University of Idaho
Cooperative Extension System

The Cereal Sentinel

A newsletter for Treasure Valley cereal producers

February 16, 2007 Issue No. 44

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The goal of this newsletter is to serve the best interests of Treasure Valley cereal producers. It will be issued periodically as information warrants. Correspondence and inquiries should be addressed to: **Parma Research and Extension Center, 29603 U of I Lane, Parma, ID 83660 (208-722-6701 Ext. 216) (Fax-208-722-6708) (Email bradb@uidaho.edu)**

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Spring Cereal Variety Performance

The 2006 season marked the 20th season of the Southwest Idaho Cooperative Extension Variety Performance Trials for spring cereals. The trials, supported by the **Idaho Wheat Commission**, **Idaho Barley Commission**, private breeders and the UI **College of Agriculture and Life Sciences**, allow the testing of public and proprietary varieties and advanced lines under the irrigated conditions of the Treasure Valley.

Three irrigated spring trials were conducted during the 2006 season. Trials were located at the Parma R & E Center, Weiser, and Nampa. The Parma trial was planted March 1, Weiser on April 7, and Nampa on March 24. Yields were lowest and protein the highest at Weiser likely due to the late planting.

There was no stripe rust on wheat in 2006 in the Treasure Valley unlike 2005. As with any variety comparison, the more years and sites varieties can be compared over, the more reliable the information.

Soft White Spring Wheat

The 2006 results for soft white spring wheat varieties are shown in Tables 1-2. Several soft white spring releases offer not only increased yield but significant improvements in milling or baking quality over the most commonly grown **Penawawa**. P**enawawa**, is an early maturing, older release that tends to be higher in protein, lower in test weight with very poor milling and baking quality. It was susceptible to stripe rust in 2005 and yielded significantly less than **Alturas** and other stripe rust tolerant varieties. **Penawawa,** though an acceptable feed wheat, is not a preferred variety for milling or export.

Alturas (ID0526) is a high yielding, high quality Idaho release that has performed very well since its introduction. **Alturas** was the most productive variety evaluated from 1999-06. **Alturas** is slightly taller than **Penawawa** but lodging was similar. Test weight for **Alturas** is slightly lower than **Penawawa**. **Alturas** showed good resistance to stripe rust prevalent in 2005.

Alpowa is slightly taller than **Alturas** but has good lodging resistance and excellent test weight. **Alpowa** was more tolerant of stripe rust than **Penawawa** and

Table 1. Soft White Spring Wheat Performance in the Treasure Valley. 2006.

Variety	Yield	Protein	Test Weight	Height	Lodging
	bu/acre	%	lb/bu	in	%
			Parma		
Alpowa	90	8.5	58.8	34	0
Alturas	98	8.3	61.0	33	0
IDO629	91	10.0	61.2	32	0
IDO630	94	9.2	62.2	29	0
IDO642	101	9.6	61.8	31	0
IDO645	108	8.7	61.8	34	0
Jubilee	95	9.6	62.0	33	0
Penawawa	104	8.8	61.1	33	0
Pettit	96	7.6	61.4	28	0
WB Nick	90	9.4	61.3	32	0
Average	97	9.0	61.2	32	0
$LSD_{.10}$[1]	11	0.8	1.8	2	--
			Weiser		
Alpowa	66	12.8	60.8	32	0
Alturas	75	12.2	61.4	32	5
IDO629	73	13.0	61.5	29	3
IDO630	75	13.0	61.8	29	0
IDO642	67	12.7	60.7	30	0
IDO645	82	12.4	60.8	34	5
Jubilee	80	12.4	62.5	34	3
Penawawa	66	13.5	61.6	31	3
PenawawaX	64	13.7	63.0	29	0
Pettit	86	11.4	62.3	26	3
WB Nick	76	12.7	62.8	31	0
Average	74	12.7	61.7	31	2
$LSD_{.10}$	10	0.8	2.1	1	7
			Nampa		
Alpowa	106	10.6	62.7	36	3
Alturas	111	9.6	60.4	34	3
IDO629	106	10.7	60.7	35	3
IDO630	108	11.5	62.1	33	10
IDO642	108	10.8	61.9	32	3
IDO645	119	9.8	62.1	35	33
Jubilee	112	10.4	61.5	35	10
Penawawa	103	10.5	61.4	34	3
PenawawaX	109	11.4	62.3	32	3
Pettit	109	9.3	61.2	28	3
WB Nick	115	10.5	62.1	33	28
Average	110	10.5	61.7	33	9
$LSD_{.10}$	8	0.6	2.0	1	17

[1] Means must differ by more than the LSD to be statistically different

Table 2. Soft White Spring Wheat Performance in the Treasure Valley over several sites or years.

