



The Cereal Sentinel

A newsletter for Treasure Valley cereal producers

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Topics:

Page

Cooperative Extension Variety Trials	2
Soft White Spring Wheat Performance	2
Spring Barley Performance	3
Hard Red Spring Wheat Performance	4
Hard Red vs Soft White Spring Wheat	5
Hard White Spring Wheat	6
Durum Wheat Potential	7
New Feed Barley Publication	9
Steptoe Barley Feed Quality	10

Important Dates:

Malheur Station Field Day
Parma Station Field Day

July 10
July 11

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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Cooperative Extension Variety Trials

The 1995 season marked the 9th season of the Southwestern Idaho Cooperative Extension Variety Performance Trials. The trials, supported by the Idaho Wheat Commission, Idaho Barley Commission, private breeders and the University of Idaho College of Agriculture 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 1995 season. Trials were located at the Parma Research and Extension Center, Weiser, and Melba.

The Parma site, planted February 28, was the most productive 1995 site, due in part to the early planting. The Melba site was an earlier planting, February 24, but less productive than Parma. Shorter plant height and lower protein suggest that available N may have limited yield at Melba.

Weiser was planted March 31, a month later, and was the lowest yielding site. Protein and height were also lowest at this site suggesting that low available N limited yield.

Soft White Spring Wheat Performance

The 1995 results for soft white spring wheat varieties are shown in Table 1. A better indication of variety performance is possible with comparisons involving several sites and years in Table 2.

Centennial, Alpowa, Penawawa, and WPB Vanna all yielded more than **Treasure, Whitebird, and Pomerelle** in the last three years of testing. Yield did not differ appreciably among the most productive varieties, but they differed in other characteristics. **Alpowa** is slightly taller, was the most weak strawed and prone to lodge but has excellent test weight. **WPB Vanna** had the best straw strength and the lowest protein. **Centennial** and **Penawawa** had higher protein than **Alpowa** or **WPB Vanna**.

Pomerelle was released primarily as a replacement for **Treasure**. **Pomerelle** has not yielded better than

Table 1. 1995 Irrigated Soft White Spring Wheat Performance in the Treasure Valley.

Variety	Yield	Protein	Test Weight	Height	Lodging
	bu/acre	%	lb/bu	in	%
<i>Parma</i>					
Sunstar Promise	149	9.3	64.4	38	0
Alpowa	146	9.4	65.0	39	0
Penawawa	145	10.0	64.9	37	8
Treasure	144	8.8	64.1	38	5
IDO471	143	9.4	63.1	36	0
Whitebird	141	9.1	64.9	40	0
Centennial	138	9.7	64.0	37	3
Vanna	138	9.5	63.4	39	0
Pomerelle	131	9.2	60.2	38	15
LSD _{.10}	12	0.4	1.2	2	18
<i>Weiser</i>					
Sunstar Promise	93	7.7	65.1	33	0
Alpowa	87	8.5	65.3	35	0
Penawawa	96	7.9	65.0	32	0
Treasure	91	7.9	64.4	31	8
IDO471	94	8.4	65.4	31	0
Whitebird	85	7.9	64.8	35	0
Centennial	93	8.3	63.9	33	0
Vanna	90	7.6	64.5	34	0
Pomerelle	96	7.8	63.4	34	0
LSD _{.10}	10	0.5	1.1	2	--
<i>Melba</i>					
Sunstar Promise	102	8.5	62.2	37	0
Alpowa	106	9.0	63.8	37	0
Penawawa	99	8.5	63.3	35	0
Treasure	97	9.2	61.4	37	8
IDO471	115	9.4	63.3	35	0
Whitebird	101	9.1	63.3	38	0
Centennial	105	9.2	62.7	36	0
Vanna	106	8.6	62.7	38	0
Pomerelle	99	8.5	61.8	36	0
LSD _{.10}	14	0.6	1.2	2	6

Treasure in western Idaho but may be slightly shorter and resistant to lodging.

Whitebird was released as a replacement for **Penawawa**. It has not yielded as well as **Penawawa** in the Treasure Valley, but it does have better test weight and lower protein.

Table 2. Soft White Spring Wheat Performance for Selected Years.

