

## 2006 SPRING WHEAT

**OVERVIEW:** Grain yield averages were **higher than a previous 3-yr average** by 25.7%, 26.8% and 28.3% for soft white, hard white and hard red spring wheat, respectively. **Average yield across** all 16 locations in 2006 was 54.7, 58.5 and 58.0 bu/ac for soft white, hard white and hard red spring market classes, respectively. Environmental extremes were manifested throughout the growing season that included: drought/heat stress from mid-April to mid-May, killing frost period in early May 2006, good precipitation and cool weather in late May and early June and capped off with some severe heat stress periods in both June and July. All of these factors created a real stop & go growth and development pattern for spring wheat during the growing season; however in general spring wheat performed better than expected. **Eighteen (18) spring wheat nurseries** were established and harvested in the 2006 Variety Testing Program trials; however, two (2) locations, (Dusty, WA and Fairfield, WA), are not listed in the 2006 data set since field variation (CV %) in these nurseries was outside the limits for providing accurate performance evaluations among the varieties or experimental lines entered. Included in the nurseries were **18 soft white spring, 12 hard white spring and 20 hard red spring** entries. Four (4) of the entries were soft white **spring clubs** and are listed in italics in the summary sheets. **Test weight** value across all locations for each market class was 58.8, 59.6 and 58.9 lb/bu for soft white, hard white and hard red spring wheat, respectively. Even though the overall averages were somewhat low, certain locations had excellent test weight quality that was probably reflective of late May precipitation and June rainfall patterns coupled with cool weather that was favorable to kernel development and fill. **Percent grain protein** had an average of 12.0%, 13.1% and 14.9% for soft white, hard white and hard red spring wheat, respectively. The relatively high soft white spring average grain protein percent average was probably elevated by the heat stress periods during kernel fill. **Stripe rust** (*Puccinia striiformis* f. sp. *tritici*) infections were slight at nearly all locations except WSU Spillman Agronomy Farm (Pullman, WA) where high levels of inoculum were prevalent from surrounding wheat research sites. Table XMC0632. provides **stripe rust ratings** at selected locations for the spring wheat varieties in the WSU Extension Cereal Variety Testing Program trials. This table was provided by Dr. X. Chen, Plant Pathologist, USDA/ARS, Pullman, WA that. Listed below are summary evaluations for spring wheat at each WSU Variety Testing Program location:

### ALMIRA SPRING WHEAT

1. 2006 Spring Wheat **yield data** from the WSU Variety Testing nursery at the Almira, WA location averaged 68.0, 70.0, and 70.4 bu/ac for soft white spring, hard white spring and hard red spring wheat, respectively. The 2006 spring wheat **average yields were higher** by 40.2%, 40.5% and 44.2% for soft white spring, hard white spring and hard red spring wheat, respectively, compared to the historical 3-year average. **Yield rankings** among varieties within market classes continued to track with 3-year historical yield rank trends. This substantial yield increase above historical yields is a function of above normal precipitation during end of May and first part of June that enhanced tiller production and development coupled with being planted on summer fallow ground. *NOTE: This nursery was located approximately 8 miles northwest of Wilbur, WA on Douglas Rd (D. McKay farm).*
2. **Test weight** average values across all three market classes had a range of 59.3 to 60.1 lbs/bu.
3. **Grain protein** values were low in the hard white and hard red market classes and are undoubtedly a function of higher than average yields. The fertility program for the hard nurseries was based on a historical average of around 40 bushels per acre. Hard white and hard red spring wheat nurseries were fertilized at a level of 3.2# nitrogen and 3.7# nitrogen per expected yield, respectively. With yields 40% higher than average at this location,

fertility adjusted to the increased yields would have resulted in substantially higher grain protein levels. Obviously, this made the biggest difference in the hard red spring wheat nursery.