Variety	Yield	Protein	Test Weight	Height	Lodged
	bu/acre	%	lb/bu	in	%
2006 (3 sites)					
Alpowa	87	10.6	60.7	34	1
Alturas	95	10.1	60.9	33	3
IDO629	90	11.2	61.1	32	2
IDO630	92	11.2	62.0	30	3
IDO642	92	11.0	61.5	31	1
IDO645	103	10.3	61.6	34	13
Jubilee	96	10.8	62.0	34	4
Penawawa	91	11.0	61.4	32	2
Pettit	97	9.4	61.6	27	2
WB Nick	94	10.9	62.0	32	10
Average	93	10.8	61.6	32	4
$LSD_{.10}$[1]	6	0.6	1.1	1	7
2005-06 (5 sites)					
Alpowa	92	10.7	61.0	36	1
Alturas	109	10.1	61.5	35	4
Jubilee	90	10.9	60.3	37	3
Penawawa	94	11.0	60.9	34	2
Pettit	109	9.4	61.9	30	3
WB Nick	109	10.7	62.2	35	6
Average	101	10.5	61.3	35	3
$LSD_{.10}$	8	0.4	1.0	1	5
1999-06 (23 sites)					
Alpowa	100	11.1	63.1	37	11
Alturas	111	10.6	62.5	35	12
Jubilee	106	10.8	62.8	37	12
Penawawa	104	11.2	62.7	35	13
Average	105	10.9	62.8	36	12
$LSD_{.10}$	3	0.2	0.3	1	4

[1] Means must differ by more than the LSD to be statistically different.

consequently more productive than **Penawawa** in 2005. **Alpowa** baking quality is better than **Penawawa** but not as good as **Alturas** or **Jubilee**.

Jubilee, in the absence of stripe rust, has been as productive as **Alturas,** but is slightly taller with better test weight. **Pettit** is a new very short UI release, averaging 6 inches shorter than **Alturas**. **Pettit** in two years of testing has yielded as well as **Alturas** and **WB Nick**. It also has low protein. **WB Nick** yielded as well as **Alturas** in the last two years of testing but has better test weight.

ID0645 is an Idaho advanced line that yielded the highest of all entries in 2006. The protein for **ID0645** is similar to **Alturas**. Two waxy spring wheats, **ID0629** and **ID0630**, yielded comparable to **Penawawa** in 2006. These lines are targeted primarily for the TVRR fractionation facility in Ontario. Another waxy is **Penawawa X** that was grown in only two locations.

Hard Red Spring Wheat

Hard red spring varieties are evaluated because of their historically higher prices and potential for greater returns. Results for hard red spring wheat are given in Tables 3 and 4.

WB936 is the most commonly planted hard red spring in southern Idaho. Historically it has good yield potential, comparable to **Jefferson,** but less than **Jerome**. **WB936** is susceptible to stripe rust. It has good milling and baking quality.

Jefferson, a release from the UI breeding program at Aberdeen, has yielded as well as **WB936** over several years of testing, but less than **Jerome**. **Jefferson** is taller than **WB936** and **Jerome** and can be more susceptible to lodging. It has protein comparable to **WB936** with excellent milling yield and good baking quality. It was tolerant of stripe rust in 2005.

Jerome (IDO566) is an Idaho release that is the most productive entry over five years of testing. It had good tolerance to stripe rust in 2005. **Jerome** has excellent test weight, better than **WB936**, and is slightly taller than **WB936**. **Jerome** has excellent milling yield, mixing tolerance and very good baking quality. **Jerome** has lower protein than both **WB936** and **Jefferson**. **Jerome** may be less tolerant of moisture stress during stem elongation than **Jefferson**.

ID0578 is an advanced line from the UI Aberdeen breeding program. It yielded somewhat less than other hard reds in 2006.

