

## RESULTS AND DISCUSSION

### PERFORMANCE OF WHEAT VARIETIES ACROSS SOUTH LOUISIANA:

#### South Region Means:

Performance of wheat varieties tested across south Louisiana in 2006 is shown in Table 1. Bold print in all tables indicates that the entry is a released variety and normal print indicates that the entry is a breeding line that is not commercially available. AGS 2000 (85.9 bu/acre) and Terral LA 482 (79.7 bu/acre) were the two highest-yielding released varieties as well as the highest yielding entries overall. AGS 2060 (79.6 bu/acre) and Terral LA841 (79.0 bu/acre) rounded out the top four for south Louisiana. The yield average for 50 entries was 57.3 bu/acre and the average test weight, 56.6 lbs./bu. Test weights ranged from 56.0 to 58.3. Drought conditions throughout the growing season resulted in low to moderate disease pressure and negligible septoria leaf and glume blotch. Leaf and stem rust occurred at moderate levels.

The average heading date was 81 (March 22). Only two of the 30 highest-yielding entries had a heading date later than the mean, whereas 19 of the 20 lowest-yielding entries had a heading date later than the mean. This is a reflection of the impact of spring drought on late-heading varieties and the presence of a number of late and non-adapted entries in the trial.

Across south Louisiana, two released varieties, Terral LA482 (82.3 bu/acre) and AGS 2000 (80.1 bu/acre) led in two year mean yields (Table 2). Terral LA841 ranked a close third with a grain yield of 80.0 bu/acre. The 27 entries tested for two years at three locations averaged a yield of 63.1 bu/acre and a test weight of 57.4 lbs/bu. Earlier-heading varieties generally had a higher yield than later-heading varieties.

Two Terral varieties, LA 482 (81.4 bu/acre) and LA 841 (80.6 bu/acre) topped the list of 14 entries tested across south Louisiana for three years (Table 3). Two other released varieties, AGS 2000 and Delta King GR9108 as well as one LA breeding line, LA95135D54-2-3-C also had yields at or above 76.0 bu/acre. The test weight averaged 57.3 lbs/bu. Low leaf rust and stripe rust ratings also contributed to the superior performance of these top five entries.

#### Baton Rouge:

The varieties AGS 2000 and Magnolia had the highest yields of 50 entries at Baton Rouge in 2006 (Table 4). Terral LA 482 and Fleming tied for third with a yield of 79.9 bu/acre. AGS 2060 and GA 96229-3A41 rounded out the top five with a yield 77.4 bu/acre. The average yield was 55.8 bu/acre and the average test weight was 57.3 lbs/bu. Dry conditions throughout the growing season resulted in excellent test weights and low disease pressure. Seven entries had test weights equal to or greater than 60.0 lbs/bu with Pioneer 26R87 and AGS 2060, and GA 9513953E25 topping the list. Average heading occurred at day 84. Leaf rust averaged 3% with a high of 33% and stripe rust was present at very low levels. As expected, disease ratings were low in early maturing entries and moderate in late maturing entries.

**Crowley:**

The Crowley test was led by AGS 2000 with a yield of 71.5 bu/acre (Table 5), followed by Pioneer 26R87 and AGS 2060. AgriPro Coker/Magnolia (68.3 bu/acre), and GA 951395-3A31 (66.8 bu/acre) round out the leading five entries at this location. The average yield was 53.7 bu/acre and the average test weight was 55.3 lbs/bu. Low disease pressure can be attributed to low rainfall throughout the spring. Stem rust ranged between 0 and 6 where a '9' indicates very severe disease. Leaf rust ranged from 0 to 38% with an average of 7%. The top eight yielding entries all had leaf rust and stem rust ratings of 0. Compared to the other two south Louisiana growing locations, significantly lower yields were seen at Crowley. The lower yields are attributable to post emergence rains which reduced stands in some plots.

