Collaborator Results & Agenda

Pacific Northwest Wheat Quality Council PNW Section - Cereals & Grains Association

Coeur D'Alene, Idaho
January 25 - 27th, 2023

CROP YEAR 2022

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Pacific Northwest Wheat Quality Council

Serving the Needs of the Wheat Industry

MISSION STATEMENT

To enhance the quality of wheat produced in the Western States by promoting the development of superior cultivars

The Pacific Northwest Wheat Quality Council is a not-for-profit organization comprised of wheat breeders, cereal chemists, producers, marketers, inspectors, processors, and users of wheat. Through its Technical Committee of volunteer collaborators, the Council aims to solicit and evaluate advanced-generation wheat breeding lines, thereby providing direct feed-back as to the merits of individual breeding lines and more general information as to the technical requirement of wheat end-users. In this way, longer-term breeding objectives are defined.

first convened in Portland, Oregon, 1995

Agenda

Pacific Northwest Wheat Quality Council
PNW Section Cereals & Grains Association / Falling Number Workshop

January 25th through January 27th, 2023
Coeur d'Alene Resort - Coeur d'Alene, Idaho

Wednesday Jan 25th	**Falling Number Workshop**	**Location**
8:30-10:00am	Breakfast	Bay 2
10:00-10:30am	An introduction to Falling Numbers in Wheat: Plans for Improved Testing, Communication, and Breeding for Resistance. Alison Thompson, PhD USDA-ARS Pullman WA	Bay 2
10:30am-11:00am	Estimating FN using Hyperspecteral Imaging, progress in developing a nondestructive test. Zhiwu Zhang, PhD WSU, Dept of Crop and Soil Science	Bay 2
11:00am-11:30pm	Identifying Molecular Markers for Resistance to Low FN from LMA and Preharvest Sprouting Camille Steber, PhD USDA-ARS Pullman WA	Bay 2
11:30am-12:00pm	Getting the Data to the Wheat Industry: WAVE is a database of variety trial data including falling number. Julia Piaskowski, PhD University of Idaho	Bay 2
12:00-1:30pm	Lunch	Bay 1
1:30-2:00pm	A Tale of Two Populations: Identifying Molecular Markers for Resistance to Low FN from LMA and Preharvest Sprouting Scott Carle, PhD WSU, Dept of Crop and Soil Science	Bay 2
2:00-2:30pm	Falling Numbers, Making Recommendations for the Growers Geoff Schultz Highline Grain Growers, Inc (Manager of Operations)	Bay 2
2:30-3pm	TBA, special guest	Bay 2
3:00-4pm	Discussion with Audience Brainstorming about future research.	Bay 2
5:00-5:30pm	Meet at Boardwalk to board dinner cruise	The Coeur de Alene
5:30-7:30p	Dinner Cruise	The Coeur de Alene

Thursday Jan 26th	Technical Presentations	Location
07:30-8:30a	Breakfast	Bay 2
8:00am	Welcome Remarks and Announcements Alecia Kiszonas, USDA-ARS	Bay 2
8:05-8:15am	Falling Number Workshop Recap	Bay 2
8:15-8:45am	Brief State Reports	Bay 2
8:45-9:30am	Where do we see ourselves in the future? Barriers? Andrew Ross, OSU	Bay 2
9:30-10am	Break	
10:00-11:00am	Methods: Practical considerations Andrew Ross, OSU	Bay 2
11:00-12:00pm	CRISPR presentation and discussion Mike Pumphrey, Kim Campbell	Bay 2
12:00-1:00pm	Lunch	Bay 1
1:00-2:30pm	Overseas Markets and Presentations	Bay 2
2:30-3:00pm	Break	
3:00-3:45pm	PNW-WQC Business	Bay 2
3:45-4:00pm	PNW-WQC Collaborator's Meeting	Bay 2
4:00-4:30pm	PNW Cereals & Grains Assoc Section Meeting	Bay 2
4:30-5:15pm	Attended Student Poster Viewing	Bay 2
5:30-6:30pm	Meeting Sponsor's Reception	Casco Bay/Kidd Is
6:30-8:00pm	Dinner Buffet	Casco Bay/Kidd Is

Friday Jan 27th	**PNW-WQC Roundtable**	**Location**
7:30-8:30am	Breakfast	Bay 2
8:00-10:00am	Welcome & Opening Remarks USDA-FGIS Grain Grading Report Ash Curve Discussion PNW-WQC Quality Roundtable *denotes check Group 1 Soft White Winter (WA8334, WA8336, WA8362, WA8364, Madsen*) Group 2 Soft White Spring (WA8354 CL+, Seahawk*) Group 3 Soft White Winter (UIL13-046145A, UI Magic CL+*) Group 4 Soft White Winter (M-Pire) Group 5 Soft White Winter (OR2170559, Nixon*)	Bay 2
10:00-10:30am	Break	
10:30-11:45am	PNW-WQC Quality Roundtable Group 6 Soft White Winter (ORI2190025 CL+, ORI2190027 CL+, Appleby CL+*) Group 7 Winter Club (OR5180072, Cara*) Group 8 Hard Red Spring (WA8356, Glee*) Group 9 Hard Red Spring (BZ917-207, BZ919-134, BZ919-101*) Group 10 Hard Red Spring (XF9306, XF9307, WB9668*)	Bay 2
11:45-12:00pm	Discussion of Meeting Site for 2024 Meeting, Elections	Bay 2
12:00-1:00pm	Lunch	Bay 1

2022 CROP YEAR SPONSORS

Meeting Sponsors

Continental Mills
Food Products of Choice

Grain Craft

Idaho Wheat

LCS
Limagrain

OWC
Oregon Wheat Commission

U.S. Wheat Associates

Washington Grain Commission

Vendor Sponsors

Student Sponsors

SAMPLE ORGANIZATION 2022 CROP YEAR

Sample	Variety	Group	Breeder / Presenter	Institution / Company	Location	Class	Check
1	WA8334	1	CARTER	Washington State University	Pullman	SWW	
2	WA8336	1	CARTER	Washington State University	Pullman	SWW	
3	WA8362	1	CARTER	Washington State University	Pullman	SWW	
4	WA8364	1	CARTER	Washington State University	Pullman	SWW	
5	Madsen	1	CARTER	Washington State University	Pullman	SWW	Check
6	WA8354	2	PUMPHREY	Washington State University	Pullman	SWS	
7	SEAHAWK	2	PUMPHREY	Washington State University	Pullman	SWS	Check
8	UIL13-046145A	3	WANG	University of Idaho	Genesee	SWW	
9	UI Magic CL+	3	WANG	University of Idaho	Genesee	SWW	Check
10	M-Pire	4	SALOIS	McGregor	Walla Walla	SWW	
11	OR2170559	5	ZEMETRA	Oregon State University	Pendleton	SWW	
12	Nixon	5	ZEMETRA	Oregon State University	Pendleton	SWW	Check
13	ORI2190025 CL+	6	ZEMETRA	Oregon State University	Pendleton	SWW	
14	ORI2190027 CL+	6	ZEMETRA	Oregon State University	Pendleton	SWW	
15	Appleby CL+	6	ZEMETRA	Oregon State University	Pendleton	SWW	Check
16	OR5180072	7	ZEMETRA	Oregon State University	Pendleton	CLUB	
17	Cara	7	ZEMETRA	Oregon State University	Pendleton	CLUB	Check
18	WA8356	8	PUMPHREY	Washington State University	Pullman	HRS	
19	Glee	8	PUMPHREY	Washington State University	Pullman	HRS	Check
20	BZ917-207	9	CLARK	Nutrien	Idaho Falls	HRS	
21	BZ919-134	9	CLARK	Nutrien	Idaho Falls	HRS	
22	BZ919-101	9	CLARK	Nutrien	Idaho Falls	HRS	Check
23	XF9306	10	REYNOLDS	WestBred	American Falls	HRS	
24	XF9307	10	REYNOLDS	WestBred	American Falls	HRS	
25	WB9668	10	REYNOLDS	WestBred	American Falls	HRS	Check

List of Registrants

First Name	Last Name	Company	Email
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Pacific Northwest Wheat Quality Council

Collaborators 2022 Crop Year

These collaborative flour tests are supported by the wheat commissions of Washington, Oregon, and Idaho in cooperation with the USDA-ARS Western Wheat Quality Laboratory. The purpose is to maintain and improve the milling and baking quality of wheat in the Western region. It is an attempt to keep current with the needs of wheat processors and flour users. The information gained from the data and opinions of the collaborators is of significant value to the wheat breeding programs of the region. The project aims to provide each collaborator an opportunity to express their opinion as to whether the tested selections would satisfy the end-use demands of their industry. We would like to thank each of the collaborators for their participation in this annual project.

ADM Milling
Ardent Mills
Bay State Milling
California Wheat Commission
Daily Bread Quality Analytics
Grain Craft
Idaho Wheat Quality Lab
Japan Flour Millers Association
KRUSTEAZ Continental Mills Inc.
Nutrien Ag Solutions
PSES Dept. MSU
Samyang, Corp
Soft Wheat Quality Lab
USDA GIPSA TSD
USDA-ARS Center for Grain and Animal Health Research
USDA-ARS, Wheat Quality Lab
Washington St Dept of Agriculture
Wheat Marketing Center
Western Wheat Quality Lab

A History of

Experimental Wheat Breeding Lines

Evaluated by the Pacific Northwest Wheat Quality Council

1995 Portland, OR

WA7663	SWW	
WA7690	SWW	PI 597665
WA7717	SWW	
WA7622	W. Club	Rulo
IDO392	SWS	Whitebird
IDO421	HRW	Bonneville

1996 Park City, UT

IDO448	SWS	Pomerelle
IDO488	SWS	PI 592986
OR880494	SWW	
OR880510	SWW	
OR880525	SWW	
OR870012	SWW	
OR870337	SWW	
OR870831	SWW	
OR898120	SWW	Weatherford
OR908377	SWW	
WA7677	SWS	Alpowa
WA7712	SWS	Wawawai
WA7806	SWS	
IDO447	HRW	
IDO467	HRW	Boundary
WA7802	HRS	Scarlet
OR850513	HWW	Ivory
OR889176	HWW	

1997 Coeur d'Alene, ID

UC896	HWS	
OR870082	SWW	
OR939515	SWW	
IDO462	HRS	Jefferson
IDO492	HRS	Iona
IDO525	SWS	Jubilee
ID14502B	SWW	Brundage
WA7802	HRS	Scarlet
WA7805	SWS	
WA7831	SWS	
WA7752	W. Club	Coda

1998 Portland, OR

OR00542	SWW	
OR880172	SWW	Foote
XWH1020	SWW	
XWH1017	SWW	Quantum 7817
OR92CL0054	W. Club	Temple
UC1085	HRW	
Q542	HRW	Quantum 542
MT7811	HWW	NuWest

1999 Bozeman, MT

WA7850	SWS	Zak
ID10420A	SWW	Hubbard
OR939476	SWW	
OR933528	SWW	
WA7824	HRS	Tara
IDO533	HWS	Lolo
IDO523	HWS	
IDO509	HRW	
UT1944-158	HWW	Golden Spike
BZ991-408	HWS	Pristine
ML455	HWS	ML455

2000 Honolulu, HI

WA7839	HRS	Rosa
OR4870453	HWS	Winsome
MT9432	HRW	BigSky
MTW9441	HWW	NuSky
IDO526	SWS	Alturas

BZ692-108	SWS	Challis
S9700459	S. Club	
WA7833	W. Club	Bruehl
ID87-52814A	SWW	
OR939526	SWW	Tubbs
XWH5019	Q5019	
XWH7415	Q7415	

2001 Seattle, WA

IDO513	HRW	DW
IDO550	HWW	Gary
WA7899	HWS	Macon
ID-B-96	SWW	Brundage 96
BZ96W93-477-D	SWW	Mohler
BZ96W93-481-B	SWW	Beamer
OR941904	SWW	
OR941899	SWW	
OR9443560	SWW	
KW943683	SWW	
WA7902	S. Club	Eden

2002 Carson City, NV

ARS96105	SWW	
ARS96277	SWW	
Chukar	W. Club	
Finch	SWW	
960195p7007	SWW	
OR900553	SWW	
OR941550	SWW	
OR951431	SWW	
IDO556	S. Club	PI 620633
MT9426	HRW	Paul
UT203032	HRW	Deloris
WA7859	HRS	Hollis
IDO517	HRW	Moreland
BZ998-447W	HWS	Waikea
BZ992-463W	HWS	Not Released
Kern	HRS	

2003 Oakland, CA

IDO566	HRS	Jerome
IDO545	HRS	PI 632710
ML18A-3-38	HWS	
ORH01092	SWW	Goetze
BZ992-632	HRS	Not Released
BZ698-31	SWS	Nick
WA7905	SWS	Not Released
WA7906	SWS	Not Released
IDO576	SWW	PI 620637
OR2010051	SWW	ORCF-101
OR9900553	SWW	
ID9120503A	SWW	Dune
ID9134302A	SWW	Simon

Overseas Varietal Analysis Program:

Edwin	W. Club
Finch	SWW

2004 Coeur d'Alene, ID

WA7936	HWW	MDM
WA7939	HRW	Bauermeister
WA7931	HWS	Otis
WA7925	HRS	tabled
IDO587	SWW	Idaho 587
WA7921	SWS	Louise
OR2010007	SWW	ORCF-102
BZ698-528	SWW	WB-528
WA7916	SWW	Masami

Overseas Varietal Analysis Program:

Brundage 96	SWW
OR9900553	SWW
Zak	SWS
Weatherford	SWW
Finch	SWW
Jubilee	SWS

2005 Portland, OR

IDO597	HWS	Lochsa
IDO575	HRW	Juniper
IDO573	HRW	
MTS0031	HRW	Genou
MT00159	HRW	Yellowstone
MT00097	HRW	
W96-355	HRW	AgriPro Paladin
BU6W99-456	SWW	WB-456
KW9016	SWW	
KW9043	SWW	PI 639106

Overseas Varietal Analysis Program:

Stephens	SWW

OR9801757	SWW	
Jubilee	SWS	
Finch	SWW	
Zak	SWS	
ORCF-101	SWW	
Simon	SWW	

2006 San Diego, CA

MTCL0316	HRW	Norris
MTCL0318	HRW	Bynum
BZ9W02-2060	HRW	Carter
IDO604	HWW	UI Darwin
BZ6WM02-1154	SWW	
ID99-435	SWW	UICF Lambert
ID92-22407A	SWW	Bitterroot
ID99-419	SWW	UICF Orca
OR2010239	SWW	
KSW3017	SWW	
WA7964	SWS	
IDO632	SWS	UI Pettit

Overseas Varietal Analysis Program:

Finch	SWW	
Simon	SWW	
Alturas	SWS	
Zak	SWS	
ORSS-1757	SWW	
ORCF-101	SWW	

2007 Salt Lake City, UT

IDO2-859	SWW	
ORH010085	SWW	Skiles
WA8008	SWS	Whit
ACS52610	HRS	Volt
BZ999-592	HRS	ONeal
BZ9M03-1024	HRS	Not Released
IDO578	HRS	UI Winchester
ORN00B553	HRW	Norwest 553
Palomino	HWW	
IDO641	HWW	
Patwin	HWS	

Overseas Varietal Analysis Program:

10348W	HWS	RSI10348W
Blanca Royale	HWS	
BZ902-413W	HWS	

Alturas	SWS	
Louise	SWS	
Masami	SWW	
ORCF-101	SWW	
Simon	SWW	
ORSS-1757	SWW	

2008 Portland, OR

Cataldo	SWS	
WA8039	SWS	Babe
OR2050910	SWW	
ID93-64901A	SWW	Bruneau
WA7975	HRW	Farnum
IDO621	HRW	
UT9325-55	HRW	Curlew
Cabernet	HRS	
WA7954	HRS	Kelse
BZ903-445WP	HWS	Hartline
BZ904-336WP	HWS	WB-Idamax
Snowcrest	HWS	

Overseas Varietal Analysis Program:

Bitterroot	SWW	
ORCF-102	SWW	
ORSS-1757	SWW	
Alturas	SWS	
Masami	SWW	
Louise	SWS	

2009 Sacramento, CA

IDO671	SWS	UI Whitmore
IDO655	SWW	IDO 655
Xerpha	SWW	
OR2050293	SWW	
OR2060324	SWW	
OR2040726	SWW	Mary
KW05W02370	SWW	
Cara	Club	
WA8047	Club	JD
UT9743-42	HRW	Greenville
IDO653	HRW	
IDO651	HWW	UICF Grace
APB02-0081	HRS	Bullseye
BZ903-461W	HWS	Prestea
BZ903-464W	HWS	Not Released

Overseas Varietal Analysis Program:

Bitterroot	SWW	
Skiles	SWW	
Cataldo	SWS	
ORCF-102	SWW	
Louise	SWS	
Cara	Club	

2010 Phoenix, AZ

WA8090	SWS	Diva
BZ604-002	SWS	Not Released
BZ6M06-1001 CL2	SWS	WB-1035CL2
IDO599	SWS	Stone
IDO644	SWS	
OR2040726	SWW	Mary
OR2060395	SWW	
ID9364901A	SWW	Bruneau
KW006	SWW	
KW7003	HRW	
IDO658	HWW	UI Silver
IDO660	HWW	Not Released
SJ908-203W	HWS	

Overseas Varietal Analysis Program:

Bitterroot	SWW	
Skiles	SWW	
ORCF102	SWW	
Xerpha	SWW	
UI Cataldo	SWS	
Cara	Club	

2011 Seattle, WA

IDO686	SWS	
IDO687	SWS	
WA8092	SWW	Otto
9616702A	SWW	
03PN-107#3	SWW	SY 107
03PN-108#20	SWW	Not Released
03PN-108#21	SWW	SY Ovation
ARS960277L	SWW	Amber
ARS970075-3C	Club	Chrystal
ARS970163-4C	Club	Crescent
IDO656	HRW	UI SRG
WB Quake	HRW	
Esperia	HRW	
IDO835	HWW	LHS
IDO702	HRS	Not Released
BZ906-491R	HRS	Not Released
BZ906-491W	HWS	Not Released

Overseas Varietal Analysis Program:

Bruneau	SWW	
ORCF103	SWW	
Skiles	SWW	
Xerpha	SWW	
UI Cataldo	SWS	
Cara	Club	

2012 San Diego, CA

IDO669	SWS	
WA8124	SWS	
OR2070870	SWW	
OR2071628	SWW	
OR208047P94	SWW	
WA8134	SWW	
99-06202A	SWW	
BZ6W07-436	SWW	
NSA2350A	SWW	
WA8074	HRS	Glee
B04-1418	HRS	Not Released
97S0621-05	HRS	SY Steelhead
IDO862	HRS	
IDO694	HWS	
WA8118	HRW	
WA8119	HRW	

Overseas Varietal Analysis Program:

Diva	SWS	
ORCF103	SWW	
Xerpha	SWW	
Bruneau	SWW	
Goetze	SWW	
AP Legacy	SWW	

2013 Scottsdale, AZ

Dayn	HWS	
ID862E	HRS	
BZ6W03-414	SWW	
BZ6W07-436	SWW	
BZ6W07-427	SWW	WB 1529
BZ6W07-458	SWW	WB 1604
WA8151	SWW	
Rosalyn	SWW	
KWAW010	SWW	
WA8143	SWW	Curiosity CL+
ORCF102	SWW	
LWW04-4009	SWW	
ID02-10606A	SWW	
Selbu	SWW	

Overseas Varietal Analysis Program:

Diva	SWS	
Stone	SWS	
Bruneau	SWW	
Goetze	SWW	
AP Legacy	SWW	
ORCF103	SWW	
Chrystal	Club	

2014 Portland, OR

Blanca Grande	HWS	
LCS Star	HWS	
BZ908-418	HRS	
BZ908-552	HRS	WB 9668
WB9229	HRS	
IDO1203S	HRS	
Jefferson	HRS	
SY240R	HRS	SY Basalt
Solano	HRS	
WA8165	HRS	Chet
WA8166	HRS	Alum
DAS001	HRW	
DAS002	HRW	
Whetstone	HRW	
IDO1108DH	SWW	
Stephens	SWW	

Overseas Varietal Analysis Program:

SY3024-2	SWS	
WA8187	SWW	

Due to 2013 U.S. Government shutdown no OVA varieties will be available for analysis.

2015 San Francisco, CA

SY3001-2	HRS	SY Selway
SY40292R	HRS	SY Coho
SY0136	HWS	SY Teton
IDO1101	HWW	
WA8158	HWW	
WA8184	HWW	Earl
WA8162	SWS	Seahawk
WA8189	SWS	Tekoa
WA8177	SWW	
WA8169	SWW	Jasper
WA8212	SWW	
LCS Biancor	SWW	
WB1376CLP	SWW	
BZ6W06-440	SWW	

Overseas Varietal Analysis Program:

UI Stone	SWS	
Whit	SWS	
Bobtail	SWW	
Otto	SWW	
WB Trifecta	SWW	
Kaseberg	SWW	
LCS Artdeco	SWW	
ARS Chrystal	Club	

2016 Scottsdale, AZ

KWHR001	HRS	
K070526	HRS	
10SB0087-B	HRS	LCS Luna
SY3051-9	HRS	
Eagan	HRS	
IDO1203S-A	HWS	
WB7328	HWS	
WB7589	HWS	
OR2100081H	HWW	
OR2110679	HWW	Irv
OR2111025	HWW	
IDO1101	HWW	
WA8180	HRW	Sequoia
LCS Jet	HRW	
Huffman	SWW	
Melba	Club	

Overseas Varietal Analysis Program:

Whit	SWS	
Otto	SWW	
Huffman	SWW	
WB Trifecta	SWW	
Kaseberg	SWW	
LCS Artdeco	SWW	
Bobtail	SWW	
ARS Crescent	Club	

This concludes the U.S. Wheat Associates OVA program in this format. Beginning in 2017, selected overseas collaborators will be included as PNW WQC cooperators.

2017 San Antonio, TX

WB9200	HRS	
IDO1603S	HRS	
SY3015-8	HRS	SY Gunsight
IDO1602S	HWS	
IDO1604S	HWS	
MT1348	HRW	
SY Touchstone	HRW	
Ryan	SWS	
LCS Silk	SWS	
WB6430	SWS	
IDO1403S	SWS	
UI Sparrow	SWW	
WA8232	SWW	
UI Castle	SWW	
UI Magic	SWW	
OR2101043	SWW	
SY Assure	SWW	
SY09PN046#16	SWW	SY Raptor
SY09PN062#18	SWW	SY Dayton
SY04PN066-7	SWW	SY Command
SY09PN005#25	SWW	SY Banks

2018 San Diego, CA

SY09PN3017-09	HRS	AP Renegade
IDO1701S	HRS	
IDO1703S	HRS	
WA8268	HRW	Scorpio
LCS Rocket	HRW	
IDO1607	HRW	
SY09PN008#72	SWW	SY Raptor
SY09PN046#57	SWW	
SY09PN062#04	SWW	
M-Press	SWW	
WA8270	SWW	
WA8271	SWW	Devote
WA8275	SWW	Stingray CL+
IDN07-28017B	SWW	
WB1783	SWW	
UI Palouse	SWW	
LCS Drive	SWW	
Norwest Tandem	SWW	
Norwest Duet	SWW	
OR212086	SWW	
ARS Pritchett	Club	
ARS20060123-31C	Club	ARS Castella
IDO1405S	SWS	

2019 Portland, OR

WB9662	HRS	
SY10PN3039-02	HRS	AP Kimber CL2
WA8280	HRS	Net CL+
IDO1801S	HRS	
IDO1805S	HRS	
IDO1704S	HWS	
12SB0224	HWS	
OR2130118H	HWW	
WA8252	HWW	
IDO1506	HWW	
IDO1706	HWW	
IDO1806	HWW	
SY08PN2001-07	SWS	AP Coachman
SY11PN2532-195	SWS	AP Mondovi CL2
SY11PN2532-507	SWS	
WA8290	SWW	
UIL09-15702A	SWW	
SY06PN212-25	SWW	
LCS Sonic	SWW	
LCS Shark	SWW	
LCS Hulk	SWW	
OR12150031C1	SWW	
OR12161250	SWW	

2020 Spokane, WA

10PN2018-12	HRS
XC9404	HRS
WA8309	HRW
IDO1806	HWW
IDO1906	HWW
IDO1802S	SWS
IDO1404S	SWS
WA8295 CL+	Club
M-IDAS	SWW
WA8293	SWW
WA8305 CL+	SWW
UIL 15-72223	SWW
11PN044#84	SWW
O8PN030-3	SWW
LCS Ghost	SWW
LCS Shine	SWW
LCS Blackjack	SWW
LWW16-71088	SWW
IDO1708	SWW
IDO1810	SWW
OR2130755	SWW

2021 On-line Meeting

BZ917-215	HRS	
BZ2917-221	HRS	
IDO2002S	HWS	
IDO2004S	HWS	
IDO1804S	HWS	
XD9201	HWS	
XD9205	HWS	
IDO1906	HWW	
IDO2006	HWW	
ARS09X492-6CBW	Club	Cameo
ARSX12015-68CBW	Club	
WA8317	Club	
OR5170022	Club	
Sockeye CL+	SWW	
Selbu2	SWW	
11PN039#20	SWW	
11PN042#02	SWW	
UIL17-6268CL+	SWW	
UIL17-6451CL+	SWW	
X-73-1-1R2-3	SWW	
OR2160243	SWW	
OR2160264	SWW	

2022 On-line Meeting

Hale	HRS
XE9301	HRS
BZ919-101	HRS
Rocker	HRS
JeffersonHF	HRS
XE9309	HWS
BZ919-100W	HWS
BZ919-059W	HWS
IDO2104HF	HWS
WA8325	Club
OR5180071	Club
UIL15-028024	SWW
UIL17-7706	SWW

2023 Coeur d'Alene, ID

WA8356	HRS
BZ917-207	HRS
BZ919-134	HRS
XF9306	HRS
XF9307	HRS
OR5180072	Club
WA8334	SWW
WS8336	SWW
WA8362	SWW
WA8364	SWW
WA8354 CL+	SWW
UIL13-046145A	SWW
M-Pire	SWW
OR2170559	SWW
ORI2190025 CL+	SWW
ORI2190027 CL+	SWW

NB: the 1995 meeting evaluated 1993-crop samples; at the subsequent meeting (1996) both 1994- and 1995-crop samples were evaluated. Since the 1997 meeting, “current” crop samples have been evaluated.

Disclaimer: these lists are subject to correction; variety names may be added to experimental line designations at future times.

Variety Descriptions PNW WQC
2022 Crop Year

WA8334 is a soft white winter wheat line with the pedigree of Finch by Eltan, then crossed to an experimental breeding line. This line has average plant height and average heading date. It has high yield potential in the low and intermediate rainfall zones of Eastern Washington, and good test weight. WA8334 has good emergence from deep planting, but only has moderate tolerance for snow mold. This line is photoperiod sensitive, carries the Rht1 gene for semi-dwarf, carries the Pch1 and Pch2 gene for eyespot tolerance (based on marker data), has very good stripe rust resistance, and also carries the Dx5+Dy10 glutenin profile.

WA8336 is a soft white winter wheat line with the pedigree of an experimental line crossed to Finch, and then crossed to Bobtail. This line is short in stature and has an average heading date. It has high yield potential in the high rainfall zones of Eastern Washington and in Northern Idaho. Similar to Bobtail, the test weight of this line can be light under certain climactic conditions. This line is photoperiod sensitive, carries the Rht2 gene for semi-dwarf, and is resistant to stripe rust with unknown genes conferring resistance.

WA8362 is a soft white winter wheat line with the pedigree UICF Brundage/Cashup. This line has been advanced in the breeding program based on its excellent emergence abilities from deep planting in the low rainfall regions of Washington. Based on marker data, WA8362 does not carry a dwarfing gene, which contributes to its excellent emergence. We have also noted that this line emerges 3-5 days earlier than other lines listed with very good emergence, another benefit to growers. On top of the emergence trait, WA8362 also has very good stripe rust resistance, carries the Pch2 gene for foot rot resistance, has good winter survival, and moderate tolerance to snow mold. Grain yield of WA8362 has been equal to other lines grown in the deep furrow/summer fallow cropping system, but with the improved emergence. WA8362 carries the Dx5+Dy10 glutenin alleles, and also has a very soft kernel (SKCS hardness value of 5).

WA8364 is a soft white winter wheat line with the pedigree of WA7976/Finch//Xerpha/Masami. This line has an average plant height and average heading date. It has high yield potential in the low and intermediate rainfall wheat production zones of Eastern Washington, and good test weight. WA8364 has good emergence from deep planting, but only has good tolerance for snow mold. This line is photoperiod sensitive, carries the Rht1 gene for semi-dwarf, carries the Pch1 and Pch2 gene for eyespot tolerance (based on marker data), has very good stripe rust resistance (which is uncharacterized).

WA 8354 CL+ is a 2-gene Clearfield soft white spring wheat with the pedigree "Ryan/4/Seahawk/3/Seahawk sib*2//CL+ experimental/2*Babe". WA 8354 CL+ has excellent stripe rust resistance due in part to *Yr5* and *Yr18*, aluminum tolerance (*ALMT1*), Hessian fly resistance (from Seahawk), partial waxy trait due to *Wx-B1b* null mutation, and good soft wheat quality (*Ax-null*, *Dx2+Dy12*). Early-medium maturity, good straw strength with medium to shorter height, high test weight, and top-end yield potential are evident in WSU and UI Variety testing data in 2021-2022. Milling and baking properties have been good throughout testing

UIL13-046145A is a soft white winter wheat co-developed by the University of Idaho and Limagrain Cereal Seeds in a collaboration known as Varsity Idaho. UIL13-046145A is an awned, with medium maturity and medium plant height, being the same height and maturity as SY Ovation, with an adaptation area of Northern Idaho and Eastern Washington. UIL13-046145A also performs well in irrigated areas in Southern Idaho. It has good test weight, low protein content, and good tolerance to stripe rust.

TMC M-Pire is a soft white winter wheat licensed by The McGregor Company. Broadly adapted to the dryland cropping systems in the PNW from 10" to 24" rain falls, TMC M-Pire is an awned and hollow-stemmed variety with a medium-early heading date and medium-short plant type. In addition to excellent standability and outstanding spring vigor, TMC M-Pire boasts improved test weight and falling numbers when compared to TMC M-Press; protein levels between the two varieties remain similar.

OR2170559 (pedigree: NSL08-3485/SY-Ovation//OR951431/NSA 94-2137) - awned soft white winter wheat with good stripe rust resistance and resistance to soilborne wheat mosaic virus (sbWMV). Intended for high rainfall – irrigated production areas in eastern Oregon and eastern Washington where sbWMV is present. Good yield potential and has shown good end-use quality. Source of seed – Pendleton and Corvallis, Oregon.

ORI2190025 CL+ (pedigree: Rosalyn/3/ORCF-103/AP100CL//OR2060371) - awnletted to awnless soft white winter wheat that carries two genes for resistance to Beyond herbicide. ORI2190025 CL+ has an early heading date, good stripe rust resistance and intermediate resistance to strawbreaker foot rot. Has good to excellent yield potential compared to other Clearfield cultivars and is intended for the low to intermediate rainfall production areas of eastern Oregon. Source of seed – Pendleton and Corvallis, Oregon.

ORI2190027 CL+ (pedigree: Rosalyn/3/ORCF-103/AP100CL//OR2060371) - awnletted soft white winter wheat that carries two genes for resistance to Beyond herbicide. ORI2190025 CL+ has an early heading date similar to Appleby CL+, good stripe rust resistance and intermediate resistance to strawbreaker foot rot. Has good to excellent yield potential compared to other Clearfield cultivars and is intended for the low to intermediate rainfall production areas of eastern Oregon. Source of seed – Pendleton and Corvallis, Oregon.

OR5180072 (pedigree: ARS98X402-1C/OR2080641) - awned winter club wheat with good stripe rust resistance and good yield potential. Intended for the club wheat growing areas in eastern Oregon and southeastern Washington. Has shown good end-use quality over three years of testing by the USDA-ARS Western Wheat Quality Laboratory. Source of seed – Pendleton and Corvallis, Oregon.

WA 8356 is an experimental hard red spring wheat with the pedigree "(Glee/Buck Pronto)/3/(Kelse/Scarlet Yr515)//Kelse/Scarlet Yr515". WA 8356 has demonstrated broad yield adaptation, with very good test weight, very good straw strength, a high level of stripe rust resistance based on a combination of *Yr5* and *Yr15*, Hessian fly resistance, and good milling an baking quality. WA 8356 performed particularly well in hot and dry environments over the past four years of testing.

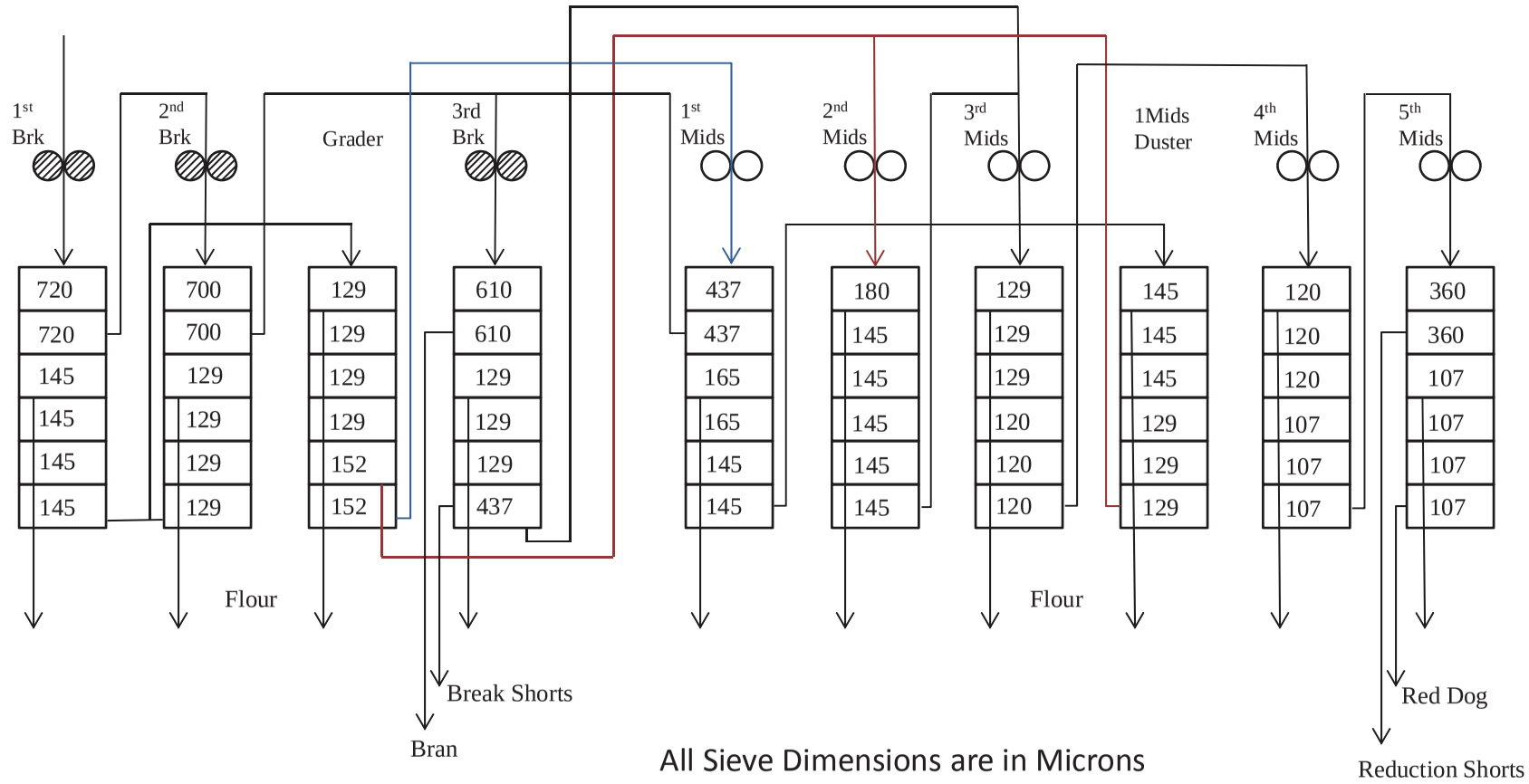
BZ917-207 hard red spring wheat Experimental number BZ917-207 is a hard red spring wheat developed by Nutrien Ag Solutions (NAS) from the cross WestBred 906R/TCG Cornerstone//Egan. BZ917-207 is a semi-dwarf, intended for production in the irrigated areas of the PNW. BZ917-207 has shown to be resistant to the current races of strip rust in the PNW (tests positive for the Gpc-B1/Yr36 marker). Yield levels are lower than the checks, but protein levels are 1.5-2.5% higher. BZ917-207 is a strong gluten wheat and mixograph scores have been high. This could possibly be a good wheat to use for organic production.

BZ919-134 hard red spring wheat Experimental # BZ919-134 is a two gene semi dwarf, hard red spring wheat developed by Nutrien Ag Solutions from the cross Klasic/SRS 05189. SRS 05189 is a line developed by Dr. Kim Kidwell, previously at WSU, by backcrossing the HRS variety Scarlet with Yr5 and Yr15 for stripe rust resistance. BZ919-134 is resistant to the current races of stripe rust in the PNW and tests positive for Markers for Yr5 and Yr15. Yields are similar to current irrigated varieties with protein levels averaging .5-1 percentage points lower than the checks, but the mixograph scores have been very good.

XF9306 – a hard red spring wheat submitted by WestBred (a unit of Bayer Crop Science) was developed for the Pacific Northwest market. XF9306 has excellent yield potential, especially in southern Idaho. It also has high test weight, high protein content, and very good mill and bake quality. It shows moderate resistance to yellow (stripe) rust and may have some tolerance to FHB and BLS. Maturity is medium and overall height is considered medium-short (similar but slightly shorter than WB9707) offering good standability. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as Certified Seed Only. The sample submitted was grown in a cooperator's field near American Falls, ID.

XF9307 - hard red spring wheat submitted by WestBred (a unit of Bayer Crop Science) was developed for the Pacific Northwest market. XF9307 has excellent yield potential, especially in southern Idaho. It also has high test weight, high protein content, and very good mill and bake quality. It shows moderate resistance to yellow (stripe) rust and may have some tolerance to FHB and BLS. It is a medium maturing variety overall height is medium-short (slightly shorter than WB9707) offering excellent standability. This variety is protected under the Plant Variety Protection Act and can only be sold or advertised by variety name as Certified Seed Only. The sample submitted was grown in a cooperator's field near Shelley, ID.