#### **BICKLETON SPRING WHEAT**

1. 2006 Spring Wheat **yield data** from the WSU Variety Testing nursery at the Bickleton, WA location averaged 35.8, 38.0, and 43.6 bu/ac for soft white spring, hard white spring and hard red spring wheat, respectively. The 2006 spring wheat **average yields** exceeded the historical 3-yr average in all market classes by 34.5%, 27.9% and 43.8% in soft white, hard white and hard red spring, respectively. *NOTE: The Bickleton nursery was located about 5 miles east of Bickleton, WA near the Glade – Crider Rd intersection. (S. Matsen farm).*
2. This nursery was **direct seeded** on 3 May 2006 with a no-till (cross-slot openers) drill into winter wheat stubble with soil moisture at 2-inches below the soil surface. Throughout the growing season this was a nice, even stand. Excellent timing of late May/early June precipitation greatly enhanced the yield potentials at this location and contributed to above average spring wheat yields.
3. **Yield rankings** among varieties within market classes were very consistent with 3-yr and 5-yr historical yield rank patterns.
4. **Test weight** average values across all three market classes were slightly down for the soft and hard white nurseries and there was a considerable reduction in test weight for the majority of the hard red spring entries. Some of this reduction could be associated with higher fertility (nitrogen) levels on the hard red spring nursery that aided in attaining high protein levels but probably at the expense of test weight. High temperature stress during grain fill of the hard red spring nursery was the other contributing factor to low test weight values.
5. **Grain protein** values averaged 11.1%, 11.7% and 14.2% for the soft white, hard white and hard red spring market classes, respectively.

#### **CONNELL SPRING WHEAT**

1. 2006 Spring Wheat **yield data** from the WSU Variety Testing nursery at the Connell, WA location averaged 38.6, 36.3, and 35.7 bu/ac for soft white spring, hard white spring and hard red spring wheat, respectively. The 2006 spring wheat **average yields were higher** by 26.5%, 26.0% and 33.2% for soft white spring, hard white spring and hard red spring wheat, respectively, compared to the historical 3-year average. This yield increase above historical yields is a function of above normal precipitation during end of May and first part of June that enhanced tiller production and development. In addition, this nursery was planted (15 March 2005) on summer fallow.
2. In addition to above average yields, **test weight** values (average range across market classes was 58.3 lb/bu to 59.5 lb/bu) were moderate, probably influenced by late season high temperatures during grain fill.
3. **Grain protein** values were high and averaged 13.4%, 14.3% and 15.7% for soft white, hard white and hard red spring market classes, respectively. Some of the elevated protein values are undoubtedly related to dry conditions during grain fill coupled with fairly high residual fertility levels on this summer fallow ground. The fertility levels favored hard spring market classes.
4. In general, variety **yield rankings** followed 3-year yield rank trends.

### DAYTON SPRING WHEAT

1. 2006 Spring Wheat **yield data** from the WSU Variety Testing nursery at the Dayton, WA location averaged 62.7, 66.7, and 65.6 bu/ac for soft white spring, hard white spring and hard red spring wheat, respectively. The 2006 spring wheat **average yields were higher** by 7.3%, 4.7% and 7.3% for soft white spring, hard white spring and hard red spring wheat, respectively, compared to the historical 3-year average. This yield increase above historical yields is a function of above normal precipitation during end of May and first part of June that enhanced tiller production and development. This nursery was planted on 24 March 2006 on winter wheat stubble. *NOTE: This nursery was located approximately 8 miles SW of Dayton, WA on Payne Hollow/Hogeye Hollow Rd (J. Takemura farm).*
2. This nursery had a moderate infestation of **Cereal Leaf Beetle (CLB)** and an insecticide was used to control the infestation. The CLB infestation is not considered have caused any yield loss.
3. **Test weight** average values across all three market classes had a range of 58.4 to 59.0 lbs/bu. Both Fielder and Edwall soft white spring wheat varieties exhibited very low test weight values. This could have been a function of heat stress during kernel development that affected these older varieties more than others.
4. **Grain protein** values were fairly high across all market classes. Some of the elevated protein values in the soft white spring wheat are undoubtedly related to dry/heat stress conditions during grain fill. The soil fertility levels favored hard spring market classes
5. In general, variety **yield rankings** continue to closely followed 3-year yield rank trends.