**Jeanerette:**

AGS 2000 had the highest yield at Jeanerette (98.3 bu/acre). The other released varieties in the top five at this location, Terral LA841, AGS 2060, and Terral LA482 had yields of 93.2, 91.8, and 90.8 bu/acre respectively. One LA breeding line, LA95135D54-2-3-C (85.6 bu/acre) rounded out the group of entries with yields greater than 85 bu/acre. Despite an extremely dry March and April (0 rainfall), leaf rust pressure was heavy at this location. Leaf rust ratings averaged 15% and ranged from 0 to 65%. The five highest-yielding entries all had leaf rust ratings equal to or less than 3%. Yields were highly variable, ranging between 98.3 and 15.8 bu/acre. Extremely low yields were observed in very late entries not properly vernalized during a warm winter. Test weight data were not collected at this location.

**PERFORMANCE OF WHEAT VARIETIES ACROSS NORTH LOUISIANA:****North Region Means:**

Performance data of 27 varieties tested across north Louisiana for 2 years is shown in Table 7. Five commercially available varieties, Terral LA 841, Terral LA 482, Vigoro McIntosh, AgriPro Coker 9553, and Delta King GR9108 had the five highest yields, all greater than 90.0 bu/acre. These five varieties all had stripe rust ratings  $\leq 2\%$  and leaf rust ratings  $\leq 5\%$ . These data contain one location (Winnsboro) for 2006 and three locations (Alexandria, Bossier City and Winnsboro) for 2005. The Alexandria, Bossier City, and St. Joseph locations in 2006 were lost to Sencor damage, wild pigs, and RoundUp drift damage, respectively. There relationship between heading date and yield is not as strong in north Louisiana as in south Louisiana because north Louisiana has cooler winter with less dramatic temperature fluctuations.

Terral LA 841 (93.6 bu/acre), Terral LA 482 (90.6 bu/acre) and Vigoro McIntosh (90.3 bu/acre) retained their positions as top three yielding entries in performance data for three years in north Louisiana (Table 8). Delta King GR9108 (90.0 bu/acre) moved up one ranking to 4<sup>th</sup> with LA95135D54-2-3-C, a Louisiana experimental breeding line rounding out the top five with a yield of 87.1 bu/acre. Low levels of stripe rust ( $\leq 5\%$ ), leaf rust ( $\leq 4\%$ ), and septoria ( $\leq 2.2$  on 0-9 scale) were seen in these top five entries.

**Winnsboro:**

The test at Winnsboro produced very high yields. In 2006, four varieties, Terral LA 482 (106.6 bu/acre), AgriPro Coker, Magnolia Delta King GR9108 (102.7 bu/acre), and Croplan 8302 (101.2 bu/acre) yielded over 100 bu/acre (Table 9). Disease levels were low at this location with a stripe rust mean of 2% and leaf rust mean of 5% for 51 entries.

Sencor damage posed a problem at Winnsboro in 2006. Many entries had data from at least one rep discarded. The damage to USG 3209 was so severe, no yield data is reported for this entry.

**STATEWIDE PERFORMANCE OF WHEAT VARIETIES:**

The average performance of 48 wheat entries across four locations in 2006 is given in Table 10. Table 11 separates the yield data into locations and is ranked according to overall mean yield. In 2006, Terral LA482 ranked 1<sup>st</sup> statewide with a yield of 86.9 bu/acre followed by AgriPro Coker/ Magnolia with a 84.4 bu/acre yield. A second experimental line, Pioneer/26R87 rounded out the top five entries with a yield of 81.2 bu/acre.

Test weights averaged 56.1 lbs/bu with Pioneer/26R87 (60.0 lbs/bu) ranking 1<sup>st</sup>. Stripe and leaf rust levels were very low with means of 2 and 8% respectively. All but one of the top five yielding varieties had a stripe rust rating of 0%. The top five entries according to test weight were all below the leaf rust mean.