Significant discounts can result with hard red spring protein below 14%. The protein levels for the hard reds in two of these trials are lower than desired because late season N was not applied for protein enhancement. The hard red springs are typically about 5% less productive than the soft whites. They are more comparable in yield under more stressful conditions, i.e. later plantings.

For a detailed discussion of N management issues related to hard wheat protein you can access on-line the Cooperative Extension publication PNW 578, "**Nitrogen**

Table 3. Hard Red Spring Wheat Performance in the Treasure Valley. 2006.

Variety	Yield	Protein	Test Weight	Height	Lodged
	bu/A	%	lb/bu	in.	%
			Parma		
IDO578	92	11.2	63.4	32	0
Jefferson	97	11.5	62.4	33	0
Jerome	94	10.9	63.1	31	0
WB 936	90	12.0	62.5	29	0
Average	93	11.4	62.8	31	0
$LSD_{.10}$[1]	11	1.0	2.4	2	--
			Weiser		
IDO578	73	14.9	61.2	31	3
Jefferson	80	14.4	62.2	33	0
Jerome	80	14.1	62.9	31	0
WB 936	87	14.9	61.9	31	0
Average	80	14.6	62.2	32	0.6
$LSD_{.10}$	12	0.8	1.2	1	3
			Nampa		
IDO578	85	11.8	60.9	32	0
Jefferson	96	11.4	62.4	34	0
Jerome	97	10.9	62.2	32	3
WB 936	95	11.2	62.6	30	0
Average	93	11.3	62.0	32	0.6
$LSD_{.10}$	11	1.0	1.7	1	3

[1] Means must differ by more than the $LSD_{.10}$ to be statistically different

Table 4. Hard Red Spring Wheat Performance in the Treasure Valley over several locations or years.

Variety	Yield	Protein	Test Weight	Height	Lodged
	bu/A	%	lb/bu	in.	%
			2006 (3 sites)		
IDO578	83	12.6	62.1	32	1
Jefferson	91	12.5	62.3	33	0
Jerome	91	12.0	62.7	32	1
WB936	91	12.7	62.3	30	0
Average	89	12.4	62.4	32	0.4
$LSD_{.10}$[1]	7	0.7	1.0	1	1
			2003-06 (11 sites)		
Jefferson	99	12.9	62.9	36	5
Jerome	107	12.4	62.4	34	6
WB936	99	13.5	62.3	32	5
Average	102	12.9	62.7	34	9
$LSD_{.10}$	4	0.3	0.4	1	6

[1] Means must differ by more than the $LSD_{.10}$ to be statistically different

Management for Hard Wheat Protein Enhancement" at http://info.ag.uidaho.edu/pdf/pnw/bul578.pdf. The publication is also available as a hard copy from Ag Publications (phone 208/885-7982, fax 208/885-4648, email: calspubs@uidaho.edu.

Hard White Spring Wheat

Hard white spring wheat (HWS) is a different market class from the soft white and hard red classes. Hard whites are used for both noodle and bread making depending on the variety and protein level.

There is considerable breeder and industry interest in hard whites as they have potential for re-capturing significant foreign bread and noodle markets, as well as satisfying an increasing demand for hard white wheat domestically. Southern Idaho and Utah mills are currently milling hard white wheat and significant quantities have been marketed to other domestic mills east of the region. Variety Preserved hard white wheat is contracted in southern Idaho at prices above hard red winter.

Lolo, a UI release, has good yield potential but is lower in protein than **Lochsa** and **Otis** and weaker strawed. Test weight is higher than **Lochsa**.

Otis (WA7931), a 2004 WSU release, has been evaluated for the past four years. **Otis** has protein and test weight similar to **Lolo**. It is 4-5 inches taller than the other entries but has excellent straw strength and lodged less than **Lolo**. It is comparable in yield to **Lochsa** and **Lolo**.

Lochsa (ID0597), a recent Idaho release, was comparable in yield to **Otis** and **Lolo** but higher in protein than **Lolo**. **Lochsa** was similar in height but had better straw strength than **Lolo**.

Winsome, an OSU release, yielded less than **Otis**, **Lolo**, and **Lochsa** over the last four years and had the lowest test weight. **Winsome** is the shortest of the four.

Table 5. Hard White Spring Wheat Performance in the Treasure Valley. 2006.

