



# The Cereal Sentinel

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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 2002 season marked the 16th 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 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 2002 season. Trials were located at the Parma Research and Extension Center, Kuna, and Weiser. The Parma trial was planted March 5, Weiser on March 20, and Kuna on March 22. Lodging was highest at Parma due to high winds and hail in mid July which also shattered some grain. Stress conditions at Kuna reduced plant height and yield. Protein was high at both Weiser and Kuna suggesting that excessive N may also have limited yield. Conversely, protein at Parma was low and yield may have been limited from inadequate N.

There was no incidence of barley stripe rust in the Treasure Valley during 2002 that we are aware of. Spring barley variety performance should be interpreted in that light.

## Soft White Spring Wheat

The 2002 results for soft white spring wheat varieties are shown in Tables 1-2. The best indication of long term variety performance is a comparison involving several sites and years.

There are several relatively new soft white spring releases for growers to consider that offer not only excellent yield but significant improvements in milling or baking quality over commonly grown spring wheats such as **Penawawa**. They include **Alturas** and **Jubilee**, both comparable in quality to **Treasure**, the quality standard.

**Jubilee** (ID0525) and **Alturas** (ID0526) are high yielding, low protein, high quality Idaho releases that have performed very well since their introduction. **Jubilee** is slightly taller, but **Alturas** is similar to **Penawawa** in height. They have good test weight relative to **Penawawa** and comparable straw strength.

Table 1. 2002 Early Planted 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>       |         |         |             |        |         |
| Alpowa             | 114     | 9.0     | 63.5        | 41     | 55      |
| Alturas            | 114     | 8.8     | 62.8        | 36     | 80      |
| Centennial         | 109     | 9.4     | 63.4        | 39     | 65      |
| IDO556             | 108     | 9.4     | 64.0        | 32     | 58      |
| Jubilee            | 114     | 9.4     | 64.3        | 38     | 88      |
| Penawawa           | 116     | 9.4     | 63.9        | 37     | 65      |
| Pomerelle          | 110     | 8.6     | 62.8        | 40     | 78      |
| Treasure           | 109     | 8.8     | 61.0        | 38     | 85      |
| WA7902             | 109     | 8.7     | 62.9        | 31     | 75      |
| WA7905             | 108     | 9.7     | 63.1        | 42     | 90      |
| Whitebird          | 112     | 9.7     | 63.0        | 40     | 70      |
| Zak                | 118     | 9.1     | 62.0        | 41     | 85      |
| Average            | 112     | 9.2     | 63.0        | 38     | 74      |
| LSD <sub>.10</sub> | 8       | 1.1     | 1.0         | 2      | 28      |
| <i>Weiser</i>      |         |         |             |        |         |
| Alpowa             | 72      | 13.3    | 60.9        | 42     | 0       |
| Alturas            | 92      | 12.2    | 61.1        | 39     | 0       |
| Centennial         | 86      | 13.6    | 61.1        | 41     | 10      |
| Challis            | 79      | 13.6    | 59.4        | 39     | 0       |
| IDO556             | 83      | 13.4    | 63.0        | 35     | 0       |
| Jubilee            | 93      | 12.3    | 61.5        | 41     | 0       |
| Penawawa           | 75      | 13.3    | 60.1        | 42     | 15      |
| Pomerelle          | 77      | 12.6    | 61.1        | 42     | 0       |
| Treasure           | 79      | 12.8    | 60.5        | 41     | 0       |
| WA7902             | 80      | 12.2    | 63.1        | 37     | 0       |
| WA7905             | 71      | 12.5    | 60.1        | 41     | 0       |
| Whitebird          | 86      | 12.2    | 61.0        | 42     | 0       |
| Zak                | 81      | 13.4    | 56.9        | 41     | 5       |
| Average            | 81      | 12.9    | 60.2        | 39     | 2       |
| LSD <sub>.10</sub> | 11      | 1.3     | 1.9         | 2      | 11      |
| <i>Kuna</i>        |         |         |             |        |         |
| Alpowa             | 101     | 13.3    | 62.5        | 30     | 3       |
| Alturas            | 104     | 12.5    | 63.5        | 28     | 0       |
| Centennial         | 83      | 13.3    | 62.4        | 26     | 0       |
| Challis            | 101     | 12.8    | 61.0        | 27     | 0       |
| IDO556             | 76      | 14.3    | 64.4        | 25     | 5       |
| Jubilee            | 105     | 12.9    | 61.6        | 30     | 0       |
| Penawawa           | 97      | 13.7    | 61.8        | 28     | 0       |
| Pomerelle          | 99      | 12.9    | 63.4        | 29     | 0       |
| Treasure           | 89      | 14.0    | 62.4        | 26     | 0       |
| WA7902             | 91      | 12.4    | 62.5        | 27     | 3       |
| WA7905             | 96      | 13.3    | 61.8        | 30     | 18      |
| Whitebird          | 95      | 13.4    | 63.8        | 29     | 5       |
| Zak                | 79      | 13.4    | 62.3        | 28     | 3       |
| Average            | 96      | 13.3    | 61.9        | 28     | 2       |
| LSD <sub>.10</sub> | 13      | 0.6     | 1.8         | 2      | 9       |

<sup>1</sup> Means must differ by more than the LSD to be statistically different