### FARMINGTON SPRING WHEAT

1. 2006 Spring Wheat **yield data** from the WSU Variety Testing nursery at the Farmington, WA location averaged 81.9, 79.9, and 76.2 bu/ac for soft white spring, hard white spring and hard red spring wheat, respectively. The 2006 spring wheat **average yields were lower** by 10.8%, 10.8% and 15.1% for soft white, hard white and hard red spring market classes, respectively. *NOTE: This nursery was located, approximately 5 miles south of Farmington, WA on the Farmington/Garfield Rd (B. Nelson farm).*
2. The nursery was **seeded** on 1 May 2006 on re-crop ground following winter wheat. There was good soil moisture at seeding with the moisture level just one-inch below the soil surface. Germination and emergence was good and the stand was uniform.
3. **Stripe rust** was a factor in this nursery and generally caused yield and test weight reductions in very susceptible varieties. However; the severity of infections (infection type) was fairly low throughout the nurseries that resulted in not as great a yield impact than would have been expected. Some of this could have been a result of the hot temperatures that shut the rust down (and even the plants in some cases) and reduced the impact.
4. In contrast, **low test weight values** within each market class appear to be somewhat linked to the percentage of stripe rust evaluated on 11 July 2006. Most notable are Fielder and Edwall soft white spring wheat varieties that are extremely susceptible to stripe rust.
5. **Yield rankings** among varieties within market classes generally followed 3-year historical yield rank patterns. Good soil moisture at seeding coupled with late-May-early June precipitation with cool weather allowed the plants to withstand the majority of heat stress periods that occurred in late June and July 2006.
6. **Test weight** average values across all three market classes were fairly good this year and had an average of 59.7, 60.3 and 59.7 lbs/bu for soft white, hard white and hard red spring, respectively.
7. **Grain protein** values averaged 11.8%, 13.0% and 14.4% for the soft white, hard white and hard red spring market classes, respectively. Protein values for each market class appear to be following similar trends seen in nurseries at other locations where soft white values are

slightly elevated but hard white and hard red spring varieties/experimental lines are within acceptable minimum protein values, on average, for the market class.

#### **HORSE HEAVEN SPRING WHEAT**

1. 2006 Spring Wheat **yield data** from the WSU Variety Testing nursery at the Horse Heaven location averaged 39.7, 40.8, and 42.6 bu/ac for soft white spring, hard white spring and hard red spring wheat, respectively. The 2006 spring wheat **average yields were higher** by 24.4%, 31.6% and 32.7% for soft white spring, hard white spring and hard red spring wheat, respectively, compared to the historical 3-year average. This yield increase above historical yields is a function of above normal precipitation (one to two inches) during end of May and first part of June that enhanced tiller production and development. In addition, this nursery was planted on summer fallow. *NOTE: This nursery was located, approximately 15 miles southeast of Prosser, WA traveling on SR221 and Sellards Road in the Horse Heaven Hills region of Washington State (M.Schmitt farm).*
2. In contrast to above average yields, **test weight** values were fairly low, probably influenced by late season high temperatures during grain fill. Test weight averages for each nursery were also heavily influenced by stripe rust infestations that caused a significant yield and test weight reductions in susceptible varieties. Generally, the most stripe rust susceptible varieties had the lowest yield and test weight values.
3. **Stripe rust** infections appeared to occur late in the season (mid-late June 2006).
4. **Grain protein** values averaged 12.1%, 13.8% and 15.1% for soft white, hard white and hard red spring market classes, respectively. Some of the elevated protein values are undoubtedly related to dry conditions during grain fill and associated low test weight values.
5. In general, variety **Yield rankings** were similar to 3-year historical Yield rankings. The Horse Heaven area typically uses hard red spring wheat as a rotation crop in a 4-yr rotation with HRW and summer fallow to help manage weed problems such as Russian thistle. Stripe rust has become a significant problem in spring wheat as well as winter wheat in this region.

#### **LAMONT SPRING WHEAT**

1. 2006 Spring Wheat **yield data** from the WSU Variety Testing nursery at the Lamont, WA location averaged 69.6, 72.71, and 70.1 bu/ac for soft white spring, hard white spring and hard red spring wheat, respectively. The 2006 spring wheat **average yields were higher** by 37.8%, 44.8% and 43.1% for soft white, hard white and hard red spring market classes, respectively. *NOTE: This nursery was located, approximately 8 miles south of Lamont, WA adjacent SR 23 (G. White farm).*
2. The nursery was **seeded early** on 30 March 2006 on re-crop ground following spring wheat. There was good soil moisture at seeding with the moisture level just one-inch below the soil surface. Germination and emergence was good and the stand was uniform. It is worth noting that the nursery was seeded on the same site as the 2005 Variety Testing Program spring nursery. The site location was on a flat that had excellent moisture that made it nearly 'ideal' for an annual spring crop rotation. In addition, the nursery was fertilized with 65#N in addition to a soil test residual of 135#N in a 4-foot profile. This level of fertility provided for maximum attainment of both yield and grain protein goals. For comparisons, the Lamont winter wheat nursery that was located about 4-miles away and planted on summer fallow had an average yield of 116.2 bu/ac.
3. **Stripe rust** infections were present in this nursery; however, percent infection was low even in susceptible varieties and had minimal impact on yield/Test weight.
4. **Yield rankings** among varieties within market classes closely followed 3-year historical yield rank patterns.

