

Winter wheat performance in 2008

WSU Extension cereal variety testing program yields trial results

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VARIETY TESTING

The Washington State University variety testing program evaluates winter wheat varieties each year to provide performance information that farmers can use to select superior varieties for their cropping conditions. These tests are done in farmers' fields under typical conditions in that area. Soft white, hard white, and hard red varieties are included in these tests based on their potential adaptation in Washington and commercial use of a variety. The Washington Wheat Commission provides funds to support the program, and private varieties are entered on a fee basis.

INFORMATION SUMMARIZATION

Agronomic performance data from 2008 soft white winter wheat tests are summarized by average rainfall zone (Tables 1, 2). Available water is a strong factor determining variety performance and can be important to variety adaptation. The low rainfall zone is less than 12", low-intermediate is 12"-16", high-intermediate is 16"-20", and high rainfall is more than 20". Performance data from the 2008 hard winter wheat tests are also summarized by average rainfall zone (Table 3). However, the higher zones are combined so that the low rainfall zone is <12", intermediate is 12"-16", and high rainfall is >16". Wheat grain yield data are given for individual sites within a rainfall zone, and grain yield, test weight, and protein are presented as averages across the sites within a zone. Yield is based on a 60-pound bushel weight. Varieties are listed in descending average yield in a rainfall

zone. Average values are presented at the bottom of listings and are followed by a Least

Significant Difference (LSD) statistic at the 10 percent level. The results from named varieties are presented, but many experimental lines were also evaluated in the trials. Additional information for individual sites and experimental lines is available on the WSU Variety Testing web page: <http://variety.wsu.edu>. Most of the locations listed are in the vicinity of the towns listed, but Mayview is a location in Garfield County approximately 25 miles northeast of Pomeroy, and St. Andrews is five miles northwest of Coulee City, Washington.

INFORMATION INTERPRETATION

Average past performance of a variety is the best indicator available to predict future performance potential. Variety performance can vary from location to location and year to year. The results in this article are for 2008, but consider results from other years and locations when determining variety suitability. Average performance over locations and years most accurately represents varieties' relative performance and is available on the variety testing web page. Evaluate as much information as possible when selecting varieties. Yield is a primary characteristic when selecting varieties, but disease resistance, winter survival, maturity, lodging tendency, test weight, protein, emergence ability, and end-use quality are also important variety selection characteristics.

Reported small differences among varieties in yield and other characteristics are usually of limited importance due to chance differences in tests. A tool for evaluating true differences is the LSD statistic. When comparing differences between varieties, if that difference is greater or equal to the LSD 0.10 value, that difference is considered significant at the 10 percent confidence level. The 10 percent confidence level means that there is a 9 out of 10 chance that the difference is a true difference and not due to other experimental variation.

RESULTS

Winter wheat was reported grown in Washington on 1,800,000 acres in 2008, an increase from the 1,720,000



56 bushels/acre, down from 62 bushels/acre in 2007. The average yields across locations in 2008 variety trials were also lower than in 2007, and that reduction can be partly attributed to available water for the crop. Most production areas experienced rainfall totals well below average for the growing season. Limited water also likely contributed to reduced test weights and increased protein levels overall, although high temperatures during grain filling can also influence test weight and protein.

Xerpha is a soft white common winter wheat variety that was recently released by the WSU winter wheat breeding program and is adapted to all winter wheat growing areas of

Washington. In 2008, *Xerpha* produced the highest average yield in each of the precipitation zones, and was above average for test weight and below average for protein. More information about *Xerpha* can be found in *Extension Bulletin EB2043* linked, along with other varieties, on the extension website under variety descriptions. Foundation seed of *Xerpha* was sold for 2009 planting, and registered seed should be available for fall 2009. *Farnum* is a hard red winter wheat released by WSU in 2008 and is adapted to the low rainfall zone. *Farnum* has good agronomic performance in the low rainfall zone, improved disease resistance, and comparable end-use quality. ■

Table 2. 2008 WSU EXTENSION SOFT WHITE WINTER WHEAT TRIAL SUMMARY
Precipitation Zone= 12"-16" **Precipitation Zone= <12"**