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

| Variety                 | Yield<br>bu/acre | Protein<br>% | Test<br>Weight<br>lb/bu | Height<br>in | Lodged<br>% |
|-------------------------|------------------|--------------|-------------------------|--------------|-------------|
| 2002 (3 sites)          |                  |              |                         |              |             |
| Alpowa                  | 96               | 11.9         | 62.2                    | 37           | 19          |
| Alturas                 | 103              | 11.2         | 62.5                    | 34           | 27          |
| Centennial              | 93               | 12.1         | 62.3                    | 35           | 25          |
| IDO556                  | 89               | 12.4         | 63.8                    | 31           | 21          |
| Jubilee                 | 104              | 11.5         | 62.5                    | 36           | 29          |
| Penawawa                | 96               | 12.1         | 61.9                    | 34           | 27          |
| Pomerelle               | 95               | 11.4         | 62.4                    | 37           | 26          |
| Treasure                | 92               | 11.9         | 61.3                    | 35           | 28          |
| WA7902                  | 93               | 11.1         | 62.8                    | 34           | 26          |
| WA7905                  | 92               | 11.8         | 61.7                    | 38           | 36          |
| Whitebird               | 98               | 11.8         | 62.6                    | 37           | 25          |
| Zak                     | 93               | 12.0         | 61.3                    | 37           | 31          |
| Average                 | 95               | 11.8         | 62.2                    | 35           | 25          |
| LSD <sub>.10</sub>      | 13               | 1.6          | 1.1                     | 4            | 26          |
| 2001-2 (6 sites)        |                  |              |                         |              |             |
| Alpowa                  | 109              | 11.3         | 63.7                    | 38           | 15          |
| Alturas                 | 114              | 10.6         | 63.0                    | 35           | 14          |
| IDO556                  | 98               | 11.5         | 64.4                    | 32           | 10          |
| Jubilee                 | 113              | 10.8         | 63.5                    | 37           | 15          |
| Penawawa                | 111              | 11.3         | 63.1                    | 35           | 17          |
| Pomerelle               | 106              | 10.5         | 62.7                    | 37           | 13          |
| WA7902                  | 106              | 10.5         | 63.6                    | 35           | 13          |
| Zak                     | 108              | 11.0         | 62.4                    | 37           | 24          |
| Average                 | 108              | 10.9         | 63.2                    | 36           | 15          |
| LSD <sub>.10</sub>      | 10               | 1.1          | 0.8                     | 2            | 15          |
| 1999-02 (12 site years) |                  |              |                         |              |             |
| Alpowa                  | 105              | 11.2         | 63.9                    | 37           | 7           |
| Alturas                 | 115              | 10.6         | 63.2                    | 35           | 7           |
| Jubilee                 | 113              | 10.8         | 63.8                    | 37           | 8           |
| Penawawa                | 109              | 11.1         | 63.4                    | 35           | 8           |
| Pomerelle               | 108              | 10.6         | 62.7                    | 37           | 6           |
| Average                 | 109              | 10.8         | 63.3                    | 36           | 7           |
| LSD <sub>.10</sub>      | 8                | 0.7          | 0.6                     | 1            | 8           |
| 1993-02 (27 site years) |                  |              |                         |              |             |
| Alpowa                  | 110              | 10.7         | 63.0                    | 37           | 6           |
| Centennial              | 109              | 10.7         | 62.5                    | 36           | 5           |
| Penawawa                | 110              | 11.1         | 61.9                    | 36           | 7           |
| Pomerelle               | 106              | 10.3         | 61.2                    | 36           | 6           |
| Treasure                | 106              | 10.5         | 61.0                    | 36           | 9           |
| Whitebird               | 108              | 10.6         | 62.6                    | 38           | 5           |
| Average                 | 108              | 10.6         | 62.0                    | 36           | 6           |
| LSD <sub>.10</sub>      | 5                | 0.4          | 0.1                     | 0.8          | 7           |

<sup>1</sup> Means must differ by more than the LSD to be statistically different

**Zak**, a recent WSU release, represents a marked improvement in milling and baking quality over previous WSU irrigated releases, but it also lacks sufficient straw strength for our production system.

**WPB Challis** is high yielding with milling and baking quality comparable to that of **Treasure** and **Pomerelle**. **WPB Challis** has moderate height and test weight. It averaged the lowest in protein over three years and has test weight similar to **Alturas**.

**Alpowa** is slightly taller than others, but has good lodging resistance and excellent test weight. **Alpowa** baking quality is better than **Penawawa** but not as good as **Alturas**, **Jubilee**, or **WPB Challis**.

The most commonly grown spring wheat is currently **Penawawa**, an early maturing, older release that yields well but tends to be higher in protein, lower in test weight with very poor milling and baking quality. There are better alternatives to this variety available

**Centennial** also has good yield potential and good straw strength. **Whitebird** has good yield potential but has not yielded as well as **Penawawa** and **Alpowa**.

**Whitebird** does have low protein and excellent baking quality as does **Vanna**.

**ID0556** is a spring club wheat as is **WA7902**.

## Hard Red Spring Wheat

Hard red spring varieties are evaluated because of their historically higher prices and potential for greater returns to spring wheat producers. Results for hard red spring wheat are given in Tables 3 and 4. As with any variety comparison, the more years and sites they can be compared over the more reliable the information.

**WPB 936**, a Western Plant Breeders release, is the most commonly planted hard red spring in western Idaho. It has excellent yield potential and its high yield potential is in part responsible for its occasional lower protein.

**Jefferson**, a relatively new release from the UI breeding program at Aberdeen, has yielded as well as **WPB936** over several years of testing. **Jefferson** is taller than **WPB936** and more susceptible to lodging. It has protein comparable to **WPB936**. **Jefferson** has moderate Hessian fly resistance, excellent milling yield and good baking quality.

**Hi-Line**, a Montana variety, has been evaluated for nine site years in western Idaho. **Hi-Line** was less productive than **WPB 936** but generally has slightly better protein and test weight. It was slightly taller than **WPB 936** but had good straw strength.