Twenty five entries were tested across Louisiana in 2005 and 2006 (Table 12). Data was obtained from four locations in 2006 and five locations in 2005. Two Terral varieties, LA482 (87.3 bu/acre) and LA841 (86.1 bu/acre) ranked 1<sup>st</sup> and 2<sup>nd</sup> with yields far above the test mean of 73.9 bu/acre (Table 12). Delta King GR9108 and AgriPro Coker 9553 had a mean yield above 80 bu/acre.

Twelve entries were tested across Louisiana in the 2004-2006 seasons. The number of locations supplying data varied from year to year. Three locations reported in 2004, five locations in 2005, and 4 locations in 2006. Over three years, Terral LA841 (87.1 bu/acre) and Terral LA482 (86.1 bu/acre) ranked first and second, again with yields far above the mean (73.9 bu/acre).

**OTHER WHEAT TRIALS:**

Forty five entries were tested in the 2006 USDA Uniform Southern Soft Red Winter Wheat Nursery at Baton Rouge and Winnsboro (Tables 13 and 14). At Baton Rouge, the leading entry had a yield of 83.7 bu/acre compared to a test mean yield of 57.8. At Winnsboro, the leading entry had a yield of 82.6 bu/acre compared to a test mean yield of 60.1 bu/acre.

Wheat Preliminary Yield Trial A (WPA), consisted of 36 entries (32 "LA" experimental lines and 4 checks) in 2006 and was planted at two locations, Baton Rouge and Winnsboro (Tables 15, 16 and 17). The yield mean for Baton Rouge was 66.6 bu/acre with a yield of 86.5 bu/acre by the leading entry. All checks had a yield below 74

bu/acre. The leading entry at Winnsboro had a yield of 90.5 bu/acre compared to a mean of 72.6 bu/acre. No check yielded higher than 76 bu/acre.

Wheat Preliminary Yield Trial B (WPB), consisted of 34 entries (Tables 18, 19, 20). Like WPA, this test was planted at Baton Rouge and Winnsboro. A LA breeding line, LA9901UC-2-2-C (68.9 bu/acre) outperformed a released variety, AGS 2000 and led the test at Baton Rouge. The average yield was 52.5 bu/acre. At Winnsboro, AGS 2060 (98.4 bu/acre) led in yield. The test mean yield here was 79.6 bu/acre.

Wheat Preliminary Yield Trial C (WPC), Baton Rouge and Winnsboro mean data are located in Table 21. In this trial, three checks, AGS 2000 (70.7 bu/acre), Pioneer 26R61 (68.0 bu/acre), and AGS 2060 (67.9 bu/acre) represent the top yielding entries. The mean yield of 41 entries was 55.3 bu/acre.

## **PERFORMANCE OF OAT VARIETIES**

### **PERFORMANCE OF OAT VARIETIES ACROSS LOUISIANA:**

In 2006, oat variety performance trials data was collected at Baton Rouge and Winnsboro (Table 22). Twenty nine entries, seven of them commercial varieties, were included in this trial. Bossier City yielded no data due to the destruction of the plots by feral pigs. The top yielding entries included four "LA" breeding lines, all with yields above 120 bu/acre and a Texas experimental line, TX02U7682 (137.8 bu/acre), which led the test. All five had excellent (0) crown rust ratings, and good (0.5-3.0) stem rust ratings. The test had an average yield of 105.5 bu/acre and an average test weight of 32.6 lbs/bu.

Dry weather throughout the growing season contributed to excellent test weights and low crown rust pressure. All entries except Brooks (5%) and Terral Secretariat LA495 (3%) had a crown rust rating of 0. In the case of stem rust, however, new race(s) appeared, taking out some previously resistant varieties. Stem rust ratings varied from 0.5 to 6 on a 0-9 scale with a test average of 2.5.

Oat variety trial two and three year mean data can be found in Table 23. LA96006BSB-270-S2-C had the highest two year mean yield (146.6 bu/acre), an above average test weight (34.6 lbs/bu), an excellent crown rust rating (0) and a below average stem rust rating (1.5). It has been approved for release as a variety. Four other LA breeding lines as well as one released variety (Terral Trophy) and one experimental Texas line (TX02U7605) had mean yields above 120 bu/acre. The two year means were 105.2 bu/acre for yield and 32.9 lbs/bu for test weight. Terral Trophy may have been one entry affected by the new stem rust race(s) with a rating of 5 which was far above the test mean of 2.5 and the three-year mean rating of 1.4.