5. **Test weight** average values across all three market classes were exceptional with an average of 61.1, 61.9 and 61.3 lbs/bu for soft white, hard white and hard red spring, respectively. A fairly early seeding coupled with the wet, cool conditions during grain development and fill at the end of May and into June appears to have dove-tailed ideally for test weight at this location in 2006.
6. **Grain protein** values averaged 13.0%, 14.1% and 15.8% for the soft white, hard white and hard red spring market classes, respectively. Protein values for each market class appeared to follow similar trends seen in nurseries at other locations where soft white values were slightly elevated but hard white and hard red spring entries were within acceptable minimum protein values, on average, for the market class. Higher than average nitrogen fertility levels are the probable reason for the elevated soft white spring wheat protein levels.

#### LIND SPRING WHEAT

1. 2006 Spring Wheat **yield data** from the WSU Variety Testing nursery at the Lind, WA location averaged 37.9, 38.8, and 35.8 bu/ac for soft white spring, hard white spring and hard red spring wheat, respectively. The 2006 spring wheat **average yields were higher** by 12.4%, 18.6% and 17.7% for soft white spring, hard white spring and hard red spring wheat, respectively, compared to the historical 3-year average. This yield increase above historical yields is a function of above normal precipitation during end of May and first part of June that enhanced tiller production and development. In addition, this nursery was planted fairly early (16 March 2005) on summer fallow. *NOTE: This nursery was planted on the WSU Dryland Research Station at Lind, WA.*
2. In addition to above average yields, **test weight** values (average range across market classes was 56.5 lb/bu to 62.7 lb/bu) were fairly high, probably influenced by late season high temperatures during grain fill.
3. **Grain protein** values were high and averaged 12.6%, 13.9% and 15.4% for soft white, hard white and hard red spring market classes, respectively. Some of the elevated protein values are undoubtedly related to dry conditions during grain fill coupled with fairly high residual fertility levels on this summer fallow ground. The soil fertility levels favored hard spring market classes. Under commercial production of soft white spring wheat it is not expected that fertility levels would have been as high.
4. In general, variety **yield rankings** closely followed 3-year yield rank trends.

#### MAYVIEW SPRING WHEAT

1. 2006 Spring Wheat **yield data** from the WSU Variety Testing nursery at the Mayview location averaged 39.2, 40.3, and 38.1 bu/ac for soft white spring, hard white spring and hard red spring wheat, respectively. The 2006 spring wheat **average yields** were about equal to the historical 3-yr average in the soft white market class but 5%-10% lower in the hard white and hard red spring market classes, respectively. *NOTE: The Mayview nursery was located in Garfield County approximately 25 miles northeast of Pomeroy, WA on the Tramway Rd. This nursery overlooks and is on what is called the 'breaks' of the Snake River, approximately 10 miles SE of Lower Granite Dam. The nursery is in a 16"-20" rainfall region. (Roger & Randy Koller farm).*
2. This nursery was **re-crop seeded** on 27 April 2006 into winter wheat stubble with soil moisture within an inch of the surface. Throughout the growing season this was a nice, even stand.
3. **Yield rankings** among varieties within market classes bounced around a little when comparing with 3-yr and 5-yr historical yield rank patterns. This is another one of the nurseries that performed near average even with the up-and-down weather patterns thrown at it during the growing season.



4. **Test weight** average values across all three market classes were slightly off this year and had a range of 58.3 to 58.9 lbs/bu. The dry/heat stress periods during grain fill undoubtedly resulted in lower test weights for many entries.
5. **Grain protein** values averaged 12.4%, 13.8% and 15.4% for the soft white, hard white and hard red spring market classes, respectively.