Variety	Yield bu/A	Protein %	Test Weight lb/bu	Height in.	Lodged %
<i>1989-92 (13 site years)</i>					
Treasure	91	11.3	59.0	33	11
Centennial	90	11.6	60.7	33	3
Fieldwin	90	11.8	60.6	36	7
Owens	89	11.8	60.1	34	14
LSD _{.10} ¹	3.7	0.3	0.3	.6	3.7
<i>1993-95 (8 site years)</i>					
Centennial	122	10.4	63.1	36	6
Treasure	117	9.9	61.8	37	9
WPB Vanna	122	9.8	62.7	37	2
Whitebird	117	10.2	63.4	38	7
Alpowa	123	10.2	63.7	38	15
Penawawa	122	10.6	62.4	36	8
Pomerelle	115	9.7	61.5	36	7
LSD _{.10} ¹	4	0.3	0.5	.6	6
<i>1995 (3 sites years)</i>					
Centennial	112	9.1	63.6	35	1
Treasure	110	8.6	63.3	35	4
WPB Vanna	111	8.6	63.5	37	0
Whitebird	109	8.7	64.3	38	0
Alpowa	114	8.9	64.8	37	0
Penawawa	115	8.8	64.5	35	3
Pomerelle	109	8.5	61.8	36	5
Snstar Promise	116	8.5	64.0	36	0
IDO471	117	9.0	64.0	34	0
LSD _{.10} ¹	7	0.3	0.7	1	6

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

Sunstar Promise is a new variety from Don Sundermann. It did well in its first year of testing in the Treasure Valley.

IDO471 was an advanced line from the Aberdeen breeding program that will not be further evaluated as this number. It was a composite of several lines that will be

replaced with another composite in the 1996 testing. Performance of its replacement will include all but 2 of the 13 original lines.

Private breeders continue to provide some excellent soft white spring material for our evaluation. **WPB Vanna** and **Sunstar Promise** have yielded as well as the best public varieties that we grow under irrigation.

Spring Barley Performance

The Southwest Idaho Cooperative Extension variety trials have evaluated varieties and advanced lines of barley since 1987. The trials evaluate primarily feed barley varieties. Spring barley variety performance over various time periods is given in the Table 3.

Six Row Varieties

Six row barley varieties have traditionally been more productive than the two row feed types. **Steptoe**, the most commonly grown six row barley in western Idaho has enjoyed a popularity lasting far longer than most varieties. For all its popularity, **Steptoe** has some serious flaws for an irrigated barley.

Steptoe is weak strawed and susceptible to lodging. This is a serious limitation to yield. The greater productivity of more recently released varieties is largely related to their greater resistance to lodging. Several six row varieties perform as well or better than **Steptoe** in high yield environments. **Colter**, **WPB Gustoe**, and **Maranna** all yielded more than **Steptoe** during the 1992-95 period.

Colter, a six row from Aberdeen, has several advantages over **Steptoe** including higher yield potential and test weight. Though it tends to be slightly taller than **Steptoe** it has better straw strength and better lodging resistance. **Colter** is also earlier than **Steptoe**.

WPB Gustoe, a Western Plant Breeders release, has better yield potential and is substantially shorter with better lodging resistance than **Steptoe**.

Maranna, an OSU release, yielded more than **Steptoe** and has better test weight, higher protein, stronger straw, and is shorter.

Payette, an Aberdeen release, had higher protein than all other varieties and good test weight among six row entries. It is shorter and more lodging resistant than **Steptoe**, but it lacks **Steptoe's** yield potential.

Steptoe has proved an excellent variety for less productive plantings. Late planted or subjected to less intensive management, **Steptoe** generally yields better

Table 3. Spring Barley Variety Performance in the Treasure Valley.

Variety	Yield bu/A	Protein %	Test Weight lb/bu	Height in.	Lodging %
<i>1992-95 (12 site years)</i>					
<i>Six Rows</i>					
Colter	143	9.3	49.8	36	23
Gustoe	144	9.5	48.8	28	21
Maranna	142	10.8	50.0	31	18
Steptoe	136	9.9	48.6	36	41
Payette	130	11.2	50.3	32	19
<i>Two Rows</i>					
Baronesse	131	10.5	52.5	34	40
Lud	121	11.1	53.1	35	37
LSD ₁₀	5.0	0.3	0.5	0.6	7
<i>1994-95 (6 site years)</i>					
<i>Six Rows</i>					
Colter	146	8.6	51.0	41	31
Gustoe	152	9.0	49.6	29	25
Maranna	156	9.7	50.9	33	8
Steptoe	136	9.0	49.4	40	59
<i>Two Rows</i>					
Baronesse	139	9.7	53.8	37	50
Lud	128	10.2	54.3	38	49
Idagold	156	9.8	52.6	30	26
Galena	144	9.6	53.0	34	15
C14	146	9.6	54.3	33	23
B9008611	139	9.7	51.9	38	39

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

Washington is now greater than Steptoe because it yields more in those rainfed environments.