Table 3. Hard Red Spring Wheat Performance in the Treasure Valley. 2002.

| Variety              | Yield<br>bu/A | Protein<br>% | Test<br>Weight<br>lb/bu | Height<br>in. | Lodged<br>% |
|----------------------|---------------|--------------|-------------------------|---------------|-------------|
| <i>Parma</i>         |               |              |                         |               |             |
| Hi-Line <sup>1</sup> | 91            | 11.9         | 63.3                    | 36            | 53          |
| IDO557               | 101           | 11.4         | 63.0                    | 36            | 68          |
| IDO566               | 120           | 12.1         | 62.4                    | 37            | 70          |
| Jefferson            | 111           | 12.0         | 63.0                    | 37            | 90          |
| Saxon                | 114           | 11.0         | 63.1                    | 38            | 75          |
| Scarlet              | 104           | 11.1         | 62.7                    | 42            | 60          |
| Tara                 | 101           | 11.6         | 63.8                    | 40            | 65          |
| WA7859               | 97            | 12.5         | 62.3                    | 47            | 90          |
| WPB936               | 111           | 12.3         | 61.5                    | 35            | 64          |
| YU955-241            | 117           | 11.2         | 63.1                    | 33            | 30          |
| Average              | 106           | 11.7         | 62.8                    | 38            | 66          |
| LSD <sub>.10</sub>   | 6             | 1.7          | 1.3                     | 2             | 37          |
| <i>Weiser</i>        |               |              |                         |               |             |
| Hi-Line              | 84            | 14.0         | 62.3                    | 39            | 30          |
| IDO557               | 91            | 13.2         | 63.0                    | 36            | 10          |
| IDO566               | 104           | 13.2         | 64.5                    | 37            | 3           |
| Jefferson            | 94            | 14.0         | 62.9                    | 39            | 88          |
| Saxon                | 93            | 14.1         | 62.5                    | 41            | 30          |
| Scarlet              | 95            | 12.9         | 62.6                    | 41            | 45          |
| SX1501B              | 77            | 14.1         | 57.8                    | 32            | 0           |
| SX1502B              | 88            | 14.9         | 59.6                    | 36            | 0           |
| SX1503B              | 73            | 13.8         | 53.6                    | 32            | 0           |
| Tara                 | 93            | 13.8         | 63.3                    | 38            | 23          |
| WA7859               | 82            | 13.0         | 63.3                    | 43            | 43          |
| WPB936               | 109           | 13.0         | 65.1                    | 36            | 0           |
| Average              | 90            | 13.7         | 61.7                    | 37            | 23          |
| LSD <sub>.10</sub>   | 16            | 1.1          | 1.8                     | 3             | 34          |
| <i>Kuna</i>          |               |              |                         |               |             |
| Hi-Line              | 85            | 15.8         | 63.0                    | 28            | 3           |
| IDO557               | 80            | 15.9         | 61.8                    | 25            | 0           |
| IDO566               | 103           | 14.6         | 63.8                    | 29            | 0           |
| Jefferson            | 88            | 15.1         | 63.4                    | 27            | 0           |
| Saxon                | 79            | 16.5         | 64.1                    | 29            | 0           |
| Scarlet              | 88            | 15.4         | 63.9                    | 30            | 5           |
| SX1501B              | 118           | 14.8         | 60.8                    | 27            | 0           |
| SX1502B              | 93            | 16.4         | 60.8                    | 27            | 0           |
| SX1503B              | 102           | 14.5         | 56.1                    | 24            | 0           |
| Tara                 | 83            | 15.7         | 62.4                    | 29            | 3           |
| WA7859               | 82            | 15.9         | 63.4                    | 32            | 3           |
| WPB936               | 92            | 16.1         | 61.8                    | 27            | 3           |
| Average              | 91            | 15.6         | 62.1                    | 28            | 1           |
| LSD <sub>.10</sub>   | 17            | 1.1          | 1.8                     | 3             | 5           |

<sup>1</sup> Means must differ by more than the LSD<sub>.10</sub> to be statistically different

**Scarlet** (WA7839) and **Tara** (WA7824) are recent releases from WSU. They have not yielded as well as the more productive hard reds such as **Jefferson** or **WPB 936**. They have good test weight, and good straw strength and excellent milling and baking quality.

**Saxon** is a General Mills variety with good protein and test weight but fair yield potential. **ID0566** is similar to **WPB 936** in yield and lodging. **WA7859** is taller than other entries and yields less than **WPB 936**.

Significant discounts can result with hard red springs if protein is below 14%. The protein levels for the hard reds in these variety trials are lower than desired at Parma, and higher than necessary at Kuna. The trials were not fertilized with N for maximum protein at Parma and quite often the sites are under fertilized with