WWQL Miag Multomat Flow Sheet



All Sieve Dimensions are in Microns

	# of Teeth	α	β	Land	Radius	Spiral	Break Setting Targets
1st Break	14	40	70	0.004”	0.024”	8% = 1”	43% Through 707 micron
2nd Break	20	40	75	0.002”	0.012”	10% = 1¼”	64% Through 707 micron
3rd Break	24	35	75	0.002”	0.008”	10% = 1¼”	Bran Appearance

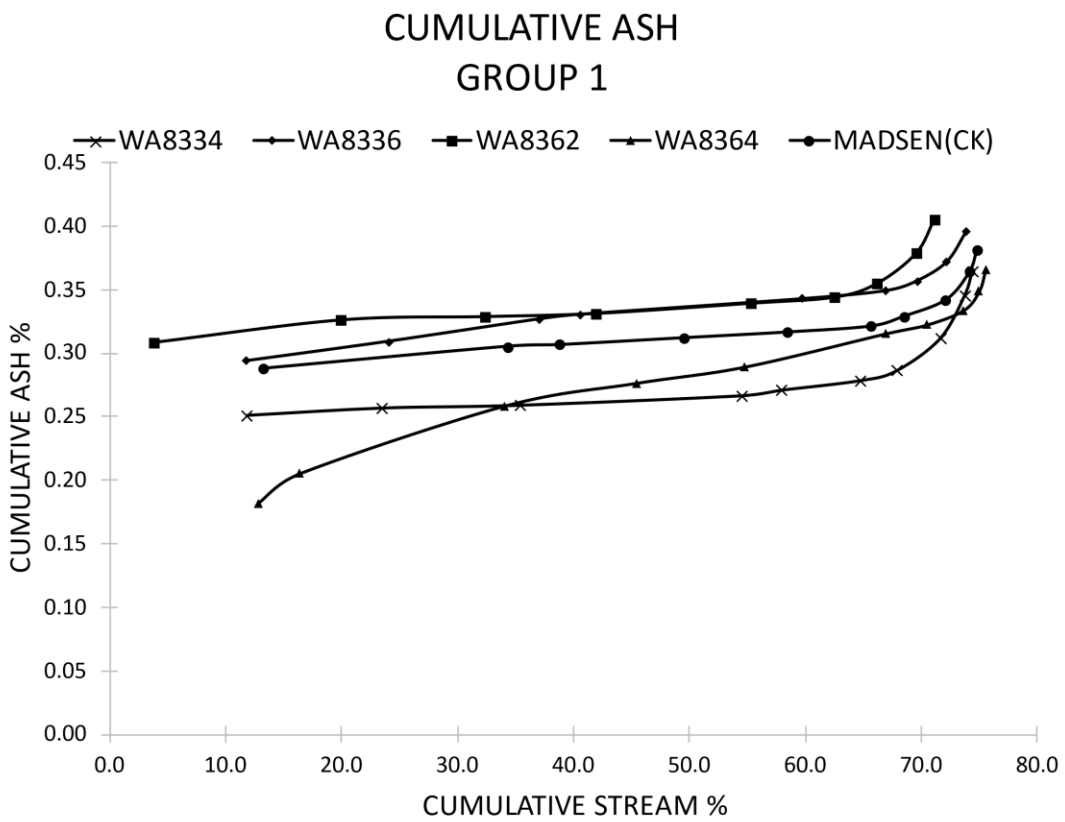
Western Wheat Quality Laboratory, MIAG MULTOMAT

Break Roll Speed
Fast Rolls: 340rpm
Slow Rolls: 145rpm
Differential: 2.34 : 1

Reduction Roll Speed
Fast Rolls: 340rpm
Slow Rolls: 250rpm
Differential: 1.36 : 1

Temper
14% Soft Wheat
16% Hard Wheat
0.5% Pre-Temper

ASH CURVES



WA8334

Stream	Yield	Ash	Cumulative Yield	Cumulative Ash
M1	11.9	0.25	11.9	0.25
B2	11.6	0.26	23.5	0.26
B1	11.9	0.26	35.4	0.26
M2	19.1	0.28	54.5	0.27
M1RD	3.5	0.34	58.0	0.27
GR	6.8	0.34	64.7	0.28
B3	3.1	0.44	67.9	0.29
M3	3.8	0.76	71.6	0.31
M4	2.1	1.48	73.8	0.34
M5	0.7	2.48	74.4	0.36
REDDOG	0.7	2.70	75.1	0.39
REDSH	0.2	3.24	75.4	0.39
BKSH	2.3	3.65	77.7	0.49
BRAN	22.3	4.80	100.0	1.45

Whole Wheat Ash	1.73
Break Flour Yield	26.6

WA8336

Stream	Yield	Ash	Cumulative Yield	Cumulative Ash
B1	11.8	0.29	11.8	0.29
B2	12.2	0.32	24.1	0.31
M1	13.0	0.36	37.1	0.33
M1RD	3.5	0.37	40.6	0.33
M2	19.1	0.37	59.8	0.34
GR	7.2	0.40	66.9	0.35
B3	2.7	0.55	69.7	0.36
M3	2.5	0.78	72.2	0.37
M4	1.7	1.42	73.9	0.40
REDDOG	0.6	2.47	74.5	0.41
M5	0.6	2.54	75.0	0.43
BKSH	2.5	2.95	77.6	0.51
REDSH	0.2	3.07	77.8	0.52
BRAN	22.2	4.68	100.0	1.44

Whole Wheat Ash	1.79
Break Flour Yield	26.8

WA8362

Stream	Yield	Ash	Cumulative Yield	Cumulative Ash
M1RD	3.7	0.31	3.7	0.31
M2	16.2	0.33	20.0	0.33
B2	12.4	0.33	32.3	0.33
M1	9.6	0.34	42.0	0.33
B1	13.4	0.36	55.3	0.34
GR	7.2	0.38	62.5	0.34
B3	3.7	0.54	66.2	0.35
M3	3.4	0.84	69.6	0.38
M4	1.6	1.57	71.1	0.40
REDDOG	0.6	2.34	71.7	0.42
M5	0.8	2.51	72.5	0.44
REDSH	0.3	3.43	72.9	0.46
BKSH	2.4	3.68	75.3	0.56
BRAN	24.7	4.87	100.0	1.63

Whole Wheat Ash	2.34
Break Flour Yield	29.4

WA8364

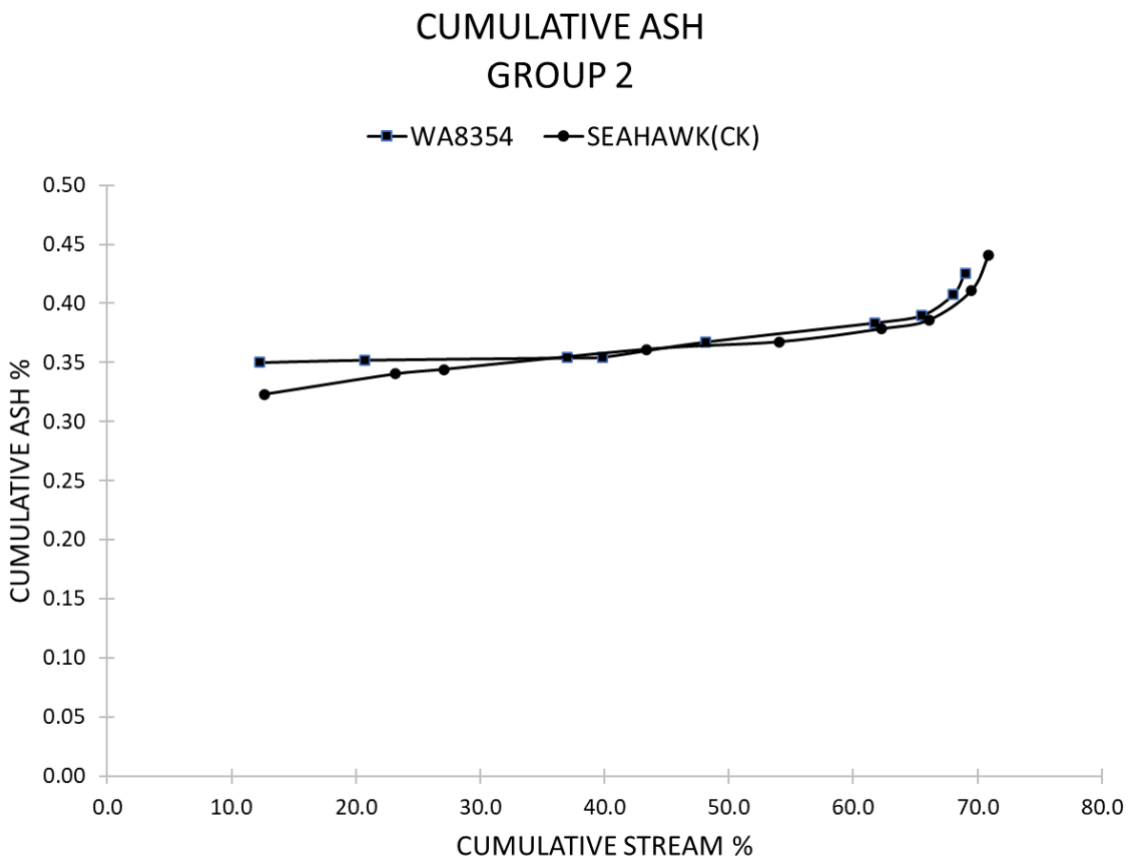
Stream	Yield	Ash	Cumulative Yield	Cumulative Ash
B1	12.8	0.18	12.8	0.18
M1RD	3.6	0.29	16.4	0.21
M2	17.7	0.31	34.1	0.26
M1	11.4	0.33	45.5	0.28
GR	9.3	0.35	54.8	0.29
B2	12.1	0.43	66.9	0.32
B3	3.5	0.45	70.4	0.32
M3	3.2	0.59	73.6	0.33
M4	1.4	1.17	75.0	0.35
M5	0.6	2.67	75.5	0.37
REDDOG	0.5	3.12	76.0	0.38
BKSH	1.9	3.81	77.9	0.47
REDSH	0.2	4.21	78.1	0.48
BRAN	21.9	4.86	100.0	1.44

Whole Wheat Ash	1.42
Break Flour Yield	28.4

MADSEN

Stream	Yield	Ash	Cumulative Yield	Cumulative Ash
M1	13.3	0.29	13.3	0.29
M2	21.1	0.32	34.3	0.31
M1RD	4.5	0.32	38.8	0.31
B2	10.7	0.33	49.5	0.31
B1	9.0	0.34	58.5	0.32
GR	7.2	0.36	65.6	0.32
B3	2.8	0.51	68.4	0.33
M3	3.7	0.59	72.1	0.34
M4	2.0	1.16	74.1	0.36
M5	0.6	2.40	74.7	0.38
REDDOG	0.6	2.46	75.3	0.40
BKSH	2.3	3.12	77.6	0.48
REDSH	0.2	3.54	77.8	0.49
BRAN	22.2	5.23	100.0	1.54

Whole Wheat Ash	2.37
Break Flour Yield	22.5



WA8354

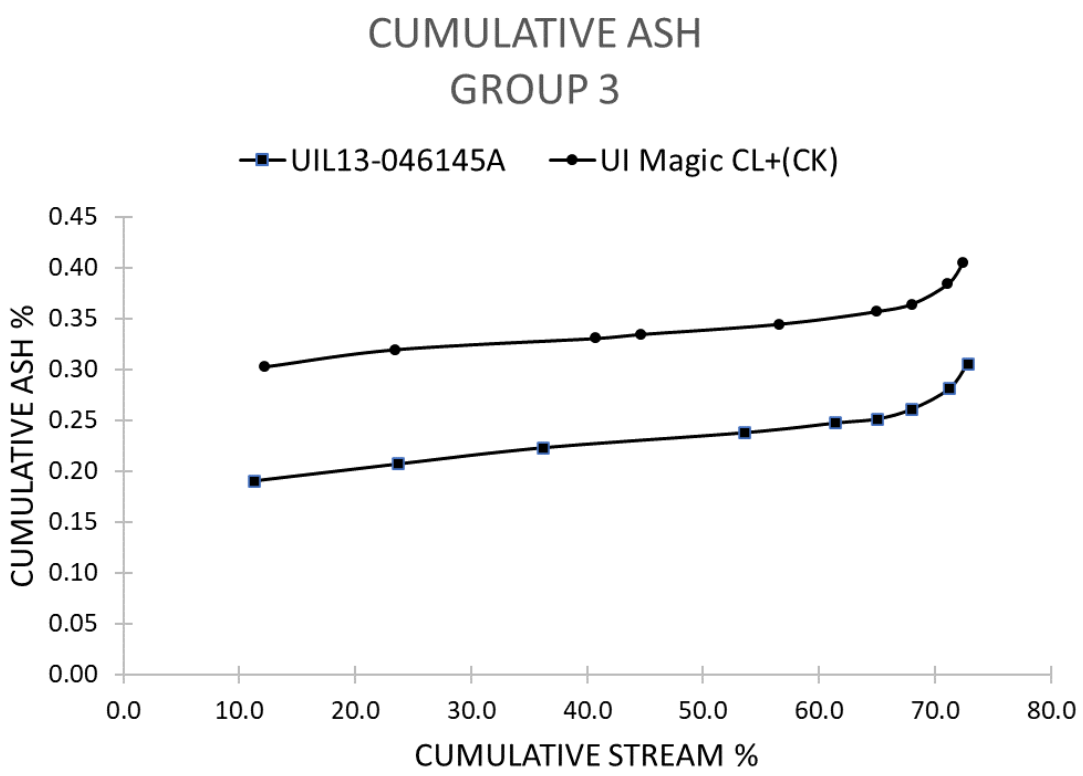
Stream	Yield	Ash	Cumulative Yield	Cumulative Ash
B2	12.3	0.35	12.3	0.35
M1	8.4	0.35	20.7	0.35
B1	16.3	0.36	37.0	0.35
M1RD	2.9	0.36	39.9	0.35
GR	8.2	0.43	48.1	0.37
M2	13.6	0.44	61.8	0.38
B3	3.7	0.49	65.5	0.39
M3	2.6	0.87	68.0	0.41
M4	0.9	1.74	69.0	0.43
REDDOG	0.7	2.84	69.7	0.45
M5	0.5	3.04	70.1	0.47
BKSH	2.9	3.42	73.0	0.58
REDSH	0.3	3.60	73.3	0.60
BRAN	26.7	4.23	100.0	1.57

Whole Wheat Ash	2.01
Break Flour Yield	32.3

SEAHAWK

Stream	Yield	Ash	Cumulative Yield	Cumulative Ash
B1	12.7	0.32	12.7	0.32
M1	10.5	0.36	23.2	0.34
M1RD	3.9	0.37	27.1	0.34
M2	16.3	0.39	43.4	0.36
B2	10.7	0.39	54.1	0.37
GR	8.2	0.45	62.3	0.38
B3	3.8	0.51	66.1	0.39
M3	3.4	0.89	69.5	0.41
M4	1.4	1.94	70.9	0.44
REDDOG	0.8	2.80	71.7	0.47
M5	0.6	3.14	72.2	0.49
BKSH	3.0	3.33	75.2	0.60
REDSH	0.4	3.35	75.6	0.61
BRAN	24.4	4.27	100.0	1.51

Whole Wheat Ash	2.06
Break Flour Yield	27.2



UIL13-046145A

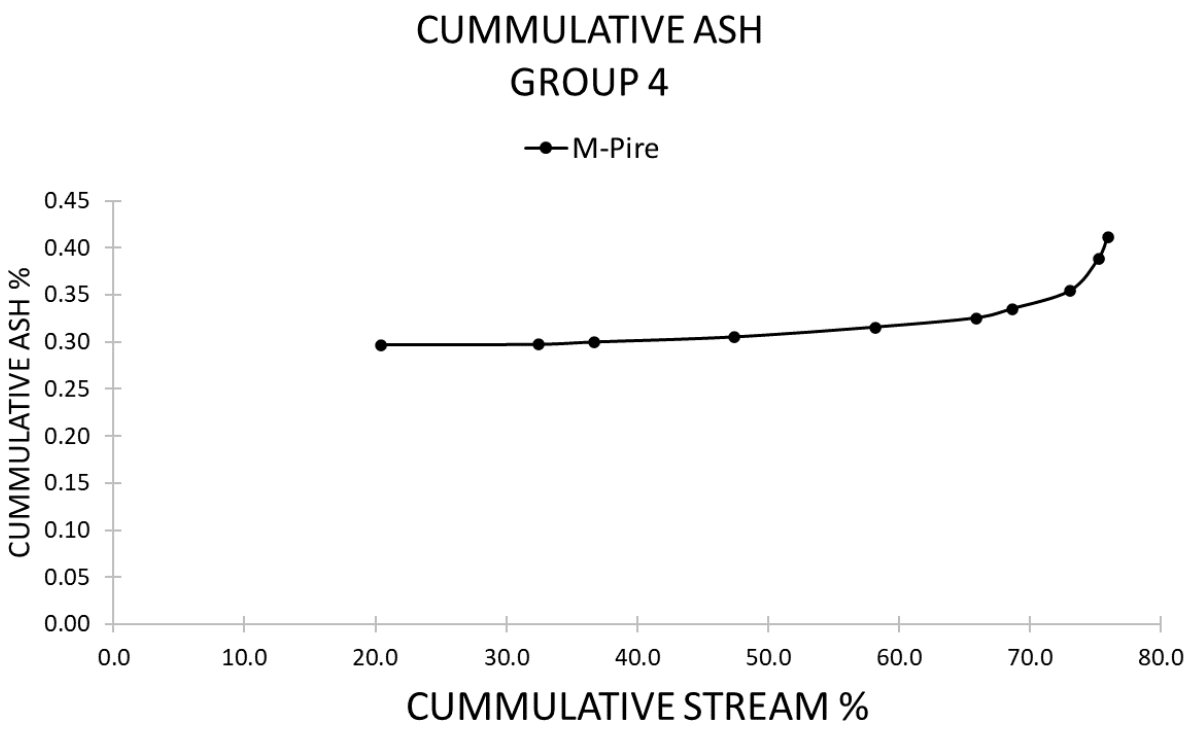
			Cumulative	
Stream	Yield	Ash	Yield	Ash
M1	11.3	0.19	11.3	0.19
B2	12.4	0.22	23.7	0.21
B1	12.6	0.25	36.2	0.22
M2	17.4	0.27	53.6	0.24
GR	7.9	0.31	61.5	0.25
M1RD	3.6	0.32	65.0	0.25
B3	3.0	0.47	68.0	0.26
M3	3.2	0.70	71.2	0.28
M4	1.6	1.41	72.8	0.31
REDDOG	0.6	2.60	73.4	0.32
M5	0.6	2.84	74.0	0.34
REDSH	0.2	3.34	74.2	0.35
BKSH	2.6	3.47	76.8	0.46
BRAN	23.2	4.52	100.0	1.40

Whole Wheat Ash	2.12
Break Flour Yield	27.9

UI Magic CL+

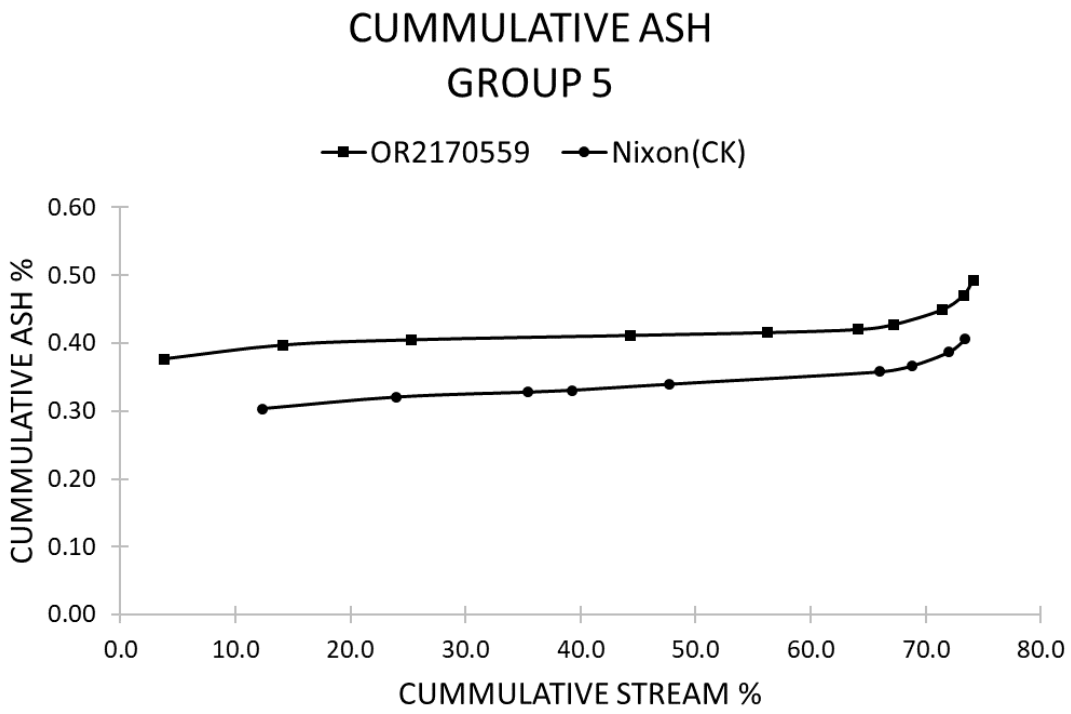
			Cumulative	
Stream	Yield	Ash	Yield	Ash
B1	12.2	0.30	12.2	0.30
M1	11.3	0.34	23.5	0.32
M2	17.2	0.35	40.7	0.33
M1RD	3.9	0.38	44.6	0.33
B2	12.0	0.38	56.5	0.34
GR	8.4	0.44	64.9	0.36
B3	3.0	0.52	68.0	0.36
M3	3.1	0.82	71.1	0.38
M4	1.3	1.52	72.4	0.40
REDDOG	0.6	2.74	73.0	0.42
M5	0.5	2.75	73.5	0.44
BKSH	2.6	3.60	76.1	0.55
REDSH	0.3	3.91	76.4	0.56
BRAN	23.6	4.91	100.0	1.59

Whole Wheat Ash	1.78
Break Flour Yield	27.2



M-Pire				
			Cumulative	
Stream	Yield	Ash	Yield	Ash
M2	20.4	0.30	20.4	0.30
M1	12.0	0.30	32.4	0.30
M1RD	4.3	0.32	36.7	0.30
B1	10.7	0.32	47.4	0.30
B2	10.8	0.36	58.2	0.32
GR	7.7	0.40	65.9	0.33
B3	2.8	0.57	68.7	0.34
M3	4.4	0.65	73.1	0.35
M4	2.2	1.54	75.2	0.39
M5	0.7	2.84	75.9	0.41
REDDOG	0.5	3.04	76.4	0.43
BKSH	2.4	3.66	78.8	0.52
REDSH	0.2	3.71	78.9	0.53
BRAN	21.1	5.23	100.0	1.52

Whole Wheat Ash	2.08
Break Flour Yield	24.3



OR2170559

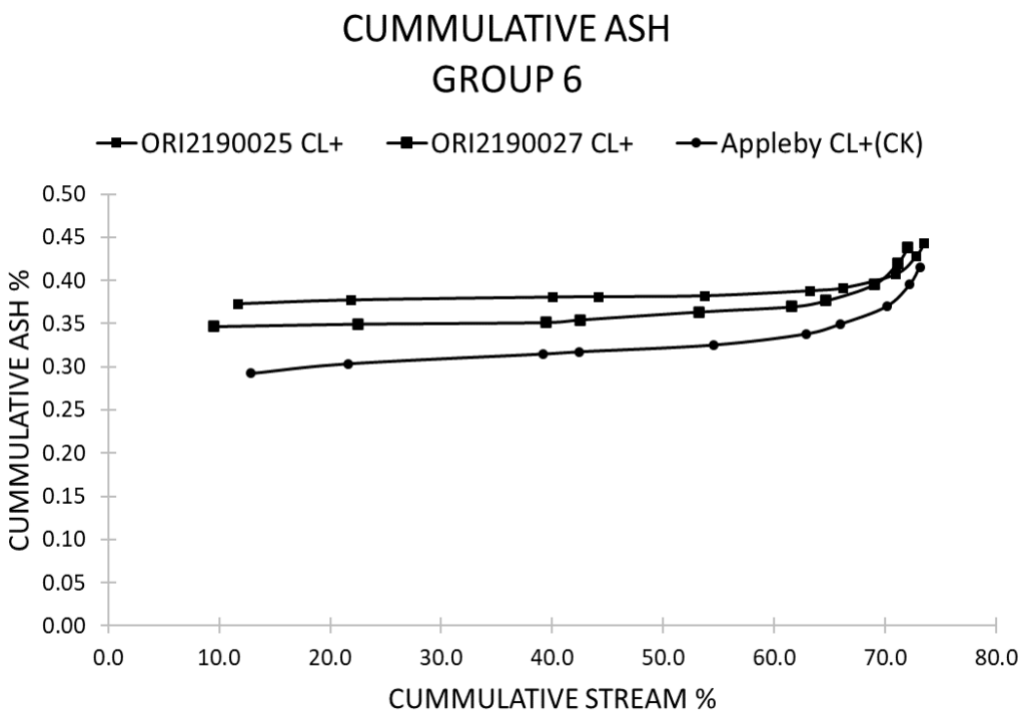
			Cumulative	
Stream	Yield	Ash	Yield	Ash
M1RD	3.8	0.38	3.8	0.38
B1	10.3	0.40	14.1	0.40
B2	11.2	0.41	25.3	0.40
M2	19.0	0.42	44.3	0.41
M1	11.9	0.43	56.2	0.42
GR	7.8	0.45	64.1	0.42
B3	3.1	0.57	67.2	0.43
M3	4.2	0.80	71.4	0.45
M4	1.9	1.30	73.3	0.47
M5	0.8	2.46	74.1	0.49
REDDOG	0.8	2.67	74.9	0.52
REDSH	0.4	4.10	75.3	0.54
BKSH	2.7	4.13	78.0	0.66
BRAN	22.0	5.69	100.0	1.76

Whole Wheat Ash	2.10
Break Flour Yield	24.6

Nixon (CK)

			Cumulative	
Stream	Yield	Ash	Yield	Ash
B1	12.3	0.30	12.3	0.30
M1	11.7	0.34	24.0	0.32
B2	11.4	0.34	35.4	0.33
M1RD	3.9	0.36	39.3	0.33
GR	8.4	0.38	47.7	0.34
M2	18.2	0.41	66.0	0.36
B3	2.8	0.57	68.8	0.37
M3	3.2	0.83	72.0	0.39
M4	1.4	1.35	73.5	0.41
REDDOG	0.6	2.64	74.1	0.42
M5	0.7	2.82	74.1	0.42
BKSH	2.5	3.41	77.2	0.54
REDSH	0.3	3.84	77.5	0.55
BRAN	22.5	5.02	100.0	1.56

Whole Wheat Ash	2.08
Break Flour Yield	26.5



ORI2190025 CL+

Stream	Yield	Ash	Cumulative Yield	Cumulative Ash
B1	11.7	0.37	11.7	0.37
B2	10.2	0.38	21.9	0.38
M2	18.2	0.38	40.0	0.38
M1RD	4.2	0.39	44.2	0.38
M1	9.6	0.39	53.8	0.38
GR	9.5	0.42	63.3	0.39
B3	2.9	0.46	66.2	0.39
M3	4.7	0.63	70.9	0.41
M4	1.9	1.23	72.8	0.43
M5	0.8	1.92	73.5	0.44
REDDOG	0.6	1.97	74.1	0.46
BKSH	2.4	2.71	76.5	0.53
REDSH	0.2	2.88	76.7	0.53
BRAN	23.3	4.43	100.0	1.44

Whole Wheat Ash	1.89
Break Flour Yield	24.8

ORI2190027 CL+

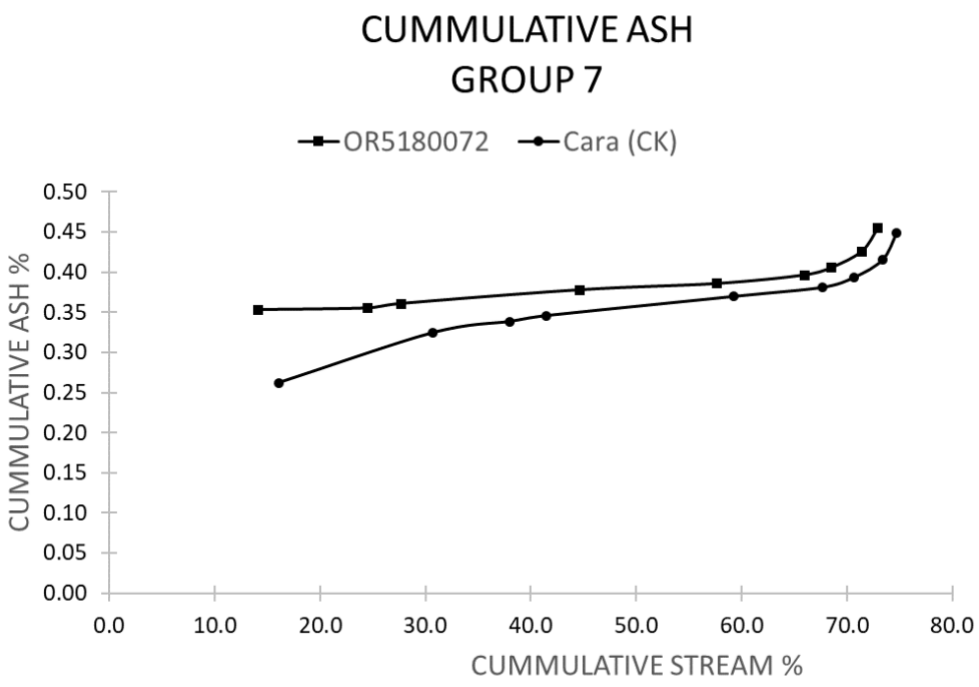
Stream	Yield	Ash	Cumulative Yield	Cumulative Ash
M1	9.5	0.35	9.5	0.35
B1	13.0	0.35	22.5	0.35
M2	16.9	0.35	39.4	0.35
M1RD	3.1	0.39	42.5	0.35
B2	10.7	0.40	53.2	0.36
GR	8.3	0.41	61.5	0.37
B3	3.1	0.51	64.6	0.38
M3	4.4	0.68	69.0	0.40
M4	2.1	1.23	71.1	0.42
M5	0.9	1.84	72.0	0.44
REDDOG	1.0	1.88	73.0	0.46
REDSH	0.3	2.52	73.3	0.47
BKSH	3.1	3.18	76.4	0.58
BRAN	23.6	4.30	100.0	1.46

Whole Wheat Ash	1.94
Break Flour Yield	26.8

Appleby CL+(CK)

Stream	Yield	Ash	Cumulative Yield	Cumulative Ash
B1	12.8	0.29	12.8	0.29
M1	8.8	0.32	21.6	0.30
M2	17.6	0.33	39.2	0.31
M1RD	3.2	0.35	42.4	0.32
B2	12.1	0.35	54.5	0.33
GR	8.4	0.42	62.9	0.34
B3	3.1	0.58	66.0	0.35
M3	4.2	0.69	70.1	0.37
M4	2.1	1.25	72.2	0.40
M5	0.9	2.03	73.1	0.42
REDDOG	1.3	2.25	74.4	0.45
BKSH	3.3	3.02	77.7	0.56
REDSH	0.4	3.05	78.1	0.57
BRAN	21.9	4.57	100.0	1.44

Whole Wheat Ash	2.01
Break Flour Yield	28.1



Cara(CK)

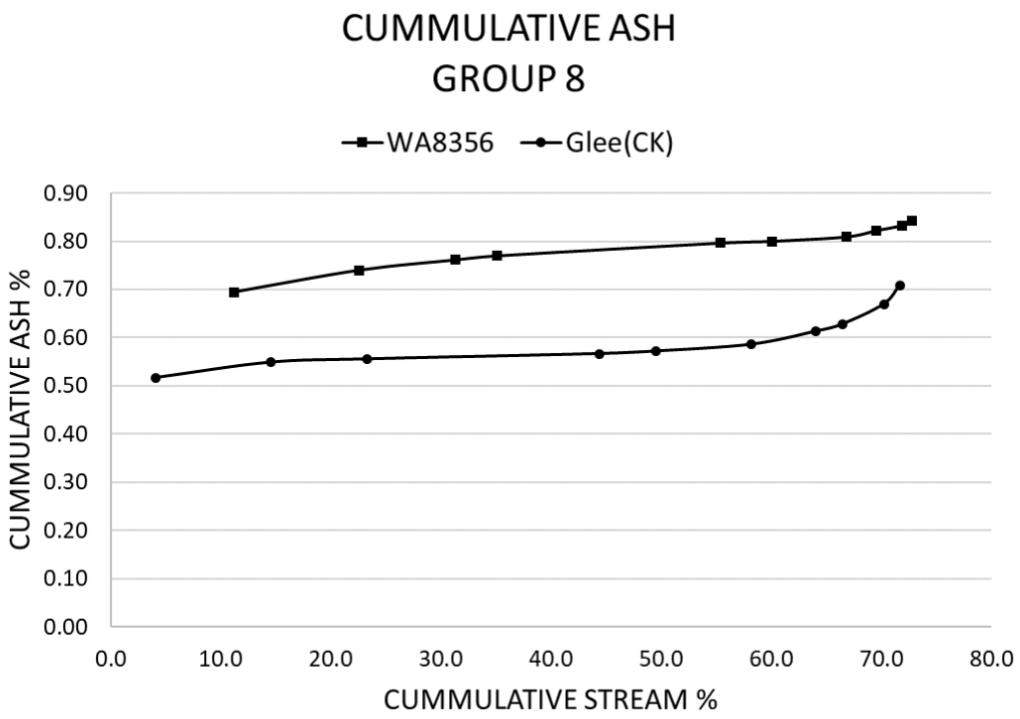
			Cumulative	
Stream	Yield	Ash	Yield	Ash
B1	16.1	0.26	16.1	0.26
B2	14.7	0.39	30.7	0.32
M1	7.3	0.40	38.0	0.34
M1RD	3.4	0.42	41.4	0.35
M2	17.9	0.42	59.3	0.37
GR	8.4	0.46	67.7	0.38
B3	3.0	0.68	70.7	0.39
M3	2.7	0.99	73.4	0.42
M4	1.3	2.28	74.7	0.45
REDDOG	0.6	2.52	75.3	0.47
M5	0.6	3.08	75.9	0.48
REDSH	0.2	3.25	76.0	0.49
BKSH	2.7	3.69	78.8	0.60
BRAN	21.2	5.08	100.0	1.55

Whole Wheat Ash	2.06
Break Flour Yield	33.7

OR5180072

			Cumulative	
Stream	Yield	Ash	Yield	Ash
B1	14.2	0.35	14.2	0.35
M1	10.3	0.36	24.5	0.36
M1RD	3.2	0.40	27.7	0.36
M2	17.0	0.41	44.7	0.38
B2	13.0	0.41	57.6	0.39
GR	8.3	0.47	66.0	0.40
B3	2.6	0.65	68.6	0.41
M3	2.9	0.91	71.4	0.43
M4	1.5	1.81	72.9	0.46
REDDOG	0.8	2.09	73.7	0.47
REDSH	0.2	2.33	74.0	0.48
M5	0.6	3.18	74.6	0.50
BKSH	2.8	3.36	77.4	0.60
BRAN	22.6	4.94	100.0	1.59

Whole Wheat Ash	1.88
Break Flour Yield	29.7



WA8356

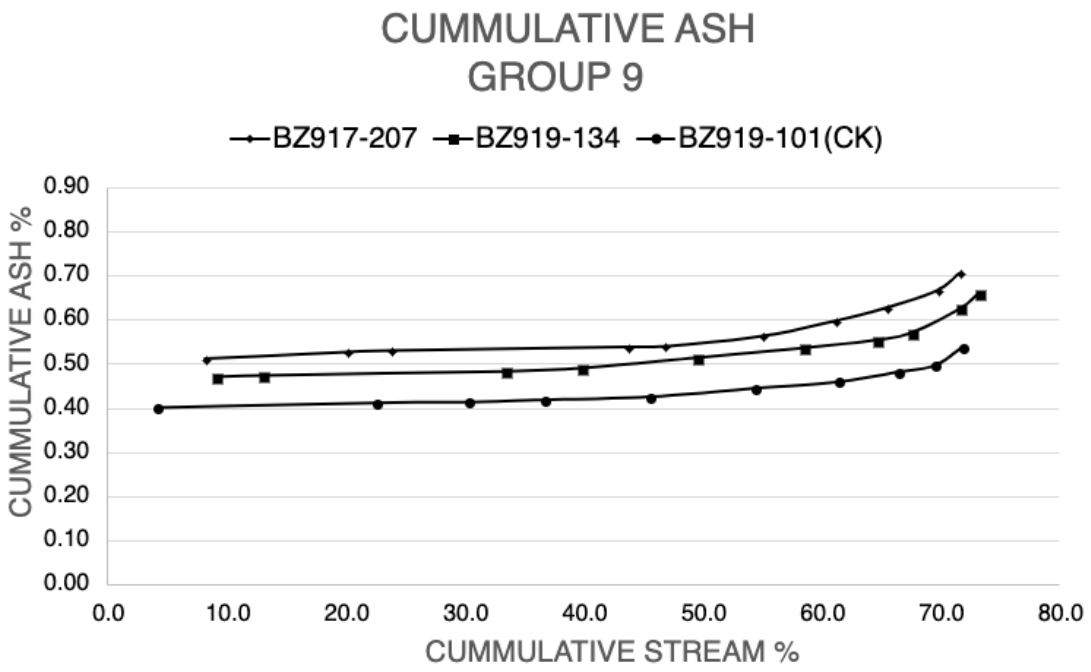
			Cumulative	
Stream	Yield	Ash	Yield	Ash
M1	11.2	0.69	11.2	0.69
B2	11.4	0.78	22.6	0.74
GR	8.8	0.82	31.3	0.76
M1RD	3.8	0.84	35.1	0.77
M2	20.3	0.84	55.4	0.80
M3	4.7	0.84	60.1	0.80
B1	6.8	0.89	66.9	0.81
M4	2.7	1.14	69.6	0.82
B3	2.3	1.15	71.9	0.83
M5	0.9	1.55	72.8	0.84
REDDOG	1.5	2.63	74.3	0.88
BKSH	3.6	4.10	77.9	1.03
REDSH	0.6	4.52	78.5	1.05
BRAN	21.5	6.00	100.0	2.12

Whole Wheat Ash	2.09
Break Flour Yield	20.5

Glee(CK)

			Cumulative	
Stream	Yield	Ash	Yield	Ash
M1RD	4.1	0.52	4.1	0.52
M1	10.5	0.56	14.6	0.55
B2	8.7	0.57	23.3	0.56
M2	21.1	0.58	44.4	0.57
B1	5.1	0.62	49.6	0.57
GR	8.6	0.67	58.2	0.59
M3	5.9	0.88	64.1	0.61
B3	2.4	1.02	66.5	0.63
M4	3.8	1.41	70.3	0.67
M5	1.4	2.59	71.7	0.71
REDDOG	2.1	3.45	73.8	0.79
BKSH	4.4	3.82	78.1	0.96
REDSH	0.7	3.87	78.9	0.98
BRAN	21.1	5.02	100.0	1.83

Whole Wheat Ash	1.65
Break Flour Yield	16.3



BZ917-207

Stream	Yield	Ash	Cumulative Yield	Cumulative Ash
M1	8.2	0.51	8.2	0.51
B1	12.0	0.54	20.2	0.53
M1RD	3.7	0.54	23.9	0.53
M2	19.9	0.55	43.8	0.54
B2	3.1	0.56	46.9	0.54
GR	8.3	0.69	55.1	0.56
M3	6.1	0.91	61.3	0.60
BKSH	4.2	1.05	65.5	0.63
M4	4.3	1.27	69.8	0.67
M5	1.8	2.19	71.6	0.70
REDDOG	1.9	3.33	73.5	0.77
B3	2.5	3.55	76.0	0.86
REDSH	0.6	4.10	76.6	0.89
BRAN	23.4	4.89	100.0	1.83

Whole Wheat Ash	1.78
Break Flour Yield	17.6

BZ919-134

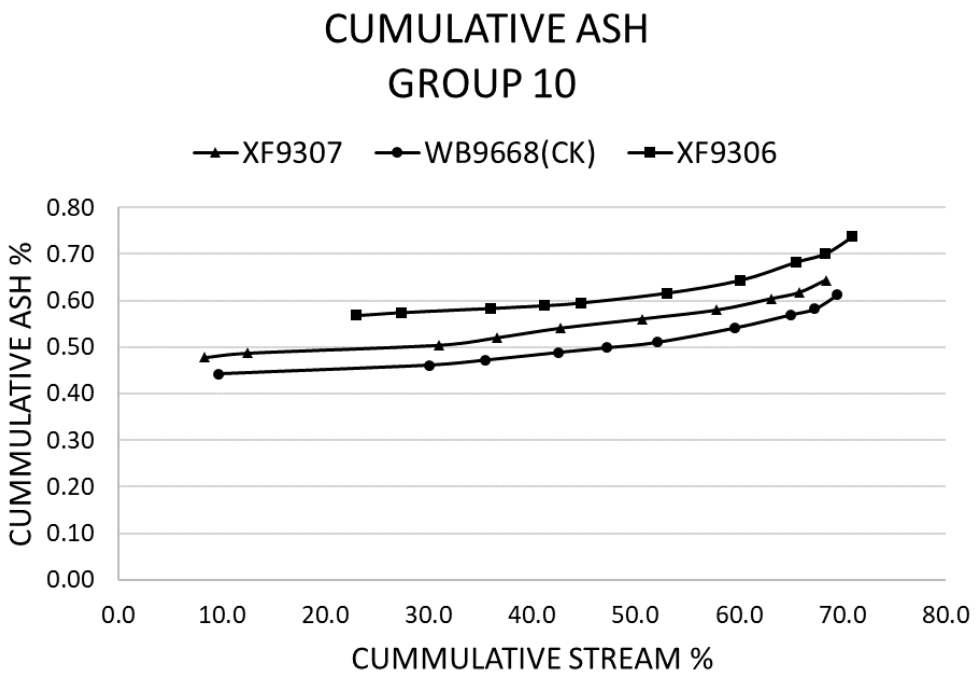
Stream	Yield	Ash	Cumulative Yield	Cumulative Ash
M1	9.1	0.47	9.1	0.47
M1RD	4.0	0.48	13.1	0.47
M2	20.4	0.49	33.5	0.48
B1	6.3	0.53	39.8	0.49
B2	9.7	0.61	49.5	0.51
GR	9.1	0.66	58.6	0.54
M3	6.1	0.72	64.7	0.55
B3	2.9	0.92	67.6	0.57
M4	4.1	1.54	71.7	0.63
M5	1.5	2.25	73.2	0.66
REDDOG	1.4	3.20	74.6	0.71
BKSH	4.4	3.67	79.0	0.87
REDSH	0.6	4.05	79.7	0.90
BRAN	20.3	5.13	100.0	1.76

Whole Wheat Ash	1.57
Break Flour Yield	18.9

BZ919-101(CK)

Stream	Yield	Ash	Cumulative Yield	Cumulative Ash
M1RD	4.2	0.40	4.2	0.40
M2	18.5	0.41	22.6	0.41
M1	7.8	0.42	30.4	0.41
B1	6.3	0.44	36.8	0.42
B2	8.9	0.45	45.6	0.42
GR	8.9	0.54	54.5	0.44
M3	7.0	0.57	61.5	0.46
M4	5.1	0.75	66.6	0.48
B3	3.0	0.81	69.6	0.50
M5	2.3	1.82	71.9	0.54
REDDOG	2.1	2.58	74.0	0.60
REDSH	0.8	3.64	74.8	0.63
BKSH	4.5	3.71	79.3	0.80
BRAN	20.7	6.07	100.0	1.89

Whole Wheat Ash	1.58
Break Flour Yield	18.2



XF9306

Stream	Yield	Ash	Cumulative Yield	Cumulative Ash
M2	23.0	0.57	23.0	0.57
M1RD	4.4	0.61	27.4	0.57
M1	8.6	0.61	36.0	0.58
B1	5.3	0.63	41.2	0.59
B2	3.5	0.66	44.7	0.60
GR	8.3	0.73	53.1	0.62
M3	7.1	0.85	60.1	0.64
M4	5.4	1.11	65.5	0.68
B3	2.9	1.12	68.4	0.70
M5	2.6	1.68	71.0	0.74
REDDOG	2.4	3.35	73.4	0.82
BKSH	4.8	4.27	78.2	1.03
REDSH	0.9	4.44	79.1	1.07
BRAN	20.9	5.71	100.0	2.04

Whole Wheat Ash	1.73
Break Flour Yield	11.7

XF9307

Stream	Yield	Ash	Cumulative Yield	Cumulative Ash
M1	8.3	0.48	8.3	0.48
M1RD	4.1	0.51	12.4	0.49
M2	18.5	0.52	31.0	0.50
B1	5.6	0.61	36.6	0.52
B2	6.2	0.66	42.8	0.54
GR	7.9	0.67	50.6	0.56
M3	7.2	0.71	57.9	0.58
M4	5.2	0.87	63.1	0.60
B3	2.7	0.93	65.9	0.62
M5	2.6	1.32	68.5	0.64
REDDOG	2.2	2.58	70.7	0.70
BKSH	4.6	3.37	75.2	0.87
REDSH	0.6	3.97	75.9	0.89
BRAN	24.1	4.92	100.0	1.86

Whole Wheat Ash	1.82
Break Flour Yield	14.5

WB9668(CK)

Stream	Yield	Ash	Cumulative Yield	Cumulative Ash
M1	9.6	0.44	9.6	0.44
M2	20.4	0.47	30.0	0.46
B1	5.4	0.53	35.4	0.47
B2	7.1	0.57	42.6	0.49
M1RD	4.7	0.59	47.3	0.50
GR	4.9	0.62	52.1	0.51
M3	7.5	0.76	59.7	0.54
M4	5.4	0.88	65.0	0.57
B3	2.3	0.92	67.3	0.58
M5	2.2	1.54	69.5	0.61
REDDOG	1.8	2.74	71.3	0.67
BKSH	4.1	3.66	75.4	0.83
REDSH	0.4	4.08	75.8	0.85
BRAN	24.2	6.00	100.0	2.09

Whole Wheat Ash	2.50
Break Flour Yield	14.8

End - Product Evaluation Summary - PNW WQC 2022 Crop Year

Variety	Question #1																								
	WA8334	WA8336	WA8362	WA8364	Madsen (CK)	WA8354	SEAHAWK (CK)	UIL13-046145A	UI Magic CL+ (CK)	M-Pire	OR2170559	Nixon (CK)	ORI2190025 CL+	ORI2190027 CL+	Appleby CL+ (CK)	OR5180072	Cara (CK)	WA8356	Glee (CK)	BZ917-207	BZ919-134	BZ919-101 (CK)	XF9306	XF9307	WB9668 (CK)
Groups	1					2		3		4	5		6			7		8		9			10		
Collaborators	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
ADM Milling	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	7.0	7.0
Ardent Milling	5.0	5.0	5.0	8.0	8.0	5.0	8.0	8.0	8.0	8.0	8.0	8.0	5.0	8.0	8.0	8.0	5.0	9.0	6.0	8.0	8.0	9.0	4.0	4.0	5.0
Bay State Milling																		7.0	6.0	6.0	7.0	7.0	8.0	5.0	8.0
California Wheat Commission																		6.0	4.0	4.0	8.0	9.0	3.0	3.0	7.0
Daily Bread Quality Analytics	7.0	7.0	6.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	5.0	4.0	4.0	9.0	6.0	2.0	2.0	3.0
Grain Craft																		8.0	7.0	6.0	8.0	8.0	2.0	2.0	6.0
Idaho Wheat Quality Lab	5.0	5.0	5.0	5.0	4.0	3.0	3.0	5.0	5.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0	5.0	6.0	5.0	5.0	5.0	5.0	5.0	3.0	4.0
JFMA	4.0	5.0	4.0	4.0	4.0	4.0	4.0	5.0	5.0	5.0	5.0	5.0	4.0	4.0	5.0	5.0	5.0	4.0	4.0	5.0	4.0	2.0	3.0	3.0	4.0
KRUSTEAZ Continental Mills	7.0	6.0	4.0	5.0	8.0	7.0	7.0	6.0	6.0	7.0	4.0	3.0	5.0	5.0	4.0										
PSES Dept. MSU																		5.0	5.0	6.0	6.0	5.0	5.0	5.0	5.0
Samyang Corp	6.0	7.0	4.0	6.0	5.0	4.0	4.0	6.0	5.0	6.0	4.0	5.0	5.0	5.0	5.0	7.0	7.0	7.0	6.0	5.0	8.0	9.0	4.0	5.0	8.0
USDA-ARS CGAHR																		7.5	7.5	7.5	8.5	6.0	4.0	3.5	7.5
USDA-ARS, Wheat Quality Lab																		5.0	5.0	6.0	6.0	4.0	2.0	2.0	5.0
Wheat Marketing Center																		7.0	7.0	7.0	7.0	7.0	4.0	4.0	6.0
WWQL	9.0	9.0	8.0	7.0	6.0	4.0	7.0	7.0	8.0	7.0	7.0	8.0	8.0	6.0	5.0	9.0	9.0	5.0	4.0	3.0	4.0	5.0	3.0	3.0	3.0
WWQL - (Cakes)	5.0	4.0	5.0	5.0	4.0	6.0	6.0	8.0	4.0	4.0	6.0	7.0	5.0	5.0	7.0	8.0	7.0								
Mean	6.2	6.2	5.4	6.1	6.0	5.3	6.0	6.7	6.2	6.0	5.9	6.2	5.8	5.9	6.0	7.1	6.6	6.4	5.6	5.8	6.9	6.4	4.1	3.7	5.6