#### **MOSES LAKE SPRING WHEAT (irrigated)**

1. 2006 Spring Wheat **yield data** from the WSU Variety Testing nursery at the Moses Lake, WA location averaged 92.3, 74.5, and 72.4 bu/ac for soft white spring, hard white spring and hard red spring wheat, respectively. The 2006 spring wheat **average yields were slightly higher** by 13.6% and 2.5% for soft and hard white spring market classes, respectively, but 1.4% lower for the hard red spring market class. Also included adjacent to this nursery was an additional and separate hard red spring nursery that includes only HRS varieties adapted to irrigation (referred to as *irrigated only hard red spring*). Separate statistical analyses were used on each HRS nursery; however, yield comparisons among entries between the two nurseries should be a reliable indicator of performance differences. The nursery was seeded on 28 March 2006 following a previous crop of leeks and was irrigated with solid set irrigation. *This nursery was located in the vicinity of Block 89, 5 miles north of I-90 and about 2-miles east of Dodson Rd (J. LaFave farm).*
2. **Yield rankings** among varieties within market classes were fairly consistent with 3-year historical yield rank patterns; however, there was some bouncing around. The soft white spring wheat nursery had a relatively high CV% (16.0%) that probably accounts for a lot of the variation comparing varieties over years. Nick, soft white spring wheat, is an example of a variety that has one of the higher yield averages under irrigation but did not rank as high in the 2006 trials. The variation in this nursery is a combination of soil variability coupled with some intermittent irrigation problems (sprinkler heads blowing off, leaks, etc.). Hard white and hard red spring nurseries had yield rankings among entries that were comparable with 3-yr average yields.
3. **Stripe rust** was not an issue in this nursery in 2006.
4. **Test weight** average values across all three market classes had a range of 58.9 to 60.1 lbs/bu. The dry/heat stress periods during grain fill did not appear to have hurt test weight appreciably.
5. **Grain protein** values averaged 12.6%, 14.1% and 15.8% for the soft white, hard white and hard red spring market classes, respectively. Additional nitrogen was applied through the irrigation system to the hard white and hard red spring nurseries to match yield/protein goals for each market class.

#### **PULLMAN SPRING WHEAT**

1. 2006 Spring Wheat **yield data** from the WSU Variety Testing nursery at the Pullman location averaged 67.9, 74.5, and 72.4 bu/ac for soft white spring, hard white spring and hard red spring wheat, respectively. The 2006 spring wheat **average yields were slightly higher** by 1.6% and 1.6% for soft and hard white spring market classes, respectively, but 6.5% lower for the hard red spring market class. *NOTE: This nursery was located on WSU Spillman Agronomy Farm, Dept. of Crop and Soil Sciences, approximately 5 miles southwest of Pullman, WA on Johnson Rd (S. Kuehner, Manager).*
2. **Yield rankings** among varieties within market classes generally followed 3-year historical yield rank patterns.
3. **Stripe rust was severe** in susceptible varieties in this nursery and severity of infection levels contributed to substantially lower yields and test weight values. These nurseries were not treated with a fungicide. The soft white spring market class nursery exhibited some of the widest swings in stripe rust infection among entries. For example, Zak, Edwall and

Fielder each had over 90% levels of infection and they also were the lowest yielding varieties in the nursery with the lowest average test weight values. The hard white and hard red spring nurseries showed similar patterns with stripe rust susceptible varieties.

4. **Test weight** average values across all three market classes were slightly off this year and had a range of 57.5 to 58.5 lbs/bu. The dry/heat stress periods during grain fill undoubtedly resulted in lower test weights. Not all varieties/experimental lines experienced lower test weights; however, it was fairly easy to see the effect on stripe rust on susceptible varieties. For example Edwall, soft white spring wheat only had a 52.8 lb/bu test weight.
5. **Grain protein** values averaged 11.3%, 12.6% and 14.7% for the soft white, hard white and hard red spring market classes, respectively.