Variety	Yield	Protein	Test Weight	Height	Lodged
	bu/A	%	lb/bu	in.	%
		Parma			
Lochsa	100	12.6	61.8	33	0
Lolo	107	9.9	61.8	37	0
Otis	116	10.6	61.9	43	0
Winsome	77	10.8	61.3	30	0
Average	100	11.0	61.7	36	0
$LSD_{.10}$[1]	11	0.8	1.5	1	--
		Weiser			
Lochsa	85	14.8	60.3	32	0
Lolo	88	14.2	63.0	32	0
Otis	78	14.7	61.7	35	0
Winsome	63	14.1	61.0	28	0
Average	79	14.4	61.5	32	0
$LSD_{.10}$	11	0.7	2.3	1	--
		Nampa			
Lochsa	98	12.3	60.9	33	0
Lolo	100	10.6	61.7	33	0
Otis	95	12.3	62.0	38	0
Winsome	73	11.7	62.5	31	0
Average	91	11.7	61.8	34	0
$LSD_{.10}$	17	1.5	1.9	1	--

[1] Means must differ by more than the $LSD_{.10}$ to be statistically different

Table 6. Hard White Spring Wheat Performance in the Treasure Valley over site years.

Variety	Yield	Protein	Test Weight	Height	Lodged
	bu/A	%	lb/bu	in	%
		2006(3 sites)			
Lochsa	94	13.2	61.0	33	0
Lolo	98	11.6	62.1	34	0
Otis	96	12.5	61.9	39	0
Winsome	71	12.2	61.6	30	0
Average	90	12.4	61.6	34	0
$LSD_{.10}$[1]	9	0.7	1.0	1	--
		2004-2006 (8 sites)			
Lochsa	100	13.1	60.9	35	8
Lolo	102	12.1	62.2	35	16
Otis	104	12.4	61.7	40	8
Winsome	85	12.1	60.2	32	5
Average	98	12.4	61.2	35	9
$LSD_{.10}$	5	0.3	0.6	1	6
		1999-2006 (23 sites)			
Lolo	110	12.1	64.1	36	16
Winsome	103	11.7	62.4	33	9
Average	106	11.9	63.3	35	12
$LSD_{.10}$	4	0.2	0.3	1	4

[1]Means must differ by more than the $LSD_{.10}$ to be statistically different.

Producers are reminded that co-mingling soft white and hard white wheat will destroy the value of the mix for food uses, a sure way to lose domestic and export markets. Growers are urged to grow hard whites only if they have a ready market and can insure the segregation of hard whites from soft whites. This is perhaps the greatest concern with large scale hard white production in a traditional soft white production area such as western Idaho. There are currently very limited local hard white markets in the Treasure Valley.

Spring Barley

The Southwest Idaho Cooperative Extension Variety Performance trials have evaluated barley varieties and advanced lines since 1987. Spring barley variety performance is presented in Tables 7-10.

Barley stripe rust was not evident this past season in western Idaho. There was more lodging at Weiser and yields were lower than at Parma.

Six-Row Varieties

Millenium, a Utah State release, was evaluated for the sixth year in 2006. It is 2 to 3 inches shorter than **Steptoe** with far superior straw strength and lodging resistance**. Millenium** has better yield potential and test weight than **Steptoe** under good management. **Millenium** ranked highest in yield across 16 site years, averaging 18 bu/A higher than **Steptoe** and 8 bu/A higher than **Nebula**. **Millenium** has excellent test weight for a six row.

Creel, a 2002 USDA release, is shorter with improved straw strength over **Steptoe** and better test weight. **Creel** was higher yielding than **Steptoe** and comparable to **Nebula**, but does not consistently yield as

Table 7. Six-Row Spring Barley Variety Performance in the Treasure Valley. 2006.