VARIETY NAME (Club in italics)	ALMIRA	ANATONE	CRESTON	LAMONT	YIELD (BU/A)		
					AVERAGE YIELD	AVERAGE TEST WEIGHT	AVERAGE PROTEIN
	-----YIELD (BU/A)-----				LB/BU	%	
XERPHERA	93	89	122	91	99	58.6	10.2
GEORGE	95	82	108	99	96	57.7	10.6
ELTAN	87	80	113	90	92	58.6	10.1
ORCF-102	91	72	112	90	91	58.9	10.5
ROD	92	72	110	89	91	57.4	10.6
ELTAN/TUBBS06	92	71	109	90	90	57.7	10.5
LEGION	90	62	111	92	89	56.9	10.5
ELTAN/MADSEN	80	74	112	86	88	58.4	10.6
ROD/TUBBS06	84	69	122	77	88	57.5	10.6
BRUEHL	92	72	105	82	88	56.6	10.9
SALUTE	87	65	107	91	87	57.0	10.8
MADSEN/ROD	86	66	110	84	86	57.9	10.6
SKILES	81	66	107	90	86	58.6	11.3
FINCH	82	71	100	89	86	59.3	10.7
TUBBS 06	89	64	103	86	85	57.5	10.8
LAMBERT	83	75	90	92	85	58.5	10.6
MADSEN	75	79	109	76	85	58.6	10.9
RJAMES	87	62	104	86	85	56.3	10.6
WB 1020M	79	73	105	81	84	58.8	10.7
MASAMI	86	60	105	86	84	57.4	10.8
MJ-9	80	67	106	80	83	56.4	11.1
AP 700 CL	79	64	103	86	83	57.7	10.7
SIMON	80	61	104	85	83	58.7	11.0
ORCF-103	85	65	104	75	82	58.3	10.7
CODA	76	69	92	87	81	60.2	10.8
WB 456	76	70	92	85	81	60.6	11.9
WB-528	79	62	97	85	81	59.9	11.2
WB 1066M	80	77	84	79	80	60.8	11.6
ORCF-101	75	57	102	86	80	57.9	11.6
BRUNDAGE 96	80	72	N/A	87	80	57.4	11.3
WB 523	66	71	101	80	79	59.5	11.0
STEPHENS	77	65	92	79	78	57.6	11.0
BITTERROOT	68	70	98	71	77	59.2	10.9
CASHUP	74	68	86	78	76	59.0	11.0
CHUKAR	69	66	N/A	78	71	56.1	11.3
CARA	73	61	N/A	77	71	56.0	11.5
Average	82	69	104	85	84	58.1	10.9
LSD (0.10)	10	9	13	10	5	0.5	0.4

VARIETY NAME (Club in italics)	CONNELL	HARRINGTON	LIND	RITZVILLE	ST. ANDREWS	YIELD (BU/A)		
						AVERAGE YIELD	AVERAGE TEST WEIGHT	AVERAGE PROTEIN
	-----YIELD (BU/A)-----					LB/BU	%	
ELTAN	38	27	25	30	60	36	59.4	12.7
XERPHERA	47	28	26	31	46	36	59.1	11.9
GEORGE	37	21	26	27	62	35	58.5	12.5
ROD	43	22	24	32	52	35	57.7	12.4
FINCH	43	22	18	30	53	33	58.9	12.7
SKILES	42	24	25	29	45	33	58.7	13.2
WB 1020M	43	24	25	27	46	33	59.8	12.4
LEGION	42	26	23	32	41	33	58.1	12.5
ORCF-103	51	22	20	24	46	33	59.2	12.6
ELTAN/TUBBS06	37	24	21	26	53	32	58.8	12.6
ELTAN/MADSEN	38	22	21	29	49	32	59.5	12.6
ROD/TUBBS06	46	24	20	26	42	32	58.0	12.2
ORCF-102	49	26	19	25	40	32	59.8	12.5
TUBBS 06	45	24	21	27	39	31	58.0	12.3
MADSEN/ROD	43	22	19	28	43	31	59.0	12.3
BRUEHL	26	22	22	32	52	31	57.5	13.1
MASAMI	44	19	19	29	44	31	58.0	12.5
LAMBERT	40	22	18	26	46	30	59.1	12.5
MADSEN	41	25	20	26	39	30	59.1	12.9
SALUTE	35	22	21	25	48	30	57.1	12.4
CHUKAR	42	20	23	29	35	30	55.9	12.3
AP 700 CL	46	21	22	27	33	30	58.5	12.9
CODA	36	25	23	24	39	29	59.7	13.3
BRUNDAGE 96	39	21	17	26	43	29	58.4	12.6
RJAMES	28	21	16	25	51	28	57.9	12.2
WB-528	47	20	17	25	31	28	60.3	12.8
CASHUP	33	14	22	26	44	28	59.7	12.6
MJ-9	33	21	19	27	38	27	57.3	12.9
WB 523	40	16	15	25	39	27	60.1	12.8
STEPHENS	43	21	17	22	31	27	58.1	12.9
SIMON	41	16	18	24	31	26	57.9	13.1
WB 1066M	34	24	16	23	33	26	60.3	13.2
CARA	34	17	17	26	32	25	55.7	12.9
ORCF-101	37	21	16	26	N/A	25	59.5	13.3
BITTERROOT	33	19	14	20	37	25	59.2	12.9
WB 456	36	16	16	22	25	23	59.9	14.0
Average	40	22	20	27	42	30	58.7	12.7
LSD (0.10)	8	5	5	5	8	3	0.6	0.4

