

Washington Grain Commission
2023 Wheat and Barley Research Annual Progress Reports and Final Reports
Format

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Project #: 4721

Progress Report Year: *3 of 3 (maximum of 3 year funding cycle)*

Title: **Quality of Varieties & Pre-Release Lines: Genotype & Environment ‘G&E’ Study**

Cooperators: *Kim Garland-Campbell, Arron Carter, Mike Pumphrey, Clark Neely*

Executive summary: The 2023 harvest sample analysis is roughly half done; the project is on-going. As in previous years, all quality data were/will be analyzed using the *t*-Score statistic. The quality *t*-Scores for each soft white winter, club, soft white spring and club, hard red winter, hard red spring, and hard white winter and spring varieties are summarized using ‘Grain’, ‘Milling’, ‘End-Product’, and ‘Overall’ Scores. Varieties in each market class/sub-class are then ranked by the Overall Score. All varieties and advanced breeding lines with three or more years of data are included in the final listing.

Using these results and analyses, the WWQL works closely with the WGC to develop the, “*Preferred WHEAT VARIETIES for Washington based on end-use quality*” each year with annual updates. Completion of the variety rankings in February represents the first significant accomplishment each year. We coordinate variety classification with Oregon and Idaho cereal chemists.

Introduction: Identifying the relative quality (advantages or short-comings) of varieties and pre-release lines, both public and private, requires robust, statistically-valid, objective comparisons. Similarly, quality data on an environment-by-environment basis is needed, especially for a wider array of commercial varieties and pre-release lines. The WWQL prioritizes resources to experimental breeding samples from Washington State University and ARS programs; in-depth analysis of commercial varieties, newly released varieties, and advanced pre-release lines is accomplished with this matching WGC support. This on-going study has identified varieties with exceptionally good quality and others that were considered to be inferior. In addition, this study contributes substantively to the WSU Variety Release process and release decisions.

Approach:

Continued testing only new varieties and pre-release lines; discontinue testing varieties with 3 or more years of quality data. Included 1 historic and 1 prominent “benchmark” varieties in each class. Obtained grain samples from existing WSU Variety Testing Extension yield trials (utilized these samples because the cost of producing them is already covered) from 4-6 representative environments from each market class (8-12 from SWW given its greater acreage and market share). Conducted complete milling and baking quality analyses.

Results:

The following varieties have been released and published in the Preferred Variety Brochure during this 3-year funding cycle of this project.

Market Class	Most Desirable	Desirable	Acceptable
Soft White + Club	AP Exceed	Appleby CL+	AP Dynamic
	Jameson	Inspire	WB 1532
	Nimbus	LCS Blackjack	AP Iliad
	Sockeye CL+	LCS Jefe	AP Coachman
	YSC-201	M-Press	
	YSC-215	OR2X2CLP	
	ARS Cameo	Piranha CL+	
	AP Mondovi	Sonic	
	UI Cookie	Stingray CL+	
	Hedge CL+	VI Presto CL+	
	Roger	VI Voodoo CL+	
Hard Wheat	Scorpio	WB4311	WB4303
	Guardian		WB4394
	Canvas		LCS Helix AX
	Millie		
	Hale		

Impact:

This ‘G&E’ project provides value to growers in two significant ways: First, it documents and highlights the quality of varieties so that growers are aware of the importance of quality and will hopefully include quality in their seed-buying decisions. Data are objective “head-to-head” results on Private and Public varieties. Secondly, the data generated by the G&E study supports in a major way the analysis of new breeding lines and the WSU Variety Release process. This program is also highly visible such that good end-use quality is reinforced as a priority in both private and public breeding programs throughout the region.

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Outputs and Outcomes: : Following are recent advanced lines and released varieties that were supported with complete end-use quality analyses:

ALUM	HRS
ARROWHEAD	HRW
ARS09X492-6CBW	CLUB
ARS14DH1122-26	CLUB
ARS14DH1122-44	CLUB
ARSX09500-14CBW	CLUB
ARSX09500-17CBW	CLUB
ARSX12015-68CBW	CLUB
ARSX12097-8D	CLUB
ARSX12099-158	CLUB
ASSURE	SWW
BOBTAIL	SWW
BRUEHL	CLUB
BRUNDAGE96	SWW
BRUNEAU	SWW
CASTELLA	CLUB
CHET	HRS
CLEARSTONE	HRW
COMMAND	SWW
CRESCENT	CLUB
CURIOSITY	SWW
DAYN	HWS
DEVOTE	SWW
DUET	SWW
EARL	HWW
FARNUM	HRW
FUSION	HRS
GLEE	HRS
GUNSIGHT	HRS
HULK	SWW
INCLINE	HRW
JASPER	SWW
JD	CLUB
JET	HRW
KELDIN	HRW
KELSE	HRS
LOUISE	SWS
MADSEN	SWW
MAGIC	SWW
MELA	SWW

MELBA	CLUB
MONARCH	HWW
NORWEST553	HRW
ORCF102	SWW
OTTO	SWW
PIRANHA	SWW
PRITCHETT	CLUB
PUMA	SWW
PURL	SWW
RESILIENCE	SWW
ROSALYN	SWW
RYAN	SWS
SCORPIO	HRW
SEAHAWK	SWS
SELBU2	SWW
SEQUOIA	HRW
SOCKEYE	SWW
SPRINTER	HRW
STEPHENS	SWW
STINGRAY	SWW
TANDEM	SWW
WA8290	SWW
WA8293	SWW
WA8307	SWW
WA8309	HRW
WA8310	HRW
WA8312	CLUB
WA8317	SWW
WA8318	HRW
WA8319	SWW
WA8321	SWS
WA8323	SWS
WA8325	CLUB
WA8330	SWW
WA8335	SWW
WA8336	SWW
WA8337	SWW
WA8342	HRS
WA8343	HRS
WA8344	HRS
WB528	SWW
WB9668	HRS
WHETSTONE	HRW

WGC project number: 4721				
WGC project title: G&E Study				
Project PI(s): Kiszonas				
Project initiation date: July 1, 2021				
Project year (3 of 3-yr cycle):				
Objective	Deliverable	Progress	Timeline	Communication
Complete milling and baking analyses	Data set complete	Winter and spring wheat datasets are complete	All tests are complete	Internal
Analyze data set for t-scores	Grain, Milling, Baking, and Overall t-scores are calculated	Final data set is being processed	Complete in January	Internal
Rank varieties, assign quality classification, deliver final consensus to WGC	Final consensus classification of cereal chemists across the PNW	We will meet at the PNW Wheat Quality Council meeting to reach consensus on Classification	We had scheduled a meeting at the PNW Wheat Quality Council	Meeting with PNW cereal chemists from USDA, WSU, U of I, and OSU at the PNW-WQC; then communicate results to WGC