Variety	Yield	Test Weight	Height	Lodging	Thins
	bu/A	lb/bu	in.	%	%
			Parma		
01ID255	140	50.0	39	0	0.75
Creel	173	52.7	38	0	1.17
Herald	116	51.3	39	0	0.64
Legacy	144	53.3	38	28	0.67
Millennium	149	52.4	32	0	1.14
Nebula	116	51.4	23	0	0.39
NRP158	127	63.3	39	0	2.97
Steptoe	153	52.1	37	23	0.49
Tradition	151	53.9	37	0	0.44
YU599-006	109	52.6	24	0	0.33
Average	138	53.3	35	5	0.90
$LSD_{.10}$[1]	12	1.0	3	12	0.35
			Weiser		
01ID255	103	49.6	39	23	2.16
Aquina	114	55.9	37	8	1.16
Creel	100	51.3	38	95	3.51
Goldeneye	115	53.1	38	63	2.34
Herald	88	49.1	40	0	3.14
Legacy	98	53.4	40	98	1.53
Millennium	138	50.8	31	28	3.42
Nebula	105	46.8	28	63	3.89
NRP158	80	60.4	38	35	9.31
Steptoe	100	50.6	38	98	1.63
Tradition	88	53.9	41	63	1.31
YU599-006	116	49.1	25	8	1.52
Average	104	52.0	36	48	2.91
$LSD_{.10}$	13	1.7	1	33	1.22

[1] Means must differ by more than the LSD to be statistically different.

Table 8. Spring 6-Row Barley Variety Performance in the Treasure Valley over several sites and years.

Variety	Yield	Test Weight	Height	Lodged	Thins
	bu/A	lb/bu	in.	%	%
		2006 (2 sites)			
01ID255	121	49.8	39	11	1.46
Creel	137	52.0	38	48	2.34
Herald	102	50.2	40	0	1.89
Legacy	121	53.4	39	63	1.10
Millennium	144	51.6	32	14	2.28
Nebula	110	49.1	25	31	2.14
NRP158	104	61.8	38	18	6.14
Steptoe	126	51.4	38	60	1.06
Tradition	119	53.9	39	31	0.87
YU599-006	112	50.8	25	4	0.93
Average	119	52.6	35	29	2.00
$LSD_{.10}$[1]	14	0.9	2	21	0.95
		2004-2006 (6 site)			
Creel	146	51.3	38	54	4.98
Herald	133	50.6	42	25	3.72
Legacy	137	52.4	41	62	3.13
Millennium	155	51.2	35	15	4.63
Nebula	144	49.6	30	21	2.54
Steptoe	132	49.8	40	66	3.09
Tradition	132	53.4	41	43	1.73
Average	140	51.2	38	41	3.40
$LSD_{.10}$	9	0.7	1	12	0.90
		2000-06 (16 site)			
Millennium	150	52.3	35	17	3.57
Nebula	142	50.5	30	19	1.55
Steptoe	132	51.3	38	60	2.21
Average	141	51.4	34	32	2.44
$LSD_{.10}$	7	0.5	1	8	0.58

[1] Means must differ by more than the $LSD_{.10}$ to be statistically different.

well as **Millenium**. **Creel** has better straw strength than **Steptoe** but lodges more than **Millenium** and **Nebula.**

Nebula is a short barley with good lodging resistance. It has lower test weight than **Millenium** and comparable to the poor test of **Steptoe**. Both **Nebula** and its waxy offspring **YU599-006** did not fair well under the higher temperatures during grain fill in 2006.

00ID255 and **Herald** (01ID1550) are distinctive in that they carry the low phytate gene. They have significant **Colter** parentage and are similar to **Colter** in most agronomic characteristics. Low phytate grain has a greater percentage of seed phosphorus in forms that are better used by non-ruminants. Greater utilization of seed phosphorus by non-ruminants results in less P excreted in manure which provides several advantages to the feeder. The low phytate gene typically leads to somewhat lower test weight. **Herald** is as productive as **Steptoe** in three years of testing. They are similar in height to **Steptoe** but lodge less.

Tradition and **Legacy** are Busch Ag malting barleys. They are taller than **Steptoe** but as productive with higher test weight.

Table 9. Two-Row Spring Barley Variety Performance in the Treasure Valley. 2006.

