

Project # 4127-1605

Final Report Year: 3 of 3

Title: EVALUATION OF BARLEY VARIETIES

Researcher: Clark Neely, Variety Testing Program Lead

EXECUTIVE SUMMARY:

The primary goal of the WSU Extension Cereal Variety Testing Program is to provide growers, the agribusiness industry, university researchers, and other interested clientele with comprehensive, objective, and independent information on the adaptation and performance of spring barley cultivars across the intermediate and high rainfall dryland production regions of eastern Washington where barley is grown.

The VTP planted 12 spring barley variety trials in each of the past three years. While all 12 were harvested each year, data from one, two and five trials were not published in 2019, 2020, and 2021, respectively, due to high variation in the data within the trials. All data is posted on our website and email notifications were sent out via the ‘prelimdata’ list serve when data was available. In the past year, the number of members on this list has increased 67% to 355. We continue to publish our final technical report each year which can be found on our website (<http://smallgrains.wsu.edu/variety>) and is posted in December. The variety selection tool has continually been updated each year and in spring of 2021 a new mobile app was developed to provide a user-friendly experience on their phone and even off-line access once the app is installed.

Due to COVID-19, in-person field days were cancelled in 2020. In response, the VTP led the effort to organize, record and post virtual field days as our primary Extension outreach that year. A total of four field day playlists were created for each precipitation zone and posted on the WSU CAHNRS YouTube Channel. Three of these clips covered the spring barley variety trials at Reardan, Dayton and Pullman and received a total of 86 views combined. In 2021, we held in-person field days at eight sites (200 attendance) with spring barley variety trials. We continued the virtual field days as well producing two barley variety trial video clips, one each at Dayton and Farmington, which received 26 and 17 views, respectively.

IMPACT:

The economic value (impact) of the WSU VTP is measured by providing information to growers and seed industry personnel leading to variety selections that maximize profitability and minimize risk. Choosing an appropriate barley variety to plant is one of the easiest ways that a grower can increase production and decrease costs (through decreased inputs). Between 70,000 and 84,000 acres of spring barley were harvested each year between 2019 and 2021. When comparing the yield from the top three varieties in each trial and comparing their average yield to the trial average, there is approximately a 437 lb/a yield advantage. When multiplied across acres

harvested and using an average sales price of \$147/ton, the VTP had the potential to generate an additional \$7 million dollars over the past three years as shown in the table below. The VTP strives to disseminate information to growers as widely as possible. Both the variety testing website and the variety selection tool average over 8,000 page views each on an annual basis. Another 1,000+ contacts are made through field days and grower meetings each year. While yield is important there are multiple traits that growers look for in a variety, which vary in importance from region to region. The VTP publishes data on test weight, grain protein, plump seed, plant height, maturity, and stripe rust. An additional impact of the VTP comes through the evaluation of breeding lines, providing valuable information to aid breeders in variety release decisions, leading to new and improved barley varieties available to growers in Washington.

Year	Harvested Barley Acres	Average Yield Gain for Top Five Varieties in Trials	Average Price of Feed Barley	Additional Income Generated
	# acres	lb/acre	\$/ton	\$
2019	84,000	260	\$130	\$1,419,600
2020	71,000	630	\$134	\$2,996,910
2021	70,000	420	\$177	\$2,601,900
Total	75000	437	\$147	\$7,018,410

WGC project number: 4127-1605				
WGC project title: Evaluation of Barley Varieties				
Project PI(s): Clark Neely				
Project initiation date: 07-01-2019				
Project year (X of 3-yr cycle): 3 of 3				
Objective	Deliverable	Progress	Timeline	Communication
1. Conduct representative and objective barley variety field trial evaluations at locations that represent major production areas of Washington.	12 spring barley trials; 18 entries/trial	2019, 2020 and 2021 trials completed & data finalized	Trials are planted in the spring, data results are available to growers at the end of each harvest season.	Results from the variety trials are communicated via Extension programming and are detailed under Objective #4.
2. Entries in trials will include: currently grown varieties and promising advanced breeding lines from the major public and private breeding programs in the region.	All widely grown, commercially available varieties and promising experimental lines are included in trials.	i.) 2021 barley entries: 28% public, 72% private. Every major spring feed and malt barley breeding program in the PNW is actively participating in the VTP. ii.) 2019, 2020, and 2021 entries, locations, and maps have all been posted on the variety testing website.	Deadline for spring entry requests are February 1 and seed is due February 12.	i.) Send out 'call for entries' letter by mid-January requesting spring barley entries. ii.) Maintain positive relationship with breeding programs to ensure future participation.
3. Provide access to variety trials and harvested grain enabling other researchers and supporting projects to gather information from the trials.	Participation and ratings from other projects/ programs.	Cooperation with breeders, pathologists, seed dealers, WSCIA, other universities, and Extension. Data are used by breeders for variety release and promotional materials.	Ongoing cooperation and collaboration that fit with timelines and other listed objectives.	Stripe rust ratings presented in seed buyers guide and variety selection tool. VTP data used for variety release and PVP applications.
4. Deliver an Extension education program to make the results and interpretation of the variety trials available to growers, the seed industry, and other clientele.	a.) Grower meetings	Participated in VT panel at Tri-state Grower Convention (Dec 2021).	Will attend when invited	Attend in person and present results through powerpoint presentation and handouts when appropriate.
	b.) Field Tours	i.) 2020: 3 video clips recorded on barley variety trials and posted with other field day videos on WSU CAHNRS YouTube Channel (86 views). ii.) 2021: 8 in-person field days (200 attendance); 2 video recordings of barley variety trials posted with virtual field days (43 views). iii.) 10 planned for 2022; virtual field days will be filmed at two locations and posted online.	June-July	*List of Field Days provided below; provide paper handouts of data
	c.) Email List Serv	2019, 2020, and 2021 results delivered; list serve membership increased 67% in 2021	October through December	Email list serve: Data sent to 355 members as it becomes available
	d.) Website	Up to date with 2019, 2020 and 2021 data	October through December	9,950 pageview for 2019 VT data; 8,267 pageviews for 2020 VT data; 6,348 pageview for 2021 VT data
	e.) Annual Report	2019, 2020, and 2021 final reports have all been posted online.	December	The annual report will be published as a WSU technical report online and hard copy upon request.
	f.) WSCIA Seed Buyers Guides	2019 Guide completed; 2020 Guide not published (decision made by WSCIA) 2021 Guide not published (decision made by WSCIA)	January-February	Seed Buyers Guide published in January-February
	g.) Wheat Life	2019, 2020, and 2021 spring barley VT articles completed.	Barley VT article is submitted annually in December.	Article published in Wheat Life in January each year

	h.) Variety Selection Tool (smallgrains.wsu.edu)	Selection tool was updated with new data in 2020 and 2021. Tool to be updated with 2021 data by January 2022. New mobile app developed and released in May 2021 for easier access on mobile devices and off-line.	January 2022	The variety selection tool had 9,406 pageviews in 2021.
*Anticipated 2022 in-person Field Days include: Almira, Dayton, Fairfield, Farmington, Lamont, Mayview, Palouse, Reardan, St. John, and Walla Walla.				