Variety	Question #2																								
	WA8334	WA8336	WA8362	WA8364	Madsen (CK)	WA8354	SEAHAWK (CK)	UIL13-046145A	UI Magic CL+ (CK)	M-Pire	OR2170559	Nixon (CK)	ORI2190025 CL+	ORI2190027 CL+	Appleby CL+ (CK)	OR5180072	Cara (CK)	WA8356	Glee (CK)	BZ917-207	BZ919-134	BZ919-101 (CK)	XF9306	XF9307	WB9668 (CK)
Groups	1					2		3		4	5		6			7		8		9			10		
Collaborators	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
ADM Milling	7.0	7.0	8.0	8.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	6.0	6.0	7.0
Ardent Milling	5.0	5.0	4.0	7.0	6.0	4.0	6.0	8.0	8.0	7.0	8.0	7.0	6.0	7.0	7.0	8.0	6.0	9.0	9.0	8.0	8.0	8.0	6.0	6.0	7.0
Bay State Milling																		6.0	8.0	6.0	6.0	8.0	7.0	4.0	8.0
California Wheat Commission																		6.0	3.0	3.0	7.0	9.0	2.0	3.0	7.0
Daily Bread Quality Analytics	4.0	5.0	7.0	7.0	5.0	3.0	3.0	6.0	7.0	5.0	6.0	7.0	6.0	6.0	7.0	7.0	8.0	5.0	4.0	4.0	8.0	7.0	4.0	4.0	5.0
Grain Craft																		8.0	6.0	6.0	7.0	7.0	2.0	2.0	7.0
Idaho Wheat Quality Lab	4.0	4.0	5.0	5.0	4.0	3.0	3.0	4.0	3.0	4.0	4.0	5.0	4.0	4.0	5.0	5.0	6.0	5.0	4.0	4.0	5.0	5.0	4.0	5.0	5.0
JFMA	3.0	4.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	5.0	5.0	6.0	4.0	4.0	5.0	5.0	4.0	4.0	3.0	5.0	6.0	4.0	3.0	3.0	5.0
KRUSTEAZ Continental Mills	8.0	4.0	4.0	4.0	9.0	9.0	8.0	5.0	5.0	8.0	5.0	4.0	5.0	4.0	4.0										
PSES Dept. MSU																		5.0	5.0	5.0	6.0	5.0	5.0	5.0	6.0
Samyang Corp	7.0	5.0	6.0	5.0	4.0	7.0	8.0	7.0	8.0	7.0	6.0	7.0	6.0	4.0	7.0	8.0	9.0	6.0	5.0	4.0	7.0	8.0	5.0	4.0	9.0
USDA-ARS CGAHR																		5.0	6.0	6.0	6.0	4.5	3.0	3.0	4.5
USDA-ARS, Wheat Quality Lab																		3.0	3.0	6.0	7.0	7.0	6.0	6.0	7.0
Wheat Marketing Center	3.0	5.0	6.0	6.0	5.0	6.0	6.0	6.0	5.0	5.0	5.0	6.0	6.0	6.0	5.0	7.0	6.0	5.0	5.0	6.0	6.0	6.0	6.0	6.0	7.0
WWQL	2.0	3.0	5.0	5.0	2.0	2.0	2.0	3.0	3.0	2.0	3.0	4.0	2.0	2.0	5.0	5.0	6.0	3.0	3.0	3.0	4.0	4.0	1.0	1.0	2.0
WWQL - (Cakes)	2.0	4.0	5.0	5.0	2.0	6.0	7.0	7.0	5.0	4.0	2.0	4.0	6.0	5.0	4.0	6.0	9.0								
Mean	4.5	4.6	5.5	5.7	4.9	5.2	5.6	5.9	5.6	5.4	5.1	5.7	5.2	5.0	5.7	6.6	6.9	5.6	5.1	5.3	6.5	6.5	4.3	4.1	6.2

Variety	Question #3																								
	WA8334	WA8336	WA8362	WA8364	Madsen (CK)	WA8354	SEAHAWK (CK)	UIL13-046145A	UI Magic CL+ (CK)	M-Pire	OR2170559	Nixon (CK)	ORI2190025 CL+	ORI2190027 CL+	Appleby CL+ (CK)	OR5180072	Cara (CK)	WA8356	Glee (CK)	BZ917-207	BZ919-134	BZ919-101 (CK)	XF9306	XF9307	WB9668 (CK)
Groups	1					2		3		4	5		6			7		8		9			10		
Collaborators	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
ADM Milling	7.0	7.0	8.0	8.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	7.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	6.0	6.0	7.0
Ardent Milling	5.0	5.0	5.0	7.0	7.0	4.0	7.0	8.0	8.0	7.0	8.0	7.0	6.0	7.0	8.0	8.0	6.0	9.0	7.0	8.0	8.0	8.0	6.0	6.0	7.0
Bay State Milling																		6.0	7.0	6.0	6.0	7.0	8.0	5.0	8.0
California Wheat Commission																		6.0	3.0	3.0	7.0	9.0	2.0	2.0	7.0
Daily Bread Quality Analytics	5.0	6.0	6.0	7.0	6.0	4.0	4.0	6.0	7.0	6.0	6.0	7.0	6.0	6.0	7.0	7.0	8.0	6.0	4.0	4.0	8.0	7.0	3.0	3.0	5.0
Grain Craft	4.0	4.0	6.0	5.0	6.0	4.0	4.0	5.0	6.0	4.0	5.0	4.0	4.0	3.0	3.0	5.0	6.0	8.0	7.0	5.0	8.0	7.0	2.0	2.0	7.0
Idaho Wheat Quality Lab	5.0	5.0	6.0	6.0	4.0	3.0	2.0	4.0	2.0	2.0	3.0	6.0	5.0	5.0	5.0	6.0	6.0	6.0	5.0	5.0	6.0	6.0	5.0	4.0	4.0
JFMA	3.0	4.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	5.0	5.0	6.0	4.0	4.0	5.0	5.0	5.0	4.0	3.0	5.0	6.0	3.0	3.0	3.0	5.0
KRUSTEAZ Continental Mills	8.0	4.0	4.0	4.0	9.0	9.0	8.0	5.0	5.0	8.0	4.0	3.0	5.0	4.0	4.0										
PSES Dept. MSU																		4.0	4.0	4.0	6.0	5.0	4.0	4.0	7.0
Samyang Corp	7.0	6.0	7.0	6.5	5.0	6.5	6.5	6.0	6.5	6.5	6.5	7.0	6.5	5.0	7.0	7.0	8.0	7.0	5.0	5.0	8.0	9.0	5.0	7.0	9.0
USDA-ARS CGAHR																		6.5	7.0	7.0	7.5	5.5	3.5	3.5	6.0
USDA-ARS, Wheat Quality Lab																		3.0	3.0	6.0	7.0	4.0	3.0	3.0	7.0
Wheat Marketing Center	3.0	5.0	6.0	6.0	5.0	6.0	6.0	6.0	5.0	5.0	5.0	6.0	6.0	6.0	5.0	7.0	6.0	5.0	4.0	5.0	6.0	6.5	5.0	5.0	7.0
WWQL	3.0	3.0	5.0	5.0	3.0	3.0	3.0	4.0	4.0	3.0	4.0	4.0	3.0	3.0	5.0	5.0	6.0	3.0	3.0	4.0	5.0	5.0	1.0	1.0	2.0
WWQL - (Cakes)	2.0	4.0	5.0	5.0	3.0	6.0	7.0	7.0	5.0	4.0	3.0	5.0	6.0	5.0	5.0	7.0	9.0								
Mean	4.7	4.8	5.7	5.9	5.5	5.2	5.5	5.8	5.5	5.2	5.1	5.6	5.3	5.0	5.5	6.5	6.8	5.8	5.0	5.4	6.9	6.4	4.0	3.8	6.2

ADM Milling
Overland Park, KS

Pacific Northwest Wheat Quality Council
Evaluation Form

ADM Milling

Rate Samples in Question 1, 2 & 3 on 1-9 scale 5=usable average results. Question #4 provides additional space for comments, if appropriate.

For Dough & End-Product score as is. Make allowances and adjustments to score for questions 3 & 4.

Place laboratory data in tab below (preferred) or submit as separate file.

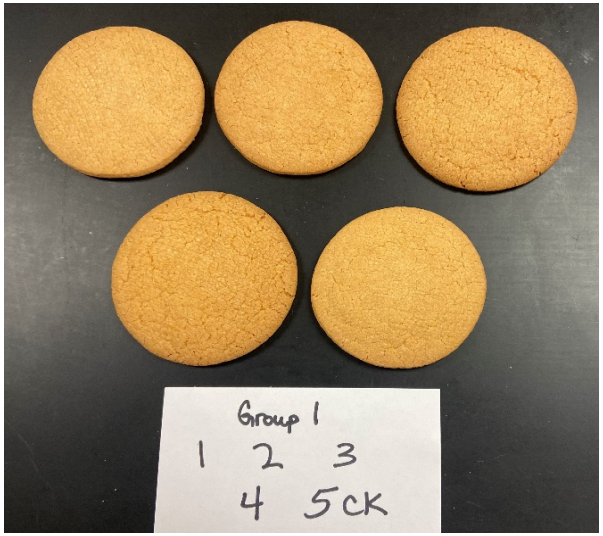
Be sure and add company name to file name please.

						1 poor 9 excellent		1 poor 9 excellent		1 poor 9 excellent			
						Question #1		Question #2		Question #3		Question #4	
Variety	Check	Class	Group	Sample#	Product	Dough/Batter Rating	Liked/Disliked Comments	End-Product Performance	Liked/Disliked Comments	Overall Acceptability	Liked/Disliked Comments	Mitigating Physical/Chemical Properties & Comments	
WA8334		SWW	1	1	Cookie	8	Good dough	7	No checking	7	Smaller spread than ck	Equal to Ck overall	
WA8336		SWW	1	2	Cookie	8	Good dough	7	No checking	7	Smaller spread than ck	Equal to Ck overall	
WA8362		SWW	1	3	Cookie	8	Good dough	8	Checking	8	Good spread factor	Slightly better than ck overall	
WA8364		SWW	1	4	Cookie	8	Good dough	8	Slight checking	8	Good spread factor	Slightly better than ck overall	
Madsen (CK)	ck	SWW	1	5	Cookie	8	Good dough	7	No checking	7	Smaller spread	Highest protein of group	
WA8354		SWS	2	6	Cookie	8	Good dough	7	No checking	7	Average spread factor	Slightly higher protein	
SEAHAWK (CK)	ck	SWS	2	7	Cookie	8	Good dough	7	No checking	7	Average spread factor	Slightly larger spread	
UIL13-046145A		SWW	3	8	Cookie	8	Good dough	7	No checking	7	Similar protein	Smaller spread than ck	
UI Magic CL+ (CK)	ck	SWW	3	9	Cookie	8	Good dough	7	No checking	7	Larger spread factor		
M-Pire		SWW	4	10	Cookie	8	Good dough	7	No checking	7	Average protein	Average spread factor	
OR2170559		SWW	5	11	Cookie	8	Good dough	7	No checking	7	Equal protein	Equal to Ck overall	
Nixon (CK)	ck	SWW	5	12	Cookie	8	Good dough	7	No checking	7	Nice spread		
ORI2190025 CL+		SWW	6	13	Cookie	8	Good dough	7	No checking	7	Low protein	Slightly better spread overall	
ORI2190027 CL+		SWW	6	14	Cookie	8	Good dough	8	Checking	7	Low protein	Equal to Ck overall	
Appleby CL+ (CK)	ck	SWW	6	15	Cookie	8	Good dough	8	Checking	7	Low protein		
OR5180072		CLUB	7	16	Cookie	8	Good dough	8	Checking	8	Good spread factor	Equal to Ck overall	
Cara (CK)	ck	CLUB	7	17	Cookie	8	Good dough	8	Checking	8	Higher spread		
WA8356		HRS	8	18	Bread	8	Good out of mixer and make up	8	Very open grain Creamy interior	8	Average mix time Good Volume	Higher protein and loaf volume	
Glee (CK)	ck	HRS	8	19	Bread	8	Good out of mixer and make up	8	Open grain Creamy interior	8	Average mix time Good volume	Average protein and loaf volume	
BZ917-207		HRS	9	20	Bread	8	Good out of mixer and make up	8	Open grain Creamy interior	8	Average mix and volume	Equal to Ck overall	
BZ919-134		HRS	9	21	Bread	8	Good out of mixer and make up	8	Open grain Creamy interior	8	Average mix good volume	Equal to Ck overall	
BZ919-101 (CK)	ck	HRS	9	22	Bread	8	Strong dough Excellent volume	8	Open grain creamy interior	8	Highest protein and mix time	Highest protein and volume	
XF9306		HRS	10	23	Bread	7	Slightly soft dough	6	Slightly dull interior	6	Average protein short mix	Slightly poorer than ck overall	
XF9307		HRS	10	24	Bread	7	Slightly soft dough	6	Slightly dull interior	6	Average protein short mix	Slightly poorer than ck overall	
WB9668 (CK)	ck	HRS	10	25	Bread	7	Slightly soft dough	7	Slightly creamy interior	7	Short mix but produced good bread	Best in group overall	

ADM - Overland Park

					Bread Bake								Farinograph			
Description	Moisture	Ash, 14%	Protein, 14%	FN	Absorption	Mixing Time	Loaf Volume	Grain	Texture	Crumb Color	Dough Condition	Cookie Spread	Absorption	Peak	Stability	MTI
WA8334	14.15	0.408	8.05	413								7.9	53.9	1.3	5.6	42
WA8336	13.96	0.433	7.5									7.9	53.5	1.2	2.2	80
WA8362	14.52	0.388	7.46									9.2	49.7	1.1	1.7	82
WA8364	14.14	0.361	7.43									9	50.9	0.8	1.4	108
Madsen (CK)	13.6	0.385	8.87									7.8	54.2	1.4	4.4	60
WA8354	13.24	0.436	10.38									7.6	53	2.8	6.4	41
SEAHAWK (CK)	14.2	0.454	10.02									8.3	53.8	2.1	3.5	72
UIL13-046145A	13.86	0.369	7.92									7.5	54.9	1.3	3.4	70
UI Magic CL+ (CK)	13.71	0.429	8.02	396								8.8	51.9	1.1	2.5	82
M-Pire	13.79	0.419	8.33									7.6	54.7	1.4	1.6	115
OR2170559	13.6	0.425	8.13									8.1	53.3	1.2	1.5	133
Nixon (CK)	13.43	0.424	7.93									7.9	52.6	1.3	1.7	125
ORI2190025 CL+	13.27	0.442	7.08									7.8	51	1.1	1.9	94
ORI2190027 CL+	13.02	0.452	6.6									7.2	51.9	1	1.6	113
Appleby CL+ (CK)	13.55	0.431	6.92									7.2	52.6	0.9	1.3	135
OR5180072	13.53	0.46	6.71	407								8.2	50.2	0.8	1.4	121
Cara (CK)	13.53	0.365	6.94									9.2	50	0.8	1	124
WA8356	13.63	0.594	13.3	582	59	9	3100	Open	Soft	Creamy	Good		60.1	7.4	17.7	6
Glee (CK)	13.84	0.646	12.37	571	58	8	2975	Open	Soft	Creamy	Good		60.4	8.2	16.1	10
BZ917-207	13.89	0.569	13.54		59	9	2875	Open	Soft	Creamy	Good		62.7	7.6	16.4	13
BZ919-134	15.01	0.533	12.59		58	9	3000	Open	Soft	Creamy	Good		62.6	9.3	17.7	2
BZ919-101 (CK)	14.9	0.498	13.76		59	12	3150	Open	Soft	Creamy	Good		64	7.9	17.5	11
XF9306	15.26	0.632	12.9		58	5	2650	Open	Soft	CR SL Dull	Soft		62.9	6.8	8.1	32
XF9307	14.79	0.592	12.75		58	5	2650	Open	Soft	CR SL Dull	Soft		64	6.8	7.5	40
WB9668 (CK)	14.14	0.545	13.68		59	5	2850	Open	Soft	Slightly Crmy	Soft		66.7	10.5	9.6	31

SAMPLE	MOISTURE	SOLVENTS	% SRC
WA8334	13.73	WATER	56.06
		SUCROSE	121.32
	TECH	LACTIC	112.28
	DR	SOD CARB	78.27
SAMPLE	MOISTURE	SOLVENTS	% SRC
WA8336	13.64	WATER	58.02
		SUCROSE	105.02
	TECH	LACTIC	85.39
	DR	SOD CARB	81.17
SAMPLE	MOISTURE	SOLVENTS	% SRC
WA8362	13.76	WATER	55.53
		SUCROSE	110.92
	TECH	LACTIC	98.46
	DR	SOD CARB	76.24
SAMPLE	MOISTURE	SOLVENTS	% SRC
WA8364	13.74	WATER	52.55
		SUCROSE	107.41
	TECH	LACTIC	81.31
	DR	SOD CARB	80.23
SAMPLE	MOISTURE	SOLVENTS	% SRC
Madsen (CK)	13.18	WATER	54.81
		SUCROSE	106.04
	TECH	LACTIC	94.63
	DR	SOD CARB	73.15
SAMPLE	MOISTURE	SOLVENTS	% SRC
WA8354	12.69	WATER	58.37
		SUCROSE	128.30
	TECH	LACTIC	109.10
	DR	SOD CARB	81.68
SAMPLE	MOISTURE	SOLVENTS	% SRC
SEAHAWK (CK)	13.58	WATER	52.18
		SUCROSE	121.66
	TECH	LACTIC	95.63
	DR	SOD CARB	77.13
SAMPLE	MOISTURE	SOLVENTS	% SRC
UIL13-046145A	13.43	WATER	58.35
		SUCROSE	112.35
	TECH	LACTIC	97.97
	DR	SOD CARB	80.02
SAMPLE	MOISTURE	SOLVENTS	% SRC
UI Magic CL+ (CK)	13.16	WATER	55.59
		SUCROSE	110.19
	TECH	LACTIC	99.78
	DR	SOD CARB	78.30
SAMPLE	MOISTURE	SOLVENTS	% SRC
M-Pire	13.37	WATER	53.54
		SUCROSE	107.27
	TECH	LACTIC	79.52
	DR	SOD CARB	75.40
SAMPLE	MOISTURE	SOLVENTS	% SRC
OR2170559	13.18	WATER	47.45
		SUCROSE	106.34
	TECH	LACTIC	75.49
	DR	SOD CARB	77.32
SAMPLE	MOISTURE	SOLVENTS	% SRC
Nixon (CK)	12.96	WATER	62.47
		SUCROSE	108.22
	TECH	LACTIC	75.56
	DR	SOD CARB	74.68
SAMPLE	MOISTURE	SOLVENTS	% SRC
ORI2190025 CL+	12.71	WATER	59.94
		SUCROSE	116.57
	TECH	LACTIC	87.65
	DR	SOD CARB	83.13
SAMPLE	MOISTURE	SOLVENTS	% SRC
ORI2190027 CL+	12.44	WATER	61.39
		SUCROSE	113.54
	TECH	LACTIC	82.39
	DR	SOD CARB	84.28
SAMPLE	MOISTURE	SOLVENTS	% SRC
Appleby CL+ (CK)	13.18	WATER	57.23
		SUCROSE	109.34
	TECH	LACTIC	75.03
	DR	SOD CARB	77.10
SAMPLE	MOISTURE	SOLVENTS	% SRC
OR5180072	12.87	WATER	56.13
		SUCROSE	103.22
	TECH	LACTIC	71.56
	DR	SOD CARB	77.28
SAMPLE	MOISTURE	SOLVENTS	% SRC
Cara (CK)	13.02	WATER	53.47
		SUCROSE	95.99
	TECH	LACTIC	80.41
	DR	SOD CARB	64.29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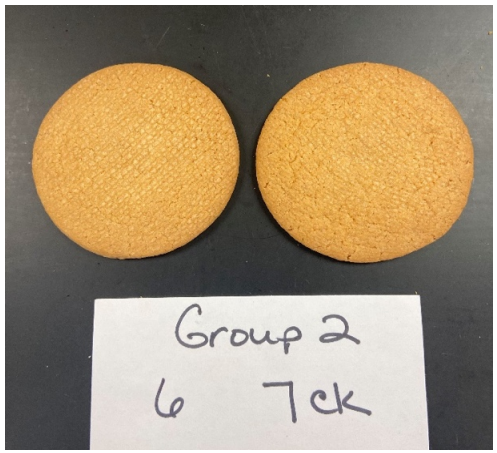
1 2 3
4 5CK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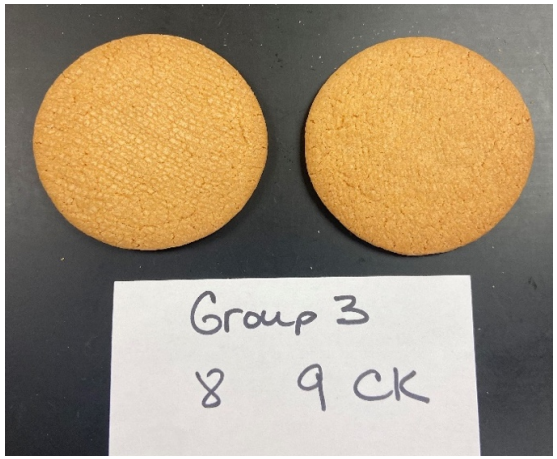
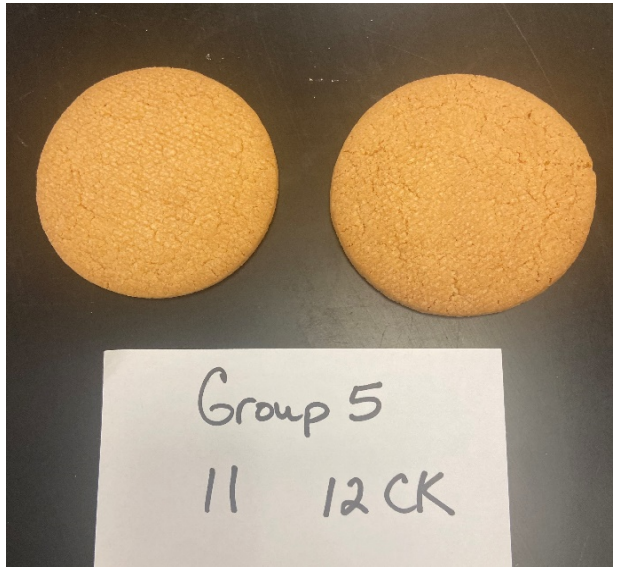
6 7CK


Group 3
8 9 CK

Group 4
10


Group 5
11 12 CK

Group 7
16 17 CK

Group 6
13 14 15 CK

Group 8
18 19

Group 9
20 21 22

Group 10
23 24 25

Ardent Mills
Denver CO

ARDENT MILLS

Pacific Northwest Wheat Quality Council
Evaluation Form

Rate Samples in Question 1, 2 & 3 on 1-9 scale 5=usable average results. Question #4 provides additional space for comments, if appropriate.

For Dough & End-Product score as is. Make allowances and adjustments to score for questions 3 & 4.

Place laboratory data in tab below (preferred) or submit as separate file.

Ardent Mills

Be sure and add company name to file name please.

Variety	Check	Class	Group	Sample #	Product	Question #1 (1 poor 9 excellent) Dough/Batter Rating	Question #1 Liked/Disliked Comments	Question #2 (1 poor 9 excellent) End-Product Performance	Question #2 Liked/Disliked Comments	Question #3 (1 poor 9 excellent) Overall Acceptability	Question #3 Liked/Disliked Comments	Question #4 Mitigating Physical/Chemical Properties & Comments		
WA8334		SWW	1	1	Sugarsnap Cookie	5	Dislike: Crumbly Dough	5	Dislikes: Uneven Browning; Misshapen Cookies Like: Similar Spread Factor to Check	5	Worse than Check			
WA8336		SWW	1	2	Sugarsnap Cookie	5	Dislike: Crumbly Doiugh	5	Dislikes: Misshapen Cookies Like: Similar Spread Factor to Check	5	Worse than Check			
WA8362		SWW	1	3	Sugarsnap Cookie	5	Dislike: Crumbly Dough	4	Dislikes: Uneven Browning; Uneven Surface; Dark Color; Misshapen Cookies Like: High Spread Factor	5	Worse than Check			
WA8364		SWW	1	4	Sugarsnap Cookie	8		7	Dislike: Uneven Browning Like: High Spread Factor	7	Better than Check			
Madsen (CK)	ck	SWW	1	5	Sugarsnap Cookie	8		6		7				
WA8354		SWS	2	6	Sugarsnap Cookie	5	Dislike: Crumbly Dough	4	Dislikes: Uneven Browning; Dark Color; Uneven Surface; Misshapen Cookies; Slightly Lower Spread Factor	4	Worse than Check			
SEAHAWK (CK)	ck	SWS	2	7	Sugarsnap Cookie	8		6	Dislike: Uneven Browning	7				
UIL13-046145A		SWW	3	8	Sugarsnap Cookie	8		8	Like: High Spread Factor	8	Similar to Check			
UI Magic CL+ (CK)	ck	SWW	3	9	Sugarsnap Cookie	8		8		8				
M-Pire		SWW	4	10	Sugarsnap Cookie	8		7	Dislike: Low Spread Factor	7				
OR2170559		SWW	5	11	Sugarsnap Cookie	8		8	Like: Similar Spread Factor to Check	8	Better than Check			
Nixon (CK)	ck	SWW	5	12	Sugarsnap Cookie	8		7	Dislike: Uneven Browning	7				
ORI2190025 CL+		SWW	6	13	Sugarsnap Cookie	5	Dislike: Crumbly Dough	6	Dislikes: Uneven Surface; Uneven Browning; Lower Spread Factor than Check	6	Worse than Check			
ORI2190027 CL+		SWW	6	14	Sugarsnap Cookie	8		7	Dislike: Lower Spread Factor than Check	7	Worse than Check			
Appleby CL+ (CK)	ck	SWW	6	15	Sugarsnap Cookie	8		7		8				
OR5180072		CLUB	7	16	Sugarsnap Cookie	8		8	Like: High Spread Factor	8	Better than Check			
Cara (CK)	ck	CLUB	7	17	Sugarsnap Cookie	5	Dislike: Crumbly Dough	6	Dislikes: Uneven Browning; Bubbling	6				
WA8356		HRS	8	18	1lb Sponge & Dough Loaf	9	Like: Slightly Strong Dough; Long Mix Time	9	Like: Good Volume	9	Better than Check			
Glee (CK)	ck	HRS	8	19	1lb Sponge & Dough Loaf	6	Dislikes: Partial Breakdown at Mix; Slightly Weak, Wet Dough	9	Like: Good Volume	7				
BZ917-207		HRS	9	20	1lb Sponge & Dough Loaf	8		8	Likes: Great Volume; Large Break and Shred	8	Similar to Check			
BZ919-134		HRS	9	21	1lb Sponge & Dough Loaf	8	Like: Slightly Strong Dough; Long Mix Time	8	Likes: Good Volume; Large Break and Shred	8	Similar to Check			
BZ919-101 (CK)	ck	HRS	9	22	1lb Sponge & Dough Loaf	9	Like: Strong Dough; Long Mix Time	8	Like: Good Grain	8				
XF9306		HRS	10	23	1lb Sponge & Dough Loaf	4	Dislikes: Short Mix Time; Slightly Wet, Weak Dough	6	Dislike: Slightly Flat Top	5	Worse than Check			
XF9307		HRS	10	24	1lb Sponge & Dough Loaf	4	Dislikes: Short Mix Time; Slightly Wet, Weak Dough	6	Dislike: Slightly Flat, Uneven Top	5	Worse than Check			
WB9668 (CK)	ck	HRS	10	25	1lb Sponge & Dough Loaf	5	Dislike: Wet, Weak Dough	7	Like: Good Volume	6				

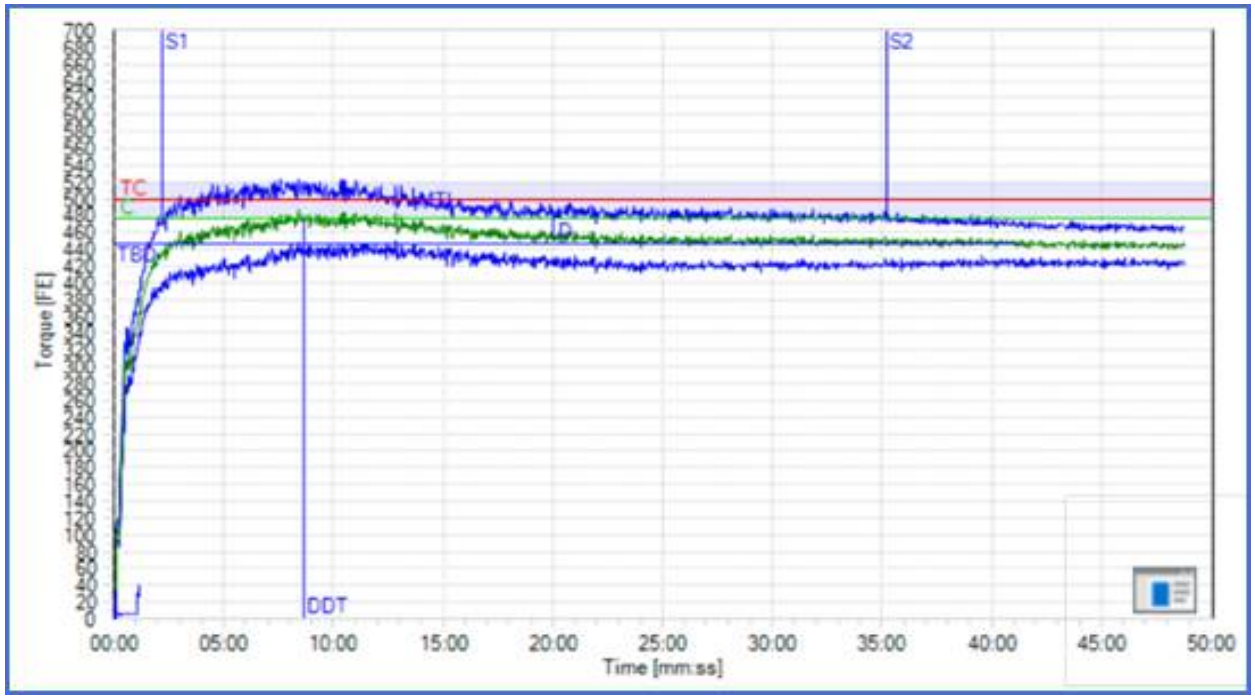
Ardent Mills

Sample ID	Variety	Sample #	Group	Check	Class	FARINOGRAPH				SRC				SUGARSNAP COOKIE BAKE				BREAD BAKE							
						Absorption @ 14% mb (%)	Peak (min)	Stability (min)	MTI (bu)	Water @ 14% mb (%)	Lactic Acid @ 14% mb (%)	Sucrose @ 14% mb (%)	Sodium Carbonate @ 14% mb (%)	Average Spread (mm)	Average Thickness (mm)	Spread Factor	Comments	Remix Time (min)	Mix Score	Makeup Score	Absorption Score	Loaf Volume (cc)	Loaf Height (in)	Comments	Bake Score
2001-22-004186	WA8334	1	Group 1		SWW					55.53	114.02	100.34	75.55	475.49	46.10	88.38	Crumbly Dough								
2001-22-004187	WA8336	2	Group 1		SWW					56.90	85.65	93.72	72.21	472.94	46.70	86.79	Crumbly Dough								
2001-22-004188	WA8362	3	Group 1		SWW					49.30	97.42	93.15	68.68	518.98	38.98	114.10	Crumbly Dough								
2001-22-004189	WA8364	4	Group 1		SWW					53.15	81.69	95.46	70.32	510.70	38.12	114.81									
2001-22-004190	Madsen (CK)	5	Group 1	ck	SWW					55.02	98.42	93.95	70.02	464.46	47.37	84.03									
2001-22-004191	WA8354	6	Group 2		SWS					51.25	119.37	101.29	77.12	481.22	51.58	79.95	Crumbly Dough								
2001-22-004192	SEAHAWK (CK)	7	Group 2	ck	SWS					52.49	106.47	96.83	71.30	479.81	47.39	86.77									
2001-22-004193	UIL13-046145A	8	Group 3		SWW					54.95	99.91	94.88	73.50	492.55	40.01	105.52									
2001-22-004194	UI Magic CL+ (CK)	9	Group 3	ck	SWW					54.08	100.20	93.33	69.73	489.22	41.18	101.82									
2001-22-004195	M-Pire	10	Group 4		SWW					55.58	78.80	93.24	71.32	451.84	50.16	77.21									
2001-22-004196	OR2170559	11	Group 5		SWW					51.80	80.25	92.31	69.88	477.50	45.26	90.41									
2001-22-004197	Nixon (CK)	12	Group 5	ck	SWW					51.93	77.82	94.26	72.94	489.28	45.25	92.67									
2001-22-004198	ORI2190025 CL+	13	Group 6		SWW					54.40	100.02	100.58	77.98	484.28	49.40	84.02	Crumbly Dough								
2001-22-004199	ORI2190027 CL+	14	Group 6		SWW					58.51	86.65	99.78	77.01	477.76	47.33	86.51									
2001-22-004200	Appleby CL+ (CK)	15	Group 6	ck	SWW					52.94	76.14	93.40	72.08	486.01	42.68	97.59									
2001-22-004201	OR5180072	16	Group 7		CLUB					51.84	69.63	90.06	70.21	489.28	41.43	101.21									
2001-22-004202	Cara (CK)	17	Group 7	ck	CLUB					48.47	75.36	81.96	62.40	504.48	45.65	94.71	Crumbly Dough								
2001-22-004203	WA8356	18	Group 8		HRS	59.0	8.7	33.0	16									20	8	9	8	2875	5.06	tacky, good at mix, less gas	89
2001-22-004204	Glee (CK)	19	Group 8	ck	HRS	62.1	7.7	14.4	12									8	8	7	7	2850	4.95	wet/PBD, good at mix, sl mellow	86
2001-22-004205	BZ917-207	20	Group 9		HRS	64.3	5.7	10.0	26									16	8	8	8	3000	5.3	good at mix, good/lively	90
2001-22-004206	BZ919-134	21	Group 9		HRS	62.4	9.5	21.0	24									20	9	8	8	2875	5.22	sl elastic at mix, good/lively	91
2001-22-004207	BZ919-101 (CK)	22	Group 9	ck	HRS	65.6	39.7	19.8	7									20	10	9	8	2700	4.93	elastic at mix, sl strong	91
2001-22-004208	XF9306	23	Group 10		HRS	64.3	4.7	5.8	48									4	6	7	8	2700	4.53	wet, extensible at mix, sl mellow	81
2001-22-004209	XF9307	24	Group 10		HRS	65.1	3.9	5.8	43									4	8	6	7	2675	4.34	sl wet, good at mix, mellow	83
2001-22-004210	WB9668 (CK)	25	Group 10	ck	HRS	65.6	7.1	9.1	30									8	7	8	7	2900	4.65	wet, sl extensible at mix	84

*PBD = Partial Breakdown

Ardent Mills

Variety	Sample ID	Sample	Absorption	Peak	Stability	MTI	Quality Number
WA8356	2001-22-004203	18	59.0	8.7	33	16	413
Glee (CK)	2001-22-004204	19	62.1	7.7	14.4	12	174
BZ917-207	2001-22-004205	20	64.3	5.7	10	26	121
BZ919-134	2001-22-004206	21	62.4	9.5	21	24	209
BZ919-101 (CK)	2001-22-004207	22	65.6	39.7	19.8	7	522
XF9306	2001-22-004208	23	64.3	4.7	5.8	48	89
XF9307	2001-22-004209	24	65.1	3.9	5.8	43	87
WB9668 (CK)	2001-22-004210	25	65.6	7.1	9.1	30	139



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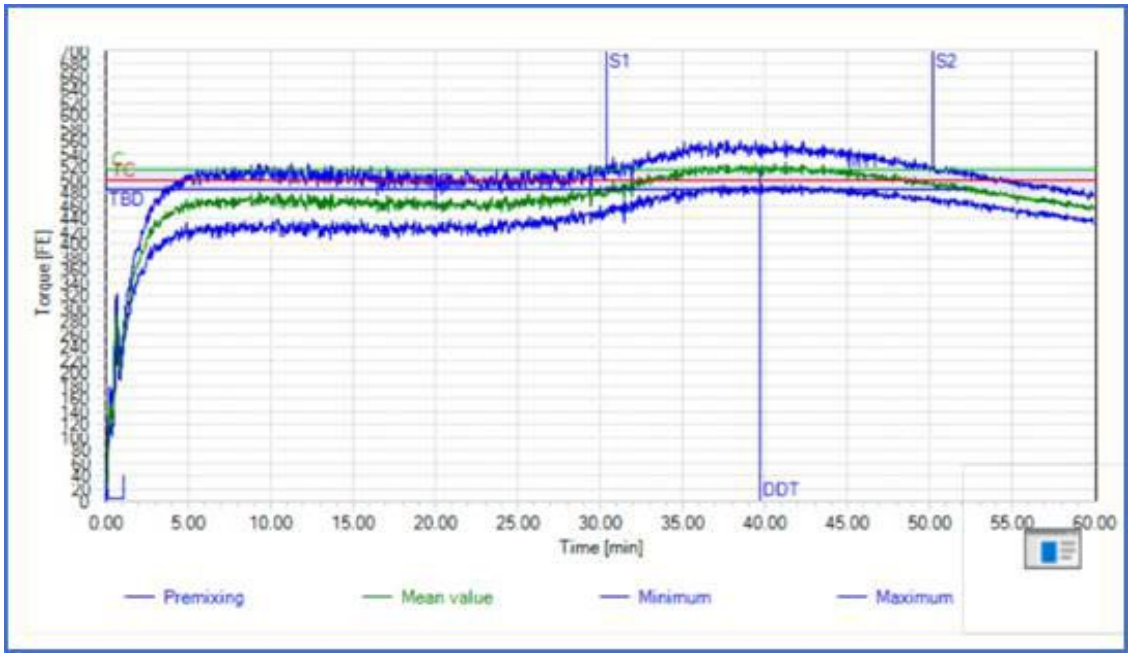
Ardent Mills



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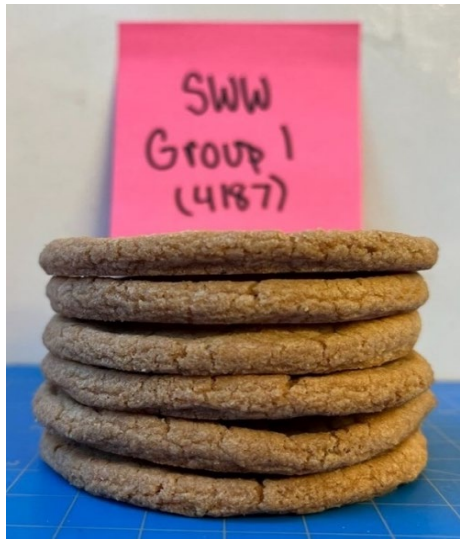
Ardent Mills



Sample # 1

Sample # 2

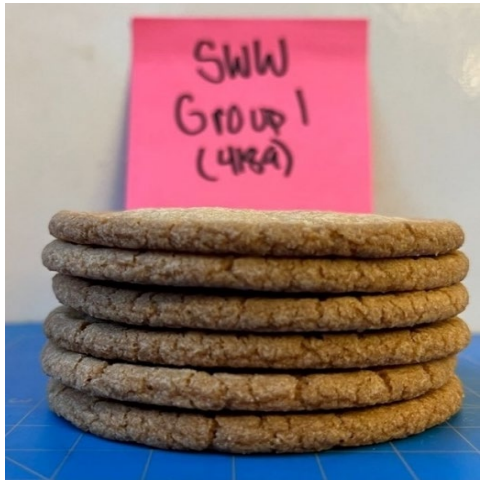
Sample # 3

Sample # 1

Sample # 2

Sample # 3

Ardent Mills



Sample # 4

Sample # 5

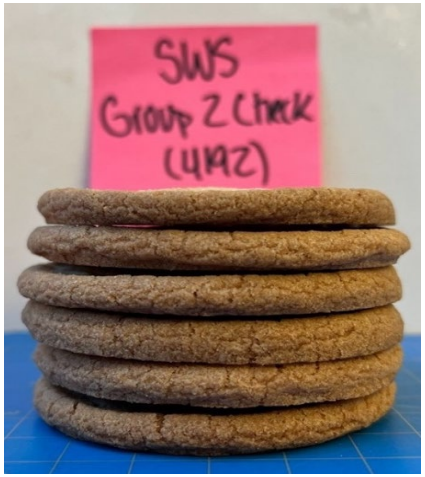
Sample # 6

Sample # 4

Sample # 5

Sample # 6

Ardent Mills



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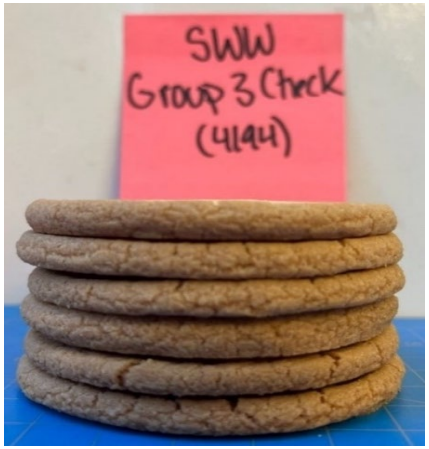
Sample # 8



Sample # 9

Sample # 7

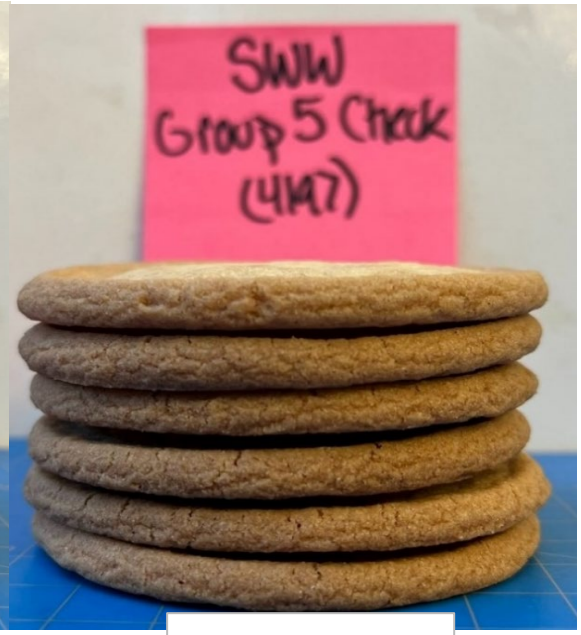
Sample # 8

Sample # 9

Ardent Mills

Sample # 10

Sample # 11



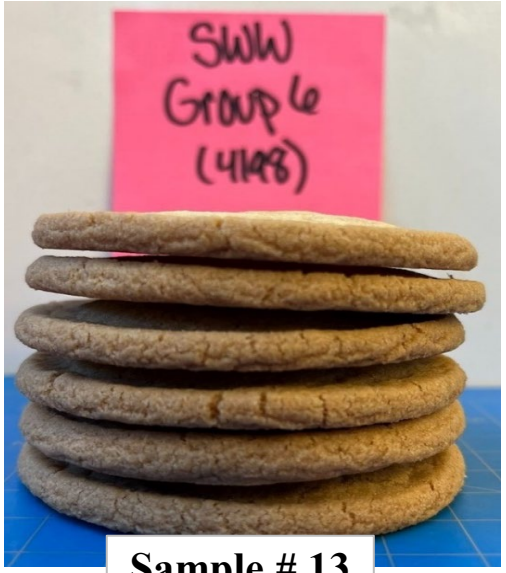
Sample # 12

Sample # 10

Sample # 11

Sample # 12

Ardent Mills



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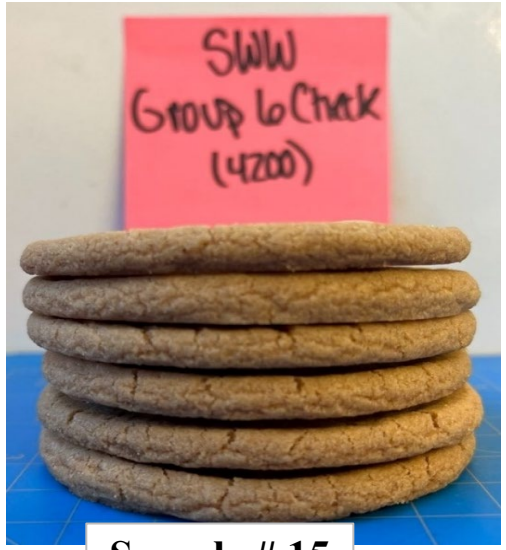
Sample # 14



Sample # 15

Sample # 13

Sample # 14

Sample # 15

Ardent Mills

Sample # 16

Sample # 17

Sample # 16

Sample # 17

18 &
Ctrl
2001-22-004203
2001-22-004204
20 & # 21
2001-22-004205
2001-22-004206
22 & # 23
2001-22-004207
2001-22-004208
24 &
2001-22-004209
2001-22-004210

Ardent Mills

Sample # 18

Sample # 19

Sample # 20

Sample #

Sample # 22

Sample # 23

Ardent Mills

Sample # 24

Sample # 25

Bay State Milling
Quincy MA

BAY STATE

Pacific Northwest Wheat Quality Council
Evaluation Form

Bay State Milling

Rate Samples in Question 1, 2 & 3 on 1-9 scale 5=usable average results. Question #4 provides additional space for comments, if appropriate.