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

| Variety                        | Yield<br>bu/A | Protein<br>% | Test<br>Weight<br>lb/bu | Height<br>in. | Lodged<br>% |
|--------------------------------|---------------|--------------|-------------------------|---------------|-------------|
| <i>2002 (3 site years)</i>     |               |              |                         |               |             |
| Hi-Line <sup>1</sup>           | 87            | 13.9         | 62.8                    | 35            | 28          |
| IDO557                         | 91            | 13.5         | 62.6                    | 32            | 26          |
| IDO566                         | 109           | 13.3         | 63.5                    | 34            | 24          |
| Jefferson                      | 98            | 13.7         | 63.1                    | 34            | 59          |
| Saxon                          | 95            | 13.9         | 63.3                    | 36            | 35          |
| Scarlet                        | 96            | 13.1         | 63.1                    | 38            | 37          |
| Tara                           | 92            | 13.7         | 63.1                    | 36            | 30          |
| WA7859                         | 87            | 13.8         | 63.0                    | 41            | 45          |
| WPB936                         | 104           | 13.8         | 62.8                    | 33            | 22          |
| Average                        | 95            | 13.8         | 62.2                    | 34            | 28          |
| LSD <sub>.10</sub>             | 11            | 1.4          | 1.1                     | 4             | 24          |
| <i>2000-02 (9 site years)</i>  |               |              |                         |               |             |
| Hi-Line                        | 103           | 13.0         | 63.9                    | 34            | 10          |
| Jefferson                      | 108           | 12.8         | 63.7                    | 35            | 20          |
| Tara                           | 98            | 12.8         | 63.9                    | 36            | 10          |
| WPB936                         | 113           | 12.9         | 63.7                    | 33            | 7           |
| Average                        | 105           | 12.9         | 63.8                    | 35            | 12          |
| LSD <sub>.10</sub>             | 7             | 0.9          | 0.6                     | 1             | 11          |
| <i>1997-02 (18 site years)</i> |               |              |                         |               |             |
| Hi-Line                        | 97            | 13.0         | 63.3                    | 34            | 5           |
| Jefferson                      | 105           | 12.7         | 63.2                    | 36            | 10          |
| WPB936                         | 103           | 12.7         | 62.6                    | 32            | 3           |
| Average                        | 102           | 12.8         | 63.0                    | 34            | 6           |
| LSD <sub>.10</sub>             | 5             | 0.5          | 0.6                     | 1             | 6           |

<sup>1</sup> Means must differ by more than the LSD<sub>.10</sub> to be statistically different

N. The commercial production of these varieties would entail quite different N management than what is provided for soft white spring wheat.

The hard red springs are typically about 5% less productive than the soft whites. They are more comparable in yield when planted late in western Idaho.

## Hard White Wheat

Hard white spring wheat (HWSW) is a market class separate and different from the soft white class. Large scale production in the PNW has largely been controlled by the Promar Select Coop through the use of licensed varieties. The new farm bill provides a small marketing incentive for irrigated HWSW production.

There is considerable breeder and industry interest in the hard whites as they have potential for re-capturing significant domestic or foreign bread and noodle markets. That interest is evident in the number of entries in the Cooperative Extension Nurseries in 2002.

**ID377s**, an Idaho release, was the first public hard white spring release for the PNW and was licensed to Promar Select Inc. **ID377s** has excellent yield potential typically equaling that of the best soft whites. **Lolo**, a UI release, is high yielding with good straw strength. It is a little shorter than **ID377s**, with better straw strength and slightly better test weight.

**Winsome**, an OSU release, has yielded well, is shorter, has lower test weight and protein is considerably lower than **ID377s**.

**Pristine**, a WPB release, yielded well, better than in 2001. It has excellent protein and test weight. General Mills and WSU submitted several hard whites but they typically over two years didn't match the yield of **ID377s**. **Macon (WA7899)**, a WSU release, has not been as productive as **Lolo** or **ID377s**.

**Blanca Grande** and **Plata** are General Mill releases evaluated for two years. They have good yield potential, and are among the shortest of varieties evaluated.

**Blanca Grande** has high protein and test weight but **Plata** is lower in protein and test weight.

The hard white market involves considerable risk to existing soft white markets and vice versa. Producers are reminded that co-mingling soft white and hard white wheats will destroy the value of the mix for food uses, a sure way to lose both domestic and export markets.

Growers are urged to venture into the hard whites only if they have a ready market and can insure the segregation of hard whites from soft whites. This is perhaps one of the greatest concerns with large scale

Table 5. Hard White Spring Wheat Performance in the Treasure Valley. 2002.