In the Treasure Valley, **Baronesse** yields better than **Lud**, our most commonly grown two row, but it does not yield higher than **Steptoe**.

Lud, an Agripro release, does not have the yield potential of **Baronesse**. But **Lud** has both better protein and test weight than **Baronesse**.

Adolph Coors entered feed barley lines for Treasure Valley testing for the first time in 1994. In two years of testing these entries had several advantages over both **Lud** and **Baronesse**. **Idagold** yielded more, was six inches shorter and lodged considerably less than **Baronesse** or **Lud**. **Idagold** is later than **Baronesse** and has lower test weight.

Galena and **C14** yielded at least as well as **Baronesse**, and are also shorter and more lodging resistant.

In the last two years of testing, practically all two row varieties were as productive as **Steptoe**, which suffered from lodging. Among these two rows, **Idagold** was the highest yielding. Whether **Idagold** continues it's winning ways in future testing remains to be seen, but it's off to an auspicious start.

Hard Red Spring Wheat Performance

We continue to evaluate hard red spring varieties in the Cooperative Extension nurseries due largely to their higher prices and potential for greater returns to producers.

WPB936 has generally yielded slightly better than **Vandal**, has a test weight advantage, and matures earlier than **Vandal**. **Vandal's** only advantage over **WPB936** is its protein, which is excellent. Both varieties have good straw strength.

Serra, a California release, has excellent yield potential, but its protein is substantially lower than **WPB936** or **Vandal**.

The hard reds are not for the faint of heart. Significant discounts can result in some years with protein below 14%. The protein levels reported for the hard reds in these variety trials are low. But the trials are not fertilized with N for maximum protein and quite often the off-station sites are under fertilized with N as in 1995. The commercial production of these varieties would entail quite different N management than what is provided for soft white spring wheat varieties.

than many varieties released for high yielding environments.

Two Row Varieties

Breeders have made great strides in providing two row barley for feed. The difference in yield between available six and two row varieties is less than it used to be. Substantial gains have also been made in straw strength.

Baronesse, from Western Plant Breeders (originally from Germany), has found a niche in the Pacific Northwest. **Baronesse** acreage in some areas of

Table 4. Hard Red Spring Wheat Performance in the Treasure Valley.

Variety	Yield bu/A	Protein %	Test Weight lb/bu	Height in.	Lodged %
<i>1992-94 (9 site years)</i>					
Vandal	99	13.5	60.9	31.5	0
WPB936	101	13.1	61.3	30.7	1
Serra	104	12.1	61.5	31.8	9
Yecora Rojo	90	13.0	61.8	26.8	0
LSD _{.10}	3	.3	.4	.7	4
<i>1992-95 (12 site years)</i>					
Vandal	102	13.1	61.7	32	0
WPB936	105	12.6	62.1	31	1
Serra	108	11.6	62.3	32	6
LSD _{.10}	3	.2	.4	.5	1
<i>1995 (3 sites)</i>					
Vandal	104	11.9	63.9	33	0
WPB936	118	10.8	63.9	32	0
Serra	118	10.0	64.1	34	0
LSD _{.10}	8	0.7	0.5	1	--

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

Hard Red vs Soft White Spring Wheat

Treasure Valley wheat producers may remember hard red spring prices in 1993 that ran as much as \$2 a bushel (\$3.33 a hundred weight) higher than soft white wheat prices. The hard red spring price advantage (at 14% protein) from July through October 1995 ranged from \$0.77 to \$1.04 a bushel.

Profitability of the two market classes depends on the yield differences, market prices, and any differences in production and marketing costs. Relative yield performance for the market classes can be gained from the Cooperative Extension trials.

The hard red spring class averaged 95% as productive as soft white spring wheat from 1987 to 1992 (16 site years). Hard reds in individual trials yielded from 13% less to 7% more than soft whites.