For Dough & End-Product score as is. Make allowances and adjustments to score for questions 3 & 4.

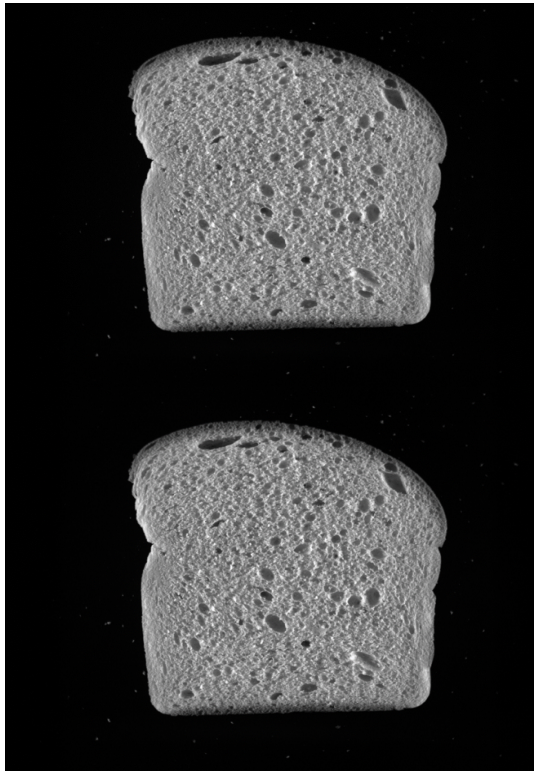
Place laboratory data in tab below (preferred) or submit as separate file.

Be sure and add company name to file name please.

						1 poor 9 excellent		1 poor 9 excellent		1 poor 9 excellent				
						Question #1		Question #2		Question #3		Question #4		
Variety	Check	Class	Group	Sample#	Product	Dough/Batter Rating	Liked/Disliked Comments	End-Product Performance	Liked/Disliked Comments	Overall Acceptability	Liked/Disliked Comments	Mitigating Physical/Chemical Properties & Comments		
WA8334		SWW	1	1										
WA8336		SWW	1	2										
WA8362		SWW	1	3										
WA8364		SWW	1	4										
Madsen (CK)	ck	SWW	1	5										
WA8354		SWS	2	6										
SEAHAWK (CK)	ck	SWS	2	7										
UIL13-046145A		SWW	3	8										
UI Magic CL+ (CK)	ck	SWW	3	9										
M-Pire		SWW	4	10										
OR2170559		SWW	5	11										
Nixon (CK)	ck	SWW	5	12										
ORI2190025 CL+		SWW	6	13										
ORI2190027 CL+		SWW	6	14										
Appleby CL+ (CK)	ck	SWW	6	15										
OR5180072		CLUB	7	16										
Cara (CK)	ck	CLUB	7	17										
WA8356		HRS	8	18	White Pan Bread	7	slightly bucky	6	good volume, but wild break and shred and uneven grain	6	some issues with end product and some difficulty working with	possibly needed more mix		
Glee (CK)	ck	HRS	8	19	White Pan Bread	6	not as extensible as I would like	8	decent all around	7	could be easier to work with, but good			
BZ917-207		HRS	9	20	White Pan Bread	6	sticky out of bowl and during forming and panning	6	insufficient break and shred, some holes and uneven grain	6	difficult to work with, mediocre performance	could be too much water since absorptions were based off mixograph and adjusted.		
BZ919-134		HRS	9	21	White Pan Bread	7	elastic but better after rest	6	volume not great, slightly gummy texture	6	decent but some issues	could have needed more water but felt fine initially		
BZ919-101 (CK)	ck	HRS	9	22	White Pan Bread	7	sponge felt slightly weak and wet both before and after fermentation	8	good all around	7	sponge gave pause but no major issues			
XF9306		HRS	10	23	White Pan Bread	8	good all around	7	volume not great but otherwise good	8	good few issues			
XF9307		HRS	10	24	White Pan Bread	5	very sticky	4	flat, crumbly and uneven grain	5	Difficult to work with and poor end product	possibly too much mix, very short mix time		
WB9668 (CK)	ck	HRS	10	25	White Pan Bread	8	good all around	8	good all around, could have better break and shred	8	good performance and easy to work with			

Baystate

SAMPLE ID	# of Cells	Cell Volume	# Holes	Hole Volume	Non-Uniformity	Brightness	NOTES	Grain Score
WA8356	7573.3	6.35	3.92	83.83	5.46	131.24	minus 2 for holes and hv, minus 2 uniformity	6
Glee (CK)	7088.3	5.89	2.38	38.54	1.49	131.34	minus 2 holes and hole volume	8
BZ917-207	6391.7	6.93	1.33	38.41	2.57	127.51	minus 2 cell number, 1 non uniformity, minus 1 holes and holes	6
BZ919-134	6254.3	6.46	0.98	26.8	1.96	129.48	minus 2 cell number	8
BZ919-101 (CK)	6759.7	6.51	2.27	46.67	1.69	132.45	minus 1 holes minus 1 cell volume	8
XF9306	7031	5.4	0.93	23.09	1.3	128.67	minus 2 holes and hole volume and non uniformity	8
XF9307	5535.3	7.35	1.19	40.15	2.37	129.91	minus 3 cell number and volume, minus 2 hole volume and	5
WB9668 (CK)	7392.7	5.71	4.01	62.98	2.05	138.86	minus 2 for holes and hole volume	8
WHITE CONTROL	7119	6.46	0.38	13.02	0.84	127.57	minus 1 non uniformity and cell volume	9



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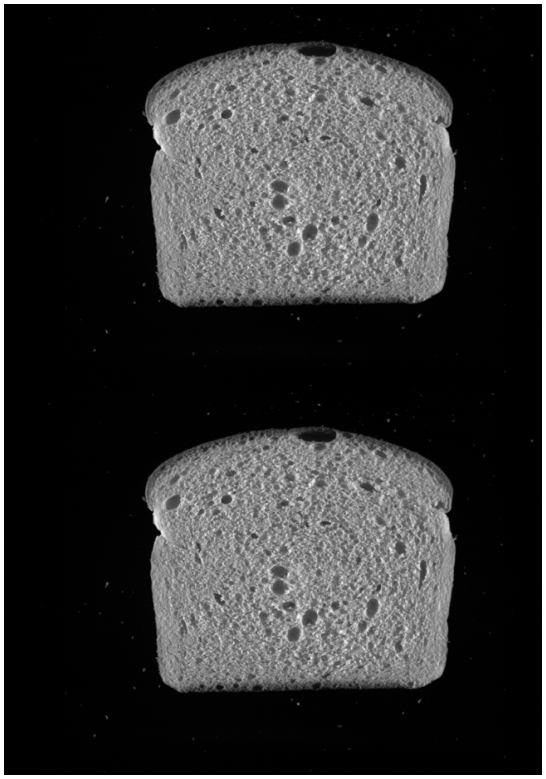

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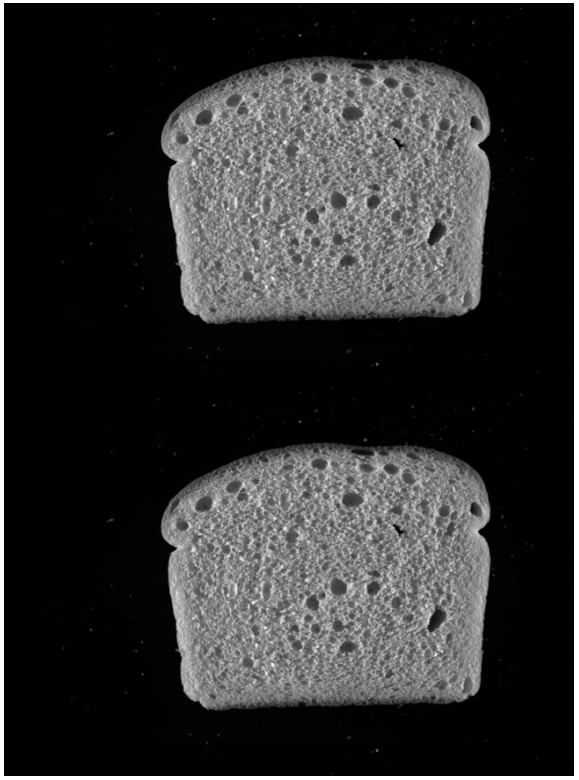
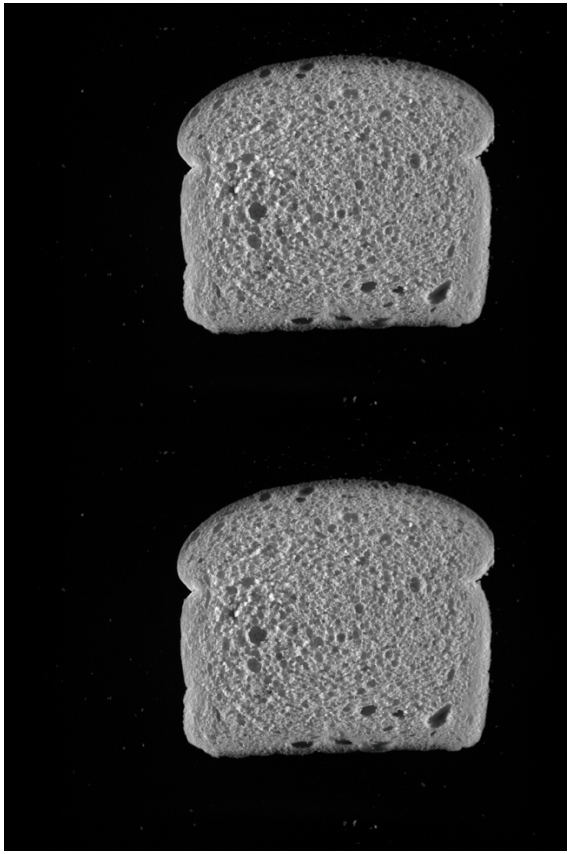


20-22 (3)

Baystate



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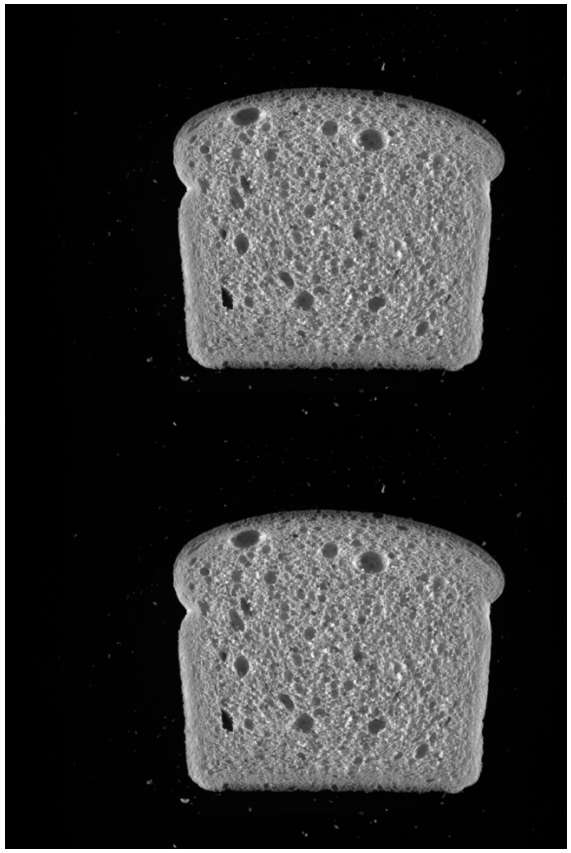

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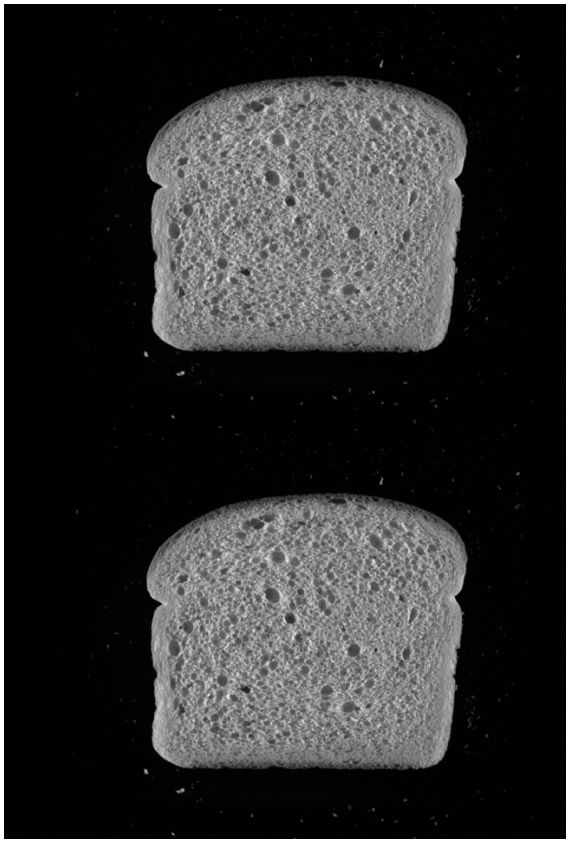

23-22 (3)

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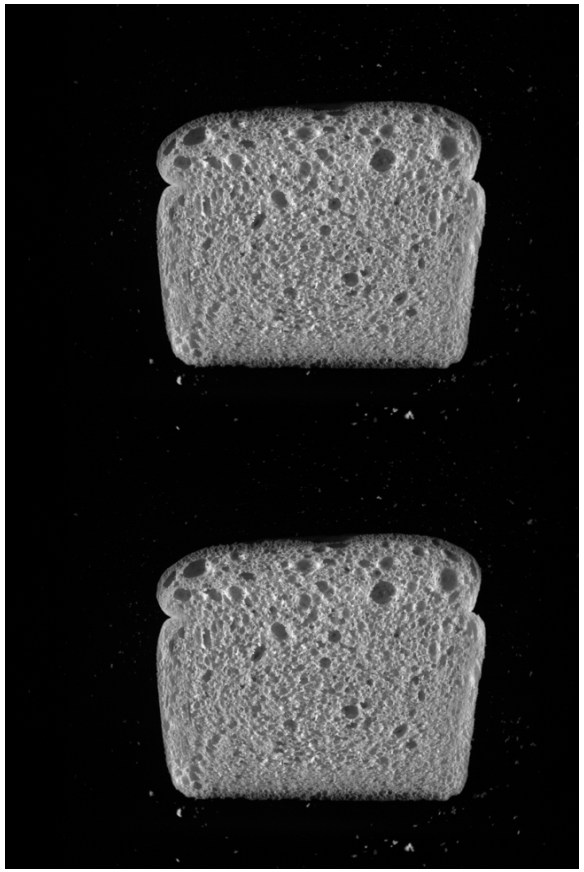
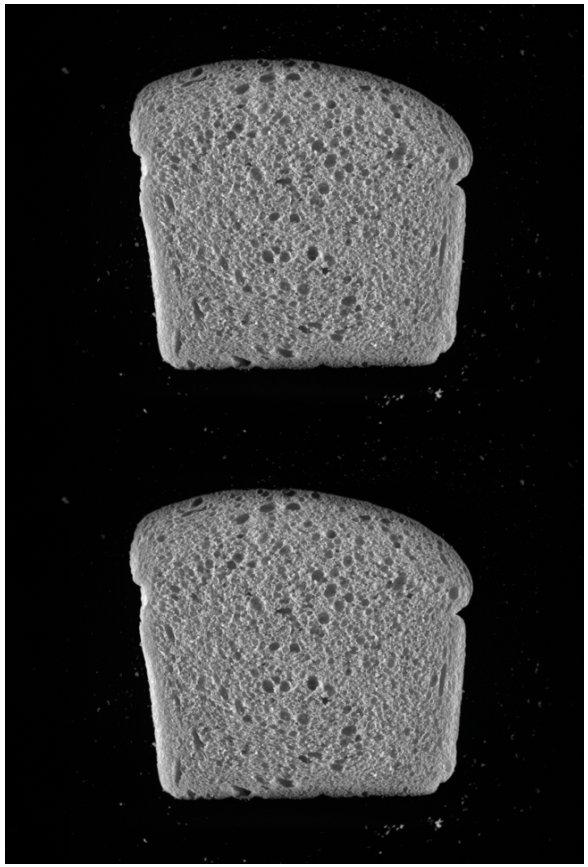


24-22 (3)

25-22 (1)



Control (1)

California Wheat Commission
Woodland CA

CA WHEAT COMM

Pacific Northwest Wheat Quality CouncilEvaluation Form

Rate Samples in Question 1, 2 & 3 on 1-9 scale 5=usable average results. Question #4 provides additional space for comments, if appropriate.

For Dough & End-Product score as is. Make allowances and adjustments to score for questions 3 & 4.

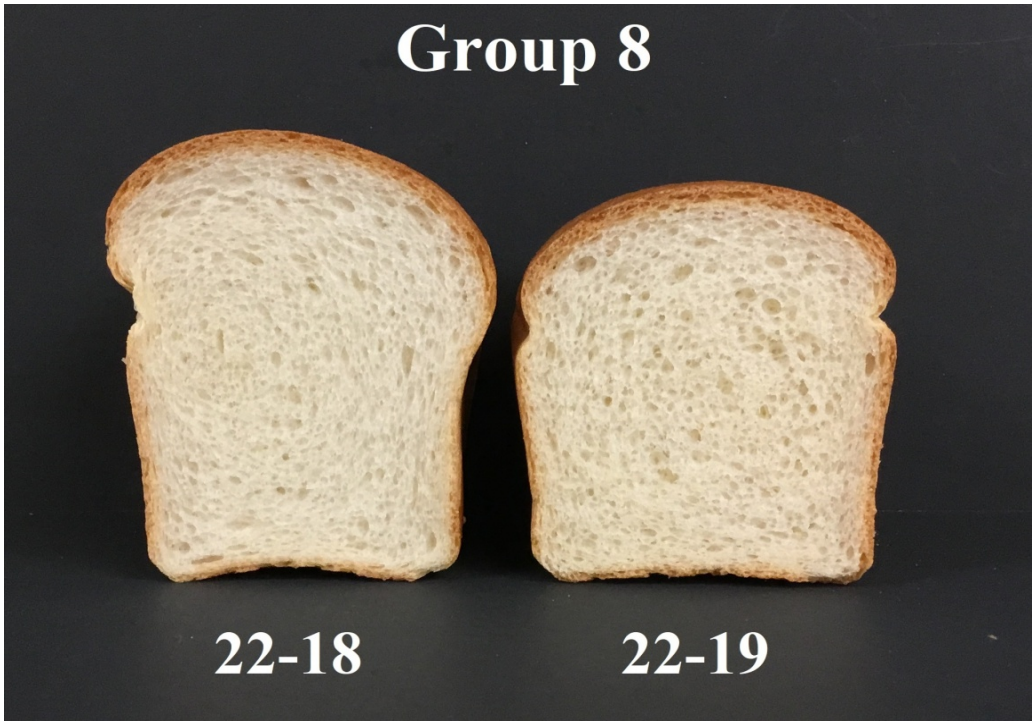
Place laboratory data in tab below (preferred) or submit as separate file.

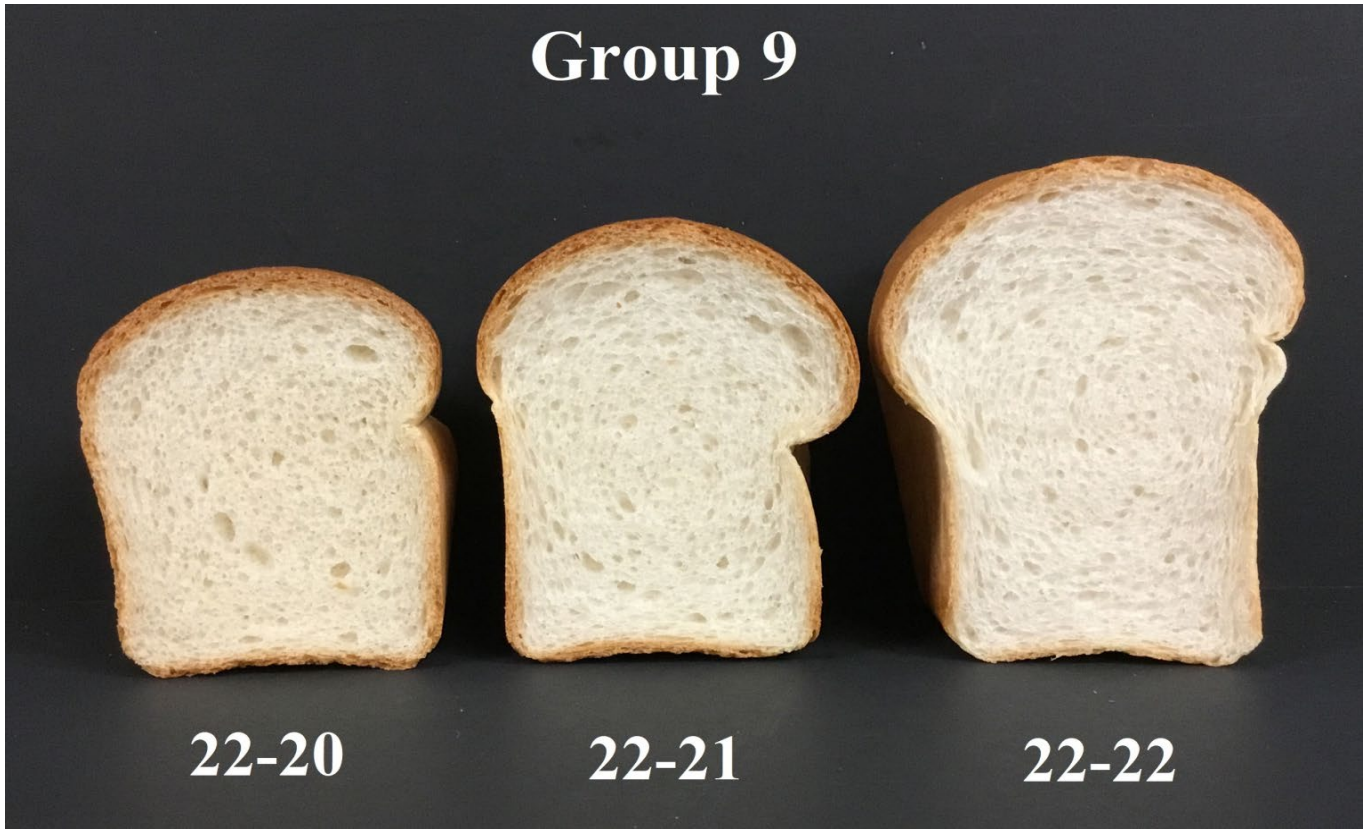
Be sure and add company name to file name please.

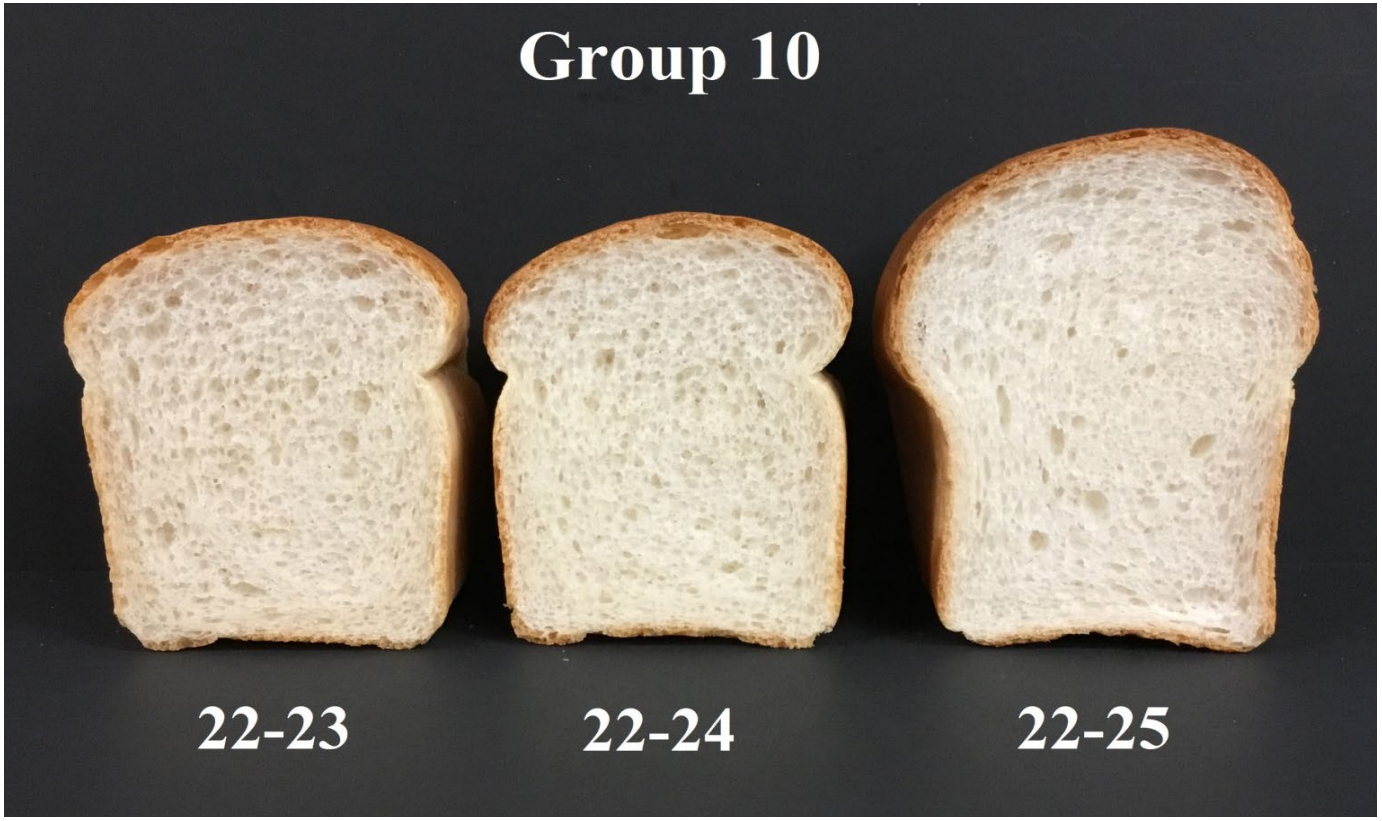
1 poor 9 excellent — Question #1 | 1 poor 9 excellent — Question #2 | 1 poor 9 excellent — Question #3 | Question #4

Variety	Check	Class	Group	Sample#	Product	Dough/Batter Rating	Liked/Disliked Comments	End-Product Performance	Liked/Disliked Comments	Overall Acceptability	Liked/Disliked Comments	Mitigating Physical/Chemical Properties & Comments		
WA8356		HRS	8	18	100g AACC	6	good mix time slightly soft dough but gained strength during punching, stronger during molding	6	good loaf volume, ok crumb, a bit tight but some elongated cells, slightly soft	6	liked better than check, slightly stronger and better end product			
Glee (CK)	ck	HRS	8	19	100g AACC	4	good mix time, softer dough out of mixer, soft during molding	3	poor volume, flat top, too open crumb, gassy, large rounded cells, coarse	3	weak dough, poor crumb			
BZ917-207		HRS	9	20	100g AACC	4	quick mix time, soft dough, not much strength	3	poor volume, flat top, a bit too open crumb, large rounded cells, slightly coarse	3	disliked, weakest dough of group			
BZ919-134		HRS	9	21	100g AACC	8	good mix time, strong dough, spongy, good strength during molding	7	good loaf volume, good crumb, mix of large and small cells, some elongated cells, slightly soft	7	okay, softer than check, but good volume, and good crumb			
BZ919-101 (CK)	ck	HRS	9	22	100g AACC	9	good mix time, well balanced, good strength during molding	9	excellent volume, good open crumb, spiral pattern, elongated cells, soft and spongy	9	liked best, good dough strength, high volume and good crumb			
XF9306		HRS	10	23	100g AACC	3	quick mix time, soft dough, lacks elasticity can't trap gas well	2	acceptable volume, flat top, poor crumb, gassy, large rounded cells, coarse	2	not good			
XF9307		HRS	10	24	100g AACC	3	quick mix time, soft dough, lacks elasticity can't trap gas well	3	acceptable volume, poor crumb, gassy, large rounded cells, slightly coarse	2	not good			
WB9668 (CK)	ck	HRS	10	25	100g AACC	7	quick mix time, soft dough, gained some strength, slightly firm during molding	7	good volume, ok crumb, no spiral pattern but slightly open and mostly uniform cells, slightly soft	7	liked best, better strength than other samples in group, good volume and ok crumb			

		BAKING ANALYSIS								
PNW ID#	Flour Protein %	BAKING ABS%	MIX TIME (min)	VOL C.C	DOUGH HANDLING (1-10)	CRUMB COLOR (1-10)	CRUMB GRAIN (1-10)	CRUMB TEXTURE (1-10)	BREAD SYMMETRY (1-10)	Bake Score (1-10)
WA8356	13.30	62.0	3.25	905	7	8	6	7	7	6.8
Glee (CK)	12.40	61.0	3.08	780	5	8	5	4	4	4.5
BZ917-207	13.40	67.0	2.25	765	5	8	4	5	4	4.5
BZ919-134	12.30	63.0	2.97	930	9	9	7	7	8	7.8
BZ919-101 (CK)	13.70	65.0	4.22	1020	10	10	9	10	10	9.8
XF9306	12.50	63.0	1.42	820	4	6	2	4	5	3.8
XF9307	12.60	62.0	1.43	835	4	8	3	5	6	4.5
WB9668 (CK)	13.60	65.0	2.08	945	6	9	7	7	8	7.0


Group 8
22-18
22-19


Group 9
22-20
22-21
22-22


Group 10
22-23
22-24
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Pacific Northwest Wheat Quality Council
Evaluation Form

DAILY BREAD QUALITY ANALYTICS

Variety	Check	Class	Group	Sample#	Product	1 poor 9 excellent Question #1 Dough/Ba.	Liked/Disliked Comments	1 poor 9 excellent Question #2 End-Produ.	Liked/Disliked Comments	1 poor 9 excellent Question #3 Overall Ac.	Liked/Disliked Comments	Question #4 Mitigating Physical/Chemical Properties & Comments
WA8334		SWW	1	1	Cookie 10-52.02	7	Good Dough	4	Poor cookie	5		
WA8336		SWW	1	2	Cookie 10-52.02	7	Good Dough	5	Average cookie	6		
WA8362		SWW	1	3	Cookie 10-52.02	6		7	Nice spread	6		
WA8364		SWW	1	4	Cookie 10-52.02	7	Good Dough	7	Good cookie, Nice spread	7		
Madsen (CK)	ck	SWW	1	5	Cookie 10-52.02	7	Good Dough	5	Average cookie	6		
WA8354		SWS	2	6	Cookie 10-52.02	7	Good Dough	3	Poor cookie	4		
SEAHAWK (CK)	ck	SWS	2	7	Cookie 10-52.02	7	Good Dough	3	Poor cookie	4		
UIL13-046145A		SWW	3	8	Cookie 10-52.02	7	Good Dough	6	Slightly above avg cookie	6		
UI Magic CL+ (CK)	ck	SWW	3	9	Cookie 10-52.02	7	Good Dough	7	Good cookie, Nice spread	7		
M-Pire		SWW	4	10	Cookie 10-52.02	5		5	Average cookie	6		
OR2170559		SWW	5	11	Cookie 10-52.02	7	Good Dough	6	Slightly above avg cookie	6		
Nixon (CK)	ck	SWW	5	12	Cookie 10-52.02	7	Good Dough	7	Good cookie, Nice spread	7		
ORI2190025 CL+		SWW	6	13	Cookie 10-52.02	7	Good Dough	6	Slightly above avg cookie	6		
ORI2190027 CL+		SWW	6	14	Cookie 10-52.02	7	Good Dough	6	Slightly above avg cookie	6		
Appleby CL+ (CK)	ck	SWW	6	15	Cookie 10-52.02	7	Good Dough	7	Good cookie, Nice spread	7		
OR5180072		CLUB	7	16	Cookie 10-52.02	7	Good Dough	7	Good cookie, Nice spread	7		
Cara (CK)	ck	CLUB	7	17	Cookie 10-52.02	7	Good Dough	8	Very nice cookie	8		
WA8356		HRS	8	18	Bread 10-10B	5	Avg dough	5	Avg loaf	6	Better than check	
Glee (CK)	ck	HRS	8	19	Bread 10-10B	4	Weak dough	4	Poor loaf vol	4		
BZ917-207		HRS	9	20	Bread 10-10B	4	Weak dough	4	Poor loaf vol, Avg grain	4		
BZ919-134		HRS	9	21	Bread 10-10B	9	Very Nice dough	8	Nice grain, good loaf vol and color	8		
BZ919-101 (CK)	ck	HRS	9	22	Bread 10-10B	6	Avg to good dough	7	Good loaf vol and color	7		
XF9306		HRS	10	23	Bread 10-10B	2	Weak dough No glu strength	4	Poor loaf	3		
XF9307		HRS	10	24	Bread 10-10B	2	Weak dough No glu strength	4	Poor loaf	3		
WB9668 (CK)	ck	HRS	10	25	Bread 10-10B	3	Weak dough No glu strength	5	Avg loaf Good color	5		

DAILY BREAD
QUALITY ANALYTICS

Soft Wheat Quality Evaluations

				FLOUR NIR					Cookie			Solvent Retention Capacity			
				Flr Mst	Flr Ash	Flr Hrd	Flr SKCS	Flr Prot	Cdiam	Top Grain		Water	Sod Carb	Lactic Acid	Sucrose
Sample	Check	Group	Class	%	%			%	mm	1=Exc		%	%	%	%
WA8334		Group 1	SWW	13.6	0.46	36	22	8.1	18.2	3		57	75	109	107
WA8336		Group 1	SWW	13.5	0.45	46	21	7.4	18.6	3		58	74	82	96
WA8362		Group 1	SWW	14.0	0.42	28	12	7.6	19.8	3		53	71	96	98
WA8364		Group 1	SWW	13.7	0.41	40	18	7.5	19.6	1		53	72	78	97
Madsen (CK)	Check	Group 1	SWW	13.2	0.43	59	25	8.9	18.6	3		55	70	93	95
WA8354		Group 2	SWS	12.7	0.44	31	6	10.3	18.2	5		57	74	115	117
SEAHAWK (CK)	Check	Group 2	SWS	13.6	0.47	39	13	10.0	18.2	5		52	71	97	104
UIL13-046145A		Group 3	SWW	13.4	0.45	48	19	7.8	19.0	3		58	74	96	100
UI Magic CL+ (CK)	Check	Group 3	SWW	13.3	0.45	48	15	8.0	19.4	1		55	71	96	97
M-Pire		Group 4	SWW	13.3	0.39	63	24	8.3	18.4	3		56	72	78	95
OR2170559		Group 5	SWW	13.2	0.43	54	19	8.2	19.0	1		54	69	76	92
Nixon (CK)	Check	Group 5	SWW	13.1	0.45	41	15	7.8	19.4	1		54	72	76	98
ORI2190025 CL+		Group 6	SWW	12.8	0.43	24	8	7.0	19.0	1		57	77	94	104
ORI2190027 CL+		Group 6	SWW	12.5	0.46	13	5	6.4	18.8	1		60	78	83	103
Appleby CL+ (CK)	Check	Group 6	SWW	13.3	0.42	21	7	6.9	19.6	1		55	72	74	96
OR5180072		Group 7	CLUB	13.2	0.45	34	12	6.6	19.6	1		55	71	68	91
Cara (CK)	Check	Group 7	CLUB	13.4	0.37	29	15	7.0	20.0	1		51	63	71	82

FlrMst=NIR flour moisture
FlrAsh=NIR Flour ash
FlrHrd=NIR Flour Hradness
FlrSKCS=NIR Flour SKCS
FlrProt=NIR Flour protein (14% moisture)
Cdiam=Cookie Diameter (mm) (2 cookies)
Top Grain=Cookie top grain. 1=Excellent and 9=Extremely poor quality

DAILY BREAD
QUALITY ANALYTICS

Hard Wheat Quality Evaluations

				FLOUR NIR					Paper MIXOGRAPH					MIXSMART				BREAD BAKE										Solvent Retention Capacity			
				Flr Mst	Flr Ash	Flr Hrd	Flr SKCS	Flr Prot	Pk time	Pk Ht	Tol	Mixo Rate	Mixo abs	Mid-Point Time	Mid-Point Height	Mid-Point Work	Mid-Point Width +2min	Babs	Bake mix time	Nat pkht	Nat whr	Loaf Vol	Pred loaf Vol	Pred loaf diff	Crumb Grain	Crumb Color	Crumb TEX	Water	Sod Carb	Lactic Acid	Sucrose
Sample	Check	Group	Class	%	%			%	min			1=Excel	%	min				%	min			cc	cc	cc	1=Excel	1=Excel	1=Excel	%	%	%	%
WA8356		Group 8	HRS	13.5	0.58	130	45	13.3	5.50	5.0	1128	4.0	63.5	5.7	44.9	203.1	16.1	64.0	4.13	58.7	7.5	955	1005	-50	4	4	3	63	80	134	111
Glee (CK)	Check	Group 8	HRS	13.3	0.61	125	46	12.3	4.25	5.4	1129	4.0	62.0	4.2	48.6	154.2	14.9	63.0	3.17	59.4	6.4	800	946	-146	5	4	4	66	84	121	112
BZ917-207		Group 9	HRS	13.3	0.55	120	49	13.5	4.00	5.3	1050	4.5	67.0	3.9	48.0	149.5	14.7	67.5	3.03	62.0	6.6	890	1011	-121	4.5	3	4	66	85	128	112
BZ919-134		Group 9	HRS	14.3	0.50	116	42	12.6	5.50	5.4	1049	4.5	65.0	5.2	51.0	197.6	17.2	65.0	3.90	71.4	9.1	1100	966	135	3.5	2	2	64	84	137	113
BZ919-101 (CK)	Check	Group 9	HRS	14.2	0.49	121	45	13.9	10.00	5.5	1286	3.5	69.0	10.0	50.9	349.9	18.0	69.0	6.45	69.3	12.4	1225	1044	182	5	1.5	2	68	88	169	127
XF9306		Group 10	HRS	14.6	0.55	130	45	12.7	2.25	5.4	417	8.0	65.0	2.2	50.8	84.8	5.3	64.0	1.78	64.5	3.7	910	972	-62	5	3	3	60	77	93	105
XF9307		Group 10	HRS	14.1	0.53	126	45	12.7	2.00	5.5	458	8.0	64.5	2.1	53.9	81.9	5.9	64.0	1.90	69.3	4.8	935	966	-31	5	3	2	62	81	99	109
WB9668 (CK)	Check	Group 10	HRS	13.6	0.51	137	52	13.6	3.00	6.1	724	7.0	68.0	2.6	58.1	116.4	7.0	68.0	2.44	72.2	5.9	1100	1031	70	4.5	2	2	63	84	123	119

FlrMst=NIR flour moisture
FlrAsh=NIR Flour ash
FlrHrd=NIR Flour Hardness
FlrSKCS=NIR Flour SKCS
FlrProt=NIR Flour protein (14% moisture)
Pktime=Mixograph peak mix time
PkHt=Mixograph height at peak time
Tol=Mixograph mixing tolerance calculated at peak and + 3 minutes
Mixo abs=optimized Mixograph absorption
Mixo Rate=Mixograph curve rating based of Tol number and mix time. 1=Excellent and 9=Extremely poor quality
Babs=actual bake absorption
Bake mixtime=actual bake mix time
Loaf=Loaf volume (cc)
Predloaf=predicted loaf volume. (65*protein+140)
Predloafdiff=the difference between the actual loaf volume and the predicted.
Crumb Grain=Bread crumb grain. 1=Excellent and 9=Extremely poor quality
Crumb Color=Bread crumb color. 1=Excellent and 9=Extremely poor quality
Crumb TEX=Bread crumb texture. 1=Excellent and 9=Extremely poor quality

Grain Craft
Manhattan KS

GRAIN CRAFT

Pacific Northwest Wheat Quality Council
Evaluation Form

Rate Samples in Question 1, 2 & 3 on 1-9 scale 5=usable average results. Question #4 provides additional space for comments, if appropriate.

For Dough & End-Product score as is. Make allowances and adjustments to score for questions 3 & 4.

Place laboratory data in tab below (preferred) or submit as separate file.

Be sure and add company name to file name please.

						1 poor 9 excellent		1 poor 9 excellent		1 poor 9 excellent				
						Question #1		Question #2		Question #3		Question #4		
Variety	Check	Class	Group	Sample#	Product	Dough/Batter Rating	Liked/Disliked Comments	End-Product Performa	Liked/Disliked Comments	Overall Acceptability	Liked/Disliked Comments	Mitigating Physical/Chemical Properties & Comments		
WA8334		SWW	1	1						4	are high, increasing overall water SRC.			
WA8336		SWW	1	2						4	Acceptable. Water slighly high, LA at bottom end of our desired target.			
WA8362		SWW	1	3						6	other values good overall. Desirable.			
WA8364		SWW	1	4						5	Acceptable profile. LA at bottom end of our desired target.			
Madsen (CK)	ck	SWW	1	5						6	SUC slighlly elevated. However, very acceptable profile.	Grain protein signficantly higher than exp. lines.		
WA8354		SWS	2	6						4	High water, LA, SC, and SUC.	High grain protein for soft wheat class.		
SEAHAWK (CK)	ck	SWS	2	7						4	High SC and SUC. Better than exp.	High grain protein for soft wheat class.		
UIL13-046145A		SWW	3	8						5	Elevated water and SC. Slightly high SUC. Good LA.			
UI Magic CL+ (CK)	ck	SWW	3	9						6	Water slightly elevated. Good LA, SC, SUC. Better than exp.			
M-Pire		SWW	4	10						4	Elevated water, with LA at bottom end of target.			
OR2170559		SWW	5	11						5	Overall acceptable. LA at bottom end of target. Better than check.			
Nixon (CK)	ck	SWW	5	12						4	High water, low LA.			
ORI2190025 CL+		SWW	6	13						4	High water, SC, and SUC. Acceptable LA.			
ORI2190027 CL+		SWW	6	14						3	High water, SC, with low LA.			
Appleby CL+ (CK)	ck	SWW	6	15						3	High water, with low LA.			
OR5180072		CLUB	7	16						5	Water and SC slightly high for club, but good LA and SUC.			
Cara (CK)	ck	CLUB	7	17						6	Good overall profile. Better than exp.			
WA8356		HRS	8	18	1 lb. sponge & dough	8	Excellent strength / long mix. Developed, slightly tight	8	Excellent volume. Slightly open, coarse interior.	8	Acceptable. Performed better than CK.			
Glee (CK)	ck	HRS	8	19	1 lb. sponge & dough	7	Good strength / adequate mix time. Optimum, developed	6	Good volume. Slightly open, coarse interior.	7	Acceptable. SL lower mix time than experimental, but slightly better absorption.	Nearly percent lower protein than experimental.		
BZ917-207		HRS	9	20	1 lb. sponge & dough	6	Good strength / adequate mix time. Optimum, developed	6	Lowest volume of group. Good grain & texture.	5	Highest farinograph absorption of group, lowest stability.			
BZ919-134		HRS	9	21	1 lb. sponge & dough	8	Excellent strength / long mix. Developed, slightly tight	7	Best volume of group. Good grain, texture slightly coarse.	8	Acceptable. Excellent stability. Good absorption. Better than CK.	protein than other two samples.		
BZ919-101 (CK)	ck	HRS	9	22	1 lb. sponge & dough	8	Excellent strength / long mix. Tight dough - underasborbed at	7	Good volume. Open, sl dry, coarse interior, needed more	7	Acceptable. Excellent stability. Good absorption potential.			
XF9306		HRS	10	23	1 lb. sponge & dough	2	Poor strength / low mix time. Developed, sticky, slack dough.	2	Poor volume. Ok grain & texture.	2	Unacceptable. Low stability / low volume.			
XF9307		HRS	10	24	1 lb. sponge & dough	2	Poor strength / low mix time. Developed, sticky, slack dough.	2	Poor volume. Ok grain & texture.	2	Unacceptable. Low stability / low volume.			
WB9668 (CK)	ck	HRS	10	25	1 lb. sponge & dough	6	Adequate dough strength / mix time. Developed, slightly sticky, slightly slack dough.	7	Good volume. Good grain & texture.	7	Acceptable. Highest absorption and best stability of the group.			