| Variety            | Yield<br>bu/A | Protein<br>% | Test<br>Weight<br>lb/bu | Height<br>in. | Lodged<br>% |
|--------------------|---------------|--------------|-------------------------|---------------|-------------|
| <i>Parma</i>       |               |              |                         |               |             |
| Blanca Grande      | 123           | 12.5         | 65.0                    | 33            | 68          |
| GM40002            | 105           | 11.3         | 63.5                    | 36            | 93          |
| GM40003            | 106           | 11.4         | 63.0                    | 40            | 93          |
| GM40004            | 109           | 11.5         | 63.2                    | 36            | 55          |
| IDO377s            | 115           | 11.5         | 63.9                    | 41            | 90          |
| Lolo               | 123           | 11.4         | 65.1                    | 39            | 89          |
| Macon              | 108           | 11.7         | 60.6                    | 39            | 85          |
| Plata              | 105           | 11.1         | 64.1                    | 32            | 35          |
| WPB Pristine       | 111           | 11.7         | 65.3                    | 37            | 50          |
| WA7900             | 107           | 10.6         | 64.4                    | 39            | 60          |
| WA7901             | 113           | 10.9         | 64.5                    | 42            | 64          |
| Winsome            | 113           | 10.4         | 62.6                    | 37            | 68          |
| YU995-231W         | 111           | 10.8         | 64.4                    | 26            | 25          |
| LSD <sub>.10</sub> | 9             | 1.2          | 2.1                     | 1             | 29          |
| <i>Weiser</i>      |               |              |                         |               |             |
| Blanca Grande      | 111           | 12.5         | 66.9                    | 34            | 5           |
| GM40002            | 101           | 12.6         | 64.9                    | 37            | 48          |
| GM40003            | 103           | 12.3         | 65.9                    | 35            | 70          |
| GM40004            | 102           | 12.1         | 63.8                    | 37            | 0           |
| IDO377s            | 88            | 12.6         | 63.1                    | 41            | 50          |
| Lolo               | 103           | 13.0         | 65.1                    | 39            | 5           |
| Macon              | 73            | 14.1         | 60.3                    | 37            | 53          |
| Plata              | 109           | 13.0         | 65.1                    | 32            | 0           |
| WPB Pristine       | 109           | 13.6         | 65.0                    | 38            | 20          |
| WA7900             | 88            | 13.4         | 63.5                    | 39            | 35          |
| WA7901             | 88            | 13.8         | 62.4                    | 43            | 65          |
| Winsome            | 105           | 11.8         | 64.4                    | 38            | 23          |
| YU995-231W         | 110           | 12.3         | 64.9                    | 28            | 0           |
| LSD <sub>.10</sub> | 16            | 1.1          | 2.3                     | 3             | 39          |
| <i>Kuna</i>        |               |              |                         |               |             |
| Blanca Grande      | 71            | 15.7         | 62.5                    | 22            | 0           |
| GM40002            | 83            | 14.7         | 62.8                    | 26            | 10          |
| GM40003            | 79            | 15.5         | 65.0                    | 25            | 3           |
| GM40004            | 86            | 15.4         | 64.0                    | 27            | 0           |
| IDO377s            | 103           | 15.4         | 64.1                    | 29            | 3           |
| Lolo               | 94            | 15.3         | 64.3                    | 28            | 0           |
| Macon              | 89            | 15.2         | 63.4                    | 27            | 3           |
| Plata              | 107           | 14.1         | 63.0                    | 27            | 0           |
| WPB Pristine       | 93            | 16.3         | 65.0                    | 27            | 5           |
| WA7900             | 82            | 15.0         | 63.5                    | 27            | 10          |
| WA7901             | 97            | 15.1         | 64.9                    | 31            | 8           |
| Winsome            | 104           | 14.0         | 63.4                    | 29            | 0           |
| YU955-231W         | 103           | 14.2         | 63.8                    | 21            | 0           |
| LSD <sub>.10</sub> | 17            | 1.0          | 1.7                     | 3             | 8           |

<sup>1</sup> Means must differ by more than the LSD<sub>.10</sub> to be statistically different

hard white production in a traditional soft white production area.

## 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. Consequently there was no advantage to those releases with stripe rust resistance.

Test weights and yields of six rows at Parma averaged lower than at Weiser in part due to significant lodging and shattering from high winds and hail. Plant heights were lower at Weiser suggesting moisture stress during stem extension.

Table 6. Hard White Spring Wheat Performance in the Treasure Valley over sites and years. 2002.

| Variety                     | Yield<br>bu/A | Protein<br>% | Test<br>Weight<br>lb/bu | Height<br>in. | Lodged<br>% |
|-----------------------------|---------------|--------------|-------------------------|---------------|-------------|
| <i>2002 (3 sites)</i>       |               |              |                         |               |             |
| Blanca Grande               | 101           | 13.6         | 64.8                    | 29            | 24          |
| GM40002                     | 96            | 12.9         | 63.7                    | 33            | 50          |
| GM40003                     | 96            | 13.1         | 64.6                    | 33            | 55          |
| GM40004                     | 99            | 13.0         | 63.6                    | 34            | 18          |
| IDO377s                     | 102           | 13.2         | 63.7                    | 37            | 48          |
| Lolo                        | 107           | 13.2         | 64.8                    | 35            | 31          |
| Macon                       | 90            | 13.7         | 61.4                    | 34            | 47          |
| Plata                       | 107           | 12.7         | 64.1                    | 30            | 12          |
| WPB Pristine                | 104           | 13.9         | 65.1                    | 34            | 34          |
| WA7900                      | 92            | 13.0         | 63.8                    | 35            | 35          |
| WA7901                      | 99            | 13.3         | 63.9                    | 39            | 45          |
| Winsome                     | 108           | 12.1         | 63.5                    | 34            | 30          |
| YU995-231W                  | 108           | 12.5         | 64.3                    | 25            | 8           |
| Average                     | 101           | 13.1         | 64.0                    | 33            | 34          |
| LSD <sub>.10</sub>          | 11            | 1.5          | 1.3                     | 4             | 26          |
| <i>2001-02 (6 sites)</i>    |               |              |                         |               |             |
| Blanca Grande               | 105           | 12.8         | 65.1                    | 31            | 12          |
| GM40002                     | 96            | 12.2         | 64.9                    | 34            | 28          |
| IDO377s                     | 111           | 12.3         | 63.9                    | 37            | 28          |
| Lolo                        | 107           | 12.5         | 64.7                    | 36            | 16          |
| Macon                       | 101           | 12.3         | 63.2                    | 35            | 24          |
| Plata                       | 109           | 12.0         | 64.2                    | 31            | 6           |
| WPB Pristine                | 99            | 13.0         | 65.2                    | 34            | 17          |
| WA7900                      | 104           | 12.2         | 64.6                    | 36            | 21          |
| WA7901                      | 106           | 12.4         | 64.3                    | 39            | 24          |
| Winsome                     | 110           | 11.4         | 63.4                    | 34            | 15          |
| Average                     | 105           | 12.3         | 64.3                    | 35            | 19          |
| LSD <sub>.10</sub>          | 8             | 1.3          | 0.8                     | 2             | 16          |
| <i>1999-2002 (12 sites)</i> |               |              |                         |               |             |
| IDO377s                     | 114           | 12.0         | 64.6                    | 37            | 14          |
| Lolo                        | 115           | 12.0         | 65.1                    | 36            | 8           |
| Winsome                     | 113           | 11.3         | 63.4                    | 34            | 8           |
| Average                     | 114           | 11.8         | 64.4                    | 36            | 10          |
| LSD <sub>.10</sub>          | 7             | 0.7          | 0.4                     | 1             | 9           |