Variety	Yield	Test Weight	Height	Lodged	Thins
	bu/A	lb/bu	in.	%	%
			Parma		
01AH2812	95	62.7	33	0	1.14
01ID435H	109	61.3	35	0	2.88
02HR684	110	61.0	34	0	2.00
2B99-2316	132	54.3	33	0	1.22
2B99-2657	141	52.8	36	3	2.21
Burton	126	54.7	34	0	1.05
Conrad	157	54.7	34	0	0.69
Idagold	150	54.1	30	0	1.01
Meresse	119	63.6	33	0	1.70
Merit	131	54.3	34	0	1.65
Merlin	122	62.8	25	0	2.32
Radiant	156	55.0	35	0	1.74
Salute	109	55.5	37	3	0.53
Samish 23	151	55.0	31	0	0.85
Spaulding R759-1	165	55.3	35	0	2.07
WA10701-99	145	53.7	37	0	1.11
Average	132	56.9	34	1	1.51
$LSD_{.10}$[1]	19	0.9	6	3	0.56
			Weiser		
01AH2812	79	60.3	38	45	3.98
01ID435H	84	58.4	37	75	8.13
02HR684	96	58.6	37	0	5.23
2B99-2316	83	50.6	36	63	4.67
2B99-2657	76	47.3	35	48	5.37
Burton	78	51.2	39	85	3.44
Conrad	93	52.0	36	55	2.91
Idagold	95	49.7	28	63	4.24
Meresse	91	58.8	34	58	9.54
Merit	85	50.0	37	38	3.09
Merlin	99	57.4	26	43	8.81
Radiant	95	51.7	35	75	5.95
Salute	81	52.8	38	65	2.40
Samish 23	104	51.4	31	73	4.32
Spaulding R759-1	100	53.6	36	53	4.36
WA10701-99	68	51.1	39	90	4.04
Average	88	53.4	35	58	5.03
$LSD_{.10}$	13	1.5	2	37	1.88

[1] Means must differ by more than the LSD to be statistically different.

Two-Row Varieties

With better tolerance to stripe rust, moisture stress, and improved lodging resistance, the better two row varieties can now be expected, especially with stripe rust present, to be more productive than many six row barleys normally produced in western Idaho.

Idagold, the **Adolph Coors** feed barley release, has excellent yield potential and better straw strength than older two rows. **Idagold** is six to seven inches shorter than **Baronesse,** the most commonly grown two row feed barley in Idaho. **Idagold** has yielded better than **Steptoe** in many trials where lodging was significant.

Radiant, a 2004 WSU release, is considerably taller and lodges more but yielded at least as well as **Idagold** over three years of testing. **WA10701-99** a WSU advanced line, has not yielded as well as **Radiant**.

Samish is a Merrill Lewis release that is as short as and yielded at both 2006 sites as well as **Idagold**. It also had better test weight than **Idagold**. **Spaulding** is a PB1 release that also performed very well at both 2006 sites averaging 10 bu/A higher than **Idagold**.

Merit, a **Busch** malt barley, is taller than **Idagold,** with comparable test weight. It yielded comparable to **Idagold** in three years of testing**. Conrad** is also a **Busch** malting barley, comparable to **Merit** in height, and possibly more productive. **Busch** advanced lines include **2B99-2316** and **2B99-2657**.

Burton is a USDA release with Russian wheat aphid resistance. It does not yield as well as other two rows evaluated over the last two years.

Several waxy barley's were evaluated in 2006 to facilitate **TVRR, Inc**., the proposed barley fractionation enterprise. **Salute**, **Merlin**, and **Meresse** are all **Westbred** varieties, and only **Salute** is hulled. USDA advanced lines include **01AH2812**, **01ID435H**, and **02AH684** all of which are hulless. Many of these are relatively high in Beta-glucan, the soluble fiber found helpful for reducing cholesterol and coronary heart disease. Within the past year barley received FDA approval of a food claim for barley's soluble fiber benefits. The announcement for the claim is available on the **Idaho Barley Commission** website http://www.idahobarley.org/barleyfoods.htm.

Additional Variety Performance Information

Variety performance information from related areas is available from other extension cereal and research breeding program web sites including the following:

OSU (http://www.css.orst.edu/cereals), USU (http://wheat.usu.edu), WSU (http://variety.wsu.edu/) and UI (http://www.ag.uidaho.edu/scseidaho).

Table 10. Spring 2-Row Barley Variety Performance in the Treasure Valley over several years or sites.