Gross returns for the two market classes for the 1982 - 1994 period were calculated from average annual Portland prices for each market class. The hard red class was assumed to be only 95% as productive as the soft whites.

Figure 1 shows the difference in gross returns for the two classes using 13%, 14% and 15% protein levels for the hard reds. Grade No.1 prices were used and the soft white wheat yield was taken as 95 bu/A. Marketing and production costs were considered equal for the two classes. Hard red spring at 13% protein resulted in higher returns than soft whites in 8 of 13 years. Average returns over the thirteen years were about \$177 per acre higher for hard reds or over \$13 per acre each year.

Hard reds at 14% provided higher returns than soft whites in 12 of the 13 years. Hard red gross returns for the marketing period averaged \$477 per acre more than soft white gross returns, or almost \$37 per acre more each year.

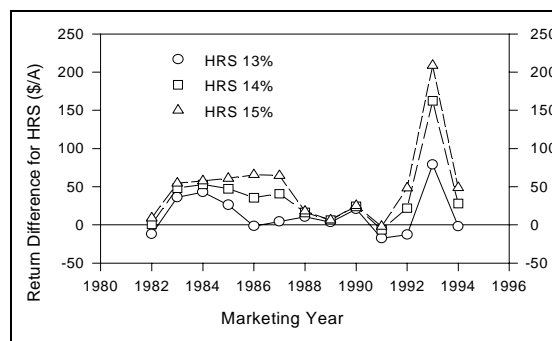


Fig. 1. Gross return differences for soft white and hard red spring wheat. 1982-1994.

For 15% protein hard reds, gross returns over 13 years were \$665 per acre more than soft white gross returns, or \$51 more per acre each year.

Past Disappointments

For the period covered, hard red springs looked pretty good for 14% or 15% protein levels. Unfortunately, many growers that tried hard reds in the past did not get 14% protein and suffered considerable discounts. Discounts in 1986, 1987, 1992 and 1993 were particularly large. They may also have been disappointed in the lower hard red yields.

Production costs for hard red springs could exceed those for soft whites if more intensive nitrogen management (split N applications, flag leaf analysis,

solution vs dry N sources, or more expensive applications) were required to insure a minimum of 14% protein.

Providing the same N management for hard reds as traditionally used for soft whites will generally result in less than 14% protein, even with the better protein varieties. Nitrogen applied from heading to flowering is especially critical for boosting protein.

Marketing costs may also be higher for the hard reds. This could be the case if hard red wheat had to be trucked to more distant elevators rather than shipped by rail.

One advantage for the hard red springs is that

Planting Date	Variety bu/A	Yield %	Protein
<i>1993</i>			
April 19	Vandal	79	13.4
	Treasure	98	9.9
May 10	Vandal	25	13.6
	Treasure	23	11.7
<i>1994</i>			
March 1	Vandal	134	12.6
	Treasure	148	9.8
April 18	Vandal	69	13.2
	Treasure	73	10.4
<i>1995</i>			
Feb. 27	Vandal	101	12.6
	Treasure	107	9.5
March 22	Vandal	93	12.7
	Treasure	87	9.9
April 12	Vandal	71	13.3
	Treasure	73	10.0

lower test weight is required for the No. 1 grade. Only 58 pound test weight is required for hard reds as compared to 60 for soft whites.

Who Is Most Likely To Profit?

Treasure Valley producers in the best position to take advantage of hard red spring market prices are sprinkler irrigators that can inject N through the lines. Application costs are minimized and N can be applied more timely and uniformly for boosting protein than with furrow irrigation. Producers with local elevators willing to handle the hard

red class also have the advantage, as additional marketing costs may be avoided.

Some scenarios lend themselves more to hard reds than to soft whites. Late plantings (and later maturity) generally result in lower yields and higher protein (Table 5). Higher protein in the soft whites is undesirable for much of the soft white trade. With hard reds the higher protein from late plantings should result in less of a discount or higher premiums.

Likewise, short water years that result in moisture stress during grain filling can also lead to lower yields, lower test weights, and higher protein. Hard reds may be more profitable under these conditions.

The importance of variety selection should be evident from the figure and the economic analysis. High protein and good yield are essential. The two highest protein varieties with acceptable yield potential in the Treasure Valley, that we have evaluated, are **WPB936** and **Vandal**.