<sup>1</sup> Means must differ by more than the LSD<sub>.10</sub> to be statistically different

Table 7. Six-Row Spring Barley Variety Performance in the Treasure Valley. 2002

| Variety            | Yield<br>bu/A | Test<br>Weight<br>lb/bu | Height<br>in. | Lodging<br>% |
|--------------------|---------------|-------------------------|---------------|--------------|
| <i>Parma</i>       |               |                         |               |              |
| Brigham            | 102           | 47.8                    | 40            | 60           |
| Colter             | 96            | 47.9                    | 44            | 83           |
| Millennium         | 109           | 49.4                    | 38            | 45           |
| Nebula             | 131           | 47.4                    | 36            | 35           |
| Steptoe            | 109           | 47.8                    | 44            | 93           |
| Average            | 110           | 48.1                    | 40            | 63           |
| LSD <sub>.10</sub> | 14            | 1.4                     | 2             | 29           |
| <i>Weiser</i>      |               |                         |               |              |
| Brigham            | 135           | 53.1                    | 34            | 28           |
| Colter             | 110           | 54.4                    | 38            | 50           |
| Legacy             | 128           | 55.5                    | 39            | 80           |
| Millennium         | 156           | 55.0                    | 35            | 20           |
| Nebula             | 163           | 54.3                    | 32            | 0            |
| Steptoe            | 137           | 54.4                    | 34            | 93           |
| Average            | 138           | 54.4                    | 35            | 45           |
| LSD <sub>.10</sub> | 18            | 1.6                     | 4             | 45           |

<sup>1</sup> Means must differ by more than the LSD to be statistically different.

### Six-Row Varieties

**Steptoe**, still the most commonly grown six-row in western Idaho, has serious flaws for an irrigated feed barley. Its height, weak straw, and susceptibility to lodging limit its yield potential under high yielding conditions. The greater productivity of more recently released varieties is largely related to their greater resistance to lodging. **Steptoe** is more competitive in

yield under more stressful conditions, as in 2002. **Steptoe** has been displaced in Washington, Oregon, and all other production districts in Idaho due to its lower productivity and poorer feed quality.

**WB Nebula**, a Western Plant Breeder release, is the shortest of the six row varieties and has excellent lodging resistance. It has better yield potential than **Steptoe** under more optimum conditions but no better test weight.

**Colter**, a USDA release from Aberdeen is slightly taller than **Steptoe**, but has much better straw strength and lodging resistance. **Colter** also matures earlier than **Steptoe**. **Colter** is especially susceptible to stripe rust. **Colter** has not consistently yielded as well as **Steptoe**.

Two new Utah State releases **Millenium** and **Brigham** were evaluated for the third year in 2002. These two varieties have excellent lodging resistance. **Brigham** is the shorter of the two but **Millenium** had the better test weight. **Millenium** is about as tall as **Steptoe**

| Variety                        | Yield<br>bu/A | Test<br>Weight<br>lb/bu | Height<br>in. | Lodged<br>% | Thins<br>% |
|--------------------------------|---------------|-------------------------|---------------|-------------|------------|
| <i>2002 (2 sites)</i>          |               |                         |               |             |            |
| Brigham                        | 119           | 50.5                    | 37            | 44          | 0.8        |
| Colter                         | 103           | 51.1                    | 41            | 66          | 3.6        |
| Millennium                     | 133           | 52.2                    | 36            | 33          | 2.8        |
| Nebula                         | 147           | 50.8                    | 34            | 18          | 0.9        |
| Steptoe                        | 123           | 51.0                    | 39            | 93          | 2.0        |
| Average                        | 125           | 51.5                    | 38            | 53          | 2.1        |
| LSD <sub>.10</sub>             | 18            | 3                       | 3             | 27          | 1.0        |
| <i>2000-02 (8 site years)</i>  |               |                         |               |             |            |
| Brigham                        | 130           | 50.7                    | 33            | 12          | 0.9        |
| Colter                         | 122           | 51.7                    | 36            | 17          | 2.4        |
| Millennium                     | 146           | 52.3                    | 33            | 8           | 2.4        |
| Nebula                         | 145           | 51.3                    | 29            | 5           | 0.5        |
| Steptoe                        | 136           | 52.0                    | 36            | 26          | 1.3        |
| Average                        | 136           | 51.6                    | 33            | 14          | 1.5        |
| LSD <sub>.10</sub>             | 14            | 1.0                     | 3             | 12          | 0.7        |
| <i>1997-02 (17 site years)</i> |               |                         |               |             |            |
| Colter                         | 117           | 50.1                    | 37            | 8           | 2.7        |
| Nebula                         | 125           | 48.9                    | 29            | 2           | 0.8        |
| Steptoe                        | 122           | 50.0                    | 37            | 12          | 1.8        |
| Average                        | 121           | 49.7                    | 34            | 7           | 1.7        |
| LSD <sub>.10</sub>             | 9             | 1.2                     | 1             | 7           | 0.7        |

<sup>1</sup> Means must differ by more than the LSD to be statistically different.

and has equaled **WPB Nebula** in yield during its testing.

### Two-Row Varieties

#### Feed

Six and two-row variety yields have narrowed considerably over the years. With better tolerance to stripe rust, moisture stress, improved lodging resistance, the better two row varieties can now be expected, when stripe rust is present, to be more productive than many six row barleys normally produced in western Idaho.