PACIFIC NORTHWEST WHEAT QUALITY COUNCIL SAMPLE RESULTS 2022

Bake Method: one pound sponge & dough, lean formula

GRAIN CRAFT

				Flour Analysis									Bake Detail									
Sample Description	Class	Check	Group	Flour Moist	Flour Ash	Flour Protein	FNV	Farino Abs	Farino Peak	Farino MTI	Farino Stability	Malted Value	Bake Abs	Mix Time (min)	Dough Score (1-9)	Dough Comments	Volume (cc)	Color (1-9)	Grain (1-9)	Texture (1-9)	External (1-9)	Comments
WA8356	HRS		8	13.8	0.55	13.3	543	58.0	7.0	14	20.0	280	58.0	40.0	8	DEVELOPED, SLIGHTLY TIGHT	3118	6 Cream	6	6	8	Protein, stability, mix time and volume higher than check. Excellent gluten strength with low absorption for HRS. Average interior attributes.
Glee (CK)	HRS	**ck**	8	13.9	0.57	12.4	499	59.5	7.2	25	14.5	290	60.0	17.0	9	OPTIMUM, DEVELOPED	2927	6	6	6	6	Protein low. Adequate stability and mix time. Low absorption, slightly better than test. Excellent dough handling. Good volume. Average interior attributes.
BZ917-207	HRS		9	13.6	0.52	13.5	413	62.5	5.4	33	10.3	242	63.0	17.0	9	OPTIMUM, DEVELOPED	2809	7 Slightly Creamy	7	7	4	Good protein with high absorption, acceptable stability and mix time. Lower stability and mix time than check. Slightly lower volume than check.
BZ919-134	HRS		9	15.0	0.47	12.5	387	60.5	9.3	13	20.0	243	60.0	30.0	8	DEVELOPED, SLIGHTLY TIGHT	2912	7	7	6	6	High protein with good absorption, excellent stability, mix time and volume. Better volume than check. Dough handling better than check.
BZ919-101 (CK)	HRS	**ck**	9	14.8	0.48	13.8	361	62.2	8.2	9	20.0	260	62.0	50.0	5	DRY, TIGHT	2868	7	6	5	5	High protein with good absorption, excellent stability, very long mix time and good volume. Excellent gluten strength; dough seemed underabsorbed at 62.0%.
XF9306	HRS		10	15.1	0.53	12.8	423	60.5	4.6	68	5.2	250	61.0	7.0	4	DEVELOPED, STICKY, SLACK	2633	7	7	7	1	High protein with good absorption, low / unacceptable stability and mix time. Low volume. Worse than check.
XF9307	HRS		10	14.9	0.52	12.7	403	62.5	5.0	50	5.5	242	62.0	7.0	4	DEVELOPED, STICKY, SLACK	2662	7	7	7	1	High protein with good absorption, low / unacceptable stability and mix time. Low volume. Worse than check.
WB9668 (CK)	HRS	**ck**	10	14.3	0.48	13.7	405	65.0	8.3	24	15.4	259	65.0	14.0	6	DEVELOPED, SLIGHTLY STICKY, SLIGHTLY SLACK	2971	8 White	7	7	7	High protein with high absorption. Good stability and mix time. Excellent volume.

GRAIN CRAFT

PNW Wheat Quality Council

2022 Samples			Milling					Solvent Retention Capacity			
Sample	Class	Group	Wheat Pro.	Flour Mst.	Flour Pro.	Flour Ash	Flour Yld	Water	Lactic Acid	Sodium Carbonate	Sucrose
WA8334	SWW	1	9.3	13.6	7.7	0.43	74.4	57.7	106.2	74.2	112.8
WA8336	SWW	1	9.0	13.6	7.2	0.44	74.5	56.3	84.1	71.0	100.5
WA8362	SWW	1	9.1	14.0	7.1	0.41	71.9	55.6	92.5	68.7	101.4
WA8364	SWW	1	8.8	13.7	7.2	0.38	75.5	53.7	81.7	70.1	101.3
Madsen (CK)	SWW	1	10.5	13.2	8.6	0.41	74.7	54.4	91.1	69.7	101.0
WA8354	SWW	2	11.8	12.7	9.9	0.46	69.5	56.8	116.7	74.6	115.4
SEAHAWK (CK)	SWW	2	11.1	13.6	9.4	0.46	71.5	53.7	107.5	74.8	112.2
UIL13-046145A	SWW	3	8.3	13.6	7.5	0.41	73.4	56.9	95.7	75.4	104.7
UI Magic CL+ (CK)	SWW	3	8.6	13.3	7.7	0.46	72.9	55.9	98.0	70.2	101.5
M-Pire	SWW	4	9.3	13.3	8.0	0.46	75.9	58.5	84.1	73.4	102.4
OR2170559	SWW	5	9.1	13.5	7.8	0.44	74.1	54.4	82.7	70.6	99.3
Nixon (CK)	SWW	5	9.0	13.2	7.6	0.50	74.2	56.9	80.6	71.6	101.4
ORI2190025 CL+	SWW	6	8.2	13.1	6.8	0.46	73.5	58.3	96.2	75.6	106.2
ORI2190027 CL+	SWW	6	7.8	12.7	6.5	0.46	72.0	61.0	79.1	76.2	102.5
Appleby CL+ (CK)	SWW	6	8.2	13.4	6.8	0.45	73.1	58.6	76.8	72.4	98.3
OR5180072	CLUB	7	8.3	13.2	6.5	0.49	73.5	55.4	69.9	71.4	90.6
Cara (CK)	CLUB	7	9.0	13.6	6.8	0.40	75.3	53.3	72.6	63.4	85.8

US FGIS and WSDA

GRAIN INSP

FGIS		
		Wheat Falling Number
		14% Moisture Basis (sec)
Sample	Class	Corrected for Barometric Pressure
1	SWW	356
2	SWW	361
3	SWW	365
4	SWW	365
5	SWW	364
6	SWS	390
7	SWS	358
8	SWW	368
9	SWW	364
10	SWW	376
11	SWW	355
12	SWW	370
13	SWW	338
14	SWW	352
15	SWW	322
16	CLUB	342
17	CLUB	347
18	HRS	438
19	HRS	422
20	HRS	463
21	HRS	375
22	HRS	401
23	HRS	359
24	HRS	354
25	HRS	419

WSDA EVALUATION OF WQC SAMPLES

THE RESULTS OF THIS EVALUATION ARE THE PREDICTIONS OF THE OLYMPIA SUPERVISION OFFICE ON HOW VARIETIES PRESENTED BY THE PACIFIC NORTHWEST WHEAT QUALITY COUNCIL WILL BE CLASSED BY INSPECTORS IN THE OFFICIAL INSPECTION SYSTEM BASED ON KERNEL MORPHOLOGY. REGIONAL AND ENVIRONMENTAL EFFECTS CAN DRAMATICALY CHANGE KERNEL MORPHOLOGY AND THESE RESULTS MAY REF-LECT TRAITS IN AN INDIVIDUAL TEST PLOT LOCATION THAT MAY NOT BE INDICATIVE OF THE VARIETY AS A WHOLI

DEFINITIONS:

HRS: HARD RED SPRING
HRW: HARD RED WINTER
SWH: SOFT WHITE WHEAT
WHCB: WHITE CLUB WHEAT
WWH: WESTERN WHITE WHEAT - MIXTURE OF SOFT WHITE WHEAT AND WHITE CLUB WHEAT > 10%
HDWH: HARD WHITE WHEAT
XWHT: MIXED WHEAT - GREATER THAN 10% OFOTHER CLASS
DU: DURUM
CCL: CONTRASTING CLASS - CONTAINS A PERCENTAGE OF OTHER CLASS < 10%

WSDA EVALUATION OF WQC SAMPLES

	INSPECTION-CLASS	EVALUATION COMMENTS	VARIETY
1	SWH		
2	SWH		
3	SWH		
4	SWH	Similar to sample 3	
5	SWH		
6	SWH		
7	SWH		
8	SWH		
9	SWH		
10	SWH		
11	SWH		
12	SWH		
13	SWH		
14	SWH		
15	SWH		
16	WHCB	Might lose some to SWH	
17	WHCB	Bruehl look	
18	HRS		
19	HRS	Looks like Kelse	
20	HRS		
21	HRS		
22	HRS		
23	HRS		
24	HRS		
25	HRS		

Japan Flour Millers Association
Tokyo JP

JFMA

Pacific Northwest Wheat Quality Council
Evaluation Form

Japan Flour Millers Association

Rate Samples in Question 1, 2 & 3 on 1-9 scale 5=usable average results. Question #4 provides additional space for comments, if appropriate.

For Dough & End-Product score as is. Make allowances and adjustments to score for questions 3 & 4.

Place laboratory data in tab below (preferred) or submit as separate file.

Be sure and add company name to file name please.

						1 poor 9 excellent		1 poor 9 excellent		1 poor 9 excellent				
						Question #1		Question #2		Question #3		Question #4		
Variety	Check	Class	Group	Sample#	Product	Dough/Batter Rating	Liked/Disliked Comments	End-Product Performance	Liked/Disliked Comments	Overall Acceptability	Liked/Disliked Comments	Mitigating Physical/Chemical Properties & Comments		
WA8334		SWW	1	1	Sponge Cake	4	easy to drop specific gravity	3	uneven cell structure hard and dry texture	3				
WA8336		SWW	1	2	Sponge Cake	5		4	difficult to dissolve in mouth	4				
WA8362		SWW	1	3	Sponge Cake	4	little heavy batter	5	little uneven cell structure smooth and moist texture	5				
WA8364		SWW	1	4	Sponge Cake	4	little heavy batter	5	little uneven cell structure smooth and moist texture	5				
Madsen (CK)	ck	SWW	1	5	Sponge Cake	4		5	little dry mouth feel	5				
WA8354		SWS	2	6	Sponge Cake	4	little heavy batter, easy to drop specific gravity	5	uneven cell structure difficult to dissolve in mouth	5		protein too high		
SEAHAWK (CK)	ck	SWS	2	7	Sponge Cake	4	little heavy batter	6	uneven cell structure, moist texture	6		protein high		
UIL13-046145A		SWW	3	8	Sponge Cake	5		6	smooth and moist texture	6				
UI Magic CL+ (CK)	ck	SWW	3	9	Sponge Cake	5		5		5				
M-Pire		SWW	4	10	Sponge Cake	5		5		5				
OR2170559		SWW	5	11	Sponge Cake	5		5		5				
Nixon (CK)	ck	SWW	5	12	Sponge Cake	5		6	smooth and moist texture, easy to dissolve in mouth	6		good volume		
ORI2190025 CL+		SWW	6	13	Sponge Cake	4	little heavy batter	4	difficult to dissolve in mouth	4				
ORI2190027 CL+		SWW	6	14	Sponge Cake	4	little heavy batter	4	difficult to dissolve in mouth	4				
Appleby CL+ (CK)	ck	SWW	6	15	Sponge Cake	5	slightly heavy batter	5		5				
OR5180072		CLUB	7	16	Sponge Cake	5		5		5				
Cara (CK)	ck	CLUB	7	17	Sponge Cake	5		4	difficult to dissolve in mouth	5				
WA8356		HRS	8	18	Bread	4		4	slightly dark color, bad texture	4				
Glee (CK)	ck	HRS	8	19	Bread	4	less elasticity	3	little dark color, bad texture	3		low volume		
BZ917-207		HRS	9	20	Bread	5	slightly extensible dough	5	slightly elastic and hard texture	5		low volume		
BZ919-134		HRS	9	21	Bread	4	little brittle dough	6	moderate elasticity and softness	6				
BZ919-101 (CK)	ck	HRS	9	22	Bread	2	lack of extensibility	4	hard and dry texture, uneven cell structure	3		low volume		
XF9306		HRS	10	23	Bread	3	sticky dough, lose dough strengh easily	3	dark color,dry texture	3		low volume		
XF9307		HRS	10	24	Bread	3	sticky dough, lose dough strengh easily	3	dark color,dry texture, bitter taste	3		low volume		
WB9668 (CK)	ck	HRS	10	25	Bread	4		5	slightly dark color, bitter taste	5				

Krusteaz Continental Mills, Inc
Tukwila WA

KRUSTEAZ

Pacific Northwest Wheat Quality Council
Evaluation Form

KRUSTEAZ Continental Mills Inc.

Rate Samples in Question 1, 2 & 3 on 1-9 scale 5=usable average results. Question #4 provides additional space for comments, if appropriate.

For Dough & End-Product score as is. Make allowances and adjustments to score for questions 3 & 4.

Place laboratory data in tab below (preferred) or submit as separate file.

Be sure and add company name to file name please.

						1 poor 9 excellent		1 poor 9 excellent		1 poor 9 excellent			
						Question #1		Question #2		Question #3		Question #4	
Variety	Check	Class	Group	Sample#	Product	Dough/Batter Rating	Liked/Disliked Comments	End-Product Performance	Liked/Disliked Comments	Overall Acceptability	Liked/Disliked Comments	Mitigating Physical/Chemical Properties & Comments	
WA8334		SWW	1	1	Pancake	7	Good batter viscosity	8	Excellent pancake height	8	Very good pancakes		
WA8336		SWW	1	2	Pancake	6	Low batter viscosity	4	Chewy gummy texture	4	Border line acceptability for batter applications		
WA8362		SWW	1	3	Pancake	4	Very low batter viscosity	4	Chewy gummy texture	4	No suitable for batter applications		
WA8364		SWW	1	4	Pancake	5	Low batter viscosity	4	Chewy gummy texture	4	No suitable for batter applications		
Madsen (CK)	ck	SWW	1	5	Pancake	8	Excellent batter viscosity	9	Excellent pancake height	9	Tall fluffy pancakes		
WA8354		SWS	2	6	Pancake	7	Good batter viscosity	9	Excellent pancake height	9	Tall fluffy pancakes		
SEAHAWK (CK)	ck	SWS	2	7	Pancake	7	Good batter viscosity	8	Excellent pancake height	8	Very good pancakes		
UIL13-046145A		SWW	3	8	Pancake	6	Low batter viscosity	5	Chewy gummy texture	5	On the low viscosity side, but still acceptable for batter applications		
UI Magic CL+ (CK)	ck	SWW	3	9	Pancake	6	Low batter viscosity	5	Chewy gummy texture	5	On the low viscosity side, but still acceptable for batter applications		
M-Pire		SWW	4	10	Pancake	7	Good batter viscosity	8	Excellent pancake height	8	Very good pancakes		
OR2170559		SWW	5	11	Pancake	4	Low batter viscosity	5	Chewy gummy texture	4	Border line acceptability for batter applications		
Nixon (CK)	ck	SWW	5	12	Pancake	3	Very low batter viscosity	4	Chewy gummy texture	3	No suitable for batter applications		
ORI2190025 CL+		SWW	6	13	Pancake	5	Low batter viscosity	5	Chewy texture	5	Border line acceptability for batter applications		
ORI2190027 CL+		SWW	6	14	Pancake	5	Low batter viscosity	4	Chewy gummy texture	4	No suitable for batter applications		
Appleby CL+ (CK)	ck	SWW	6	15	Pancake	4	Very low batter viscosity	4	Chewy texture	4	No suitable for batter applications		

Krusteaz

Continental Mills - Pancake Data

Sample	Group	Check	Class	**Bostwick (cm)**	**3-stack height (in)**
WA8334	1		SWW	12.00	1.49
WA8336	1		SWW	13.75	1.25
WA8362	1		SWW	17.00	1.22
WA8364	1		SWW	15.00	1.26
Madsen (CK)	1	Check	SWW	11.00	1.70
WA8354	2		SWS	12.25	1.56
SEAHAWK (CK)	2	Check	SWS	12.00	1.65
UIL13-046145A	3		SWW	15.00	1.30
UI Magic CL+ (CK)	3	Check	SWW	14.00	1.34
M-Pire	4		SWW	12.50	1.63
OR2170559	5		SWW	14.25	1.37
Nixon (CK)	5	Check	SWW	16.25	1.28
ORI2190025 CL+	6		SWW	15.00	1.40
ORI2190027 CL+	6		SWW	15.00	1.28
Appleby CL+ (CK)	6	Check	SWW	17.00	1.30

	2022 PNW WQC Samples										
	Nutrien Ag Solutions - Bozeman R&D										
					Nutrien	WWQL	Nutrien	WWQL	Nutrien	WWQL	Nutrien
Sample	**Variety**	**Check**	**Group**	**Class**	**Moisture**	**Moisture**	**TW**	**TW**	**Protein**	**Protein**	**SED**
1	WA8334		Group 1	SWW	8	7.8	60.8	62.5	8.7	9.3	60.0
2	WA8336		Group 1	SWW	7.5	7.7	58.8	60.3	8.5	9.0	37.0
3	WA8362		Group 1	SWW	7.9	8.3	60.8	62.5	9.0	9.1	44.0
4	WA8364		Group 1	SWW	7.9	7.7	62.0	63.2	8.9	8.8	24.0
5	Madsen (CK)	ck	Group 1	SWW	8.5	8.1	61.0	62.3	10.3	10.5	48.0
6	WA8354		Group 2	SWS	8.2	8.0	59.4	59.3	11.6	11.8	70.0
7	SEAHAWK (CK)	ck	Group 2	SWS	8.3	8.1	59.1	61.6	11.0	11.1	65.0
8	UIL13-046145A		Group 3	SWW	8.3	8.3	61.9	62.2	8.9	8.3	39.0
9	UI Magic CL+ (CK)	ck	Group 3	SWW	8.2	7.7	59.5	61.2	9.0	8.6	34.0
10	M-Pire		Group 4	SWW	7.9	7.8	63.4	64.6	9.7	9.3	25.0
11	OR2170559		Group 5	SWW	8.4	8.3	60.7	61.0	9.6	9.1	24.0
12	Nixon (CK)	ck	Group 5	SWW	8.1	8.6	60.4	62.0	9.5	9.0	20.0
13	ORI2190025 CL+		Group 6	SWW	7.5	8.5	60.3	61.3	8.3	8.2	28.0
14	ORI2190027 CL+		Group 6	SWW	7.8	9.1	62.1	62.4	8.5	7.8	20.0
15	Appleby CL+ (CK)	ck	Group 6	SWW	7.8	8.9	59.9	61.1	8.7	8.2	17.0
16	OR5180072		Group 7	CLUB	7.5	8.8	59.4	60.9	8.7	8.3	18.0
17	Cara (CK)	ck	Group 7	CLUB	7.9	8.9	60.0	60.8	9.0	9.0	28.0
18	WA8356		Group 8	HRS	8.5	7.0	56.0	56.4	14.3	13.0	112.0
19	Glee (CK)	ck	Group 8	HRS	8.4	6.6	58.4	59.8	13.8	12.1	112.0
20	BZ917-207		Group 9	HRS	9	7.9	61.7	62.7	16.3	16.5	114.0
21	BZ919-134		Group 9	HRS	9.1	8.2	62.3	62.8	13.2	12.9	114.0
22	BZ919-101 (CK)	ck	Group 9	HRS	9.3	7.8	62.6	63.2	15.0	14.5	118.0
23	XF9306		Group 10	HRS	9.3	8.9	60.7	61.8	13.1	12.9	93.0
24	XF9307		Group 10	HRS	9.3	8.9	60.7	62.0	13.6	13.2	98.0
25	WB9668 (CK)	ck	Group 10	HRS	9	9.1	61.4	62.8	14.3	14.2	112.0
* = Checked with Phadebas assay and showed very low alpha-amylase activity											

Pacific Northwest Wheat Quality Council
Evaluation Form

PSES Dept. MSU

Rate Samples in Question 1, 2 & 3 on 1-9 scale 5=usable average results. Question #4 provides additional space for comments, if appropriate.

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						Question #1		Question #2		Question #3		Question #4	
Variety	Check	Class	Group	Sample#	Product	Dough/Batter Rating	Liked/Disliked Comments	End-Product Performance	Liked/Disliked Comments	Overall Acceptability	Liked/Disliked Comments	Mitigating Physical/Chemical Properties & Comments	
WA8334		SWW	1	1									
WA8336		SWW	1	2									
WA8362		SWW	1	3									
WA8364		SWW	1	4									
Madsen (CK)	ck	SWW	1	5									
WA8354		SWS	2	6									
SEAHAWK (CK)	ck	SWS	2	7									
UIL13-046145A		SWW	3	8									
UI Magic CL+ (CK)	ck	SWW	3	9									
M-Pire		SWW	4	10									
OR2170559		SWW	5	11									
Nixon (CK)	ck	SWW	5	12									
ORI2190025 CL+		SWW	6	13									
ORI2190027 CL+		SWW	6	14									
Appleby CL+ (CK)	ck	SWW	6	15									
OR5180072		CLUB	7	16									
Cara (CK)	ck	CLUB	7	17									
WA8356		HRS	8	18	100 g pup loaf	5	Tacky, droopy dough. Didn't pick up off bowl slightly bucky by pan punch	5	Small proof, symmetrical, nice color	4	Best crumb of the HRSs	Bucky dough	
Glee (CK)	ck	HRS	8	19	100 g pup loaf	5	Droopy not nice stiff and odd dough	5	Small proof, symmetrical, dark loaf	4	Decent crumb, some dough strength	Tacky weird to handle	
BZ917-207		HRS	9	20	100 g pup loaf	6	Good stretch, elasticity and dome	5	Slightly dark, wrong side break	4	Decent crumb, dead dough strength	Tacky weird to handle	
BZ919-134		HRS	9	21	100 g pup loaf	6	Nice elasticity, stretch & dome	6	Nice loaf color	6	Decent crumb	Dough imroved as it developed	
BZ919-101 (CK)	ck	HRS	9	22	100 g pup loaf	5	Has strength, extremely bucky	5	Slightly dark, large side tear	5	Large volume, High absorption	Dimpled dough, long mixer	
XF9306		HRS	10	23	100 g pup loaf	5	Soft tendencies, wet, dimpled dough	5	Slightly dark, side tear	4	Proofed nicely, has stretch	Poor crumb	
XF9307		HRS	10	24	100 g pup loaf	5	Soft tendencies, wet, dimpled dough	5	Good proof	4	Stretchy wet dough	Poor crumb, short mix time	
WB9668 (CK)	ck	HRS	10	25	100 g pup loaf	5	Has stretch, strength, sl drooping	6	Good volume, average crumb	7	Slightly dark loaf		

2022 MONTANA STATE UNIVERSITY PNW WHEAT QUALITY COUNCIL

Variety	GROUP	CLASS	CHECK	WHEAT PROTEIN	SKH	FLOUR YIELD	FLOUR PROTEIN	FASH	BMTIME	BABS	LVOL, CC	CGS
WA8356	8	HRS		13.0	70	72.8	12.9	0.68	10.1	73.5	1010	7
Glee (CK)	8	HRS	X	12.1	76	71.7	11.9	0.69	8.1	73.1	1025	6
BZ917-207	9	HRS		16.5	70	69.9	12.9	0.63	6.4	73.9	1070	5
BZ919-134	9	HRS		12.9	56	73.2	12.2	0.55	9.3	74.5	1185	6
BZ919-101 (CK)	9	HRS	X	14.5	65	71.9	13.5	0.54	26.7	85.2	1220	5
XF9306	10	HRS		12.9	53	71.0	12.5	0.68	3.2	73.3	1050	4
XF9307	10	HRS		13.2	56	68.5	12.4	0.68	2.8	74.3	1075	4
WB9668 (CK)	10	HRS	X	14.2	58	69.5	13.3	0.61	4.4	77.4	1240	5

Samyang, Corporation
Seoul, Korea

SAMYANG

Pacific Northwest Wheat Quality Council
Evaluation Form

Samyang, Corp

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						Question #1		Question #2		Question #3		Question #4		
Variety	Check	Class	Group	Sample#	Product	Dough/Batter Rating	Liked/Disliked Comments	End-Product Performance	Liked/Disliked Comments	Overall Acceptability	Liked/Disliked Comments	Mitigating Physical/Chemical Properties & Comments		
WA8334		SWW	1	1	Sponge cake	6	High water abs. but, High specific gravity Little bit strong dough properties	7	Good symmetry	7	Lumpy texture & High firmness			
WA8336		SWW	1	2	Sponge cake	7	Low elasticity	5	Height reduction(Surface Collapse)	6	Lumpy texture & High firmness			
WA8362		SWW	1	3	Sponge cake	4	Little bit high gluten strenth Low water abs. Highest specific gravity	6	Execllent symmetry Good color, structure for crumb but, Height reduction(Surface Collapse)	7	Nothing significant to report			
WA8364		SWW	1	4	Sponge cake	6	Low specific gravity but, Low water abs.& elasticity	5	Good symmetry	6.5	Very lumpy texture & High firmness			
Madsen (CK)	ck	SWW	1	5	Sponge cake	5	High water abs. High elasticity & Strong gluten strenth	4	Good symmetry but, Height reduction(Surface Collapse), very low loaf volume	5	Sticky surface Dry texture & Highest firmness			
WA8354		SWS	2	6	Sponge cake	4	High water abs. High elasticity & Strong gluten strenth Highest max. viscosity Highest gluten content	7	High loaf volume Good symmetry	6.5	Dry & lumpy texture			
SEAHAWK (CK)	ck	SWS	2	7	Sponge cake	4	High gluten content & specific gravity	8	High loaf volume	6.5	Nothing significant to report			
UIL13-046145A		SWW	3	8	Sponge cake	6	Low specific gravity	7	High height reduction(Surface Collapse)	6	Dry texture & High firmness			
UI Magic CL+ (CK)	ck	SWW	3	9	Sponge cake	5	High elasticity	8	Good symmetry	6.5	Moist texture			
M-Pire		SWW	4	10	Sponge cake	6	Low specific gravity & High water abs. Low gluten content & elasticity	7	Height reduction(Surface Collapse)	6.5	Soft texture			
OR2170559		SWW	5	11	Sponge cake	4	Low gluten content Handling difficulties (low viscosity and severe dripping)	6	Good symmetry but, Height reduction(Surface Collapse)	6.5	Soft & very moist texture			
Nixon (CK)	ck	SWW	5	12	Sponge cake	5	Nothing significant to report	7	Good symmetry	7	Soft & moist texture			
ORI2190025 CL+		SWW	6	13	Sponge cake	5	Stability of elasticity	6	High loaf volume	6.5	Dried structure			
ORI2190027 CL+		SWW	6	14	Sponge cake	5	Low elasticity	4	Very low loaf volume	5	High firmness & lumpy texture			
Appleby CL+ (CK)	ck	SWW	6	15	Sponge cake	5	Very low specific gravity	7	Execllent symmetry, color, structure for crumb	7	Soft & elastic texture			
OR5180072		CLUB	7	16	Sponge cake	7	Very low specific gravity & High MTI value, Batter handling easy	8	High loaf volume Execllent symmetry, color, structure for crumb	7	Execllent texture but, Little bit dry & lumpy texture			
Cara (CK)	ck	CLUB	7	17	Sponge cake	7	Very low specific gravity & High MTI value, Batter handling easy	9	Highest loaf volume Execllent symmetry, color, structure for crumb	8	Execllent texture (soft & moist)			
WA8356		HRS	8	18	Pan bread	7	Yellow color Long stability, High elasticity but, Low water abs.	6	Good inside texture & cell for crumb but, Normal loaf volume	7	Chewy texture but, little bit high firmness			
Glee (CK)	ck	HRS	8	19	Pan bread	6	Slightly elastic dough but, Low fermentation endurance	5	Low loaf volume & large inside cell Coarse crumb	5	Lumpy texture & Fermented odor Not chewy, High firmness			
BZ917-207		HRS	9	20	Pan bread	5	High water abs., but, Short stability Low fermentation endurance	4	Dark color & large cell for crumb Low loaf volume	5	Rough mouth feeling & Fermented odor Not chewy, High firmness			
BZ919-134		HRS	9	21	Pan bread	8	Long stability, High elasticity	7	High oven spring & loaf volume Bright color for crust & crumb Good texture & cell for crumb	8	Soft & chewy & moist texture but, Sour taste			
BZ919-101 (CK)	ck	HRS	9	22	Pan bread	9	Very high elasticity and stability (Increased more and more) High fermentation endurance	8	High oven spring & loaf volume Bright color for crust & crumb Good structure & cell for crumb	9	Very chewy texture			
XF9306		HRS	10	23	Pan bread	4	Low fermentation endurance Elasticity decreases rapidly	5	Low loaf volume Large inside cell & dark color for crumb, Coarse crumb Low loaf volume	5	Not chewy & Fermented odor			
XF9307		HRS	10	24	Pan bread	5	Fast fermentation rate but, Elasticity decreases rapidly	4	Low loaf volume Large inside cell & dark color for crumb, Coarse crumb Low loaf volume	7	Soft texture & very moist Good taste but, not chewy, Fermented odor			
WB9668 (CK)	ck	HRS	10	25	Pan bread	8	Very high water abs. High fermentation endurance, Fast fermentation rate	9	highest loaf volume & oven spring Bright color for crust & crumb Good structure & cell for crumb	9	Soft & chewy & moist texture			

Samyang, Corp

							Farinograph						Viscograph		SRC					Particle size					Sponge cake/ Pan bread					Max Height (mm)		
Group	Class	Variety	Sample	Moisture (%)	Ash (%)	Protein (%)	Water abs. (14.0%)	D.T (min)	Stability (min)	Softening (ICC, FU)	MTI (AACC, FU)	Farino quality no.	Max. temp. (℃)	Torque (BU)	5% S.C (%)	55% EtOH (%)	Water (%)	50% Sucrose (%)	5% Lactic acid (%)	D [4, 3] Volume weighted	Specific surface area	d (0.1)	d (0.5)	d (0.9)	Dough specific gravity	Volume (ml)	Firmness g (AACC 74-09)	Firmness g (after 1 day)	Sensory test score (100Point)	Immediately after manufacture	After 1 day	Height reduction (mm)
1	SWW	WA8334	PNW WQC 22-1	13.62	0.459	8.05	52.6	1.4	3.9	71	40	33	93.9	535	71.9	39.2	56.4	98.4	110.5	66.67	0.29	9.71	38.83	180.03	0.458	1,705	347	-	83	58	53.4	-5.0
1	SWW	WA8336	PNW WQC 22-2	13.71	0.455	7.44	51.4	1.2	2.8	102	77	21	94.3	527	70.8	39.5	56.8	90.7	85.1	79.77	0.24	11.73	47.64	146.94	0.440	1,664	431	-	70	55	49.1	-6.1
1	SWW	WA8362	PNW WQC 22-3	14.25	0.451	7.33	48.9	1.0	1.2	123	79	16	92.0	621	68.4	39.5	51.1	92.1	97.5	60.23	0.31	10.32	30.06	194.53	0.461	1,732	312	-	79	57	51.3	-6.1
1	SWW	WA8364	PNW WQC 22-4	13.82	0.443	7.40	49.5	0.9	1.7	109	72	27	92.8	527	69.3	36.9	51.7	88.6	83.4	59.59	0.28	11.43	36.05	143.80	0.436	1,664	415	-	75	54	52.1	-2.4
1	SWW	Madsen (CK)	PNW WQC 22-5	13.54	0.465	8.94	52.7	1.4	3.7	83	62	44	92.5	538	67.4	39.0	54.7	92.1	98.5	83.85	0.24	11.67	48.52	227.33	0.452	1,541	596	-	72	51	43.4	-7.5
2	SWS	WA8354	PNW WQC 22-6	13.1	0.538	10.30	51.6	1.5	5.2	100	47	54	94.2	882	75.0	42.8	55.0	106.1	125.1	56.94	0.33	10.01	27.90	190.89	0.455	1,728	331	-	78	57	54.1	-2.8
2	SWS	SEAHAWK (CK)	PNW WQC 22-7	14.08	0.461	9.89	52.6	1.8	3.3	101	72	40	93.0	602	68.9	40.8	51.8	96.1	112.3	49.67	0.32	10.02	29.32	111.55	0.460	1,785	316	-	77	62	59.4	-2.3
3	SWW	UIL13-046145A	PNW WQC 22-8	13.62	0.468	7.80	53.2	1.5	3.3	107	72	35	94.5	488	73.3	38.0	55.6	93.4	104.3	73.99	0.28	10.47	37.18	224.34	0.439	1,727	443	-	75	56	47.1	-9.3
3	SWW	UI Magic CL+ (CK)	PNW WQC 22-9	13.35	0.454	7.95	49.7	1.5	4.4	87	47	24	92.8	537	68.3	36.9	53.6	92.1	104.8	72.96	0.30	9.91	35.89	224.65	0.447	1,763	334	-	76	59	56.9	-2.6
4	SWW	M-Pire	PNW WQC 22-10	13.68	0.434	8.24	52.6	1.3	1.7	103	87	21	92.0	677	70.7	38.5	56.2	90.5	83.3	78.79	0.26	10.89	44.03	226.08	0.440	1,705	327	-	78	58	52.3	-6.0
5	SWW	OR2170559	PNW WQC 22-11	13.25	0.522	8.18	50.9	1.2	1.4	123	100	18	91.4	568	66.8	36.3	53.1	90.0	81.9	78.00	0.28	10.40	40.96	226.86	0.448	1,672	317	-	77	59	52.5	-6.5
5	SWW	Nixon (CK)	PNW WQC 22-12	13.25	0.474	7.96	50.5	1.0	2.2	129	95	25	91.4	550	71.2	36.3	52.5	92.0	82.3	71.92	0.29	10.18	34.74	223.45	0.443	1,764	277	-	78	58	54.4	-4.1
6	SWW	ORI2190025 CL+	PNW WQC 22-13	13.09	0.448	7.09	48.7	1.4	1.6	105	82	19	91.4	651	75.0	36.2	54.2	98.6	103.1	57.74	0.34	8.50	30.67	173.50	0.452	1,733	292	-	76	57	55.7	-1.2
6	SWW	ORI2190027 CL+	PNW WQC 22-14	12.78	0.457	6.68	49.9	1.0	1.0	146	108	16	91.1	561	76.5	39.6	55.6	97.6	87.2	67.21	0.33	8.68	31.77	217.18	0.454	1,461	507	-	66	48	45.2	-3.0
6	SWW	Appleby CL+ (CK)	PNW WQC 22-15	13.34	0.487	7.05	50.1	0.9	1.1	157	125	15	89.6	488	70.1	37.3	52.8	91.5	78.6	70.52	0.32	8.93	33.66	222.45	0.432	1,663	334	-	80	59	56.6	-2.0
7	CLUB	OR5180072	PNW WQC 22-16	13.23	0.526	6.66	49.4	0.7	0.6	174	139	10	90.7	490	69.6	39.4	52.7	85.2	68.8	72.16	0.28	10.12	37.70	215.48	0.430	1,766	311	-	81	59	56.4	-2.8
7	CLUB	Cara (CK)	PNW WQC 22-17	13.29	0.451	7.03	48.0	0.9	0.7	157	119	11	91.5	761	62.1	38.3	49.2	79.3	75.8	67.83	0.30	10.29	34.15	216.16	0.425	1,784	297	-	84	59	58.9	0.0
8	HRS	WA8356	PNW WQC 22-18	13.86	0.605	13.14	57.9	38.5	38.4	0	0	400	94.2	569	79.3	48.3	62.5	104.8	129.0	90.72	0.17	18.68	62.20	218.44	-	2,015	226	294	77	139	-	-
8	HRS	Glee (CK)	PNW WQC 22-19	13.79	0.678	12.34	58.8	9.0	20.5	25	12	263	93.6	529	83.8	45.7	64.4	106.9	118.1	97.68	0.16	19.21	62.54	235.71	-	1,811	315	405	64	122	-	-
9	HRS	BZ917-207	PNW WQC 22-20	13.24	0.623	13.52	61.7	6.7	10.1	52	30	114	92.1	631	84.3	47.2	66.6	108.2	127.3	97.96	0.18	16.05	62.31	237.66	-	1,806	228	305	60	125	-	-
9	HRS	BZ919-134	PNW WQC 22-21	15.02	0.545	12.32	60.5	8.7	28.2	7	2	300	90.7	900	82.8	49.6	64.4	107.3	135.4	93.10	0.18	16.25	58.07	234.03	-	2,032	131	212	81	140	-	-
9	HRS	BZ919-101 (CK)	PNW WQC 22-22	14.66	0.525	13.49	62.6	30.0	27.8	0	0	300	91.4	723	85.9	56.2	66.7	123.7	173.5	88.09	0.19	16.18	55.99	226.48	-	2,165	111	192	83	145	-	-
10	HRS	XF9306	PNW WQC 22-23	15.17	0.661	12.47	61.9	4.3	5.9	57	33	90	90.1	798	76.0	45.0	61.8	101.2	99.8	94.57	0.17	18.45	64.05	226.67	-	1,888	106	182	63	128	-	-
10	HRS	XF9307	PNW WQC 22-24	14.97	0.601	12.44	62.9	4.5	6.1	61	33	91	90.3	828	78.5	44.7	62.1	103.4	101.9	90.44	0.17	17.45	60.67	221.64	-	2,002	95	180	66	134	-	-
10	HRS	WB9668 (CK)	PNW WQC 22-25	14.23	0.560	13.49	65.1	9.0	13.7	30	14	201	92.4	920	83.8	51.7	65.2	111.7	127.1	90.92	0.18	17.26	62.20	220.22	-	2,200	89	156	85	148	-	-

Farinograph / Samyang, Corp	Sample	Absorption	Peak	Stability	MTI	Quality Number
WA8334	PNW WQC 22-1	52.6	1.4	3.9	40	33
WA8336	PNW WQC 22-2	51.4	1.2	2.8	77	21
WA8362	PNW WQC 22-3	48.9	1.0	1.2	79	16
WA8364	PNW WQC 22-4	49.5	0.9	1.7	72	27
Madsen (CK)	PNW WQC 22-5	52.7	1.4	3.7	62	44
WA8354	PNW WQC 22-6	51.6	1.5	5.2	47	54
SEAHAWK (CK)	PNW WQC 22-7	52.6	1.8	3.3	72	40
UIL13-046145A	PNW WQC 22-8	53.2	1.5	3.3	72	35
UI Magic CL+ (CK)	PNW WQC 22-9	49.7	1.5	4.4	47	24
M-Pire	PNW WQC 22-10	52.6	1.3	1.7	87	21
OR2170559	PNW WQC 22-11	50.9	1.2	1.4	100	18
Nixon (CK)	PNW WQC 22-12	50.5	1.0	2.2	95	25
ORI2190025 CL+	PNW WQC 22-13	48.7	1.4	1.6	82	19
ORI2190027 CL+	PNW WQC 22-14	49.9	1.0	1	108	16
Appleby CL+ (CK)	PNW WQC 22-15	50.1	0.9	1.1	125	15
OR5180072	PNW WQC 22-16	49.4	0.7	0.6	139	10
Cara (CK)	PNW WQC 22-17	48.0	0.9	0.7	119	11
WA8356	PNW WQC 22-18	57.9	38.5	38.4	0	400
Glee (CK)	PNW WQC 22-19	58.8	9.0	20.5	12	263
BZ917-207	PNW WQC 22-20	61.7	6.7	10.1	30	114
BZ919-134	PNW WQC 22-21	60.5	8.7	28.2	2	300
BZ919-101 (CK)	PNW WQC 22-22	62.6	30.0	27.8	0	300
XF9306	PNW WQC 22-23	61.9	4.3	5.9	33	90
XF9307	PNW WQC 22-24	62.9	4.5	6.1	33	91
WB9668 (CK)	PNW WQC 22-25	65.1	9.0	13.7	14	201

USDA-ARS Eastern Soft Wheat Quality Lab
Wooster OH

SWQL OHIO

Pacific Northwest Wheat Quality Council, 2022 Harvest

Evaluation by the Soft Wheat Quality Laboratory-USDA ARS, Wooster OH

		Primary Flour Analysis			Solvent Retention Capacity				Sugar-snap Cookies		Rapid Visco-Analyzer						
Sample	Group	Flour moisture	Flour protein	Flour ash	Water	Sodium carbonate	Sucrose	Lactic acid	Diameter	Top Grain	Peak 1	Trough 1	Breakdown	Final Visc	Setback	Peak Time	Pasting Temp.
#	#	%	14%mb	14%mb	%	%	%	%	cm		cP	cP	cP	cP	cP	(min)	°C
WA8334	Group 1	14.2	8.2	0.41	59.9	79.1	106.1	109.7	17.5	3	2409	1851	558	3325	1474	6.3	85.9
WA8336	Group 1	14.1	7.6	0.43	60.0	78.2	94.3	81.6	18.1	5	2283	1739	544	3368	1629	6.1	84.8
WA8362	Group 1	14.4	7.6	0.38	56.0	74.1	98.6	95.2	18.4	4	2837	1856	981	3321	1465	6.1	70.7
WA8364	Group 1	14.1	7.6	0.36	56.6	76.8	95.6	82.2	18.7	4	2525	1823	703	3320	1498	6.1	84.0
Madsen (CK)	Group 1	13.6	9.0	0.39	56.8	73.7	96.8	93.0	17.8	5	2297	1583	714	3020	1437	6.0	84.7
WA8354	Group 2	13.1	10.4	0.43	58.6	79.4	112.0	113.4	17.1	3	3088	2304	785	3712	1409	6.4	84.7
SEAHAWK (CK)	Group 2	14.1	10.2	0.45	54.8	75.8	104.8	102.7	17.5	2	2655	1997	658	3425	1428	6.2	84.3
UIL13-046145A	Group 3	14.1	8.0	0.37	59.1	77.9	99.1	98.9	18.1	5	2156	1835	322	3364	1529	6.3	86.0
UI Magic CL+ (CK)	Group 3	13.7	8.1	0.42	56.3	74.2	95.6	97.5	18.2	5	2404	1740	665	3222	1482	6.1	85.6
M-Pire	Group 4	13.8	8.4	0.41	58.5	75.9	95.1	80.8	17.6	6	2433	1653	780	3111	1458	6.0	84.8
OR2170559	Group 5	13.8	8.3	0.42	56.9	74.7	93.0	80.4	18.3	5	2513	1616	897	2889	1273	6.2	86.4
Nixon (CK)	Group 5	13.4	7.9	0.41	57.5	76.5	97.2	79.8	18.5	4	2481	1640	842	3011	1371	6.1	84.7
ORI2190025 CL+	Group 6	13.3	7.0	0.44	59.0	81.0	104.1	99.8	18.1	4	2713	1643	1070	3076	1433	5.9	82.3
ORI2190027 CL+	Group 6	13.0	6.6	0.45	61.1	81.3	103.4	86.8	18.2	6	2632	1658	974	3024	1366	6.1	84.8
Appleby CL+ (CK)	Group 6	13.7	7.0	0.43	58.7	76.0	96.3	76.5	18.6	4	2494	1352	1142	2545	1193	5.9	83.5
OR5180072	Group 7	13.5	6.7	0.46	57.8	74.7	90.4	70.5	18.6	5	2427	1487	940	2817	1330	6.0	84.4
Cara (CK)	Group 7	13.7	7.1	0.36	53.8	68.0	83.4	76.3	19.2	4	2900	1812	1089	3107	1295	6.1	70.1

Idaho Wheat Quality Lab
Aberdeen ID

UI WQL

Pacific Northwest Wheat Quality Council
Evaluation Form

Idaho Wheat Quality Lab

Rate Samples in Question 1, 2 & 3 on 1-9 scale 5=usable average results. Question #4 provides additional space for comments, if appropriate.