Hard White Spring Wheat

Many of you have seen the reports of the Idaho Wheat Commission regarding the 1995 production of a hard white spring wheat, **377S**. The wheat was contracted by the Commission and variety preserved, that is, only the variety **377S** was contracted and no other wheat varieties added in the marketing stream. Most of this wheat, 30,000 bu, was then shipped to Korea for use in the commercial production of noodles.

This Idaho Wheat Commission test project has potential for tapping a considerable noodle market in Korea and possibly other Pacific Rim countries. These are markets we once enjoyed but lost to Australia when they developed a wheat that better fit the Korean miller's requirements for noodle flour.

The millers require about 12% protein and good gluten strength. Tests at the Wheat Marketing Center in Portland indicated **377S**, a new release from Aberdeen, has excellent noodle quality and superior to other wheats evaluated. It may have some bread quality limitations in the US but noodle quality is very good. Domestic mills also expressed interest in whatever the Koreans didn't want for their test.

How did the shipment to Korea perform? It's too early to tell. The results of the milling test should be available to the wheat commissioners in late February or March.

We tested two hard white spring varieties in the Cooperative Extension trials over the last three years and the results are reported in Table 6 together with the results for the better soft white spring varieties.

The **377S** variety proved superior in yield and test weight to the other hard white, **Klasic**, though **377S** is taller and more susceptible to lodging than **Klasic**.

The **377S** was as productive as any of the soft whites and higher yielding than **Treasure** over the three year period. Test weight for **377S** was better than the soft whites.

Apparently, producers can pursue this market, should it develop, with minimal risk of reduced yield.

Protein was slightly lower than desired for the hard whites, but that was due to low available N at some of the sites and N management practices more appropriate for soft whites. As with the hard red spring and durum wheats, a delayed N application may be required to enhance grain protein.

The **377S** variety was officially released this past winter and breeder seed was increased last year for a larger planting in 1996. The Commission was looking for 24 producers throughout the state to raise **377S** in 1996. The Wheat Commission hopes to market 225,000 bushels in the 1996 marketing year. They were still looking for growers in late January. There are some restrictions.

- Cooperating producers must commit 100 acres of wheat to this variety
- Participate in the Idaho Crop Improvement Association's Identity Preservation program
- Provide on-farm storage for all the production for a period of three to nine months.
- Sign a memorandum of agreement with the University of Idaho and the Idaho Wheat Commission which limits the marketing options for the wheat.
- Follow University of Idaho's production guidelines for the variety.

Any interested producer should contact the Idaho Wheat Commission office at 334-2353 or Don Suchan at 438-5745.

Table 6. Hard white and soft white spring wheat performance in the Treasure Valley. 1993-95, 10 site years.

Variety	Yield				Protein	Test Weight	Height	Lodging
	1993	1994	1995	Ave.				
	-----bu/a-----				%	lb/bu	in	%
<i>Hard Whites</i>								
377S	116	140	123	125	11.4	64.7	37	16
Klasic	105	133	116	116	11.9	64.0	29	0
<i>Soft Whites</i>								
Centennial	122	134	112	122	10.4	63.1	35	6
Treasure	117	127	110	117	9.9	61.8	37	9
Penawawa	118	137	114	122	10.6	62.4	36	8
LSD _{.10}	7	8	8	4	0.3	0.4	1	6

Durum Wheat Potential

Has anyone checked durum wheat prices lately? The price quoted in Portland for Hard Amber Durum the week ending January 19 was \$7.30. The futures price for September Portland delivery of durum was closer to \$6.40. Pendleton Flour Mills is offering \$6.10 for September delivery to the mill at Pendleton. By the way, those are **bushel** prices. The Portland soft white future price was almost \$2/bu lower than the durum price.

It may be appropriate to review the potential for durum markets and production in SW Idaho. I reported in a 1995 issue that Pendleton Flour Mills was offering contracts for durum wheat produced in the Treasure Valley. Their interest in promoting production has not diminished for the coming 1996 season.

What drives their interest? The mill currently uses over 2 million bushels of durum wheat annually, most of which is produced outside the PNW area. It comes from Canada and from as far south as Arizona. Pendleton has essentially doubled its durum capacity in the last few years and would prefer to contract in the PNW for the production.