**Idagold**, the first Adolph Coors feed barley release, has excellent yield potential and better straw strength than older two row releases we have tested. **Idagold** is six to seven inches shorter than **Baronesse**. **Idagold** has

| Variety            | Yield<br>bu/A | Test<br>Weight<br>lb/bu | Height<br>in. | Lodged<br>% |
|--------------------|---------------|-------------------------|---------------|-------------|
| <i>Parma</i>       |               |                         |               |             |
| C46                | 110           | 49.9                    | 36            | 78          |
| C53                | 85            | 48.1                    | 36            | 55          |
| C57                | 88            | 49.0                    | 33            | 30          |
| C60                | 101           | 51.3                    | 35            | 98          |
| C61                | 100           | 48.5                    | 36            | 83          |
| Galena             | 87            | 51.5                    | 36            | 58          |
| H3860224           | 56            | 50.6                    | 45            | 55          |
| Idagold            | 102           | 52.3                    | 33            | 68          |
| Idagold II         | 86            | 50.8                    | 35            | 18          |
| Moravian 14        | 94            | 51.8                    | 36            | 73          |
| Moravian 37        | 84            | 50.9                    | 36            | 73          |
| Valier             | 54            | 53.0                    | 43            | 50          |
| Average            | 87            | 50.6                    | 37            | 61          |
| LSD <sub>.10</sub> | 15            | 3.0                     | 1             | 28          |
| <i>Weiser</i>      |               |                         |               |             |
| C46                | 144           | 56.4                    | 30            | 0           |
| C53                | 151           | 54.9                    | 32            | 5           |
| C57                | 138           | 54.4                    | 30            | 5           |
| Galena             | 147           | 57.0                    | 34            | 8           |
| H3860224           | 107           | 56.1                    | 38            | 58          |
| Idagold            | 139           | 56.4                    | 30            | 15          |
| Idagold II         | 145           | 56.3                    | 30            | 0           |
| Merit              | 131           | 56.3                    | 36            | 65          |
| Moravian 37        | 152           | 57.0                    | 31            | 13          |
| Valier             | 117           | 56.5                    | 36            | 90          |
| Average            | 137           | 56.1                    | 33            | 26          |
| LSD <sub>.10</sub> | 19            | 1.4                     | 2             | 26          |

<sup>1</sup> Means must differ by more than the LSD to be statistically different.

yielded better than **Steptoe** in many trials where lodging was significant.

**Idagold II (C32)** is another Coors feed barley release with seed to be handled by Western Seed. It has better test weight and lodging resistance than **Idagold**. It has yielded as well as **Idagold** when not unduly stressed.

**Valier** is a Montana release that has been tested for three years. It is weaker strawed and lower yielding than **Idagold** and most other Coors releases for feed.

### Malting

Increased malting capacity in Idaho Falls will eventually increase the competition for malting barley acreage in eastern Idaho. Malting variety performance is evaluated because of the interest of mallsters and brewers in our area and the potential for malting contracts. In fact, Busch Ag malting contracts are available in western Idaho for a limited number of acres.

**Galena** is a two-row malting barley from Adolph Coors. It typically yields slightly less than **Idagold** with earlier plantings but better than **Idagold** in later seedings. **Galena** is earlier and taller than **Idagold** and has higher test weight. **Galena** is to be replaced with **Moravian 37**.

**Moravian 37** has excellent yield potential, yielding comparable to **Idagold** over the last three years of testing. It is the highest yielding two row approved for malting that we have evaluated. **Moravian 37** is more productive than **Galena**. It will be contracted primarily in the Magic Valley but seed is available from Coors for non-contracted plantings. Coors may purchase non-contracted production if there are problems in other production areas, as there has been in previous years.

**Merit** is a Busch two row approved for malting. It yielded comparable to **Galena** but did not yield as well as **Moravian 37**. **Merit** is taller than most two rows.

Treasure Valley producers can now enjoy the high yields typical of six-row barley as well as the superior test weight and feed quality of a two-row. With the uncertainty of barley stripe rust, the more tolerant two rows offer an excellent alternative.

## 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:

Table 10. Spring 2-Row Barley Variety Performance in the Treasure Valley over several years or sites. 2002

| Variety                   | Yield | Test            | Height | Lodged |
|---------------------------|-------|-----------------|--------|--------|
|                           | bu/A  | Weight<br>lb/bu | in.    | %      |
| <i>2002 (2 sites)</i>     |       |                 |        |        |
| C46                       | 127   | 53.1            | 33     | 39     |
| C53                       | 118   | 51.5            | 34     | 30     |
| C57                       | 113   | 51.7            | 32     | 18     |
| Galena                    | 118   | 54.3            | 35     | 33     |
| H3860224                  | 81    | 53.4            | 42     | 56     |
| Idagold                   | 120   | 54.3            | 31     | 41     |
| Idagold II                | 116   | 53.5            | 32     | 9      |
| Moravian 37               | 118   | 53.9            | 33     | 43     |
| Valier                    | 85    | 54.7            | 40     | 70     |
| Average                   | 110   | 53.1            | 35     | 45     |
| LSD <sub>.10</sub>        | 26    | 2.8             | 2      | 26     |
| <i>2001-02 (5 sites)</i>  |       |                 |        |        |
| C46                       | 134   | 54.6            | 29     | 22     |
| C53                       | 132   | 53.1            | 30     | 14     |
| C57                       | 126   | 52.8            | 28     | 7      |
| Galena                    | 114   | 55.3            | 32     | 13     |
| H3860224                  | 105   | 54.8            | 35     | 25     |
| Idagold                   | 129   | 54.4            | 28     | 20     |
| Idagold II                | 115   | 54.1            | 29     | 4      |
| Moravian 37               | 125   | 56.0            | 31     | 18     |
| Valier                    | 109   | 55.5            | 36     | 40     |
| Average                   | 121   | 54.5            | 31     | 18     |
| LSD <sub>.10</sub>        | 16    | 1.4             | 3      | 15     |
| <i>1999-02 (11 sites)</i> |       |                 |        |        |
| Galena                    | 123   | 54.6            | 32     | 6      |
| Idagold                   | 134   | 53.6            | 29     | 9      |
| Idagold II                | 130   | 54.0            | 29     | 2      |
| Moravian 37               | 131   | 55.2            | 32     | 8      |
| Average                   | 129   | 54.3            | 30     | 6      |
| LSD <sub>.10</sub>        | 10    | 0.8             | 1      | 7      |

<sup>1</sup> Means must differ by more than the LSD to be statistically different.