For Dough & End-Product score as is. Make allowances and adjustments to score for questions 3 & 4.

Place laboratory data in tab below (preferred) or submit as separate file.

Be sure and add company name to file name please.

						1 poor 9 excellent		1 poor 9 excellent		1 poor 9 excellent			
						Question #1		Question #2		Question #3		Question #4	
Variety	Check	Class	Group	Sample#	Product	Dough/Batter Rating	Liked/Disliked Comments	End-Product Performance	Liked/Disliked Comments	Overall Acceptability	Liked/Disliked Comments	Migrating Physical/Chemical Properties & Comments	
WA8334		SWW	1	1	sugar snap cookie	5		4		5			
WA8336		SWW	1	2	sugar snap cookie	5		4		5	Slightly better than check		
WA8362		SWW	1	3	sugar snap cookie	5		5		6	Good color and diameter; better than check		
WA8364		SWW	1	4	sugar snap cookie	5		5		6	Good color and diameter; better than check		
Madsen (CK)	ck	SWW	1	5	sugar snap cookie	4		4		4			
WA8354		SWS	2	6	sugar snap cookie	3	Slight dry and crumbly dough	3	Baked like a hard; low top grade	3	Uneven color; undesirable top grade; comparable to check		
SEAHAWK (CK)	ck	SWS	2	7	sugar snap cookie	3	Slight dry and crumbly dough	3	Baked like a hard; low top grade	2			
UIL13-046145A		SWW	3	8	sugar snap cookie	5		4		4	Decent color; performed better than check		
UI Magic CL+ (CK)	ck	SWW	3	9	sugar snap cookie	5		3		2			
M-Pire		SWW	4	10	sugar snap cookie	4		4		2	Below average performance and top grade		
OR2170559		SWW	5	11	sugar snap cookie	4		4		3	Performed lower than check		
Nixon (CK)	ck	SWW	5	12	sugar snap cookie	5		5		6			
ORI2190025 CL+		SWW	6	13	sugar snap cookie	5		4		5	Comparable to check		
ORI2190027 CL+		SWW	6	14	sugar snap cookie	5	slightly yellow	4		5	Comparable to check		
Appleby CL+ (CK)	ck	SWW	6	15	sugar snap cookie	5	yellow	5		5			
OR5180072		CLUB	7	16	sugar snap cookie	5	very yellow	5		6	Comparable to check		
Cara (CK)	ck	CLUB	7	17	sugar snap cookie	5	yellow	6		6			
WA8356		HRS	8	18	pup loaf	6	Average dough strength and handling; appropriately moist; behaved according to their flour absor	5	Good color; interior had a couple holes	6	Comparable to check		
Glee (CK)	ck	HRS	8	19	pup loaf	5	Average dough strength and handling; appropriately moist; behaved according to their flour absor	4	Good color; yeast spots on top; interior has a large hole	5			
BZ917-207		HRS	9	20	pup loaf	5	Average dough strength and handling; appropriately moist; behaved according to their flour absor	4	Good shape and color; decent interior	5	Slightly worse than check		
BZ919-134		HRS	9	21	pup loaf	5	Average dough strength and handling; appropriately moist; behaved according to their flour absor	5	Good color and rise; rougher inteiror with a hole; very comparable to check	6	Comparable to check		
BZ919-101 (CK)	ck	HRS	9	22	pup loaf	5	Average dough strength and handling; appropriately moist; behaved according to their flour absor	5	Good shape and color and rise; decent interior	6			
XF9306		HRS	10	23	pup loaf	5	Average dough strength and handling; appropriately moist; behaved according to their flour absor	4	Dark; yeast spots on top; decent shape; rougher interior	5	Slightly better than check		
XF9307		HRS	10	24	pup loaf	3	Weak and fairly sticky	5	Dark with yeast spots on top; rougher interior	4			
WB9668 (CK)	ck	HRS	10	25	pup loaf	4	Weak and fairly sticky	5	Dark with yeast spots on top; deceent shape and rise; rougher interior	4			

					Noodle Dough Color							Cookie	Top	SRC				Overall
Group	Check	Entry	Class	Fl Prt	L0	a0	b0	L24	a24	b24	L Diff	Diam.	Grain	Water	Sucrose	Na2CO3	L Acid	Score
Group 1		WA8334	SWW	7.7	89.6	-2.29	18.74	80.3	-0.5	21.9	9.22	8.67	4	55.7	101.3	74.0	100.0	5
Group 1		WA8336	SWW	7.2	89.3	-1.89	17.55	77.1	-0.5	19.1	12.14	8.73	4	56.7	92.0	71.5	76.2	5
Group 1		WA8362	SWW	7.1	88	-2.2	21.26	74.6	0.01	22.3	13.45	9.26	5	51.5	95.7	67.7	85.4	6
Group 1		WA8364	SWW	7.2	88.6	-2.4	21.11	77.2	0.39	20.6	11.42	9.13	5	52.4	92.8	69.0	73.8	6
Group 1	Check	Madsen (CK)	SWW	8.6	88.4	-1.87	19.48	76.1	-0.3	22.7	12.33	8.58	3	54.0	92.9	69.8	88.7	4
Group 2		WA8354	SWS	9.9	85.6	-1.75	22.48	68.1	1.03	21.4	17.56	8.48	2	54.5	105.6	73.9	108.2	3
Group 2	Check	SEAHAWK (CK)	SWS	9.4	85.8	-1.48	20.44	66.8	1.41	20.5	19.07	8.53	1	51.5	99.9	69.6	99.5	2
Group 3		UIL13-046145A	SWW	7.5	87.5	-2.05	20.63	76.2	0.78	21.1	11.28	8.89	5	55.9	96.5	72.5	92.5	4
Group 3	Check	UI Magic CL+ (CK)	SWW	7.7	88	-2.46	22.7	78.3	0.4	25	9.75	8.72	3	53.8	92.9	68.7	88.9	2
Group 4		M-Pire	SWW	8	88.9	-1.84	17.86	78.6	0.78	19	10.27	8.58	3	54.7	93.7	72.0	77.5	2
Group 5		OR2170559	SWW	7.8	87.3	-2.34	23.05	75	0.65	22.9	12.29	8.62	4	53.0	91.9	68.7	79.2	3
Group 5	Check	Nixon (CK)	SWW	7.6	87.9	-2.42	22.33	76.3	0.51	22.2	11.53	9.13	6	53.2	93.7	70.0	74.2	6
Group 6		ORI2190025 CL+	SWW	6.8	88.9	-2.39	22.52	77	0.34	22.8	11.92	8.94	4	54.1	100.0	75.3	94.3	5
Group 6		ORI2190027 CL+	SWW	6.5	90.1	-3.03	22.44	81.2	-0.4	22.3	8.94	8.76	5	55.4	98.7	74.8	78.4	5
Group 6	Check	Appleby CL+ (CK)	SWW	6.8	88.6	-2.17	19.82	79	0.59	22	9.52	8.92	4	53.4	95.3	70.1	71.8	5
Group 7		OR5180072	CLUB	6.5	88	-2.12	20.19	78	0.48	20	10.05	9.21	6	52.9	89.6	68.4	62.7	6
Group 7	Check	Cara (CK)	CLUB	6.8	89.1	-1.93	17.96	80	-0.2	19.6	9.12	9.27	6	49.8	84.4	61.6	70.8	6

Idaho Wheat Quality Lab

Idaho Wheat Quality Lab

					Pup Loaf							SRC				Noodle Dough Color						
Group	**Check**	**Entry**	**Class**	**Fl Prt**	**Abs (ml)**	**Mix Time**	**Sicky Score**	**Proof Height (cm)**	**Loaf Vol**	**Dough Score**	**Overall Score**	**Water**	**Sucrose**	**Na2CO3**	**L Acid**	**L0**	**a0**	**b0**	**L24**	**a24**	**b24**	**L Diff**
Group 8		WA8356	HRS	12.9	63	4.7	5	8.6	925	6	6	64.1	109.5	82.4	124.3	82.74	-0.83	23.65	63.15	0.46	23.36	19.59
Group 8	Check	Glee (CK)	HRS	12	62	4.2	6	8	900	5	5	67.0	112.0	88.4	114.0	83.16	-1.27	24.64	63.27	0.63	22.63	19.89
Group 9		BZ917-207	HRS	13	63	3.2	6	7.6	875	5	5	67.2	109.5	87.4	120.8	82.91	-0.77	22.12	60.77	1.02	20.43	22.14
Group 9		BZ919-134	HRS	12.1	62	4	6	8.4	975	5	6	67.0	112.2	88.9	133.8	84.39	-0.82	19.78	58.76	0.4	17.9	25.63
Group 9	Check	BZ919-101 (CK)	HRS	13.4	64	6.7	6	8.5	1000	5	6	69.8	125.3	90.2	166.8	83.87	-0.49	19.19	59.65	1.06	17.79	24.22
Group 10		XF9306	HRS	12.4	62	1.8	7	7.8	875	5	5	64.7	105.0	80.1	99.8	83.4	-0.76	20.2	58.5	1.22	16.32	24.9
Group 10		XF9307	HRS	12.3	62	1.8	7	7.8	975	3	4	64.1	107.6	81.9	104.7	84	-0.93	20.43	57.52	0.08	14.77	26.48
Group 10	Check	WB9668 (CK)	HRS	13.3	64	2.2	6	7.8	1000	4	4	66.1	114.9	86.7	119.3	85.89	-0.89	17.87	57.62	-0.31	15.16	28.27
	Sticky score is from 1-9 with 1 being no stickiness and 9 being very sticky									Desired range		65-70	105-115	80-90	>140							

ID Wheat Quality Lab

Group 2
6
7 (check)

Group 3
8
9 (check)

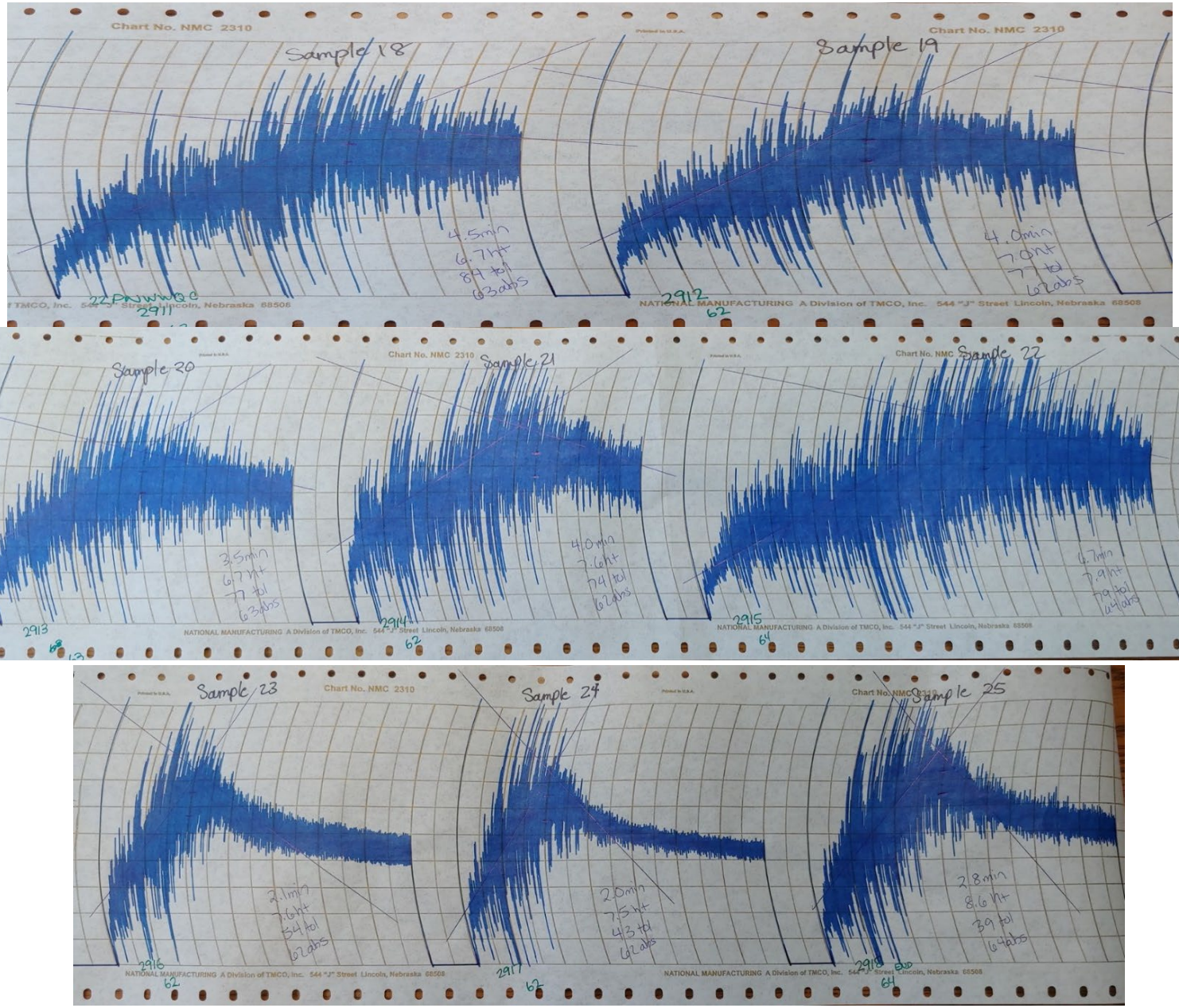
ID Wheat Quality Lab

Group 6
13
14
15 (check)

Group 7
16
17 (check)

Idaho Wheat Quality Lab

					Pup Loaf							SRC				Noodle Dough Color						
Group	**Check**	**Entry**	**Class**	**Fl Prt**	**Abs (ml)**	**Mix Time**	**Sicky Score**	**Proof Height (cm)**	**Loaf Vol**	**Dough Score**	**Overall Score**	**Water**	**Sucrose**	**Na2CO3**	**L Acid**	**L0**	**a0**	**b0**	**L24**	**a24**	**b24**	**L Diff**
Group 8		WA8356	HRS	12.9	63	4.7	5	8.6	925	6	6	64.1	109.5	82.4	124.3	82.74	-0.83	23.65	63.15	0.46	23.36	19.59
Group 8	Check	Glee (CK)	HRS	12	62	4.2	6	8	900	5	5	67.0	112.0	88.4	114.0	83.16	-1.27	24.64	63.27	0.63	22.63	19.89
Group 9		BZ917-207	HRS	13	63	3.2	6	7.6	875	5	5	67.2	109.5	87.4	120.8	82.91	-0.77	22.12	60.77	1.02	20.43	22.14
Group 9		BZ919-134	HRS	12.1	62	4	6	8.4	975	5	6	67.0	112.2	88.9	133.8	84.39	-0.82	19.78	58.76	0.4	17.9	25.63
Group 9	Check	BZ919-101 (CK)	HRS	13.4	64	6.7	6	8.5	1000	5	6	69.8	125.3	90.2	166.8	83.87	-0.49	19.19	59.65	1.06	17.79	24.22
Group 10		XF9306	HRS	12.4	62	1.8	7	7.8	875	5	5	64.7	105.0	80.1	99.8	83.4	-0.76	20.2	58.5	1.22	16.32	24.9
Group 10		XF9307	HRS	12.3	62	1.8	7	7.8	975	3	4	64.1	107.6	81.9	104.7	84	-0.93	20.43	57.52	0.08	14.77	26.48
Group 10	Check	WB9668 (CK)	HRS	13.3	64	2.2	6	7.8	1000	4	4	66.1	114.9	86.7	119.3	85.89	-0.89	17.87	57.62	-0.31	15.16	28.27
	Sticky score is from 1-9 with 1 being no stickiness and 9 being very sticky									Desired range		65-70	105-115	80-90	>140							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Sample 18
4.5min
6.7Mt
84 tol
63abs
2911
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Sample 19
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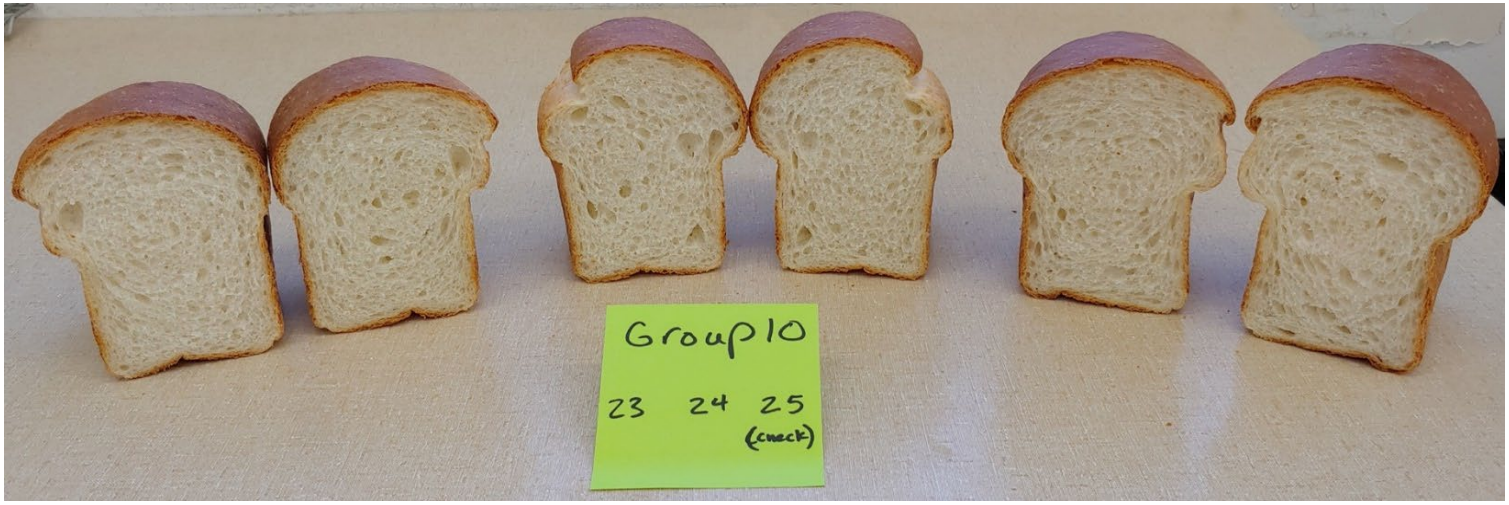
7.0Mt
77 tol
62abs
2912
62
Sample 20
3.5min
6.7Mt
77 tol
63abs
2913
Chart No. NMC 2310
Sample 21
4.0min
7.6Mt
74 tol
62abs
2914
62
Chart No. NMC
Sample 22
4.7min
7.9Mt
79 tol
64abs
2915
64
Sample 23
Chart No. NMC 2310
2.1min
7.6Mt
54 tol
62abs
2916
62
Sample 24
2.0min
7.5Mt
43 tol
62abs
2917
62
Sample 25
2.8min
8.6Mt
39 tol
64abs
2918
64
NATIONAL MANUFACTURING A Division of TMCO, Inc. 544 "J" Street Lincoln, Nebraska 68508

Group 8
18 19

ID Wheat Quality Lab

Group 10
23 24 25
(check)


Group 10
23 24 25
(check)

ID Wheat Quality Lab

ID Wheat Quality Lab

Pacific Northwest Wheat Quality Council
Evaluation Form

				Rate Samples in Question 1, 2 & 3 on 1-9 scale 5=usable average results. Question #4 provides additional space for comments, if appropriate.								
USDA-ARS Center for Grain and Animal Health Research					For Dough & End-Product score as is. Make allowances and adjustments to score for questions 3 & 4.							
					USDA ARS CGAHR HWWQL Manhattan, KS							
					Place laboratory data in tab below (preferred) or submit as separate file.							
					Be sure and add company name to file name please.							
						1 poor 9 excellent		1 poor 9 excellent		1 poor 9 excellent		
						Question #1		Question #2		Question #3		Question #4
Variety	Check	Class	Group	Sample#	Product	Dough/Batter Rating	Liked/Disliked Comments	End-Product Performance	Liked/Disliked Comments	Overall Acceptability	Liked/Disliked Comments	Mitigating Physical/Chemical Properties & Comments
WA8334		SWW	1	1								
WA8336		SWW	1	2								
WA8362		SWW	1	3								
WA8364		SWW	1	4								
Madsen (CK)	ck	SWW	1	5								
WA8354		SWS	2	6								
SEAHAWK (CK)	ck	SWS	2	7								
UIL13-046145A		SWW	3	8								
UI Magic CL+ (CK)	ck	SWW	3	9								
M-Pire		SWW	4	10								
OR2170559		SWW	5	11								
Nixon (CK)	ck	SWW	5	12								
ORI2190025 CL+		SWW	6	13								
ORI2190027 CL+		SWW	6	14								
Appleby CL+ (CK)	ck	SWW	6	15								
OR5180072		CLUB	7	16								
Cara (CK)	ck	CLUB	7	17								
WA8356		HRS	8	18	pup bread 22-2451	7.5	tough dough at make up, long MT, good abs and mixo	5	avg grain, good volume, yellow crumb	6.5	sl lower than Check, good overall	high protein with strong tolerance
Glee (CK)	ck	HRS	8	19	pup bread 22-2452	7.5	slack dough out of mixer, good MT and abs	6	good grain, good volume	7	good Check overall	good protein Check
BZ917-207		HRS	9	20	pup bread 22-2453	7.5	good dough, good MT and abs	6	good grain, large volume	7	better than Check, good overall	high protein
BZ919-134		HRS	9	21	pup bread 22-2454	8.5	excellent dough, long MT, high abs, strong mixo	6	good grain, large volume	7.5	better than Check, excellent overall	good protein
BZ919-101 (CK)	ck	HRS	9	22	pup bread 22-2455	6	tough dough at make up, very long MT, very high abs, strong mixo	4.5	avg grain, very large volume	5.5	avg Check, very strong overall	high protein Check with strong tolerance
XF9306		HRS	10	23	pup bread 22-2456	4	slack dough, very short MT, low tolerance	3	open grain, low volume, yellow crumb	3.5	lower than Check, below avg interior scores	good protein but low mix tolerance
XF9307		HRS	10	24	pup bread 22-2457	3.5	very slack dough, very short MT, low tolerance	3	open grain, low volume, yellow crumb	3.5	lower than Check, below avg overall	good protein but low mix tolerance
WB9668 (CK)	ck	HRS	10	25	pup bread 22-2458	7.5	sl slack dough at make up, short MT, low tolerance	4.5	avg grain, large volume, yellow crumb	6	good Check, surprisingly good dough	high protein Check with low tolerance

USDA-ARS Center for Grain and Animal Health Research

Sample	Sample ID	Flour Protein %	Bake Absorp %	Bake Absorp 14%	Mix Time min	Out of Mix rating (1-9)	describe	At Make up rating (1-9)	describe	Loaf weight grams	Volume cc	Grain rating (1-9)	Color describe
WA8356	22-2451	13.20	65.7	65.4	6.75	8.0	good	6.5	tough	153.2	935	5.0	yellow
Glee (CK)	22-2452	12.27	65.7	65.5	5.50	6.5	slack	8.0	good	153.3	945	6.0	sl yellow
BZ917-207	22-2453	13.31	67.7	67.5	4.00	7.0	sl tough	8.0	good	153.5	1005	6.0	sl yellow
BZ919-134	22-2454	12.48	67.7	68.5	5.75	8.0	good	9.0	excellent	153.3	1070	6.0	sl yellow
BZ919-101 (CK)	22-2455	13.73	70.7	71.4	12.25	7.0	sl slack	5.0	tough	154.0	1125	4.5	sl yellow
XF9306	22-2456	12.60	66.2	67.4	2.38	4.0	slack	4.0	slack	155.6	895	3.0	yellow
XF9307	22-2457	12.54	63.7	64.4	2.13	3.5	slack	3.0	very slack	155.9	885	3.0	yellow
WB9668 (CK)	22-2458	13.53	67.7	67.7	2.75	8.0	good	7.0	sl slack	153.9	1005	4.5	yellow

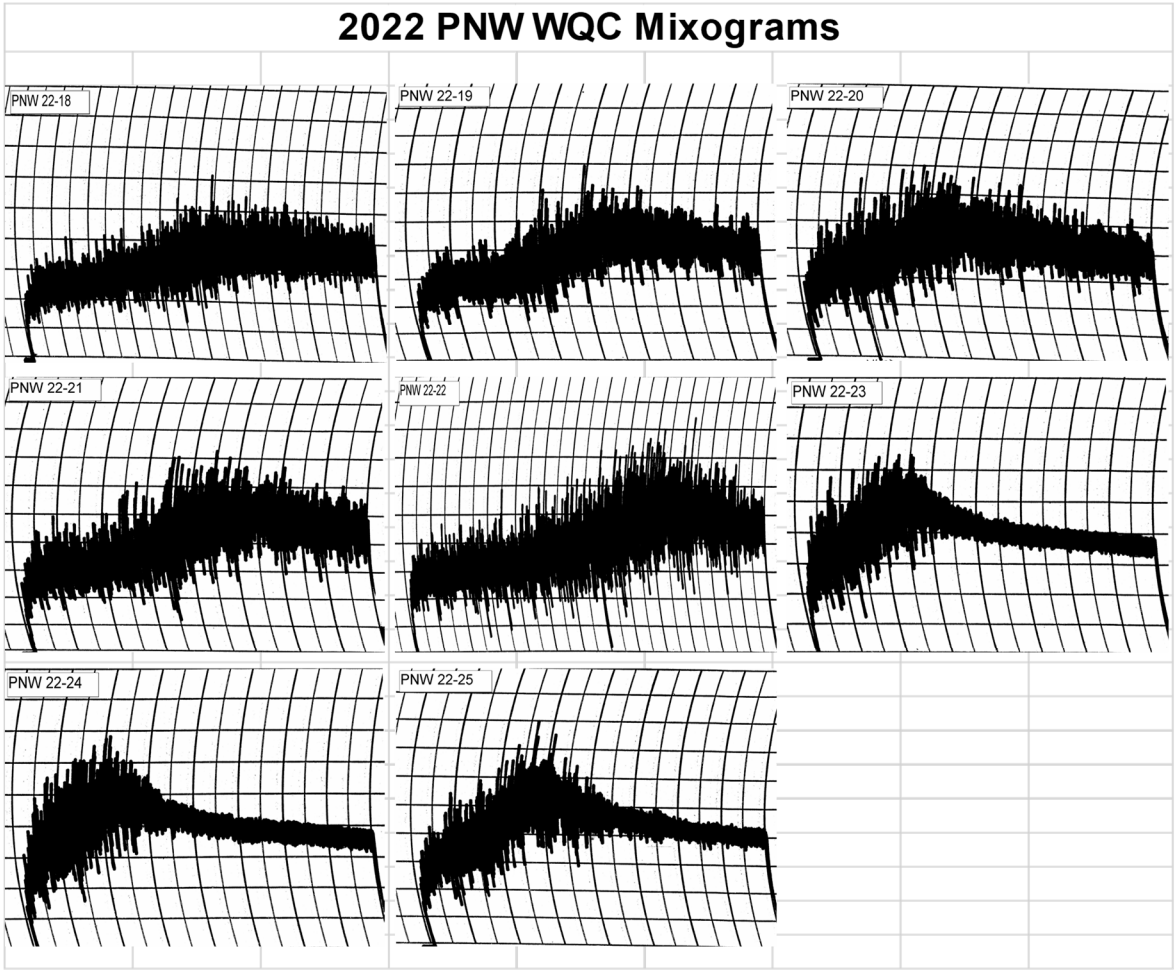
(1-6)	(1-9)
6.0	9.0
5.5	8.0
5.0	7.5
4.5	7.0
4.0	6.0
3.5	5.0
3.0	4.5
2.5	4.0
2.0	3.0
1.5	2.0
1.0	1.5

Report from USDA-ARS-HWWQL in Manhattan, KS

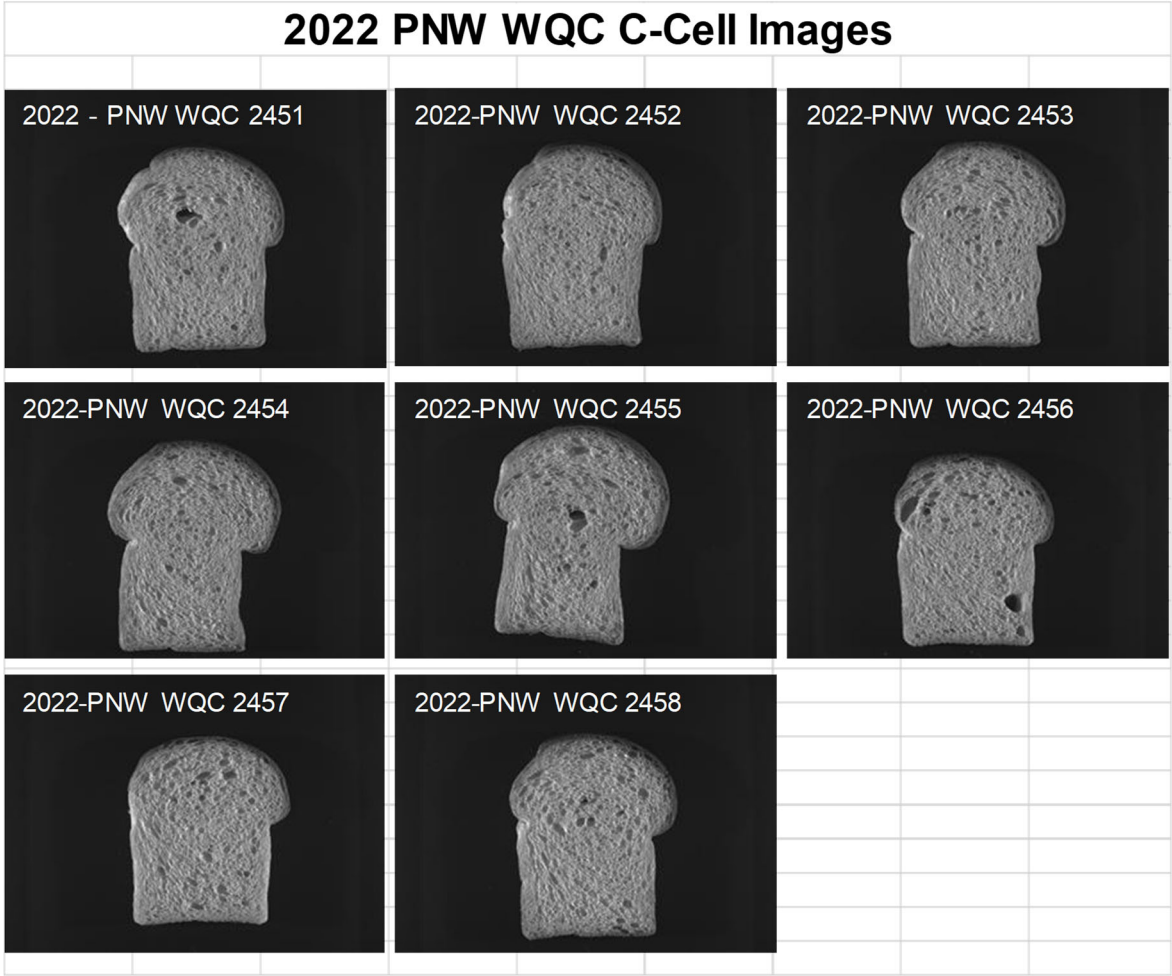
1. Mixograph Data

MIXOGRAPH DATA of 2022 PNW WQC SAMPLES							
HWWAL_ID	PNW_ID	FLR-MC	FLR-PC (14%MC)	FLR-ABS (as is)	FLR-ABS (14%MC)	MIX-TM	MIX-TOL
22-0002451	PNW WQC 22-18	13.77	13.20	66.0	65.7	5.38	4
22-0002452	PNW WQC 22-19	13.85	12.27	65.6	65.4	4.38	3
22-0002453	PNW WQC 22-20	13.79	13.31	68.0	67.8	3.38	3
22-0002454	PNW WQC 22-21	14.67	12.48	68.0	68.8	4.50	5
22-0002455	PNW WQC 22-22	14.61	13.73	70.6	71.3	9.25	6
22-0002456	PNW WQC 22-23	15.02	12.60	66.2	67.4	2.25	1
22-0002457	PNW WQC 22-24	14.60	12.54	66.6	67.3	2.13	1
22-0002458	PNW WQC 22-25	14.02	13.53	68.5	68.5	2.75	1

2. Mixograms


2022 PNW WQC Mixograms
PNW 22-18
PNW 22-19
PNW 22-20
PNW 22-21
PNW 22-22
PNW 22-23
PNW 22-24
PNW 22-25

3. C-Cell Images



Pacific Northwest Wheat Quality Council
Evaluation Form

USDA-ARS, Hard Red Spring & Durum Wheat Quality Laboratory, Fargo, ND

						1 poor 9 excellent		1 poor 9 excellent		1 poor 9 excellent		
						Question #1		Question #2		Question #3		Question #4
Variety	Check	Class	Group	Sample #	Product	Dough/Batter Rating	Liked/Disliked Comments	End-Product Performance	Liked/Disliked Comments	Overall Acceptability	Liked/Disliked Comments	Mitigating Physical/Chemical Properties & Comments
WA8356		HRS	8	18	Pup-loaf (100-g)	5	Yellow dough color; average dough.	3	Poor crumb color and texture; thick crust.	3	Similar to the check.	
Glee (CK)	ck	HRS	8	19	Pup-loaf (100-g)	5	Yellow dough color; average dough.	3	Poor crumb color and texture.	3	High ash content; average dough and poor crumb characteristics.	
BZ917-207		HRS	9	20	Pup-loaf (100-g)	6	High water absorption; good dough characteristics.	6	Nice crumb grain and texture.	6	High ash content; good dough and loaf characteristics.	
BZ919-134		HRS	9	21	Pup-loaf (100-g)	6	Long water uptake; good dough.	7	High, smooth break-and-shred; very soft crumb texture; good crumb structure.	7	Nice dough and loaf characteristics.	
BZ919-101 (CK)	ck	HRS	9	22	Pup-loaf (100-g)	4	Long water uptake and mix time; high water absorption; nice dough.	7	High break-and-shred; soft crumb texture; good crumb structure.	4	Nice dough and loaf characteristics; impractical mix time.	
XF9306		HRS	10	23	Pup-loaf (100-g)	2	Short mix time; weak dough.	6	Rough side walls; very soft crumb texture; good springiness.	3	High ash content; weak tolerance; less than average dough quality.	
XF9307		HRS	10	24	Pup-loaf (100-g)	2	Short mix time; weak dough.	6	Rough side walls; very soft crumb texture; good springiness; thick crust.	3	High ash content; weak tolerance; less than average dough quality.	
WB9668 (CK)	ck	HRS	10	25	Pup-loaf (100-g)	5	High water absorption; elastic dough.	7	Nice loaf shape; good loaf volume; very soft texture.	7	High ash content; nice loaf characteristics.	

USDA-ARS, Hard Red Spring & Durum Wheat Quality Laboratory, Fargo, ND

										Crumb Color			Crumb Grain Characteristics (C-Cell)				Texture Profile Analysis		
Variety	Check	Class	Group	Sample #	Product	Bake Abs. (%)	Mix Time (min.)	Dough Characteristics	Loaf Volume (mL)	*L**	*a**	*b**	# Cells/Slice Area (cm^{-2})	Cell Diameter (mm)	Cell Wall Thickness (mm)	Avg. Cell Elongation	Firmness (N . Mm)	Resilience (% Ratio)	Springiness (% Ratio)
WA8356		HRS	8	18	Pup-loaf (100-g)	64.1	6.50	Medium Pliable	860	76.4	-1.06	20.9	65.0	1.81	0.399	1.82	23.8	28.1	93.7
Glee (CK)	ck	HRS	8	19	Pup-loaf (100-g)	61.8	5.00	Medium Pliable	835	77.0	-1.06	20.0	70.6	1.67	0.391	1.85	21.5	27.3	93.1
BZ917-207		HRS	9	20	Pup-loaf (100-g)	67.5	4.25	Medium Pliable	930	75.9	-0.58	17.4	65.6	1.85	0.399	1.80	12.3	36.8	94.9
BZ919-134		HRS	9	21	Pup-loaf (100-g)	65.7	6.00	Elastic	1001	75.6	-0.44	17.8	61.3	1.88	0.401	1.80	12.8	33.6	93.9
BZ919-101 (CK)	ck	HRS	9	22	Pup-loaf (100-g)	69.0	11.50	Elastic	1026	74.9	-0.33	17.1	58.7	2.01	0.412	1.80	10.8	35.0	95.3
XF9306		HRS	10	23	Pup-loaf (100-g)	65.0	2.25	Medium Pliable	920	75.2	-0.57	15.0	53.7	2.27	0.427	1.69	7.5	43.7	95.1
XF9307		HRS	10	24	Pup-loaf (100-g)	63.6	2.00	Mellow/Pliable	886	76.4	-0.72	15.0	55.2	2.21	0.424	1.78	8.3	42.3	94.4
WB9668 (CK)	ck	HRS	10	25	Pup-loaf (100-g)	67.3	3.00	Mellow/Pliable	1080	77.4	-1.14	14.8	50.9	2.42	0.428	1.76	6.8	43.9	94.3

Wheat Marketing Center
Portland OR

WMC117

Pacific Northwest Wheat Quality Council
Evaluation Form

Wheat Marketing Center

Rate Samples in Question 1, 2 & 3 on 1-9 scale 5=usable average results. Question #4 provides additional space for comments, if appropriate.
For Dough & End-Product score as is. Make allowances and adjustments to score for questions 3 & 4.

Place laboratory data in tab below (preferred) or submit as separate file.

Be sure and add company name to file name please.

						1 poor 9 excellent Question #1		1 poor 9 excellent Question #2		1 poor 9 excellent Question #3		Question #4
Variety	Check	Class	Group	Sample#	Product	Dough/Better Rating	Liked/Disliked Comments	End-Product Performance	Liked/Disliked Comments	Overall Acceptability	Liked/Disliked Comments	Milling Physical/Chemical Properties & Comments
WA8334		SWW	1	1	Sponge Cake			3	Poor exterior and interior, firm texture	3	Much poorer than check	Lower flour protein than check
WA8336		SWW	1	2	Sponge Cake			5	Smiliar to check	5	Smiliar to check	Lower flour protein than check
WA8362		SWW	1	3	Sponge Cake			6	Larger volume and softer texture than check	6	Better than check	Lower flour protein than check
WA8364		SWW	1	4	Sponge Cake			6	Larger volume and softer texture than check	6	Better than check	Lower flour protein than check
Madsen (CK)	ck	SWW	1	5	Sponge Cake			5		5		
WA8354		SWS	2	6	Sponge Cake			6	Larger volume but firmer texture than check	6	Slightly poorer than check	Higher flour protein than check
SEAHAWK (CK)	ck	SWS	2	7	Sponge Cake			6		6		
UIL13-046145A		SWW	3	8	Sponge Cake			6	Softer texture than check	6	Better than check	Slightly lower flour protein than check
UI Magic CL+ (CK)	ck	SWW	3	9	Sponge Cake			5		5		
M-Pire		SWW	4	10	Sponge Cake			5	Smaller volume and firmer texture than check	5	Poorer than check	Slightly higher flour protein than check
OR2170559		SWW	5	11	Sponge Cake			5	Smaller volume and firmer texture than check	5	Poorer than check	Slightly higher flour protein than check
Nixon (CK)	ck	SWW	5	12	Sponge Cake			6		6		
ORI2190025 CL+		SWW	6	13	Sponge Cake			6	Larger volume and softer texture than check	6	Better than check	Same flour protein as check
ORI2190027 CL+		SWW	6	14	Sponge Cake			6	Larger volume and softer texture than check	6	Better than check	Slightly lower flour protein than check
Appleby CL+ (CK)	ck	SWW	6	15	Sponge Cake			5		5		
OR5180072		CLUB	7	16	Sponge Cake			7	Better exterior and interior than check	7	Better than check	Slightly lower flour protein than check
Cara (CK)	ck	CLUB	7	17	Sponge Cake			6		6		
WA8356		HRS	8	18	Pup Loaf	7	Elastic	5	Slightly yellowish crumb color; Uneven crumb structure; Slightly larger volume than check	5	Better than check	Higher flour protein than check
Glee (CK)	ck	HRS	8	19	Pup Loaf	7	Elastic	5	Slightly yellowish crumb color; Uneven crumb stru	4		
BZ917-207		HRS	9	20	Pup Loaf	7	Elastic	6	Slightly open grain; Lower volume than check	5	Poorer than check	Slightly lower flour protein than check
BZ919-134		HRS	9	21	Pup Loaf	7	Elastic	6	Slightly open grain; Slightly lower volume than check	6	Slightly poorer than check	Lower flour protein than check
BZ919-101 (CK)	ck	HRS	9	22	Pup Loaf	7	Elastic	6	Slightly open grain	6.5		
XF9306		HRS	10	23	Pup Loaf	4	Slack	6	Fine grain; Lower volume than check	5	Poorer than check	Lower flour protein than check
XF9307		HRS	10	24	Pup Loaf	4	Slack	6	Fine grain; Lower volume than check	5	Poorer than check	Lower flour protein than check
WB9668 (CK)	ck	HRS	10	25	Pup Loaf	6	Pliable	7	Fine grain; Even crumb structure	7		

Wheat Marketing Center

Variety	Check	Class	Group	Sample#	Sponge Cake Volume (cc)	External Score	Internal Score	Texture Score	Total Score	Ranking	
WA8334		SWW	1	1	1072	12	17	9	38	17	509.2
WA8336		SWW	1	2	1136	13	19	27	59	14	293.6
WA8362		SWW	1	3	1221	13	19	30	62	3	257.2
WA8364		SWW	1	4	1190	13	19	30	62	5	248.5
Madsen (CK)	ck	SWW	1	5	1104	14	20	24	58	16	321.2
WA8354		SWS	2	6	1246	13	20	27	60	9	275.9
SEAHAWK (CK)	ck	SWS	2	7	1180	13	19	30	62	6	243
UIL13-046145A		SWW	3	8	1170	13	19	30	62	7	234.3
UI Magic CL+ (CK)	ck	SWW	3	9	1149	13	19	27	59	13	269.3
M-Pire		SWW	4	10	1102	13	19	27	59	15	284.8
OR2170559		SWW	5	11	1185	13	19	27	59	11	261.2
Nixon (CK)	ck	SWW	5	12	1226	12	18	30	60	10	227.7
ORI2190025 CL+		SWW	6	13	1216	13	19	30	62	4	234.7
ORI2190027 CL+		SWW	6	14	1192	14	19	30	63	2	259.9
Appleby CL+ (CK)	ck	SWW	6	15	1146	14	18	27	59	12	269.7
OR5180072		CLUB	7	16	1232	14	20	30	64	1	216.1
Cara (CK)	ck	CLUB	7	17	1251	12	18	30	60	8	230.9

Variety	Check	Class	Group	Sample#	Pup Loaf Absorption	Mix Time	Volume	Grumb Grain	Ranking
WA8356		HRS	8	18	62.6	5.8	854	5	5
Glee (CK)	ck	HRS	8	19	**60.9**	**4.6**	**806**	**5**	**8**
BZ917-207		HRS	9	20	67.0	3.6	862	6	4
BZ919-134		HRS	9	21	65.0	4.8	932	6	3
BZ919-101 (CK)	ck	HRS	9	22	**69.2**	**9.7**	**963**	**6**	**1**
XF9306		HRS	10	23	65.1	2.0	801	6	6
XF9307		HRS	10	24	64.6	2.0	796	6	7
WB9668 (CK)	ck	HRS	10	25	**67.7**	**2.5**	**922**	**7**	**2**

Wester Wheat Quality Lab
Pullman WA

WWQL

Pacific Northwest Wheat Quality Council
Evaluation Form

Rate Samples in Question 1, 2 & 3 on 1-9 scale 5=usable average results. Question #4 provides additional space for comments, if
For Dough & End-Product score as is. Make allowances and adjustments to score for questions 3 & 4.