Market Prices

Table 7. Durum performance relative to hard red and soft white spring wheat during two periods of testing (1989-90, 1994-95).

Variety	Class	Yield bu/A	Protein %	Height in	Test Weight lb/bu	HVAK %
1989-90 (six sites)						
Centennial	Soft White	99	11.9	34	60.4	--
Vandal	Hard Red	91	13.5	34	59.0	--
WPB 881	Durum	81	13.7	32	60.4	--
1994-95 (four sites)						
Centennial	Soft White	112	9.1	36	63.6	--
Vandal	Hard Red	109	12.3	34	63.3	--
WPB 881	Durum	112	11.8	32	64.1	89
Cortez	Durum	118	11.9	31	65.5	90
Kofa	Durum	112	11.9	33	64.1	92
Duraking	Durum	118	11.3	31	65.0	79
Durex	Durum	105	11.5	33	64.1	79
Reva	Durum	110	11.8	32	64.3	83

The price offered for durum wheat fluctuates as does all wheat market classes. But in the last two years the price for durum has been appreciably better than prices for the soft white or hard red spring wheat classes.

The price offered was \$5.00 a bushel (\$8.33/cwt) in 1994 and \$4.85/bu (\$8.08/cwt) in 1995. Prices for the soft whites at the same time were well over a \$1.50 a bushel less.

Recent Forward Contracts for August delivery of soft white wheat to Notus were only about \$3.92. Since freight to Pendleton amounts to about \$.35/bu by truck, the 1996 Pendleton price for durum comes out to about \$5.80 a bushel, almost two dollars a bushel higher than the Forward Contract for soft white wheat. The price difference of \$1.88/bu represents a whopping 48% increase over the forward contract for soft white wheat.

Yield Performance

Market prices are certainly part of the equation. But how does durum wheat compare in yield to most of the spring wheat that we produce? We evaluated a durum variety in 1989 and 1990 and several varieties in 1994 and 1995. A soft white spring (*Centennial*) and hard red spring (*Vandal*) wheat were included in each trial for comparison.

The performance averaged for each period of testing is shown in the Table 7. The *WPB 881* variety across six sites in the earlier testing was only 82% as productive as *Centennial*. Durum wheat varieties generally yielded as well as *Centennial*, the soft white, and *Vandal*, the hard

red spring in the recent tests. The testing period made a big difference in relative performance. Additional years of data are needed to get a better picture of the relative performance of durum compared to other market classes.

Centennial is one of our more productive soft white spring varieties. Even if *WPB 881*, with further testing, does less well than *Centennial*, the newer durum varieties promise greater productivity and are probably closer in yield potential to our best soft white springs.

WPB881 is the industry standard for quality. Several more recently released varieties matched or exceeded the yield of *WPB881* in the recent testing, but not all varieties matched its quality.

Duraking was more productive than *WPB 881* but it had a lower percentage of hard and vitreous kernels. *WPB Kofa* yielded as well as *WPB 881* and matched its quality in protein and percentage vitreous kernels. Only *WPB Cortez* yielded more than *WPB 881*, and also matched its quality.

Specifications

The specifications for the durum are the same as in previous years. They require at least 13% protein and no less than 85% hard, vitreous, amber kernels (HVAK). As protein goes up, so does HVAK. They also prefer test weight of 60 lb/bu and minimal sprout as indicated by falling number test values less than 325. There is little black tip tolerance because of the off color flour that results. The wheat must be delivered to Pendleton. Freight costs to Pendleton are about \$.30 to \$.35 per bushel.

Few SW Idaho producers took the durum contract in 1994 or 1995. Producers aware of the contract apparently assumed the durum contract was more risky than producing soft white springs they knew they could market locally. Part of the difficulty was not knowing the percentage HVAK or protein that varieties would have under irrigated conditions in the Treasure Valley.

Although we had measured grain protein in the 1989-90 testing, we had not measured the percent HVAK. The recent testing included both protein and the HVAK measurement.

The table shows that protein was generally higher in the earlier testing and the yield lower. Protein the last two years was well below the 13% minimum required. None of the trials were managed for high protein durum or hard red spring wheat production, so protein values are understandably lower than desirable. But even though protein was low, **WPB 881** and other WPB varieties had excellent HVAK percentages. Producing durum with acceptable HVAK percentage will apparently be less difficult than meeting the protein requirement.