OSU (<http://www.css.orst.edu/cereals>), USU (<http://wheat.usu.edu>), and UI (<http://www.uidaho.edu/aberdeen/cereals/>).

# Barley Prospects

## Malting Barley

Busch Ag Resources will return to the Treasure Valley and contract for a limited acreage of two-row **Harrington** malting barley during the 2003 season. They are offering \$6.50 a hundred weight if producers meet malting specs. Their two row specs include at least 75% plump kernels on a 6/64 x 3/4" screen and an upper protein limit of 13.5% on a dry matter basis (roughly 12% protein if moisture content is adjusted to 12%).

For irrigated barley the protein specs should not be an issue unless there are irrigation problems (too little during grain filling) or excessive nitrogen. Producers are encouraged to measure residual N and adjust their N fertilization practice accordingly.

Excessive nitrogen is problematic for several reasons beyond exceeding the protein spec. It can also promote excessive growth and lodging. With lodging all sorts of specs can be affected. Kernel brightness is reduced, mold and sprout increases. Lodging reduces kernel plumpness which in turn causes uneven germination in the malt house. The concern about lodging is why they recommend Cerone for those fields prone to lodge.

**Harrington** was evaluated in the Cooperative Extension nurseries from 1996-1998. It averaged 90% as high in yield as **Stephoe** (99 vs 109 bu/A).

**Harrington** test weight was 49.4 lb/bu and 2.2 lb/bu higher than **Stephoe**. **Harrington** averaged 35" in height (three inches shorter than **Stephoe**) and lodging averaged 51% vs 72% for **Stephoe**.

Skinned and broken kernels is another significant concern as they don't germinate uniformly. Slower cylinder speeds are generally required for threshing.

This is a positive development for Treasure Valley producers. Busch Ag contracted for a limited acreage in 1997. They were pleased with their western Idaho production and quality but transportation costs made the venture cost prohibitive. The local facilitating elevator is **Weiser Feed and Storage, Inc.** For contracting information, contact Luke McHenry or Kevin Jones at 208-414-1882.

## Ethanol/Fractionation

An ethanol production facility feasibility study was conducted by Payette County during the last two years. The original study included barley as one of the potential feed stocks along with wheat and corn.

More recently the **Idaho Barley Commission** helped support a feasibility study of a barley fractionation plant that ultimately identified Payette Co as one of the better locations. Barley fractionation involves separation of food grade fiber, starch and protein constituents from the barley kernel and marketing the residual as feed or ethanol feedstock. It likely would adjoin the ethanol facility.

Early reports were that the constituents marketed separately would bring considerably higher returns than if the barley were marketed as whole grain or ethanol alone. It is the sort of value added processing that is talked about frequently for improving financial returns to producers. The most recent plans for this facility include a fractionation facility for wheat as well. There is currently not a comparable facility in this country.

For barley fractionation, a waxy hull-less barley is being considered. While the yields from waxy hull-less barleys are traditionally lower than those we currently produce for feed or malting, with acceptable contract prices of malting barley or better they could still offer significantly higher returns than we have traditionally enjoyed for feed barley. Observational trials involving these barley genotypes are currently underway at the Parma Research and Extension Center with additional plantings in the works.

A group of local investors has organized as **Treasure Valley Renewable Resources, LLC** with John Hamilton as the Manager (208-452-7807). The group, using their own funds for matching, secured a USDA Rural Development Grant to complete the feasibility study, develop a business plan, complete preliminary engineering and environmental studies, and finish the permitting process. If successful, the first crop to be used in the facility would be the 2004 season.

## Mild Winter Effects

Higher than normal winter temperatures promoted better than normal growth of early and late fall planted wheat. The better than normal tillering (and potential seed bearing heads) is beneficial for those with marginal stands from early fall planting and particularly for that late planted wheat that is normally less tillered and less productive than earlier plantings. Earlier plant development will also promote higher yields if grain filling occurs earlier under cooler temperatures.

The increased growth is going to require more soil moisture than normal at this time of year. One concern with the more rapid than usual pace of plant development is that soil moisture could be seriously

depleted by the time irrigation water is available, and that moisture stress will limit production. A stress at jointing and afterwards can effectively reduce the number of florets that develop on the tiny head forming at the base of the plant. Also, more of the later tillers could abort without developing a seed head at all. Plant height is typically reduced with stress at this stage. Producers should monitor soil moisture and plant conditions and irrigate as needed if water is available.

There may be other ramifications of earlier development. The additional tillering also puts the plant at greater risk of lodging. Freeze injury from earlier heading is also more likely. The weeds have also gotten an earlier start.

Still, the early development is a position I would prefer to be in. It increases our potential for higher yields, barring unforeseen disasters, and could reduce the overall moisture requirements by eliminating a late irrigation. Here's hoping.

## Acknowledgement

The **Idaho Wheat Commission** has awarded a grant of \$3000 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://agweb.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](mailto: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](mailto:bradb@uidaho.edu).

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