LA96006BSB-270-S2-C also had the highest three year mean yield, 132.2 bu/acre. Terral Trophy had the highest 3 year mean yield of any released variety, 112.3 bu/acre. Both entries were completely resistant to crown rust.

**Baton Rouge:**

TX92U7682 had the highest grain yield (111.1 bu/acre) of 29 entries in the 2006 oat variety trial, 111.1 bu/acre (Table 24). Four LA breeding lines, all with yields above 90 bu/acre, round out the top five entries. Terral Trophy (81.9 bu/acre) was the highest yielding released variety. The mean yield was 77.2 bu/acre. Test weights, with a mean of 35.6 lbs/bu, were excellent. Crown rust pressure was low, with a rating mean slightly above 0. Stem rust pressure, due to the new race(s), was moderate, with a mean of 2.5.

**Bossier City:**

The Bossier City test was destroyed by feral pigs.

**Winnsboro:**

Two Texas lines, TX02U7682 (164.5 bu/acre) and TX02U7605 (154.4 bu/acre) led the Winnsboro test in yield (Table 25). Yield averaged 133.4 bu/acre at this location. Two LA breeding lines and one Florida line round out the top five entries, all with yields above 151 bu/acre. TX02U7605 also had an above average test weight of 30.7 lbs/bu. Horizon 321 was the highest yielding (144.8 bu/acre) commercial variety. As was the case with most of the other testing sites, dry weather resulted in low disease pressure in Winnsboro. There was some lodging, with a mean of 2.1 and a range of 1 - 6.5 at this location.

**Preliminary Oat Yield Trial 'A' and 'B':**

Data from Oat Prelim-A at Winnsboro is found in Table 26. The highest mean yield of the two locations was claimed by an experimental Florida line, FL99153FBS-45-1-B-S-B (120 bu/acre). The mean yield of the two locations was 102 bu/acre. Two LA breeding lines followed by two commercial lines, Horizon 321 and Terral Trophy, comprise the top five, all with yields above 111 bu/acre. All top five entries had excellent crown rust ratings of 0 and moderate stem rust ratings in the range of 2-3, near the mean of 2.4.

Yields were much higher in Winnsboro than Baton Rouge. Baton Rouge yields ranged between 84.6 and 71.9 bu/acre with a mean of 81.6 bu/acre. Winnsboro yields ranged between 155.5 and 88.1 bu/acre and averaged 122.3 bu/acre.

Oat Prelim-B precedes Prelim-A in variety development and is only grown at Baton Rouge (Table 27). For the 15 entries selected for harvest, the yield averaged 67.6 bu/acre and the test weight averaged 36.1 bu/acre. LA0001BSBS-5-S2-S-B-S2 had the highest yield (92.4 bu/acre) and tied with a Florida line for the highest test weight of 38.4 lbs/bu. Lodging was moderate to severe with a rating range between 2 and 7.5 and a mean of 4.7 on a 0-9 scale. Stem rust ratings ranged between 0 – 2 and averaged 1.2 on a 0-9 scale.

**Uniform Oat Nursery at Baton Rouge:**

The USDA regional Uniform winter Oat Yield Nursery was grown at Baton Rouge (and other locations across the southern US). TX02U7682 (108.2 bu/acre) had the highest yield of 29 entries. The yield mean was 71.1 bu/acre. The test weight mean was 34.3 lbs/bu with the high of 37.4 lbs/bu taken by LA99016SBSB-98-S. Crown rust ratings averaged 1 with a range of 0-25% and twenty four entries receiving a 0 rating.

Stem rust pressure was moderate with a mean of 2.5 and a range of 0.5-6.5.