Table 3. 2008 WSU EXTENSION HARD WINTER WHEAT TRIAL SUMMARY

Precipitation Zone= >16"

VARIETY NAME	DAYTON	PULLMAN	REARDAN	WALLA WALLA	AVERAGE YIELD	AVERAGE TEST WEIGHT	AVERAGE PROTEIN
	YIELD (BU/A)						
Hard Red Winter	---				---	---	---
BOUNDARY	94	142	90	136	116	59.8	12.8
BAUERMEISTER	99	149	74	117	110	59.2	12.8
WHETSTONE	104	131	66	134	109	59.4	13.0
AGRIPRO PALADIN	108	121	71	132	108	60.6	13.2
NORWEST 553	107	120	78	124	107	60.2	13.0
DECLO	100	110	86	127	106	59.7	13.0
PEREGRINE	87	138	79	119	106	59.5	12.6
HATTON	84	139	68	104	99	61.0	12.7
EDDY	95	90	69	134	97	60.1	12.8
FINLEY	88	132	72	90	96	59.9	13.2
FARNUM	84	107	82	98	93	58.6	13.5
Hard White Winter							
MDM	101	137	85	113	109	60.0	12.5
NUDAKOTA	114	127	67	115	105	59.3	12.6
PALOMINO	104	129	60	121	103	59.3	13.4
UI DARWIN	88	141	64	110	101	60.3	12.7
Soft White Common							
ELTAN (Check)	105	151	76	120	113	58.5	11.9
Average	98	132	76	119	105	59.7	12.8
LSD (0.10)	8	12	11	12	5	0.4	0.2

Precipitation Zone= 12"-16"

VARIETY NAME	ALMIRA	LAMONT	AVERAGE YIELD	AVERAGE TEST WEIGHT	AVERAGE PROTEIN
	YIELD (BU/A)				
Hard Red Winter	---		---	---	---
FINLEY	80	94	87	62.1	10.9
BAUERMEISTER	85	84	84	60.2	11.2
BOUNDARY	82	85	84	60.3	11.3
FARNUM	81	84	83	59.1	11.6
EDDY	82	76	79	62.4	11.4
HATTON	83	73	78	63.4	11.1
PEREGRINE	77	76	77	61.4	11.1
AGRIPRO PALADIN	74	75	75	61.9	12.1
NORWEST 553	68	78	73	60.6	11.9
WHETSTONE	73	70	72	60.7	11.2
DECLO	72	66	69	61.3	12.4
Hard White Winter					
MDM	93	93	93	60.7	10.2
NUDAKOTA	83	73	78	60.6	11.0
PALOMINO	77	73	75	61.1	12.2
UI DARWIN	76	71	74	62.9	11.2
Soft White Common					
ELTAN (Check)	87	91	89	60.0	10.8
Average	80	79	79	61.1	11.3
LSD (0.10)	14	9	8	0.6	0.4

Precipitation Zone= <12"

VARIETY NAME	CONNELL	HORSE HEAVEN	LIND	RITZVILLE	ST. ANDREWS	AVERAGE YIELD	AVERAGE TEST WEIGHT	AVERAGE PROTEIN
	YIELD (BU/A)							
Hard Red Winter	---					---	---	---
BOUNDARY	38	19	22	31	60	34	59.7	12.9
FARNUM	34	25	24	30	55	34	58.4	13.2
BAUERMEISTER	37	22	21	32	54	33	58.5	12.7
FINLEY	36	21	23	31	48	32	61.7	13.2
HATTON	40	21	23	28	40	30	62.5	12.8
AGRIPRO PALADIN	42	17	19	32	42	30	62.3	13.5
PEREGRINE	32	24	18	24	44	28	61.6	12.3
WHETSTONE	43	20	17	23	38	28	60.9	13.5
NORWEST 553	49	18	16	27	29	28	59.8	13.1
EDDY	37	17	15	27	35	26	61.6	13.8
DECLO	36	18	16	21	25	23	60.5	14.1
Hard White Winter								
MDM	30	23	23	31	60	33	60.0	12.3
PALOMINO	42	21	22	28	35	30	61.3	13.3
NUDAKOTA	33	20	15	25	43	27	61.3	12.8
UI DARWIN	36	19	17	23	36	26	62.1	13.1
Soft White Common								
ELTAN (Check)	42	24	26	29	55	35	60.0	11.9
Average	38	21	20	28	43	30	60.8	13.0
LSD (0.10)	9	4	5	5	8	3	1.0	0.3



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