Variety	Yield	Test Weight	Height	Lodged	Thins
	bu/A	lb/bu	in.	%	%
		2006 (2 sites)			
01AH2812	87	61.5	35	23	2.56
01ID435H	96	59.8	36	38	5.51
02AH684	103	59.8	36	0	3.61
2B99-2316	108	52.4	34	31	2.94
2B99-2657	109	50.0	36	25	3.79
Burton	102	53.0	37	43	2.24
Conrad	125	53.4	35	28	1.80
Idagold	123	51.9	29	31	2.63
Meresse	105	61.2	34	29	5.62
Merit	108	52.1	35	19	2.37
Merlin	110	60.1	25	21	5.57
Radiant	126	53.3	35	38	3.84
Salute	95	54.1	38	34	1.46
Samish 23	127	53.2	31	36	2.58
Spaulding R759-1	133	54.5	36	26	3.21
WA10701-99	106	52.4	38	51	2.57
Average	110	55.2	34	29	3.27
$LSD_{.10}$[1]	15	0.9	2	20	1.18
		2005-06 (4 sites)			
Burton	118	53.0	38	43	2.22
Conrad	136	52.9	37	39	1.87
Idagold	130	51.6	30	33	2.89
Merit	130	51.7	37	36	2.46
Radiant	138	52.9	37	51	3.80
Average	130	52.4	36	40	2.65
$LSD_{.10}$	9	0.6	1	14	0.65
		2004-06 (6 sites)			
Idagold	135	51.8	30	38	5.60
Merit	132	51.8	38	40	5.45
Radiant	137	53.1	37	53	6.18
Average	135	52.2	35	44	5.74
$LSD_{.10}$	8	0.6	1	10	1.07

[1] Means must differ by more than the LSD to be statistically different.

Slow Release Preplant N for Hard Spring Wheat

The difference in hard red spring and soft white prices has narrowed considerably from the price difference a year ago. This is due largely to vastly improved prices for soft whites which in early February were over $5 per bushel in Portland. There are opportunities to lock in better than break even prices by forward contracting a portion of your 2007 crop.

Since prices for hard red spring wheat with acceptable protein are still somewhat better than for soft whites, there may be continued interest in hard red spring production in 2007. Hard red spring production for 2006 in western Idaho was generally of good quality with most of the production at or only slightly below 14%. As many of you know that is not always our experience.

Excessive N

With the understanding that higher seasonal N rates are needed to meet the requirements for both yield and acceptable protein, it is tempting to apply the entire seasonal N requirement pre-plant to avoid later application costs. While tempting, we have measured yield reductions from excessive N available during early vegetative growth in the absence of lodging. We have measured the adverse effects on grain yield of excessive available N during early vegetative growth, in the absence of lodging and disease, with hard red winter wheat, soft white winter wheat, winter barley, and more recently in HRS wheat.

We don't know just why yields are reduced with excessive N, when there is no lodging or exacerbated diseases or increased moisture stress. The wheat plant's physiological response to excessive N isn't a topic often addressed with research.

Though we don't know why the yields decline with excessive N, we do measure them often enough. To avoid excessive N during vegetative growth, pre-plant soil testing is essential to determine the residual N.

Slow Release Preplant N

While high preplant N using conventional N fertilizers has been problematic, newer generation N fertilizers may provide a viable option. The results of a 2005 study were reported in previous newsletters. The results from 2005 and 2006 are reported here.

The study involved a comparison of slow release polymer–coated urea N (PCU) with conventional urea

Table 11. HRS wheat response to pre-plant urea and polymer-coated urea (ESN). Parma, 2005, 2006.

Pre-plant		Late	2005		2006	
Urea N	ESN N	Urea N	Yield	Protein	Yield	Protein
----------lb/A---------			bu/A	%	bu/A	%
			Untreated			
0	0		--	--	79	8.9
----------120 lb N/A----------						
120			84	13.9	114	11.2
	120		92	14.0	117	11.6
----------180 lb N/A----------						
180			82	14.2	119	11.7
120	60		82	14.3	121	12.2
60	120		84	14.4	124	12.3
0	180		87	14.4	129	12.7
120		60	83	14.6	126	12.7
----------240 lb N/A----------						
240			73	14.6	117	12.5
	240		83	14.6	125	13.0
180		60	79	14.9	123	13.1
CV			8	1.9	4.5	3.8
$LSD_{.10}$			8	0.3	6.4	0.4

Means in columns must differ by more than the LSD to be statistically different.

pre-plant applied for HRS wheat grown under furrow irrigation at Parma. Initial residual N measured about 135 lb/A in 2005 and 80 lb/A in 2006 in the first foot. Both fertilizer N sources were broadcast pre-plant at rates of 120, 180, and 240 lb N/A with various combinations of urea and PCU also evaluated as shown in Table 1. A control was included in 2006.