Protein Requirement

Some of the 1995 sites were not adequately supplied with nitrogen which contributed to the poor protein. The 13% protein requirement for durum wheat should actually be easier to attain than the 14% required for hard red spring wheat.

WPB 881 protein was as great as **Vandal** protein in 1989-90 testing and averaged only 0.5% less than **Vandal** in the 1994-95 period. **Vandal** is possibly the highest protein hard red spring currently available.

Economic Return

How do the economic returns for the durums and soft whites compare? Let's assume the soft whites yield 100 bu/A and the better durums only 90 bu/A. Assume also that the durums are \$20/A more expensive to produce due to additional N management and seed costs. If extra freight costs of \$.30/bu are also considered, the relative net returns, excluding all other costs, are shown in Table 8 for various soft white wheat prices.

With these assumptions the local soft white breakeven price is \$5.30/bu (\$8.83/cwt). With lower soft white prices at harvest there appears to be an economic advantage in favor of the durums. The Forward Contract price for August delivery of soft white to Notus was less than \$4/bu the week ending January 26. Anyone for pasta?

Who should grow durum?

Not every producer has the production system conducive for durum production. Nitrogen management is critical for meeting the 13% protein standard. Sprinkler injection of N provides the optimum flexibility of timing N applications for maximum grain protein. Those with sprinklers will have an advantage when it comes to N application costs.

Durum wheat production will entail nitrogen management essentially the same as that for the hard red wheats. It involves a delayed N application if available N at the beginning of the season is not adequate for both yield and acceptable protein. Typically 40-60 lb N/A of

Table 8. Economic returns for soft white and durum wheat for different soft white prices.

Soft White Local Price \$/bu	Soft White Returns (\$/A)	Durum Returns (\$/A)	Return Difference (\$/A)	%
3.50	350	529	179	51
4.00	400	529	129	32
4.50	450	529	79	18
5.00	500	529	29	6
5.50	550	529	-21	-4
6.00	600	529	-71	-12

the total N requirement are injected through the lines between heading and flowering.

The number to call at Pendleton Flour Mills for contract information is 503-276-6511. For seed the number is 503-278-5071, 503-963-8815 or 509-522-1307.

New Feed Barley Publication

A Nutritional Guide to Feeding Pacific Northwest Barley to Ruminants. Richard C. Bull, (ed). Idaho Agricultural Experiment Station EXP 776. \$2.00.

This publication came from an Idaho Barley Commission grant to conduct a literature review of research on feed barley for ruminants. It should be helpful for both feeders and producers, increasing their understanding of barley's potential for ruminants. Much of the research supports the finding that barley's relative feeding value is underestimated using current National Research Council values.

Step toe Barley Feed Quality

The poor straw strength of **Step toe** and its susceptibility to lodging was mentioned earlier as a significant limitation to yield. **Step toe** has other limitations which limit its effectiveness as a feed. **Step toe** does not feed as well as other barley varieties. This has been borne out in several feeding trials conducted by animal nutritionists. In the latest trial conducted by Dr. Carl Hunt, using the two row **Baronesse** resulted in better daily gain of finishing beef steers as well as better (lower) feed:gain ratio than **Step toe** (Table 9).

Step toe's inferiority as feed apparently is related to it's hull content and hull quality. The hull content of **Step toe** is higher than other varieties, and to make matters worse, **Step toe** hulls are less digestible than hulls of other varieties.

In one comparison, **Step toe** hulls comprised 14.98% of the grain weight while **Idagold** hulls

Table 9. Grain source effects on finishing beef steers. Moscow, 1995.

Parameter	Grain Source		
	Corn	Step toe	Baronesse
Daily gain (lb)	2.68	2.59	2.78
Feed:gain	7.17	6.95	6.38

were only 10.86% of its weight. Digestibility of the hulls during 24 hours was only 26.2% for **Step toe** hulls, but 38.9% for the **Idagold** hulls. No wonder **Step toe** at times is discounted \$5 to \$10 a ton in northern Idaho because of it's poorer feed quality.

Baronesse was also a superior feed to corn. Other two row barleys should compare as favorably to corn as **Baronesse**. The results suggest that Idaho feeders could improve their competitiveness by replacing corn with two row barley when prices are comparable. Stay tuned.

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