#### **REARDAN SPRING WHEAT**

1. 2006 Spring Wheat **yield data** from the WSU Variety Testing nursery at the Reardan, WA location averaged 69.6, 65.2, and 69.4 bu/ac for soft white spring, hard white spring and hard red spring wheat, respectively. The 2006 spring wheat **average yields were higher** by 24.7%, 12.0% and 14.3% for soft white, hard white and hard red spring market classes, respectively. *NOTE: This nursery was located, approximately 5 miles west of Reardan, WA on Janett Rd (H. Johnson farm).*
2. The nursery was **seeded** on 20 April 2006 on re-crop ground following a spring (2005) mustard crop. There was good soil moisture at seeding with the moisture level just one-inch below the soil surface. Germination and emergence was good and the stand was uniform.
3. **Stripe rust** (*Puccinia striiformis f. sp. tritici*) appeared in this nursery with low to moderate levels of infection based on a 29 June 2006 field evaluation. Highly susceptible soft white spring varieties such as Zak, Fielder and Edwall appeared to suffer the greatest yield and test weight reductions from the stripe rust infections.
4. **Yield rankings** among varieties within market classes followed 3-year historical yield rank patterns. Good soil moisture at seeding coupled with late-May-early June precipitation with cool weather appeared to be good for vegetative growth and development of the spring wheat plants reflected in above average yields for this location. It is interesting to note that Wakanz, Louise and Wawawai were some of the highest yielding varieties in the soft white spring nursery and are also some of the latest maturing varieties. This trend is not quite as evident in the hard white and hard red market class; however, it suggests that 'later' varieties were able to cope with the environmental stress cycles a little better during the 2006 growing season.
5. **Test weight** average values across all three market classes bounced around this year and had a range of 58.1 to 59.2 lbs/bu. As previously mentioned, stripe rust susceptible varieties tended generally had the lowest test weight values, particularly in the soft white and hard white market classes. Heat stress periods in June and July undoubtedly had a negative impact on Test weight at the Reardan location.
6. **Grain protein** values averaged 12.1%, 14.3% and 15.5% for the soft white, hard white and hard red spring market classes, respectively. Protein values for each market class appear to be following similar trends seen in nurseries at other locations where soft white values are slightly elevated but hard white and hard red spring entries are within acceptable protein values, on average, for the market class.

#### **RITZVILLE SPRING WHEAT**

1. 2006 Spring Wheat **yield data** from the WSU Variety Testing nursery at the Ritzville, WA location averaged 36.4, 37.8, and 38.0 bu/ac for soft white spring, hard white spring and hard red spring wheat, respectively. The 2006 spring wheat **average yields were higher** by 28.1%, 39.4% and 32.8% for soft white spring, hard white spring and hard red spring wheat, respectively, compared to the historical 3-year average. This substantial yield

increase above historical yields is a function of above normal precipitation during end of May and first part of June that enhanced tiller production. This nursery was seeded on 4 April 2006 with a No-till drill (cross-slot openers). *NOTE: This nursery was located approximately 8 miles northwest of Ritzville, WA on Dewald Rd (R. Jirava farm)*

2. **Yield rankings** that compared 2006 average yields with 3-yr average yields were very consistent for entries in all three market classes. In trying to separate out variety performance it appears that earlier maturing (heading date) varieties tended to have higher average yields. In part this could be explained by adaptation differences to the growing season weather cycles where 'earlier' varieties were better able to take advantage of later May and early June precipitation/cool weather patterns before the mid-June through July heat stress periods. Yield rankings among entries within market classes continued to track with 3-year historical yield rank trends.
3. **Stripe rust** was not a factor in this nursery.
4. It is pretty obvious the crop went through quite a bit of heat stress with **test weight** average values across all three market classes having a range of 57.1 to 57.6 lbs/bu.
5. **Grain protein** values were high for all market classes. However, this is undoubtedly partly related to low test weight averages.