Western Wheat Quality Lab

						1 poor 9 excellent		1 poor 9 excellent		1 poor 9 excellent	
						Question #1		Question #2		Question #3	
Variety	Check	Class	Group	Sample#	Product	Dough/Batter Rating	Liked/Disliked Comments	End-Product Performance	Liked/Disliked Comments	Overall Acceptability	Liked/Disliked Comments
WA8334		SWW	1	1	Cookie	9		2	Small Cookies	3	
WA8336		SWW	1	2	Cookie	9		3	Small Cookies	3	
WA8362		SWW	1	3	Cookie	8		5		5	
WA8364		SWW	1	4	Cookie	7		5		5	
Madsen (CK)	ck	SWW	1	5	Cookie	6		2	Small Cookies	3	
WA8354		SWS	2	6	Cookie	4		2	Small Cookies	3	
SEAHAWK (CK)	ck	SWS	2	7	Cookie	7		2	Small Cookies	3	
UIL13-046145A		SWW	3	8	Cookie	7		3	Small Cookies	4	
UI Magic CL+ (CK)	ck	SWW	3	9	Cookie	8		3	Small Cookies	4	
M-Pire		SWW	4	10	Cookie	7		2	Small Cookies	3	
OR2170559		SWW	5	11	Cookie	7		3	Small Cookies	4	
Nixon (CK)	ck	SWW	5	12	Cookie	8		4		4	
ORI2190025 CL+		SWW	6	13	Cookie	8		2	Small Cookies	3	
ORI2190027 CL+		SWW	6	14	Cookie	6		2	Small Cookies	3	
Appleby CL+ (CK)	ck	SWW	6	15	Cookie	5		5		5	
OR5180072		CLUB	7	16	Cookie	9		5		5	
Cara (CK)	ck	CLUB	7	17	Cookie	9		6		6	
WA8356		HRS	8	18	Bread	5		3		3	
Glee (CK)	ck	HRS	8	19	Bread	4		3		3	
BZ917-207		HRS	9	20	Bread	3		3		4	
BZ919-134		HRS	9	21	Bread	4		4		5	
BZ919-101 (CK)	ck	HRS	9	22	Bread	5		4		5	
XF9306		HRS	10	23	Bread	3		1		1	
XF9307		HRS	10	24	Bread	3		1		1	
WB9668 (CK)	ck	HRS	10	25	Bread	3		2		2	

How to Score Samples:

Rate Samples in Question 1, 2 & 3 on 1-9 scale 5=usable average results. Question #4 provides additional space for comments, if appropriate.
For Dough & End-Product score as is. Make allowances and adjustments to score for questions 3 & 4.

Western Wheat Quality Lab

						1 poor 9 excellent Question #1		1 poor 9 excellent Question #2		1 poor 9 excellent Question #3		Question #4
Variety	Check	Class	Group	Sample#	Product	Dough/Batter Rating	Liked/Disliked Comments	End-Product Performance	Liked/Disliked Comments	Overall Acceptability	Liked/Disliked Comments	Mitigating Physical/Chemical Properties & Comments
WA8334		SWW	1	1	Cake	5		2		2		
WA8336		SWW	1	2	Cake	4		4		4		
WA8362		SWW	1	3	Cake	5		5		5		
WA8364		SWW	1	4	Cake	5		5		5		
Madsen (CK)	ck	SWW	1	5	Cake	4		2		3		
WA8354		SWS	2	6	Cake	6		6		6		
SEAHAWK (CK)	ck	SWS	2	7	Cake	6		7		7		
UIL13-046145A		SWW	3	8	Cake	8		7		7		
UI Magic CL+ (CK)	ck	SWW	3	9	Cake	4		5		5		
M-Pire		SWW	4	10	Cake	4		4		4		
OR2170559		SWW	5	11	Cake	6		2		3		
Nixon (CK)	ck	SWW	5	12	Cake	7		4		5		
ORI2190025 CL+		SWW	6	13	Cake	5		6		6		
ORI2190027 CL+		SWW	6	14	Cake	5		5		5		
Appleby CL+ (CK)	ck	SWW	6	15	Cake	7		4		5		
OR5180072		CLUB	7	16	Cake	8		6		7		
Cara (CK)	ck	CLUB	7	17	Cake	7		9		9		
WA8356		HRS	8	18								
Glee (CK)	ck	HRS	8	19								
BZ917-207		HRS	9	20								
BZ919-134		HRS	9	21								
BZ919-101 (CK)	ck	HRS	9	22								
XF9306		HRS	10	23								
XF9307		HRS	10	24								
WB9668 (CK)	ck	HRS	10	25								

Western Wheat Quality Lab

Sample	Variety	Check	Group	Class	Test Weight	Single Kernel Hardness	Single Kernel Weight	Single Kernel Size	Wheat Falling Number	Whole Wheat Ash	Wheat Protein	Flour Protein	Flour Ash	Flour Milling (raw data, as is mb) Break Yield	Patent Yield	Total Yield	Cookie Diameter	Cake Volume	Cake Crumb Grain	Bake Absorption	Bread Volume	Bread Crumb Grain	Solvent Retention Capacity Carbonate	Lactic Acid	Water	Sucrose	Flour SDS Sed.	Mixograph Absorption	Mix to Peak Time	to Peak He	Mixo Work 1th	After 2 r
1	WA8334		1	SWW	62.5	29.9	37.4	2.82	339	1.73	9.3	7.7	0.43	26.6	45.7	74.4	8.6	975	18				75.4	109.4	56.6	101.8	9.6					
2	WA8336		1	SWW	60.3	30.9	36.7	2.72	358	1.79	9.0	7.2	0.44	26.8	47.8	74.5	8.8	1178	19				71.7	82.8	56.4	93	6.8					
3	WA8362		1	SWW	62.5	0.8	37.1	2.80	318	2.34	9.1	7.1	0.41	29.4	46.3	71.9	9.1	1249	19				67.8	97.1	51	92.5	7.7					
4	WA8364		1	SWW	63.2	17.8	37.2	2.73	335	1.42	8.8	7.2	0.38	28.4	49.2	75.5	9.1	1266	20				69	84.4	52.7	94.6	5.8					
5	MADSEN	ck	1	SWW	62.3	38.8	36.0	2.78	349	2.37	10.5	8.6	0.41	22.5	44.7	74.7	8.6	1120	16				70.6	95.9	55.8	93.1	8.1					
6	WA8354		2	SWS	59.3	12.5	33.1	2.54	362	2.01	11.8	9.9	0.46	32.3	48.1	69.5	8.5	1273	21				75.3	123.2	54.9	104.4	12.6					
7	SEAHAWK	ck	2	SWS	61.6	21.1	32.5	2.62	338	2.06	11.1	9.4	0.46	27.2	46.0	71.5	8.5	1308	20				71.7	114.3	52.7	102.3	10.9					
8	UIL13-046145A		3	SWW	62.2	22.7	37.3	2.78	305	2.12	8.3	7.5	0.41	27.9	47.7	73.4	8.9	1260	21				72	101.4	56.1	95.4	7.4					
9	MAGIC	ck	3	SWW	61.2	23.0	32.2	2.62	295	1.78	8.6	7.7	0.46	27.2	47.8	72.9	8.9	1249	19				69.7	98.6	53.8	94.4	7.9					
10	M-PIRE		4	SWW	64.6	32.8	47.5	3.06	315	2.08	9.3	8.0	0.44	24.3	45.5	75.9	8.5	1200	18				72.3	89.5	56.6	93.5	6.7					
11	OR2170559		5	SWW	61.0	26.2	42.5	2.90	301	2.10	9.1	7.8	0.50	24.6	45.0	74.1	8.9	1194	19				70.4	83.4	55.2	92	6.4					
12	NIXON	ck	5	SWW	62.0	22.9	38.6	2.72	285*	2.08	9.0	7.6	0.46	26.5	47.7	74.2	9.0	1265	19				70.1	84.4	53.5	92.2	6.4					
13	ORI2190025		6	SWW	61.3	20.6	40.4	2.80	286*	1.89	8.2	6.8	0.46	24.8	45.2	73.5	8.8	1282	21				76.6	105	55.1	98.8	7.4					
14	ORI2190027		6	SWW	62.4	25.4	36.7	2.74	349	1.94	7.8	6.5	0.46	26.8	44.6	72.0	8.8	1262	20				77	85.7	57.1	98.5	4.8					
15	APPLEBY	ck	6	SWW	61.1	21.8	38.9	2.85	345	2.01	8.2	6.8	0.45	28.1	45.3	73.1	9.1	1215	19				70.3	76.5	53.9	92.6	4.8					
16	OR5180072		7	CLUB	60.9	19.6	40.4	2.89	275*	1.88	8.3	6.5	0.49	29.7	49.0	73.5	9.2	1248	21				69.7	67.2	54.8	89.1	4.1					
17	CARA	ck	7	CLUB	60.8	24.3	35.2	2.69	287*	2.06	9.0	6.8	0.40	33.7	49.8	75.3	9.4	1258	23				61.6	74.1	50.2	84	5.1					
18	WA8356		8	HRS	56.4	70.1	30.4	2.50	388	2.09	13.0	12.9	0.68	20.5	41.9	72.8				64.5	839	5	83.8	122.9	65.8	105.7	21.6	62.3	5.6	49.6	235.6	11.5
19	GLEE	ck	8	HRS	59.8	75.8	29.4	2.51	373	1.65	12.1	12.0	0.69	16.3	37.0	71.7				62.6	816	6	88.5	116.6	67.9	108.8	19.3	60.4	4.6	53.4	201.8	9.8
20	BZ917-207		9	HRS	62.7	69.9	40.5	2.97	373	1.78	16.5	13.0	0.64	17.6	35.3	69.9				69.4	820	4	87.9	123	69.4	109.7	14.5	66.2	3.6	54.8	163.1	11.9
21	BZ919-134		9	HRS	62.8	55.8	45.5	2.96	353	1.57	12.9	12.1	0.55	18.9	38.2	73.2				68	972	4	90.9	138.8	67.4	111.1	22.2	65.8	4.6	59	216.8	12.5
22	BZ919-101	ck	9	HRS	63.2	65.2	37.5	2.83	315	1.58	14.5	13.4	0.54	18.2	36.1	71.9				71.7	965	3	93.9	168.9	71.2	123	26.7	69.5	9	56.6	395.2	16.2
23	XF9306		10	HRS	61.8	53.3	43.2	3.1	336	1.73	12.9	12.4	0.68	11.7	30.0	71.0				67.8	746	8	85.2	100.3	64.8	106	14.2	65.6	2.3	61.7	106.4	6.1
24	XF9307		10	HRS	62.0	55.6	45.3	3.1	320	1.82	13.2	12.3	0.68	14.5	32.1	68.5				67.3	756	8	86.2	104.2	65.8	105.5	14.1	65.1	2	60.7	95.2	6.2
25	WB9668	ck	10	HRS	62.8	57.5	40.3	3.0	367	2.50	14.2	13.3	0.61	14.8	31.7	69.5				71.4	867	7	89.3	120.7	69.1	112.4	19.6	67.2	2.9	62.8	141.8	7.3

* = Checked with Phadebas assay and showed very low alpha-amylase activity

APPENDIX

Hard White Wheat Quality Targets

Dual Purpose -- Chinese Noodles and Western Pan Bread

Updated on March 2, 2001 at Hard White Wheat Quality Targets Workshop
Wheat Marketing Center, Portland, Oregon

	Chinese Hard-Bite Noodles (1)	**Pan Bread**
Wheat Quality Parameter		
Test Weight (lb/bu)	60 Minimum	60 Minimum
Kernel Hardness (SKCS 4100)	65 Minimum	65 Minimum
Kernel Diameter (mm) (SKCS 4100)	2 5 Minimum	2 5 Minimum
Falling Number (seconds)	300 Minimum	300 Minimum
Protein (%, 12% mb)	11-15 0	11 5-14 0
Ash (%, 14% mb)	1 4 Maximum	1 6 Maximum
PPO Level by L-DOPA (WWQL Method)	0-0 2	N/A
Flour Quality Parameter		
Protein (%, 14% mb)	10-13 5	10 2-11 5
Ash (14% mb)	0 38-0 45	N/A
Patent Flour Yield at 0 4% Ash (%)	60 (by Buhler)	N/A
Straight-Grade Flour Yield at 0 45% Ash (%)	70 (by Buhler)	N/A
L* (Minolta Colorimeter CR 310)	91 Minimum	N/A
Wet Gluten (%, 14% mb)	30 Minimum (2)	28
Farinograph Absorption (%, 14% mb)	60 Minimum (2)	60
Farinograph Stability (minutes)	12 Minimum (2)	12
Amylograph Peak Viscosity (Bu) (3)	500-850	500 minimum
Mixograph Peak Time (minutes)	N/A	3-7 @ 5 5 mm peak ht
Mixograph Absorption (%)	N/A	60
Chinese Raw Noodle Quality Parameter (Refer to WMC Protocol) (4)		
Chinese Raw Noodle Dough Sheet L*24 h	72 Minimum	N/A
Chinese Raw Noodle Dough Sheet L*0-L*24	10 Maximum	N/A
Chinese Raw Noodle Dough Sheet b* 24 h	25 Maximum	N/A
Cooked Noodle Hardness (g)	1250 Minimum (2)	N/A
Pan Bread Quality Parameter		
Pup Loaf Volume (cc)	N/A	900 @11% flour protein

Notes:

(1) Chinese raw, Chinese wet, Chinese instant fried, Philippine instant fried, Malaysia hokkien and Thai bamee noodles

(2) Straight-grade flour of 12% protein wheat

(3) Method: 65 g untreated flour + 450 ml deionized water

(4) Noodle formula: straight-grade flour, 100%; water, 28%; and sodium chloride, 1 2%
Noodle sizes: 2 5 mm (width) x 1 2 mm (thickness)
Noodle textural measurement: cook 100 g noodles in 1000 ml deionized water for 5 min, rinse in 27^{0}C water and drain Measure noodle texture on five noodle strands by compressing to 70% of noodle thickness with a 5-mm flat probe attached to TA XT2 Texture Analyzer

These end-use quality targets emphasize the broadest possible utilization of hard white wheats.

Other Product Categories

(Based on hard white wheat protein levels and blends with other U.S. wheat classes)

Updated on March 2, 2001 at Hard White Wheat Quality Targets Workshop
Wheat Marketing Center, Portland, Oregon

	Korean Instant Noodles	Chinese Northern-Type Steamed Bread	Hamburger/Hotdog Buns
Wheat Quality Parameter			
Test Weight (lb/bu)	60 Minimum	60 Minimum	60 Minimum
Kernel Hardness (SKCS 4100)	65 Minimum	65 Minimum	65 Minimum
Kernel Diameter (mm) (SKCS 4100)	2 5 Minimum	2 5 Minimum	2 5 Minimum
Falling Number (seconds)	300 Minimum	350-400	300 Minimum
Protein (%, 12% mb)	10-11 0	10-11 5	13-15 0
Ash (%, 14% mb)	1 4 Maximum	1 4 Maximum	1 6 Maximum
PPO Level by L-DOPA (WWQL Method)	0-0 2	0-0 2	N/A
Flour Quality Parameter			
Protein (%, 14% mb)	8 5-9 5	8 5-10 0	12 2-13 0
Ash (14% mb)	0 38-0 40	0 38-0 45	N/A
Patent Flour Yield at 0 4% Ash (%)	60 (by Buhler)	60 (by Buhler)	N/A
Straight-Grade Flour Yield at 0 45% Ash (%)	70 (by Buhler)	70 (by Buhler)	N/A
L* (Minolta Colorimeter CR 310)	91 Minimum	91 Minimum	N/A
Wet Gluten (%, 14% mb)	N/A	28-30	34 5
Farinograph Absorption (%, 14% mb)	58-60	60-62	64
Farinograph Stability (minutes)	7 5-8 5	4-6 0	15-18 0
Amylograph Peak Viscosity (Bu) (1)	800 Minimum	500 Minimum	500 Minimum
Amylograph Breakdown (Bu)	200 Minimum	N/A	N/A
Mixograph Peak Time (minutes)	N/A	N/A	4-7 @ 5 8 mm peak ht
Mixograph Absorption (%)	N/A	N/A	64
Pan Bread Quality Parameter			
Pup Loaf Volume (cc)	N/A	N/A	980 @ 13% flour protein

Notes:
(1) Method: 65 g untreated flour + 450 ml deionized water

QUALITY TARGETS FOR HARD RED SPRING WHEAT

Quality Targets Steering Committee

Adopted PNW WQC January 25th 2013, Scottsdale, Arizona

	HRS Targets
Grain Quality Parameter	
Test Weight (lb/bu)	60 0
Kernel Hardness (SKCS 4100)	60-80
Kernel Diameter (mm) (SKCS 4100)	2 8
Kernel Weight (mg) (SKCS 4100)	38
Falling Number (seconds) (in absence of sprout)	>300
Protein (%, 12% mb)	14 5
Ash (%, 12% mb) [1]	1 52

Flour Quality Parameter	
Protein (%, 14% mb) [2]	13 1
Flour Yield (%) [3]	67 4
Flour Ash (%) [1]	0 41
Mill Score [1]	81 3
Gluten ndex (%, 14% mb)	
SDS Sedimentation (cc/g, 14% mb) [4]	27 4
Farinograph Absorption (%, 14% mb) [5]	63 4
Farinograph Peak (min, 14% mb) [5]	16 3
Farinograph Stability (minutes) [5]	20 7
Mixograph Absorption (%)	64 1
Mixograph Peak (min by Mixsmart)	4 9
Mixograph Tolerance (subjective by chart)	1 6

Baking Quality Parameter	
Bake Absorption (%)	67 2
Bake Mix Time (min)	4 7
Bread Loaf Volume (cc)	1021 6
Bread Crumb Grain (subjective, 1-good 9-poor)	3 2

[1] Adjusted for lower PNW whole wheat ash observed
[2] "Protein Differential" --the difference between wheat and flour is greater on the Western Wheat
[3] Western Wheat Quality Lab Quadrumat Milling System
[4] Micro Method, 0 5g
[5] 50-gram mixing bowl NOTE: Limited WWQL Data--Midwest numbers used

QUALITY TARGETS FOR HARD RED WINTER WHEAT

Quality Targets Steering Committee

Accepted PNW WQC January 25th 2007,Salt Lake City

Grain Quality Parameter	
Test Weight (lb/bu)	260
Kernel Hardness (SKCS 4100)	60-80
Kernel Diameter (mm) (SKCS 4100)	22.4
Kernel Weight (mg) (SKCS 4100)	230
Falling Number (seconds) (in absence of sprout)	2 300
Protein (%, 12% mb)	212.0
Ash (%, 12% mb) [1]	::1.30

Flour Quality Parameter	
Protein (%, 14% mb) [2]	211.0
Flour Yield (%) [3]	268.0
Flour Ash (%) [1]	::0.37
Mill Score [1]	285
Gluten Index (%, 14% mb)	295
SDS Sedimentation (cc/g, 14% mb) [4]	217.5
Farinograph Absorption (%, 14% mb) [5]	262.0
Farinograph Peak (min, 14% mb) [5]	4.0-8.0
Farinograph Stability (minutes) [5]	10.0-16.0
Mixograph Absorption (%)	260.2
Mixograph Peak (min by Mixsmart)	3.7-5.7
Mixograph Tolerance (subjective by chart)	21.1

Baking Quality Parameter	
Bake Absorption (%)	263.5
Bake Mix Time (min)	3.0-5.0
Bread Loaf Volume (cc)	2870
Bread Crumb Grain (subjective, 1-good 9-poor)	::5

[1] Adjusted for lower PNW whole wheat ash observed
[2] "Protein Differential" --the difference between wheat and flour is greater on the Western Wheat
[3] Western Wheat Quality Lab Quadrumat Milling System.
[4] Micro Method, 0.5g
[5] 50-gram mixing bowl. NOTE: Limited WWQL Data--Midwest numbers used

QUALITY TARGETS FOR SOFT WHITE WHEAT

Quality Targets Steering Committee

Adopted January 25, 2005, Portland, OR

		WWQL Data N=1249		PNW WQC Data N=78		SRW WQC N=83	
		Quad Milled G&E Data		Miag Milled Released Varieties*		Miag Milled	
		Means	STD	Means	STD	Means	STD
Grain Quality Parameter		Varieties representing 80% of PNW Crop					
Test Weight (lb/bu)	>60	61 4	1 6	62 0	1 5		
Kernel Hardness (SKCS 4100)	45 35	31 2	10 5	28 2	10 3		
Kernel Diameter (mm) (SKCS 4100)	>2 5	2 67	0 27	2 73	0 1823		
Kernel Weight (mg) (SKCS 4100)	>35	37 93	5 7	39 07	5 4551		
Falling Number (seconds) (in absence of sprout)	2: 300						
Protein (%, 12% mb)	10 5	10 6	1 7	11 0	1 4		
Ash (%, 12% mb)	1 30	1 37	0 16	1 34	0 1249		
Flour Quality Parameter							
Protein (%, 14% mb) [1]	8 71	9 0	1 6	9 3	1 3	8 6	1 2
Ash (%, 14% mb) at 67% extraction [2]	0 38	0 39	0 05	0 45	0 05	0 40	0 40
Flour Yield (%) [2]	>68 15	68 2	2 6	77 2	1 0		
Break flour yield (%) [2]	>46 75	48 6	3 3	26 9	2 9		
Milling Score [2]	>83 47	83 0	3 9				
Wet Gluten (%, 14% mb)	27						
Farinograph Absorption (%, 14% mb) @ 8 7% protein [3]	55						
Farinograph Stability (minutes) [3]	7 0						
Mixograph Absorption (%) @ 8 7% protein	53 97	55 1	2 5	54 8	2 0	54 5	1 5
Color / Polyphenol Oxidase (L-DOPA A_{475})	0 5	0 840	0 290	0 870	0 370		
Solvent Retention Capacity: Water (%)	58	55 6	2 8	55 6	2 8	53 0	2 8
Solvent Retention Capacity: Carbonate (%)	75	72 0	4 2	72 6	3 5	72 6	5 2
Solvent Retention Capacity: Sucrose (%)	95	95 4	7 1	97 2	6 5	93 2	11 4
Solvent Retention Capacity: Lactic acid (%)	60-170	107 8	23 4	96 0	16 8	104 3	14 4
SDS Sedimentation Volume (mL/g) @ 8 7% protein	7 0-14 0	11 2	4 1	11 0	3 4	9 1	2 5
Sugar-Snap Cookie Diameter (cm) .7 protein	9 3	9 34	0 27	9 25	0 26	9 20	0 35
Sponge Cake Volume (cc)	1280	1274	69	1249	67	1314	62

[1] "Protein Differential" --the difference between wheat and flour is greater on the Western Wheat
[2] Western Wheat Quality Lab Quadrumat Milling System
[3] 50-gram mixing bowl

* Varieties with over 10K acres

QUALITY TARGETS FOR CLUB WHEAT
Quality Targets Steering Committee
Adopted January 25, 2005, Portland, OR

Grain Quality Parameter	
Test Weight (lb/bu)	>58
Kernel Hardness (SKCS 4100)	45 35
Kernel Diameter (mm) (SKCS 4100)	>2 36
Kernel Weight (mg) (SKCS 4100)	>35
Falling Number (seconds) (in absence of sprout)	2: 300
Protein (%, 12% mb)	10
Ash (%, 14% mb)	1 30

Flour Quality Parameter	
Protein (%, 14% mb) [1]	8 3
Ash (%, 14% mb) at 67% extraction [2]	0 39
Flour Yield (%) [2]	>69 2
Break flour yield (%) [2]	>50 64
Milling Score [2]	>84 62
Wet Gluten (%, 14% mb)	26
Farinograph Absorption (%, 14% mb) [3]	52 0
Farinograph Stability (minutes)@ 8 3% protein [3]	2 0
Mixograph Absorption (%)@ 8 3% protein	50
Color / Polyphenol Oxidase (L-DOPA A_{475})	0 5
Solvent Retention Capacity: Water (%)	56 0
Solvent Retention Capacity: Carbonate (%)	72 0
Solvent Retention Capacity: Sucrose (%)	93
Solvent Retention Capacity: Lactic acid (%)	72 0
SDS Sedimentation Volume (mL/g) @ 8 3% protein	5 0

Sugar-Snap Cookie Diameter (cm) .3 protein	9 4

Sponge Cake Volume (cc)	1300

[1] "Protein Differential" --the difference between wheat and flour is greater on the Western Wheat Quality Lab Quadrumat Milling System than typical of commercial mills

[2] Western Wheat Quality Lab Quadrumat Milling System

[3] 50-gram mixing bowl

WHEAT PRODUCTION IN THE PNW

Compiled by Stacey Sykes
USDA-ARS Western Wheat Quality Lab, Pullman, WA. January, 2023

Winter Wheat (all classes)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
millions of bushels										
OR	48.4	40.7	34.5	35.5	43.4	46.6	49.6	49.6	31.7	48.9
ID	61.9	58.4	57.4	66.7	53.6	61.2	59.2	59.2	45.4	63.9
WA	114.5	85.3	89.0	130.3	120.5	125.4	119.0	119.0	71.0	122.4
Total	224.8	184.4	180.9	232.5	217.5	233.2	227.8	228.4	148.1	235.3

Spring Wheat (all classes)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
millions of bushels										
OR	5.5	3.7	4.7	4.4	4.6	5.0	(N/A)	(N/A)	(N/A)	(N/A)
ID	39.3	34.6	29.8	34.4	35.3	42.3	39.6	39.2	30.6	29.2
WA	29.7	23.2	22.5	27.0	22.1	27.8	23.7	24.2	16.2	21.6
Total	74.5	61.5	57.0	65.8	62.0	75.1	63.3	63.4	46.8	50.8

Total Wheat (all classes)

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
millions of bushels										
OR	53.9	44.4	39.2	39.9	48.1	51.6	49.6	49.6	31.7	48.9
ID	101.8	93.7	87.9	101.9	90.7	104.4	99.2	98.8	76.5	93.5
WA	144.2	108.5	111.5	157.3	142.5	153.2	142.7	143.2	87.2	144.0
Totals										
PNW	299.9	246.6	238.6	299.1	281.3	309.2	291.5	291.6	195.4	286.5
US	2127.5	2035.4	2051.7	2309.7	1740.6	1884.5	1961.7	1825.8	1645.7	1649.8

Sources: USDA National Agricultural Statistics Service, and the Idaho, Oregon and Washington State Statistics Services.

Leading Soft White Common and Club Varieties in the PNW - Idaho

	2014*	2015*	2016	2017	2018	2019*	2020*	2021	2022
acreage in >000 ($ denotes spring variety, 8 denotes club variety)									
SY Ovation	-	-	145	140	224	-	-	110	105
Brundage	-	-	69	-	47	-	-	6	77
Ryan $	-	-	-	-	-	-	-	93	72
LCS Shine	-	-	-	-	-	-	-	25	68
Norwest Tandem	-	-	-	-	-	-	-	97	67
SY Assure	-	-	-	-	71	-	-	30	48
WB 1529	-	-	-	82	118	-	-	35	45
Otto	-	-	-	-	-	-	-	5	34
Stingray CL+	-	-	-	-	-	-	-	29	29
M-Press	-	-	-	-	-	-	-	28	29
WB 6430 $	-	-	-	-	-	-	-	23	29
Bruneau	-	-	-	-	-	-	-	14	29
WB 1783	-	-	-	-	-	-	-	17	28
Tekoa $	-	-	-	-	-	-	-	10	26
UI Sparrow	-	-	-	-	-	-	-	24	26
Seahawk $	-	-	-	-	23	-	-	51	22
UI Stone $	-	-	25	-	28	-	-	27	20
Trident	-	-	-	-	-	-	-	1	20
Eltan	-	-	59	58	-	-	-	10	18
Alturas $	-	-	10	-	-	-	-	7	14
Resilience CL+	-	-	-	-	-	-	-	15	13
SY Dayton	-	-	-	-	-	-	-	8	13
UI Magic CLP	-	-	-	-	47	-	-	49	12
Coda 8	-	-	-	-	-	-	-	12	12
LCS Hulk	-	-	-	-	-	-	-	26	1
AP Exceed	-	-	-	-	-	-	-	-	1
PNW Hailey	-	-	-	-	-	-	-	19	1
LCS Artdeco	-	-	-	-	-	-	-	9	1
Norwest Duet	-	-	-	-	-	-	-	9	1
Trooper	-	-	-	-	-	-	-	8	1
SY Banks	-	-	-	-	-	-	-	1	1
ARS-Pritchett 8	-	-	-	-	-	-	-	7	1
SY Raptor	-	-	-	-	-	-	-	1	-
Purl	-	-	-	-	-	-	-	4	-
Resilience	-	-	-	-	-	-	-	10	-
WB 456	-	-	5	-	-	-	-	7	-
UI Pettit $	-	-	-	-	-	-	-	5	-
WB 6121 $	-	-	-	-	-	-	-	4	-
Stephens	-	-	15	-	-	-	-	3	-
Lambert	-	-	-	-	-	-	-	3	-

LCS Blackjack	-	-	-	-	-	-	-	3	-
LCS Sonic	-	-	-	-	-	-	-	3	-
UICF-Brundage	-	-	-	-	-	-	-	2	-
AP Mondovi CL2 $	-	-	-	-	-	-	-	2	-
AP Illiad	-	-	-	-	-	-	-	2	-
UI Palouse CL+	-	-	-	-	-	-	-	2	-
WB 528	-	-	32	-	-	-	-	2	-
Babe $	-	-	-	-	-	-	-	2	-
Common Winter	-	-	710	720	507	-	-	-	-
Common Spring	-	-	395	420	460	-	-	-	-
Club	-	-	10	-	35	-	-	-	16

* No variety survey was conducted in 2014, 2015, 2019, or 2020.

Leading Soft White Common and Club Varieties in the PNW - Oregon

	2014	2015	2016*	2017	2018	2019	2020	2021	2022
acreage in >000 ($ denotes spring variety, 8 denotes club variety)									
UI Magic CL+	-	-	-	59	224	478	768	458	389
SY Assure	-	-	-	1	30	83	65	37	66
LCS Shine	-	-	-	-	-	-	1	24	59
Rosalyn	-	2	-	9	25	25	27	36	47
LCS Artdeco	-	14	-	6	7	8	11	28	31
M-Press	-	-	-	-	-	11	11	16	22
LCS Blackjack	-	-	-	-	-	-	-	2	19
Appleby CL+	-	-	-	-	-	-	-	3	18
Stingray CL+	-	-	-	-	-	-	-	-	14
Norwest Tandem	-	-	-	1	11	18	44	13	13
Seahawk $	-	-	-	-	-	-	-	7	10
Louise $	25	13	-	3	2	3	2	5	7
Bobtail	-	26	-	26	16	17	21	19	7
LCS Drive	-	-	-	15	26	11	21	9	7
Yamhill	3	7	-	1	-	1	-	7	6
Ryan $	-	-	-	-	-	-	5	20	5
UI Presto CL+	-	-	-	-	-	-	-	-	4
SY Dayton	-	-	-	-	-	5	9	8	4
AP Mondovi CL2 $	-	-	-	-	-	-	-	4	4
LCS Ghost	-	-	-	-	-	-	-	-	3
AP Iliad	-	-	-	-	-	-	-	-	3
LCS Shark	-	-	-	-	-	-	2	-	3
ARS Crescent 8	-	-	-	-	-	1	6	4	3
LCS Hulk	-	-	-	-	-	-	1	-	2
WB 6431 $	-	-	-	-	-	-	3	4	2
VI Voodoo CL+	-	-	-	-	-	-	-	-	2
Coda 8	-	-	-	-	-	-	1	-	2
Twin $	-	-	-	-	-	-	-	1	2
WB 6211 CLP $	-	-	-	-	-	-	-	-	2
Piranha CL+	-	-	-	-	-	-	-	-	1
Norwest Duet	-	-	-	1	2	1	3	4	1
Diva $	42	31	-	7	8	6	4	1	1
Tekoa $	-	-	-	-	-	-	1	-	1
Brundage	-	-	-	-	-	-	-	1	-
Stephens	-	-	-	-	-	-	8	-	-
WB 1376 CL+	-	-	-	1	1	1	1	3	-
SY Ovation	72	84	-	109	56	17	4	2	-
WB 1529	-	-	-	14	5	9	3	1	-
LCS Biancor	-	-	-	-	-	-	-	1	-
ORCF 101	336	309	-	152	47	20	9	-	-

UI Castle CL+	-	-	-	26	30	8	7	-	-
Cara 8	-	-	-	-	-	4	2	-	-
WB 1035 CL+ $	16	16	-	4	-	2	4	-	-
ORCF 102	169	122	-	83	34	9	1	-	-
Common Winter	810	729	-	578	543	732	1031	678	725
Common Spring	102	64	-	37	18	15	20	46	36
Club	-	-	-	20	-	4	3	4	-

* No variety survey was conducted in 2016.

Leading Soft White Common and Club Varieties in the PNW - Washington

	2014	2015	2016	2017	2018	2019	2020	2021	2022
acreage in >000 ($ denotes spring variety, 8 denotes club variety)									
UI Magic	-	-	-	51	115	206	267	235	279
Norwest Tandem	-	-	-	-	29	89	125	132	203
Ryan $	-	-	-	-	9	89	162	221	169
Northwest Duet	-	-	-	-	38	108	167	196	143
M-Press	-	-	-	-	-	67	98	111	141
LCS Shine	-	-	-	-	-	-	-	29	121
Curiosity CL+	-	21	145	155	158	153	180	158	118
Stingray CL+	-	-	-	-	-	-	-	16	106
LCS Hulk	-	-	-	-	-	-	21	58	88
SY Assure	-	-	-	-	18	28	19	26	70
Piranha CL+	-	-	-	-	-	-	-	-	59
Castella 8	-	-	-	-	-	-	-	14	59
LCS Artdeco	7	31	44	58	47	48	40	45	56
SY Dayton	-	-	-	-	-	25	44	42	54
LCS Blackjack	-	-	-	-	-	-	-	7	50
Pritchett 8	-	-	-	-	2	11	15	42	48
Tekoa $	-	-	-	1	-	-	29	43	48
AP Iliad	-	-	-	-	-	-	-	-	45
Seahawk $	-	-	-	3	28	57	48	46	41
Mela CL+	-	6	31	34	41	48	70	81	41
Resilience CL+	-	-	-	-	-	34	57	71	40
Melba $8	-	-	-	-	5	1	8	7	34
Otto	125	222	221	222	207	162	143	62	33
Louise $	39	84	54	56	53	26	35	69	32
ARS Crescent 8	18	41	61	98	65	35	45	23	21
LCS Drive	-	-	-	9	39	34	19	18	20
Bobtail	-	21	8	17	-	7	13	-	16
Puma	-	-	24	63	76	46	47	23	16

PNW Hailey	-	-	-	-	-	-	42	22	15
LCS Sonic	-	-	-	-	-	-	13	21	10
Sockeye CL+	-	-	-	-	-	-	-	-	10
AP Mondovi CL2 $	-	-	-	-	-	-	-	10	8
LCS Shark	-	-	-	-	-	-	-	11	8
LCS Ghost	-	-	-	-	-	-	-	11	7
WB 6121 $	12	50	67	37	28	-	18	7	7
Coda 8	5	6	3	-	-	-	-	1	5
Bruehl 8	114	147	188	56	69	21	18	15	5
WB 6211 CLP $	-	-	-	-	-	-	-	-	4
JD $8	15	11	22	21	21	2	33	3	3
Jasper	-	-	-	30	28	32	22	14	-
SY Raptor	-	-	-	-	-	14	12	8	-
VI Frost	-	-	-	-	-	-	-	7	-
Rosalyn	-	-	-	-	-	-	11	7	-
WB 1035 CL+ $	37	15	23	18	5	16	6	5	-
Eltan	107	53	61	17	31	11	69	-	-
WB 1604	-	9	19	18	24	35	14	-	-
Impact	-	-	-	-	-	-	13	-	-
SY Ovation	131	187	248	189	138	42	12	-	-
UI Castle	-	-	-	-	12	9	10	-	-
Madsen	46	27	17	-	16	7	7	-	-
ORCF-102	265	218	209	127	66	33	-	-	-
Whit $	36	40	35	17	19	14	-	-	-
WB 6341 $	9	25	21	4	-	5	-	-	-
WB 1529	-	32	71	65	37	-	-	-	-
WB 528	108	98	46	43	27	-	-	-	-
Xerpha	161	126	119	58	16	-	-	-	-
Other Varieties/Mixes	24	27	67	50	67	61	52	29	33
TOTALS									
Common Winter	1365	1349	1454	1334	1281	1292	1584	1436	1783
Common Spring	302	304	252	161	160	215	302	401	309
Club	172	207	274	176	156	68	119	105	175

Leading Hard Red Winter & Spring Wheat Varieties in the PNW

	2014*	2015*	2016	2017	2018	2019*	2020*	2021	2022
acreage in >000									
Idaho									
Juniper	-	-	-	-	-	-	-	10	30
Promontory	-	-	-	-	-	-	-	10	26
Curlew	-	-	-	-	-	-	-	-	20
Fusion	-	-	-	-	-	-	-	-	14
Clearfield	-	-	-	-	-	-	-	4	1
Utah 100	-	-	-	-	-	-	-	3	1
Yellowstone	-	-	-	-	-	-	-	2	1
LCS Jet	-	-	-	-	71	-	-	63	-
Garland	-	-	-	-	-	-	-	4	-
Battle Ax COAX	-	-	-	-	-	-	-	8	-
LCS Rocket	-	-	-	-	-	-	-	6	-
Greenville	-	-	-	-	-	-	-	3	-
Red Rock	-	-	-	-	-	-	-	2	-
Coaxium	-	-	-	-	-	-	-	1	-
Total HRW	-	-	-	-	130	-	-	-	-
WB 9668	-	-	-	58	32	-	-	63	32
Jefferson	-	-	84	-	23	-	-	13	32
SY Gunsight	-	-	-	-	-	-	-	6	20
Glee	-	-	-	-	-	-	-	10	-
WB 9303	-	-	-	-	-	-	-	8	-
WB 9663	-	-	-	-	-	-	-	1	-
WB 9518	-	-	-	23	28	-	-	1	-
Total HRS	-	-	-	-	115	-	-	-	-

* No variety survey was conducted in 2014, 2015, 2019 or 2020.

Leading Hard Red Winter & Spring Wheat Varieties in the PNW
Continued

	2014	2015	2016*	2017	2018	2019	2020	2021	2022
acreage in >000									
Oregon									
LCS Helix AX	-	-	-	-	-	-	-	7	17
Brawl CL+	-	1	-	5	16	26	9	31	16
LCS Jet	-	-	-	17	19	20	11	11	7
LCS Rocket	-	-	-	-	-	-	-	1	-
Keldin	1	3	-	5	8	-	1	-	-
LCS Evina	-	-	-	-	-	-	-	1	-
Norwest 553	10	13	-	3	-	-	-	1	-
SY Clearstone CL	-	4	-	5	2	-	-	-	-
LCS Fusion AX	-	-	-	-	-	1	2	-	-
Total HRW	20	28	-	41	46	47	24	51	40
WB Patron	-	-	-	-	-	-	-	-	7
Kelse	-	1	-	12	4	7	2	2	3
Alum	-	-	-	1	1	-	-	2	2
WB 9668	-	-	-	1	2	3	4	-	1
Buck Pronto	6	7	-	2	6	3	3	-	1
WB 9990	-	-	-	-	-	-	-	-	1
Glee	-	7	-	1	1	5	2	3	-
WB 9662	-	-	-	-	-	-	-	1	-
WB 9350	-	-	-	-	-	-	1	1	-
Expresso	-	2	-	-	-	1	1	1	-
Total HRS	21	33	-	29	23	32	14	10	16

* No variety survey was conducted in 2016.

Leading Hard Red Winter & Spring Wheat Varieties in the PNW
Continued

	2014	2015	2016	2017	2018	2019	2020	2021	2022
acreage in >000									
Washington									
LCS Jet	-	-	26	98	110	132	84	119	84
Keldin	5	36	99	101	82	59	28	55	35
LCS Helix	-	-	-	-	-	-	-	12	32
AP Venom $ **	-	-	-	-	-	-	-	-	25
WB 9662 $ **	-	-	-	-	-	-	-	-	10
Scorpio	-	-	-	-	-	-	-	-	9
SY Clearstone 2CL	-	11	31	50	38	24	11	-	6
SY Touchstone	-	-	-	-	-	6	-	-	5
Kairos	-	-	-	-	-	-	-	-	5
Kelse $ **	-	-	-	-	-	-	-	-	4
WB 4303	-	-	-	-	-	19	5	15	-
WB 4394	-	-	-	-	-	-	-	14	-
LCS Fusion AX	-	-	-	-	-	15	14	11	-
LCS Rocket	-	-	-	-	-	-	9	8	-
Esperia	26	-	-	26	11	-	-	-	-
Other Varieties	-	-	-	8	12	15	14	16	17
Total HRW	228	218	243	318	259	270	166	255	232
AP Venom	-	-	-	-	-	-	-	-	51
WB 9668	-	-	-	-	29	32	29	34	27
WB 9662	-	-	-	-	10	13	16	19	21
Kelse	44	14	32	46	16	19	17	14	20
Alum	-	-	-	3	14	6	7	6	16
Expresso	34	45	39	41	50	48	29	16	15
Glee	41	51	42	54	40	10	6	6	5
SY Gunsight	-	-	-	-	-	-	7	12	-
Net CL+	-	-	-	-	-	-	-	9	-
Chet	-	-	-	8	14	7	8	6	-
Buck Pronto	21	24	18	16	13	9	11	5	-
AP Renegade	-	-	-	-	-	-	14	-	-
SY 605CL	15	12	11	7	15	10	7	-	-
SY Selway	-	-	-	4	22	-	-	-	-
Solano	25	26	16	21	20	-	-	-	-
Other Varieties	-	-	-	-	-	15	8	12	15
Total HRS	251	222	214	263	294	169	158	126	169

** Includes acres of spring varieties planted in the winter.

Hard White Wheat Varieties in the PNW

	2014*	2015*	2016	2017*	2018	2019*	2020*	2021	2022
acreage in >000 ($ denotes spring variety)									
Idaho									
Dayn $	-	-	-	-	51	-	-	16	26
WB 7696 $	-	-	-	-	-	-	-	-	24
WB 7589 $	-	-	-	-	-	-	-	23	19
WB 7328 $	-	-	-	-	-	-	-	7	12
Explorer $	-	-	-	-	-	-	-	-	1
Klasic $	-	-	-	-	-	-	-	2	-
SY Teton $	-	-	-	-	-	-	-	18	-
WB Hartline $	-	-	-	-	-	-	-	2	-
Total Hard White	-	-	15	-	74	-	-	-	-

* No variety survey was conducted in 2014, 2015, 2017, 2019 or 2020.