Yields were appreciably higher in 2006 with no stripe rust present. Yields tended to be higher for the slow release N at higher N rates. Protein which was much higher in the yield limiting environment of 2005, did not differ between preplant N fertilizers. However, in 2006 with higher yields and lower protein, protein was higher for the slow release N than preplant urea. Protein increased with the higher rates of both N sources in both years. Unlike 2005, a yield reduction did not occur from the highest N rates in 2006 using either N source. But the yield increase with slow release N was greater than with conventional urea.

While the available N with the highest N rate may seem excessive, it is no more than some may encounter if they fertilize pre-plant without measuring residual N following previous crops such as potatoes or onions.

Another way of assessing the relative effectiveness of N fertilizers is to calculate the harvested N from the yield and grain protein. In 2006 the N in grain ranged from 8 to 28 lb N/A more with the slow release N depending on the N rate.

With a control included, it is also possible to calculate the apparent N use efficiency, the portion of the fertilizer N applied that was removed with the grain. The apparent N recovered in harvested grain of that applied in 2006 decreased as N rates increased. The N recovery ranged from highs of 50.6% with urea and 57.1% with ESN applied preplant for the 120 N rate to only 33.4% with urea and 40.7% with ESN at the 240 rate.

Delaying the application of 60 lb/A of the urea N until heading as part of a split application was generally more effective for both yield and protein than all urea applied preplant. In 2006, protein with slow release N matched the protein of the urea split application.

Considering only the effects of the two N fertilizers on yield the economic returns from them can be calculated. Assuming the slow release N was $.11 per lb N more expensive than urea and $4/bu wheat, the return was about $20 per acre higher for the slow release N.

The results are encouraging and suggest there is potential for single pre-plant applications that could serve to safely provide the N required for both yield and protein of hard wheat, particularly in a production system such as furrow irrigation that provides limited options for applying late season N for protein enhancement.

If the PCU continues to prove effective, the use of pre-plant slow release N will probably be more commonly used for HRS and HWS wheat in furrow irrigated or sprinkler systems that don't have the capability to inject soluble N during the season. Producing furrow irrigated wheat with acceptable protein has been particularly challenging.

The PCU in this study was ESN marketed by Agrium. Other PCU products may give similar results but have not been evaluated for our HRS wheat production. The research will continue in the coming season.

New Publications

Last spring a number of the UI Extension faculty involved with small grains were requested to list energy and cost saving measures that producers might consider. The publication is now available on-line as a UI Current Information Series publication. The title is **Saving**

Energy and Fertilizer Costs. CIS 1127. The publication is available on-line at http://info.ag.uidaho.edu/pdf/CIS/CIS1127.pdf. We hope you find something of value in the publication.

Another publication some may find of value is a fact sheet published by Oregon State University pertaining to the N requirements for hard wheat. The publication "**Managing N for Yield and Protein in Hard Wheat**", **FS 335**, is also available online at http://extension.oregonstate.edu/catalog/pdf/fs/fs335.pdf.

Acknowledgement

The **Idaho Wheat Commission** has awarded a grant of $3600 to subsidize this newsletter. We are pleased to acknowledge their support for this Cooperative Extension educational project.

Southwest Idaho Extension Cereals Website

Previous issues of the ***Cereal Sentinel*** newsletter back to 1996 can be viewed as PDF files on the Southwest Idaho Extension Cereals Homepage at http://www.ag.uidaho.edu/swidaho. If you would like to receive electronic notice of new ***Cereal Sentinel*** newsletters posted to the website, rather than the hard copy through the mail, send an e-mail message to me at bradb@uidaho.edu. The advantage for us is that we don't need to produce a hard copy and put it in the mail to you. The website is still under development but the content is considerably expanded from the initial website published in June 2000. In addition to the ***Cereal Sentinel*** newsletters, variety descriptions and performance have been added as well as other topics. If you have suggestions for the website send them to me at bradb@uidaho.edu.

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