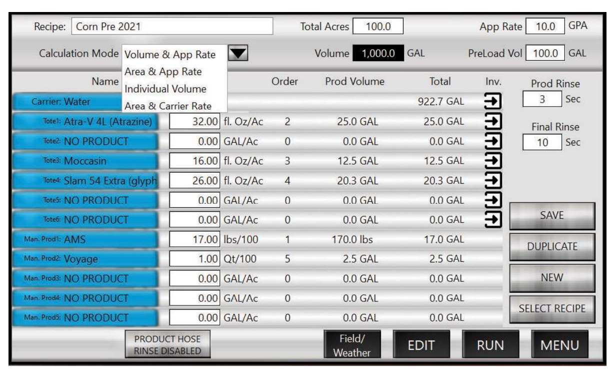
9 Product

6 - 1" Port Valves, 3 - 1 ½" Port Valve

Run Screen - Start and Monitor Batch Progress



Job Setup Screen - Auto Calculation Based on Batch Size

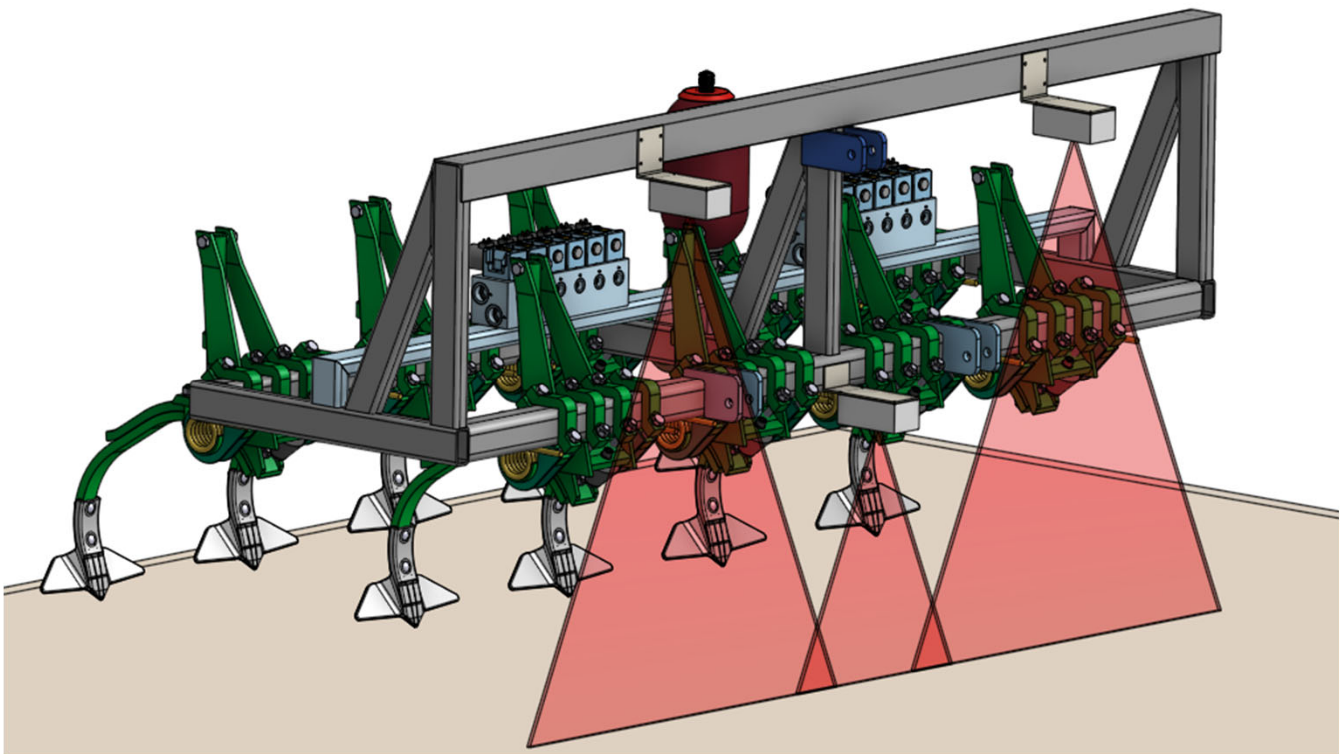


Mass Flow Meter Chemical Measurement

Mass Flow is the most accurate flow meter technology available. The Micro-Motion mass flow sensor used in QuickDraw measures the mass flow (weight) and density of the product as it moves through the sensor. With those two measurements, it calculates the volume of any liquid with extreme accuracy, regardless of physical properties.

Coming soon…

Plot-Scale WeedChipper



The “WeedChipper” has been developed (by the Centre for Engineering Innovation: Agriculture & Ecological Restoration, The University Western Australia) as a targeted tillage implement capable of delivering site-specific mechanical control of fallow weeds. As it is based on, mostly existing cultivator mechanism and weed detection technologies, the “WeedChipper development represents a cost-effective approach for alternative weed control technologies in large-scale cropping systems.

The three-point linkage mounted rig comprises hydraulically driven rapid response tines, pressure accumulator and solenoids and fitted with WeedIT sensors capable for the detection and control of small (2cm = 25/32 in) to large (80cm = 31.5in) diameter weeds occurring at low density (<1.0 plant $10m^{-2}$ ≈ $100ft^2$) control in fallow scenarios at 10 km h^{-1} ≈ 6.2 miles h^{-1}.

A demo activity will be organized post-harvest, please stay tune!

Oregon State University
Columbia Basin Agricultural Research Center

Please see Dr. Judit Barroso with your questions or discussion.

Blank on purpose

Thank you for joining us, we hope to see you again at next year's Field Day, Tuesday June 11, 2024!

Please take a moment to complete a short four question survey about today's event
https://oregonstate.qualtrics.com/jfe/form/SV_baAC46GStojRBZA