Washington									
WB Hartline $	-	3	1	.50	4	3	1	1	1
LCS Star $	-	-	-	-	.50	-	-	1	-
Dayn $	-	5	1	.50	-	-	-	1	-
Total Hard White	35	8	2	1	4.5	3	1	1	1

Durum Wheat in the PNW

	2014	2015	2016	2017	2018	2019	2020	2021	2022
Idaho	11	10	10	-	1	-	-	17	7
Oregon	-	-	-	-	-	-	-	-	-
Washington	-	-	-	-	-	-	-	-	-

Cultivar List - Cross Reference Guide					
Cultivar Name	State Line No.	Market Class	PI No.	Other Identifier	Year of Release
Above	CO980894	HRW	PI 631449	PVP 200200206	2001
Accipiter	DH00-18-196	HRW	PI 663207	PVP 201100370	2011
AgriPro Paladin	W96-355	HRW	PI 643094	PVP 200600240	2005
Albion	GT00123M	SWW	PI 608582	PVP 9900146	2001
Alkabo	D96604	DURUM	PI 642020	PVP 200600105	2006
Alpowa	WA7677	SWS	PI 566596		1993
Alsen	ND716	HRS	PI 615543	PVP 200100066	2006
Alturas	IDO526	SWS	PI 620631	PVP 200200265	2002
Alum	WA8166	HRS	PI 676289	PVP 201600077	2014
Alzada	YU894-75	DURUM	PI 634820	PVP 200400162	2004
Amidon	ND606	HRS	PI 527682		1988
Anton	NW98S097	HWW	PI 651044	PVP 200800301	2007
Anza	D6923	HRS	CItr 15284		1971
AP 502 CL	CO980889	HRW	PI 632374	PVP 200300044	2001
AP 503 CL2	CLO 3040-5-2	HRW	PI 654423	PVP 200800322	2008
AP 700 CL	OSUPOP 28-13	SWW	PI 654424	PVP 200800323	2007
AP Badger	RemPop80-3	SWW	PI 658543	PVP 201000078	2009
AP Coachman	SY08PN2001_07	SWS			2019
AP Dynamic	08PN030-3	SWW			2019
AP Exceed		SWW			2021
AP Illiad	11PN044#84	SWW			2019
AP Kimber CL2	SY10PN3039-02	HRS			2019
AP Legacy	ORF2BC9800267-0	SWW	PI 658008	PVP 200900300	2009
AP Mondovi CL2	SY11PN2532_507	SWS			2019

AP Octane	USW1120024-1-4	HRS			2019
AP Redeye	05PN044-20	HRW			2019
AP Renegade	SY09PN3017-09	HRS			2019
AP Venom	USW1120083-1-3	HRS			2019
Arapahoe	NE82656	HRW	PI 518591	PVP 8900295	1988
Arlin	KSSB369-7	HWW	PI 564246	PVP 9300123	1992
ARS-Amber	ARS96277L	SWW	PI 665047		2011
ARS-Cameo	ARS09X492-6CBW	Club-W	PI 699960		2021
ARS-Cara	ARS97-135-9	Club-W	PI 643435		2007
ARS-Castella	ARS20060123-31C	Club-W	PI 698291		2017
ARS-Chrystal	ARS970075-3C	Club-W	PI 665049		2011
ARS-Crescent	ARS970163-4C	Club-W	PI 665048		2012
ARS-Pritchett	4J0713366C	Club-W	PI 678944	PVP 201700197	2016
ARS-Selbu	ARS970161-3L	SWW	PI 667744	X970161-3L	2013
Babe	WA8039	SWS	PI 656791	PVP 201100010	2009
Balance	WA8248	HRW	PI 699242	PVP 202100490	2020
Bannock	IDO028	HRS	CItr 15318		1972
Basin	WA7520	SWW	PI 601238	PVP 8500177	1985
Battle AX		HRW			2021
Bauermeister	WA7939	HRW	PI 634717	PVP 200600245	2005
Beamer	BZ6W93-481	SWW			2000
Bearpaw	MTS0721	HRW	PI 665228	PVP 201200407	2012
Betty	KS84063-2W	HWW	PI 612578	PVP 200000155	1998
Bighorn	78W296	HRW	PI 601204	PVP 8500109	1985
BigSky	MT9432	HRW	PI 619166	PVP 200300290	2001
Bill Brown	CO01385-A1	HRW	PI 653260	PVP 200800327	2008
Bitterroot	ID92-22407A	SWW	PI 655042	PVP 200800411	2007

Blanca Fuerte	02W500274	HWS	PI 655032	PVP 200800398	2008
Blanca Royale	02W50076-W	HWS	PI 655033	PVP 200800399	2008
Bliss	IDO172	SWS	PI 486350		1983
Blizzard	IDO297	HRW	PI 512302		1991
Bobtail	OR08047P94	SWW	PI 673133	PVP 201400488	2014
Bonneville	IDO421	HRW	PI 557015	PVP 9400231	1993
Bonus	RSI31206	HRS	PI 619428	PVP 9900402	1969
Borah	IDO0043	HRS	CItr 17267		1974
Boundary	IDO467	HRW	PI 603039		1997
BR7030		HWS			
Brawl CL+	CO06052	HRW	PI 664255	PVP 201200434	2011
Bruehl	WA7833	Club-W	PI 606764	PVP 200100258	2000
Brundage	ID86-14502B	SWW	PI 599193	PVP 9800376	1996
Brundage 96	ID-B-96	SWW	PI 631486	PVP 200200245	2002
Brundage CF		SWW			
Bruneau	ID93-64901A	SWW	PI 664304	PVP 201200014	2011
Buchanan	WA7523	HRW	PI 532994		1989
Buck Pronto	T1052	HRS	PI 619397	PVP 200100067	2001
Bullseye	B02-0081	HRS	PI 658036	PVP 200900414	2009
Butte	ND519	HRS	CItr 17681		1979
Butte 86	ND597	HRS			1986
Bynum	MTCL0318	HRW	PI 643429	PVP 200600285	2006
Byrd	CO06424	HRW	PI 664257	PVP 201200432	2011
Cabernet	95WV10616	HRS	PI 646196	PVP 200700161	2007
Calorwa	WUC657	Club-S	PI 566594		1994
Carter	BZ9W022060	HRW	PI 654518	PVP 200800383	2006
Cashup		SWW	PI 601237	PVP 8500178	1985

Cataldo	IDO642	SWS	PI 642361		2007
CDC Falcon	S94-4	HRW	PI 619610	PVP 200100279	1999
Centennial	IDO312	SWS	PI 537303	PVP 9000218	1991
Challis	BZ692-108	SWS	PI 630935	PVP 200200105	2000
Chet	WA8165	HRS	PI 676288	PVP 201600076	2016
Choteau	MT9929	HRS	PI 633974	PVP 200400035	2005
Chukar	WA7855	Club-W	PI 628641	PVP 200300326	2001
Clear White	UC 1361	HWS	PI 635044	PVP 200400244	2005
ClearFirst		SWW	PI 636458	PVP 200400053	2002
Coda	WA7752	Club-W	PI 594372		1998
Columbia-1	W9123321	HRW			1996
Conan	BZ922-588	HRS	PI 607549	PVP 9900232	1999
Concept	89S*88D	SWW	PI 644021	PVP 200600278	2006
Crown	D3117	DURUM	PI 614671	PVP 200000312	2000
Curiosity CL+	WA8143	SWW	PI 675007	PVP 201500290	2015
Curlew	UT932555	HRW	PI 663157		2009
Dash 12	DA998-12	HRS	PI 644068	PVP 200700018	2006
Daws	WA6099	SWW	CItr 17419		1976
Dayn	WA8123	HWS	PI 666941	PVP 201300130	2012
Decade	MT0552	HRW	PI 660291	PVP 201100096	2010
Declo	215-B	HRW	PI 619419	PVP 200100249	1999
Deloris	UT2030-32	HRW	PI 631447		2002
Denali	CO050303-2	HRW	PI 664256	PVP 201200433	2011
Desert King	UC1375	DURUM	PI 638726	PVP 200500187	2005
Devote	WA8271	SWW	PI 693628		2019
Dirkwin	IDO106	SWS	CItr17745		1978
Diva	WA8090	SWS	PI 660663	PVP 201100268	2010

Divide	D9715-11	DURUM	PI 642021	PVP 200600106	2005
Dumas	M95-385	HRW	PI 619199	PVP 200100218	2001
Dune	ID9120503A	SWW			2004
Duraking	D 5456	DURUM	PI 561928	PVP 9200227	1992
DW	IDO513	HRW	PI 620629	PVP 200200151	2001
Earl	WA8184	HWW	PI 680639		2016
Eddy	BZ9W96-788-e	HRW	PI 643423	PVP 200600277	2004
Eden	WA7902	Club-S	PI 630983	PVP 200300264	2002
Edwall	WA6831	SWS	PI 477919		1984
Edwin	WA7834	Club-W	PI 606765		2000
Elkhorn	ND8933	HRW	PI 596352	PVP 9700319	1995
Eltan	WA7431	SWW	PI 536994		1990
Erhardt	MT8719	HRW	PI 564761		1996
Ernest Lemaire	T-1064	HRS	PI 352291		1969
Estica		HRW	PI 585231	PVP 9500069	1995
Expedition	SD97457	HRW	PI 629060	PVP 200400245	2002
Explorer	MTHW9710	HWS	PI 619086	PVP 200300182	2002
Express	DA984034	HRS	PI 573003	PVP 9000012	1991
Expresso	DA984-034SRR	HRS	PI 651616	PVP 200800002	2007
Fairview	IDO338	HRW	PI 557017		1991
Farnum	WA7975	HRW	PI 638535	PVP 200900327	2008
Federation	CItr 4734	SWS	PI 41080		1901
Fergus	TR983-239	HRS	PI 587198	PVP 9500093	1994
Fieldwin	IDO087	SWS	CItr 17425		1977
Finch	WA7853	SWW	PI 628640	PVP 200300327	2001
Fineway	FX001B	HRW	PI 653509	PVP 200700441	2008
Finley	WA7773	HRW	PI 586757		1997

Foote	OR880172	SWW	PI 599663		1997
Fortissimo	00WV50064	DURUM	PI 651031	PVP 200700442	2007
Fortuna	(ND)60-54	HRS	CItr13596		1966
Garland	UT1706-1	HRW	PI 583291	PVP 9400178	1992
Gary	IDO550	HWW	PI 620632	PVP 200200152	2002
Gene	OR8300801	SWW	PI 560129		1992
Genou	MTS0031	HRW	PI 640424	PVP 200500334	2005
George	GMGQ1	SWW	PI 639737	PVP 200500288	2004
Glee	WA8074	HRS	PI 666940	PVP 201300129	2013
Glenn	ND747	HRS	PI 639273	PVP 200500280	2005
Goetze	ORH010920	SWW	PI 655029	PVP 200800393	2007
Golden Spike	UT1944-158	HWW	PI 614813	PVP 200100033	1999
Greenville	UT9743-42	HRW	PI 665932	PVP 201200470	2010
Grenora	D97780	DURUM	PI 642022	PVP 200600107	2006
Hale		HRS			2021
Hank	BZ992-322	HRS	PI 613585	PVP 200000191	1999
Hatcher	CO980607	HRW	PI 638512	PVP 200500340	2005
Hatton	WA6364	HRW	CItr17772		1979
Havasu	PH896-21	DURUM	PI 644065	PVP 200700015	2006
Hayden	IDO465	HRW	PI 608040		1999
Helios	D00-627	DURUM	PI 670000	PVP 201400051	2013
Heyne	KS85W663-42	HWW	PI 612577	PVP 200000154	1998
Hi-Line	MT8402	HRS	PI 549275		1991
Hill 81	OWW68007-2M6	SWW	CItr17954		1983
Hiller	WA7729	Club-W	PI 587026		1995
Hollis	WA7859	HRS	PI 632857		2002
Hubbard	ID86-10420A	SWW	PI 632273	PVP 200300007	2002

Hyalite	MTCL0306	HWW	PI 643978	PVP 200600291	2006
Idaho 266	IDO266	SWS	PI 561074		1992
Idaho 352	IDO352	HRW	PI 557012		1994
Idaho 364	IDO364	HRW	PI 578276		1994
Idaho 377s	IDO377s	HWS	PI 591045	PVP 9500250	1994
Idaho 443	IDO443	HRW	PI 578277		1994
Idaho 444	IDO444	HRW	PI 578278		1994
Idaho 472	IDO472	SWS	PI 592987		1996
IDO1005	IDO1005	SWW			
IDO1708	IDO1708	SWW			
IDO442	IDO442	HRW	PI 557016		1991
IDO488	IDO488	SWS	PI 592986		1996
IDO545	IDO545	HRS	PI 632710		2003
IDO556	IDO556	Club-S	PI 620633	A91329S-22	2001
IDO562	IDO562	HRW	PI 632711		2003
IDO563	IDO563	SWS	PI 620634	A95631-S-Js-4-2	2001
IDO569	IDO569	SWS	PI 620635		2001
IDO571	IDO571	HRW	PI 620636	A781011W-1-4	2001
IDO576	IDO576	SWS	PI 620637	A9495W-G-1	2001
IDO580	IDO580	HWS	PI 620638	A96203S-D-11	2001
IDO586	IDO586	HWS	PI 632713		2003
IDO587	IDO587	SWW	PI 634567	PVP 200400096	2003
IDO602	IDO602	HRS	PI 620628	A93324S-76kbr	2005
IDO629	IDO629	SWS-waxy	PI 642365	AOO149S-4	2006
IDO630	IDO630	SWS-waxy	PI 642364	A99139-wxy-A-1	2006
IDO644	IDO644	SWS	PI 660549	A97067S-C-3	2010
IDO686	IDO686	SWS	PI 660561	A01605S-B-1-4	2010

IDO687	IDO687	SWS	PI 660562	A99038S-H-1	2010
IDO702	IDO702	HRS	PI 660563	A99372S-F-10	2010
Ike	KS89H48	HRW	PI 574488	PVP 9400149	1993
Iona	IDO492	HRS	PI 618734		1999
Irv	OR2110679	HWW			2019
Ivory	OR850513	HWW	PI 599664		1997
Jagalene	W98-362	HRW	PI 631376	PVP 200200160	2002
Jagger	KS84063-9-39-3	HRW	PI 593688	PVP 9500324	1994
Jasper	WA8169	SWW	PI 678442	PVP 201600299	2015
JD	WA8047	Club-S	PI 656790	PVP 201100009	2009
Jefferson	IDO462	HRS	PI 603040		1998
Jerome	IDO566	HRS	PI 632712	PVP 200400097	2003
Jerry	ND9257	HRW	PI 632433		2001
Joaquin	YU999-178	HRS	PI 644066	PVP 200700016	2006
Jubilee	IDO525	SWS	PI 614839	PVP 200100167	2000
Judee	MTS0713	HRW	PI 665227	PVP 201200161	2012
Judith	MT8039	HRW	PI 584526		1989
Juniper	IDO575	HRW	PI 639951		2005
Kaseberg	OR2071628	SWW	PI 669570	PVP 201300487	2012
Keldin	ACS55017	HRW	PI 669490	PVP 201300462	2013
Kelse	WA7954	HRS	PI 653842	PVP 200900351	2008
Kern		HRS	PI 612142	PVP 200000047	1999
Klasic	NKF08022	HWS	PI 486139	PVP 8200095	1982
Kronos	D03-21	DURUM	PI 576168	PVP 9400033	1996
Kulm	ND671	HRS	PI 590576	PVP 9500233	1996
KW9043	KW9043	SWW	PI 639106		2005
Ladd	OR2070870	SWW	PI 669569	PVP 201300486	2012

Lakin	KS96HW115	HWW	PI 617032	PVP 200200049	2000
Lambert	ID85-153	SWW	PI 583372		1993
Langin		HRW			2018
Lassik	UC1495	HRS	PI 653535	PVP 200800176	2008
LCS Albany	06MSP18	HRS	PI658002	PVP 200900283	2009
LCS Aprilio		HRW			
LCS Artdeco	NSA06-2153A	SWW	PI 667102	PVP 201300198	2013
LCS Atomo	06SB0086	HWS	PI 673944	PVP 201500011	2014
LCS Attitude		HRW			
LCS Aymeric	NSA09-5098	HRW	PI 684646	PVP 201700313	2017
LCS Azimut	NSA97-2365	HRW			2011
LCS Blackjack	LWW15-71945	SWW	PI 694058	PVP 202000265	2019
LCS Colonia	NIC05-4711-B	HRW	PI 673087	PVP 201400489	2014
LCS Drive	LWW12-7015	SWW	PI 680589	PVP 201700097	2017
LCS Evina	NIC04-3377-A	HRW	PI 679968	PVP 201600412	2016
LCS Fusion AX		HRW			2019
LCS Ghost	LWW14-74143	SWW	PI 691834	PVP 201900415	2019
LCS Helix AX					2019
LCS Hulk	LWW14-73163	SWW	PI 689017		2017
LCS Iron	11SB0096	HRS	PI 683538	PVP 201700222	2017
LCS Jet	NSA10-7208	HRW	PI 678936	PVP 201600094	2015
LCS Kalahari		HRW			
LCS Luna	10SB0087-B	HRS	PI 683539	PVP 201700223	2017
LCS Photon AX					2019
LCS Powerplay	09FSP18	HRS	PI 665019	PVP 201200204	2012
LCS Rocket	NSA10_2196	HRW	PI 689020	PVP 201800534	2017
LCS Shark	LWW14-71195	SWW	PI 689018		2017

LCS Shine	LWW14-72916	SWW	PI 693155	PVP 201900414	2019
LCS Silk	12-SW-068	SWS			2016
LCS Sinope		HRW			
LCS Sonic	LWW14-73161	SWW	PI 689019		2017
LCS Star	08SB0658-B	HWS	PI 673945	PVP 201500012	2014
LCS Zoom	LWW14-73915	HRW			2019
Ledger	BZ9W96-788-d	HRW	PI 642315	PVP 200600063	2006
Legion	99X1009-23	SWW	PI 658035	PVP 200900413	2008
Levante		DURUM			2002
Lewjain	WA6363	SWW	CItr 17909		1982
Lolo	IDO533	HWS	PI 614840		2000
Louise	WA7921	SWS	PI 634865	PVP 200500311	2004
Lucin-CL	UT10322	HWW	PI 663156	PVP 201100464	2010
Macon	WA7899	HWS	PI 617072	PVP 200200130	2001
MacVicar	ORF75336	SWW	PI 552427		1992
Madsen	WA7163	SWW	PI 511673		1988
Maestrale		DURUM			2004
Maier	D89135	DURUM	PI 607531	PVP 9900265	1999
Malbec	RSI50603	HRS	PI 661105	PVP 201100038	2009
Malcolm	ORCW8113	SWW	PI 497672		1987
Mandala		HRW			2018
Manning	UT89099	HRW	CItr 17846		1979
Mary	OR2040726	SWW	PI 666373	PVP 201200472	2011
Masami	WA7916	SWW	PI 634715	PVP 200600244	2004
Matt	D95-434	DURUM	PI 614136	PVP 200000301	2000
McNeal	MT8849	HRS	PI 574642		1995
MDM	WA7936	HWW	PI 634716	PVP 200600246	2005

Mel	CDH01	Club-W	PI 636459	PVP 200400052	2003
Mela CL+	WA8155	SWW	PI 675008	PVP 201500291	2015
Melba	WA8193	Club-S	PI 682073	PVP 201700203	2015
Meridian	IDO360	HRW	PI 557013	PVP 9300027	1992
Metropolis		HRW			2018
Millennium	NE94479	HRW	PI 613099	PVP 200100236	2000
Miwok		DURUM	PI 670040	PVP 201400031	2014
MJ-4	MJ-4	SWW			2000
MJ-9	MJ-9	SWW			2001
ML455 ('455')	ML107455	HWS	PI 607570	PVP 9900251	1999
Mohler	BU6W93-477	SWW	PI 635996	PVP 200400304	2004
Moreland	IDO517	HRW	PI 620630	PVP 200200266	2003
Morgan	S89-142	HRW	PI 599336	PVP 9700399	1996
Moro	AUS 11865	Club-W	CItr 13740		1965
M-IDAS		SWW	PI 698204	PVP 202100184	2021
M-Press		SWW			
M-Press		SWW			2017
MT1159CL	MTCL01159	HRW	PI 641221	PVP 200500347	2004
MTHW9420	MTHW9420	HWS	PI 612605	PVP 200000138	2000
Neeley	IDO158	HRW	CItr 17860		1980
Net CL+	WA8280	HRS			2019
New Dirkwin	UC1667	SWS	PI 664268	PVP 201100455	2011
Newana	MT7156	HRS	CItr 17430		1976
Nick	BZ698-31	SWS	PI 638697	PVP 200500144	2005
Normano		DURUM			2004
Norris	MTCL0316	HRW	PI 643430	PVP 200600286	2006
Norstar	WT80	HRW	CItr 17735		1977

Norwest 553	ORN00B553	HRW	PI 655030	PVP 200800394	2008
Norwest Duet	ORLD113092	SWW	PI 681650	PVP 201700199	2017
Norwest Tandem	ORLD112334	SWW	PI 681649	PVP 201700198	2017
NuDakota	BC97ROM-50W	HWW	PI 643089	PVP 200600235	2006
NuFrontier	W94-480W	HWW	PI 619089	PVP 200100199	2001
NuHills	W98-363	HWW	PI 633916	PVP 200300337	2003
NuHorizon	M95-610W	HWW	PI 619198	PVP 200100217	2001
NuPlains	N94L205	HWW	PI 605741	PVP 200100266	1998
NuSky	MTW9441	HWW	PI 619167		2001
NuWest	MT7811	HWW	PI 586806	PVP 9600342	1994
ONeal	BZ999-592	HRS	PI 659480	PVP 201000272	2010
ORCF-101	OR2010051	SWW	PI 633765	PVP 200300286	2003
ORCF-101R	ORI2060306	SWW			
ORCF-102	OR2010007	SWW	PI 641787	PVP 200500337	2004
ORCF-103	ORI2042037	SWW	PI 658153	PVP 200900464	2008
Orita	YU895-89	DURUM	PI 628368	PVP 200200030	2001
ORSS-1757	OR9801757	SWW	PI 641786	PVP 200500336	2005
Otis	WA7931	HWS	PI 634866	PVP 200500312	2004
Otto	WA8092	SWW	PI 667557	PVP 201300360	2012
Outlook	MT9874	HRS	PI 632252	PVP 200400008	2003
Owens	IDO185	SWS	CItr 17904		1981
Paha	WA4966	Club-W	CItr14485		1968
Palomino	W96-359W	HWW	PI 648023	PVP 200700247	2006
Patwin	UC 1419	HWS	PI 643981	PVP 200600297	2006
Paul	MT9426	HRW	PI 640425	PVP 200500335	2003
Penawawa	WA6920	SWS	PI 495916		1985
Peregrine	DH99-37-100	HRW	PI 663208	PVP 201100371	2011

Pirahna CL+	WA8305 CL+	SWW			2020
Plata	96WV54013-W	HWS	PI 631482	PVP 200200241	2002
Platinum	D9430	DURUM	PI 614670	PVP 200000311	2000
PNW Hailey	09PN046#28	SWW			2018
Pomerelle	IDO448	SWS	PI 592983		1995
Pondera	MT479	HRS	CItr 17828		1980
Promontory	UT1567-51	HRW	PI 555458	PVP 9100244	1990
Pronto	T0001052	HRS	CItr 14078		1970
Prowers 99	CO980001-MB	HRW	PI 612420	PVP 200000315	1999
Pryor	BZ9W96-919	HRW	PI 634564	PVP 200400072	2002
Puma	WA8134	SWW	PI 670038	PVP 201400085	2014
Purl	WA8234	SWW			2018
QCB36	OR9900553	SWW	PI 658244		2008
Quantum 542	XNH1359	HRW			1988
Quantum 7817	XWH1017	SWW			1997
Rampart	MTS92042	HRW	PI 593889		1996
Rebelde		HRW			2018
Reeder	ND 695	HRS	PI 613586	PVP 200000211	1999
Rely	WA7527	Club-W	PI 542401		1991
Residence	CEBECO01	HRW	PI 628987	PVP 2002000067	2002
Resilience CL+	WA8187	SWW	PI 686413	PVP 201800104	2017
Rick	UT541774	HRS	PI 614834		1980
Rimrock	ACS52025	HRW	PI 664271	PVP 201100463	2011
Ripper	CO00016	HRW	PI 644222	PVP 200700302	2006
Rjames	GMGQ2	SWW	PI 639736	PVP 200500287	2004
Rocker		HRS			2021
Rocky	NAPB 1316-76	HRW	CItr17879	PVP 7800013	1978

Rod	WA7662	SWW	PI 558510		1992
Rohde	OR855	Club-W	PI 562529		1992
Rosalyn	OR2071071	SWW	PI 673132	PVP 201400487	2014
RSI 220	RSI 220	SWS	PI 584322	PVP 9400282	1994
Rudy	CI4873	SWW	CItr 4873		1871
Rulo	WA7622	Club-W	PI 578137		1995
Ryan	WA8214	SWS	PI 682074	PVP 201700204	2016
Salute	99X1008-02	SWW	PI 654425	PVP 200800324	2007
Saxon	N93-3026	HRS	PI 608714	PVP 9800360	1999
Scarlet	WA7802	HRS	PI 601814	PVP 200000190	1999
Scholar	MT9433	HRS	PI 607557	PVP 200000144	1999
Scorpio	WA8268	HRW	PI 693629		2019
Seahawk	WA8162	SWS	PI 676290	PVP 201600078	2014
Semper	CEBECO02	HRW	PI 628988	PVP 200200068	2002
Sequoia	WA8180	HRW	PI 678966	PVP 201600315	2016
Simon	ID9134302A	SWW	PI 636132	PVP 200500001	2002
Skiles	ORH010085	SWW	PI 658154	PVP 200900465	2008
Skookum	ML042-409-1,5	SWS			2005
Snow Crest	BZ998-247W	HWS	PI 642376	PVP 200600162	2006
Snowmass	CO03W054-2	HWW	PI 658597	PVP 201000432	2010
Sockeye CL+	WA8306 CL+	SWW	PI 699243	PVP 202100491	2020
Spillman	WA7075	HRS	PI 506350		1987
Sprinter	WA8118	HRW	PI 671896	PVP 201400223	2015
Stephens	OR332	SWW	CItr 17596		1977
Stingray CL+	WA8275	SWW	PI 691557		2019
Striker	CA9W07-818	HRW	PI 660653	PVP 201100049	2011
Summit	96WV52305	HRS	PI 631480	PVP 200200239	2002

Sunstar 50-30		SWS			1998
Sunstar II	SDM2	HRS	PI 559378	PVP 9200035	1992
Sunstar Promise	SDM406	SWS	PI 585232	PVP 9500069	1995
Survivor	IDO332	HRW	PI 509503		1987
SY 107	03PN107#3	SWW	PI 664948	PVP 201200115	2012
SY 483	MH07-7483	SRW	PI 664947	PVP 201200114	2012
SY 605CL		HRS			
SY 901	MC07*7001W	SWW	PI 664944	PVP 201200111	2012
SY Assure	04PN096	SWW	PI 678621	PVP 201600255	2016
SY Banks	09PN005#25	SWW	PI 682076	PVP 201700209	2017
SY Basalt	SY240R	HRS	PI 672584	PVP 201400335	2014
SY Blanca Grande	96WV53620	HWS	PI 631481	PVP 200200240	2002
SY Cal Rojo	00WB80404	HRS	PI 651032	PVP 200700443	2007
SY Candor	09N008#72	SWW	PI 689045		
SY Capstone	03W10348	HWS	PI 665404	PVP 201200245	2012
SY Clearstone 2CL	MTCL1077	HRW	PI 668090	PVP 201300357	2012
SY Coho	04W40292R	HRS	PI 676286	PVP 201600039	2015
SY Command	SY04PN066-7	SWW	PI 682078	PVP 201700211	2017
SY Dayton	09PN062#18	SWW	PI 682079	PVP 201700212	2017
SY Gunsight	SY3015-8	HRS			2017
SY Harrison	B05*0154	SRW	PI 664946	PVP 201200113	2012
SY Ovation	03PN-108#21	SWW	PI 662047	PVP 201100387	2011
SY Raptor	09PN046#16	SWW	PI 682081	PVP 201700214	2017
SY Renegade	09PN3017-09	HRS			2018
SY Saltese	06PN3024-2	SWS	PI 678969	PVP 201600399	2016
SY Selway	04PN3001-2	HRS	PI 676285	PVP 201600038	2015
SY Steelhead	97S0621-05	HRS	PI 667769	PVP 201300338	2013

SY Teton	08W10136	HWS	PI 676287	PVP 201600040	2015
SY Touchstone	04PN028B-3	HRW	PI 678623	PVP 201600258	2016
Sylvan	UT002464	HRS	PI 578867		1996
Symphony	TV10982-1	HRW	PI 583754	PVP 9400220	1994
Tammy	W696-000	HRS	PI 601288	PVP 8600038	1986
Tara 2002	WA7824	HRS	PI 617073	PVP 200200129	2001
Tekoa	WA8189	SWS	PI 681653	PVP 201700124	2017
Temple	OR92CL0054	Club-W	PI 599665		1998
Tempo	96WV52303A	HRS			2006
Tiber	MT8003	HRW	PI 517194		1988
Tiburon	D1-2	DURUM	PI 669999	PVP 201400050	2013
Treasure	IDO248	SWS	PI 468962		1986
Trego	KS95HW62-6	HWW	PI 612576	PVP 200100117	1999
Tubbs	OR939526	SWW	PI 629114	PVP 200300287	2001
Tubbs 06	OR939526-05	SWW	PI 651023	PVP 200700423	2006
Twin		SWS			
UC Central Red		HRS			2018
UI Alta Blanca	IDO628	HWS	PI 642378		2006
UI Bronze Jade	CV-1160	HWW	PI 691501		2019
UI Castle	09-DH10	SWW	PI 675641	PVP 201600014	2016
UI Cookie		SWS		PVP	2021
UI Darwin	IDO604	HWW	PI 639953		2005
UI Galileo	IDO641	HWW			
UI LHS	IDO835	HWW	PI 660547		2010
UI Lochsa	IDO597	HWS	PI 639952		2005
UI Magic	09-DH11	SWW	PI 678629	PVP 201600300	2015
UI Magic CL+		SWW			

UI Palouse	IDN3_5_10	SWW	PI 678630	PVP 201600316	2015
UI Palouse CL+		SWW			
UI Pettit	IDO632	SWS	PI 642363		2006
UI Platinum	IDO694	HWS	PI 672533	PVP 201400419	2014
UI Silver	IDO658	HWW	PI 658467	PVP 201400011	2009
UI Sparrow	IDO1108DH	SWW	PI 680612	PVP 201700189	2017
UI SRG	IDO656	HRW	PI 660546		2010
UI Stone	IDO599	SWS	PI 660550	PVP 201300342	2013
UI Whitmore	IDO671	SWS	PI 660548		2010
UI Winchester	IDO578	HRS	PI 642362		2006
UICF-Brundage	ID02-859	SWW	PI 660543	PVP 201100031	2009
UICF-Grace	IDO651	HWW	PI 658468	PVP 201000086	2009
UICF-Lambert	ID99-435	SWW	PI 660544	PVP 201100008	2008
UI-WSU Huffman	IDN-03-29902A	SWW	PI 678853	PVP 201500295	2014
USDA Lori	Alpowa/Waxy-Pen/6/	SWS	PI 692132	PVP 202000219	2019
Utah-100	UT1650-150	HRW	PI 594920		1997
Utopia	DOI933	DURUM	PI 608756	PVP 9900209	1997
Vandal	IDO341	HRS	PI 546056	PVP 9100144	1992
Vanguard	MTSF2238	HRW	PI 593891		1995
Vanna	BZ684023	SWS	PI 587199	PVP 9500094	1995
VI Bulldog	UIL07-28017B	SWW			2019
VI Frost	UIL09-15702A	SWW			2019
VI Presto CL+		SWW			2021
VI Shock					2021
VI Voodoo CL+		SWW			2021
Vida	MT0245	HRS	PI 642366	PVP 200600225	2006
Vista	NE87615	HRW	PI 562653	PVP 9300284	1993

Volante	00WV50014	DURUM	PI 655037	PVP 200800403	2008
Volt	ACS52610	HRS	PI 655039	PVP 200800407	2007
WA7811	WA7811	HWW	PI 636367	VH094487	2004
WA7832	WA7832	SWW	PI 636368	VH092245	2004
WA7870	WA7870	SWW	PI 636370	VH094755	2004
WA7970	WA7970	SWW	PI 645606	J00C0014	2007
WA7971	WA7971	SWW	PI 645607	J00C0029	2007
WA7995	WA7995	HRS	PI 638536		2005
WA7998	WA7998	HRS	PI 638537		2005
WA8059	WA8059	SWS	PI 661152		2011
WA8325	WA8325	Club-S			2021
Wahoo	NE94654	HRW	PI 619098	PVP 200100237	2000
Waikea	BZ98-447W	HWS	PI 648029	PVP 200700256	2007
Wakanz	WA7183	SWS	PI 506352		1987
Wanser	AUS10692	HRW	CItr 13844		1965
Wawawai	WA7712	SWS	PI 574538		1994
Waxy-Pen	WA7996	Waxy	PI 63779	PVP 200600005	2004
WB 1020M	BZ6WM02-1020	SWW	PI 655031	PVP 200800397	2008
WB 1035CL+	BZM06-1001	SWS	PI 665495	PVP 201200399	2012
WB 1066CL	BZ6WM04-1066	SWW	PI 664099	PVP 201100477	2011
WB 1070CL	BZWM04-1070	SWW	PI 664092	PVP 201100470	2011
WB 1081CL+	BZ6WM06-1081	SWW	PI 669998	PVP 201300488	2013
WB 112	XY04-112	SRW	PI 664097	PVP 201100475	2011
WB 1376 CLP	BZ6WM09-1030	SWW	PI 674194	PVP 201500187	2015
WB 139	WB-139	SRW	PI 664096	PVP 201100474	2011
WB 1529	BZ6W07-427	SWW	PI 671989	PVP 201400230	2014
WB 1604	BZ6W07-458	SWW	PI 671990	PVP 201400231	2014

WB 1783		SWW	PI 686431	PVP 201800095	2018
WB 196	ZX04-196	SRW	PI 664095	PVP 201100473	2011
WB 249	LA02-249	SRW	PI 664094	PVP 201100472	2011
WB 4311	XA4104	HRW			2019
WB 456	BU6W99-456	SWW	PI 658148	PVP 200900445	2008
WB 470	WPB90470	SWW	PI 599335	PVP 9700398	1992
WB 523	BU6W00-523	SWW	PI 658149	PVP 200900446	2008
WB 528	BZ6W98-528	SWW	PI 643142	PVP 200600273	2004
WB 6341	BZ608-014	SWS	PI 671992	PVP 201400233	2014
WB 6430	BZ608-125	SWS	PI 671993	PVP 201400234	2014
WB 7589	BZ9S09-0735W	HWS	PI 674344	PVP 201500196	2015
WB 906R		HRS	PI 483455	PVP 8000078	1981
WB 9200		HRS	PI 678860	PVP 201600384	2016
WB 926	RC 80-8	HRS			1987
WB 936	PH986-61	HRS	PI 587200	PVP 9500095	1992
WB 9879 CLP	IMICHT-79	HRS	PI 666046	PVP 201200491	2012
WB Arrowhead	ML9W05-2501	HRW	PI 664101	PVP 201100479	2011
WB Cedar	HV9W96-1383R	HRW	PI 661996	PVP 201100378	2011
WB Fuzion	BZ901-717	HRS	PI 661160	PVP 201100306	2009
WB Grainfield	HV9W06-509	HRW	PI 665062	PVP 201200153	2012
WB Gunnison	BZ902-413R	HRS	PI 665064	PVP 201200155	2012
WB Hartline	BZ903-445WP	HWS	PI 665065	PVP 201200156	2012
WB Idamax	BZ904-336WP	HWS	PI 661159	PVP 201100305	2010
WB Joaquin Oro	SJ909-369	HRS	PI 664098	PVP 201100476	2011
WB Junction	BZ6W02-616	SWW	PI 664100	PVP 201100478	2011
WB Matlock	CA9W07-817	HRW	PI 661215	PVP 201100362	2011
WB Mayville	CA907-827	HRS	PI 661061	PVP 201100266	2011

WB Mead	YU802-4	DURUM	PI 664091	PVP 201100469	2011
WB Paloma	BZ904-331WP	HWS	PI 659489	PVP 201000293	2009
WB Patron	YU908-017	HRS	PI 664090	PVP 201100468	2011
WB Perla	SJ909-371	HWS	PI 664089	PVP 201100467	2011
WB Prestea	BZ903-461W	HWS	PI 665061	PVP 201200152	2012
WB Pristine	BZ991-408	HWS	PI 613581	PVP 200000180	1999
WB Quake	BZ9W05-2043	HRW	PI 664093	PVP 201100471	2011
WB Redhawk	HV9W06-727	HRS	PI 665063	PVP 201200154	2012
WB Rockland	SJ908-247	HRS	PI 659487	PVP 201000291	2010
WB Trifecta		SWW			2009
WB Tucson	ML9W05-2506	HRW	PI 664088	PVP 201100466	2011
Weatherford	OR898120	SWW	PI 602861	PVP 9900341	1998
Westmore	257S11	DURUM	PI 665066	PVP 201200293	2012
Weston	ID74-55-20	HRW	CItr 17727		1978
Whetstone	W98-344	HRW	PI 658009	PVP 200900301	2009
Whit	WA8008	SWS	PI 653841	PVP 200900350	2008
Whitebird	IDO392	SWS	PI 592982		1996
Winsome	OR4870453	HWS	PI 613177	PVP 200100111	1999
WQL18CS5	GS-191	HWS	PI 691610		2019
WQL18RE5	GS-190	HWS	PI 691609		2019
Xerpha	WA7973	SWW	PI 645605	PVP 200900289	2007
Yamhill	COR61-1227-66-7	SWW	CItr 14563		1972
Yecora Rojo	Bluebird	HRS	CItr 17414		1975
Yellowstone	MT00159	HRW	PI 643428	PVP 200600284	2005
YS-201		SWW			
YS-205		SWW			
Zak	WA7850	SWS	PI 607839	PVP 200100257	2000

Zeke	WPB87331	HRS	PI 607548	PVP 9900231	1999

Good Storage Protein Gene Combination is the Foundation of Good End-Use Quality

Jianli Chen, University of Idaho Aberdeen R & E Center

Idaho wheat production contributes significantly to domestic and overseas wheat markets. Nationally, Idaho ranks in the top eight states for wheat production. Most wheat production in southeastern Idaho is grown under irrigation, while in northern Idaho it is grown under dryland conditions. Improved grain yield and end-use quality are the two primary characteristics required in new wheat cultivars. Our research results (unpublished data) showed that the storage protein and protein genes combinations are the most important factors affecting the end-use quality. If a wheat line has a good combination of storage proteins it will produce good end-use quality regardless of being grown under irrigated, non-irrigated, or heat stressed conditions. Therefore, breeding for desirable end-use quality for hard wheat, storage protein combinations are manipulated to achieve high protein and strong gluten hard wheat using molecular markers. Major protein genes for parental line and elite lines are routinely genotyped. Early generation lines (F6) are selected for bread-baking quality based on SDS-Sedimentation. In all generations, grain protein concentration together with test weight are used to select favorable lines. Quality test data is used to understand the environmental effects and make selections based on both marker haplotypes and quality tests. Our program has been collaborating with a USDA scientist to understand sequence variation of genes controlling bread baking quality. Regarding falling number, lines with FN < 200 sec. are discarded and not used as crossing parents.

Pacific Northwest Wheat Quality Council Officers 2022

Technical Board

Chair	Andrew Ross
Vice Chair	Vacant
Secretary	Steve Wirsching
Permanent Treasurer	Scott Baker
WWQL Representative	Alecia Kiszonas

Pacific Northwest Section Officers

Chair	Joy Battistone
Past Chair	Zory Quinde-Axtell
Vice Chair	Andrew Ross
Secretary	Jayne Bock
Permanent Treasurer	Stacey Sykes

<u>Pacific Northwest Wheat Quality Council</u>
Charter & Mission

Adopted

Mission, Policy, and Operating Procedure

The mission of the Pacific Northwest Wheat Quality Council (PNW WQC) is to provide a forum for leadership and communication in promoting continuous quality improvement among the various elements of the community of Pacific Northwest wheat interests. The PNW WQC will provide an organization structure to evaluate the quality of experimental lines and cultivars that may be grown in the traditional growing regions of the Western United States. The PNW WQC also will establish other activities as requested by the membership. The PNW WQC is an autonomous unit of Cereals and Grains Association, and operates under the direction and supervision of the Technical Board with the advice and counsel of the Tri-State wheat commissions of Washington, Oregon and Idaho, and U.S. Wheat Associates.

Objectives

- Encourage wide participation by all members of the wheat industry active in the Western U.S.
- Determine, through professional consulting expertise, the end-use quality parameters and ranges that adequately describe the performance characteristics that members seek in new and existing cultivars.
- Promote the enhancement of wheat quality in new cultivars.
- Emphasize the importance of communication across all sectors and provide resources for education on the continuous quality improvement and utilization of hard and soft wheat.
- Encourage the organizations vital to wheat quality enhancement to continue to make positive contributions through research and communications.
- Offer advice and support for Federal, State and private wheat quality laboratories in the region.

Membership

- The membership of the PNW WQC will consist of those registrants attending the annual collaborative baking technical conference ('Annual Meeting').

PNW WQC Technical Board

- The Technical Board shall be the administrative unit responsible for managing the functions of the PNW WQC.
- The Technical Board shall consist of four members elected from the membership.
- Officers of the Technical Board shall consist of a Chair, Vice-Chair and Secretary, each to serve a one-year term; and a Treasurer who may serve for up to three consecutive years.

- The Director of the Western Wheat Quality Laboratory shall serve as an *Ex Officio* member of the Technical Board with no term limit. The Cultivar Development Manager of the Western Wheat Quality Laboratory shall serve as the Program Chair member of the Technical Board with no term limit.
- Terms for elected officers start the day after the annual meeting of the PNW WQC.
- The Vice-Chair generally replaces the Chair at the conclusion of the Chair's term and the Secretary generally replaces the Vice-Chair at the conclusion of the Vice-Chair's term.
- Normally only the Secretary shall be elected annually at the Annual Meeting of the PNW WQC by nomination and majority vote; and the Treasurer as appropriate.
- Any eligible member may be reelected after being out of office for one year.
- Vacancies that occur during the term of office of the members of the Technical Board shall be filled by nomination and consensus vote of the remaining members of the Technical Board. The appointee will serve the remaining term of the vacancy.
- Exceptions to the above may be granted if voted on by the Technical Board or by majority vote of the PNW WQC at the annual meeting.

Duties of the Technical Board

- The Chair shall be responsible to establish a meeting place and preside at all meetings of the Technical Board and selected elements of the PNW WQC Annual Meeting.
- The Vice-Chair shall preside at meetings in the absence of the Chair and assume such duties as may be assigned by the Chair of the Technical Board.
- The Secretary shall be responsible for taking minutes of the Technical Board meetings.
- The Treasurer will maintain a record of income and expenditures, and shall receive and disburse funds following the actions directed by the Technical Board in furtherance of the aims of the PNW WQC.
- The Treasurer shall make available to the membership a full accounting of finances at the Annual Meeting, such accounting shall become a part of the minutes.

Compensation

- Technical Board members shall serve without compensation.

Indemnity

- The Technical Board members shall be indemnified against personal liability and be included under the Cereals and Grains Association Board insurance. The cost of said insurance to be a legitimate expense of the PNW WQC.

Fiscal Accounting, Income and Disbursement

- PNW WQC funds will be maintained with the Program Chair
- Income will be deposited with CGA, and disbursements made by CGA upon written request from the PNW WQC Treasurer or Board Program Chair.
- The Technical Board will authorize the paying of expenses related to the Annual Meeting and other functions relevant to the aims and operations of the PNW WQC.

Finances and Budget

- The operating expenses of the PNW WQC may come from various sources at the discretion and approval of the Technical Board. These sources are typically Annual Meeting registrations and contributions from the Tri-State Wheat Commissions and industry donors.
- The budget shall be presented to the membership for review and approval at the Annual Meeting.
- The successful operation of the PNW WQC is founded on the principle of substantial 'in-kind' contributions of members; no accounting of in-kind contributions shall be made.

Amendments

- Amendments to the policy and operation procedure of the PNW WQC can be made by majority vote of the PNW WQC members.
- The proposed changes must be submitted in writing and must be in the hands of the membership two weeks prior to voting on the change.

<u>Pacific Northwest Wheat Quality Council</u>
Charter & Mission
Amendment No. 1

Adopted, January 25, 2013 Scottsdale, Arizona

As per the PNW WQC Charter:

"Amendments

- Amendments to the policy and operation procedure of the PNW WQC can be made by majority vote of the PNW WQC members.
- The proposed changes must be submitted in writing and must be in the hands of the membership two weeks prior to voting on the change."

Proposed Amendment No. 1.

Termination and Liquidation

- Upon majority vote of the General Membership, the PNW WQC may be terminated, no sooner than 90 days after such vote.
- Upon such action the Executive Committee shall pay all outstanding obligations, liquidate all assets, and close all bank accounts.
- Disbursements shall first fulfill all existing written agreements
- The residue of assets shall be disbursed in the following manner:
  1) Donation in whole or in part to the Student Travel Fund of AACC International
  2) Disbursement to one or more not-for-profit entities for the expressed purpose of advancing wheat grain quality in the Pacific Northwest; such disbursement(s) shall be approved by a majority vote of returned ballots from the General Membership.