#### **ST ANDREWS SPRING WHEAT**

1. 2006 Spring Wheat **yield data** from the WSU Variety Testing nursery at the St Andrews, WA location (Douglas County) averaged 19.4, 20.5, and 30.2 bu/ac for soft white spring, hard white spring and hard red spring wheat, respectively. The 2006 spring wheat **average yields were lower** by (19.2%), (15.0%) and higher by 7.1% for soft white, hard white and hard red spring market classes, respectively. *NOTE: This nursery was located, approximately 10 miles north of Coulee City, WA off SR #17 on Mold Rd (Dean & Bill McLean ranch).*
2. The nursery was **no-till seeded** on 4 May 2006 on re-crop ground following a spring (2005) wheat crop using a no-till drill with cross-slot openers. There was good soil moisture at seeding with the moisture level just one-inch below the soil surface. Germination and emergence was good and the stand was uniform.
3. **Yield rankings** among varieties within market classes were fairly consistent with 2-yr and 3-yr historical yield rank patterns. The coefficient of variation percentage (C.V. %) as an indicator of nursery variation was higher than preferred for the nurseries (prefer CV of 15% or lower); however, this is fairly typical of this location. Fairly shallow soils with a lot of environmental variation in this area of eastern Washington can contribute to wide swings in plant growth responses in a given year. Hard red spring wheat varieties had yields greater than the 3-yr average and are appearing better adapted to this location. Part of the explanation for this in 2006 appears to be related to maturity (heading date) where the highest yield HRS wheat varieties/lines had noticeably earlier heading dates. This may have allowed the HRS varieties to adapt better to the drought/heat stresses experienced throughout the growing season.
4. **Test weight** average values across all three market classes were low and had a range of 56.3 to 58.9 lbs/bu. Invariably, the heat stress periods in June and July undoubtedly had a negative impact on test weight at the St Andrews location. Some of the later maturing entries seemed more severely impacted in test weight as well as yield.
5. **Grain protein** values averaged 10.0%, 10.8% and 14.6% for the soft white, hard white and hard red spring market classes, respectively. Only the hard red spring nursery required increased nitrogen application at seeding (additional 23#N on top of a 66#N base level) determined by a spring soil test. The additional nitrogen on the HRS nursery was sufficient in all but one entry (Jerome) to attain a minimum 14% grain protein level for the HRS market class.



### **ST JOHN SPRING WHEAT**

1. 2006 Spring Wheat **yield data** from the WSU Variety Testing nursery at the St John, WA location averaged 72.4, 74.3, and 75.9 bu/ac for soft white spring, hard white spring and hard red spring wheat, respectively. The 2006 spring wheat **average yields were higher** by 15.1%, 13.9% and 16.5% for soft white, hard white and hard red spring market classes, respectively. *NOTE: This nursery was located, approximately 8 miles east of St John, WA on Ingram Rd (M. Mills's farm).*
2. The nursery was **seeded** on 26 April 2006 on re-crop ground following winter wheat. There was good soil moisture at seeding with the moisture level just one-inch below the soil surface. Germination and emergence was good and the stand was uniform.
3. Little to **no Stripe rust** appeared in this nursery.
4. **Yield rankings** among varieties within market classes generally followed 3-year historical yield rank patterns. Good soil moisture at seeding coupled with late-May-early June precipitation with cool weather was nearly ideal for plant and kernel development and allowed the plants to withstand the heat stress periods on late June and July 2006.
5. **Test weight** average values across all three market classes were good this year and had a range of 58.3 to 63.0 lbs/bu. Average test weight in all market classes was above 60 lbs/bu.
6. **Grain protein** values averaged 11.7%, 12.3% and 14.3% for the soft white, hard white and hard red spring market classes, respectively. Protein values for each market class appeared to follow similar trends seen in nurseries at other locations where soft white values were slightly elevated but hard white and hard red spring entries were within acceptable minimum protein values, on average, for the market class.

### **WALLA WALLA SPRING WHEAT**

1. 2006 Spring Wheat **yield data** from the WSU Variety Testing nursery at the Walla Walla location averaged 44.1, 71.9, and 65.5 bu/ac for soft white spring, hard white spring and hard red spring wheat, respectively. The 2006 spring wheat **average yields were higher** by 19.4% and 9.7% for hard white spring and hard red spring wheat, respectively, compared to the historical 3-year average. Soft white spring wheat average yields did not reach their expected yield potential in this nursery, partly due to germination and emergence that was reduced by fertilizer availability that was below the rooting zone at seeding. This nursery was planted on 28 March 2006 on winter wheat stubble with a no-till plot drill (cross-slot openers). An additional 45#N and 75#N was applied at seeding to the hard white and hard red spring nurseries based on soil test results to attain expected yield and protein for these market classes, respectively. The additional fertilizer appeared all season long to provide an early jump-start to the varieties in the hard nurseries compared to the soft white nursery. *NOTE: This nursery was located approximately 2 miles south of Prescott, WA on Hart Rd (A. Ford farm).*
2. This nursery had a low to moderate level infestation of **Cereal Leaf Beetle (CLB)**; however, the infestation did not warrant an insecticide application for control. The CLB infestation is not considered have caused any yield loss.
3. **Test weight** average values across all three market classes had a range of 56.9 to 62.4 lbs/bu. Generally Test weight values in all market classes for the higher yielding varieties were fairly high, especially in the hard white spring wheat varieties.
4. In general, variety **yield rankings** continue to closely follow historical 3-year yield rank trends.