

## 2004 Wheat Variety Trials Conducted in the Texas and New Mexico High Plains Brent Bean, Extension Agronomist - Texas Panhandle

### *2003-2004 Wheat Crop in Review*

Expectations for this year's wheat crop reached several highs and lows during the year ending in disappointment for many farmers. The year started off well, particularly for those who planted wheat early for grazing. Early September rains allowed early planted wheat to produce excellent fall forage for grazing. However, after the early rains most of the area received little to no precipitation until the first of March. Those who waited to plant until the first of October or later had a difficult time getting wheat established. In some fields wheat did not emerge until spring. Because of the dry fall and winter the wheat crop was in very poor shape until March when we then received excellent rainfall throughout much of the area. The prospects of a good wheat crop suddenly were much improved with high hopes for excellent yields. Unfortunately, a dry hot spell during flowering and early grain fill played a heavy toll on what looked like decent yield potential in April. In addition to the feast or famine rainfall conditions, other factors had their say in this year's crop. Greenbugs were a problem in some fields as well as Russian wheat aphids. Wheat streak mosaic virus was the worst it has been in several years. Another disease that we see periodically that was more prevalent in 2004 was the *high plain's virus*. This disease was first identified in 1993 and produces symptoms similar to that of wheat streak mosaic virus. Often wheat was found to be infected with both viruses. Both diseases are transmitted by the wheat curl mite whose main host plant is volunteer wheat. Because of the good moisture conditions present in early September, volunteer wheat could be found in abundance in or around many wheat fields last fall. This likely provided the source for the wheat streak mosaic and high plains disease viruses. If that wasn't enough, a late freeze in April also hurt wheat yields in some fields. Finally, late June rains made it impossible to harvest some fields when they were ready, resulting in significant shattering of some varieties.

### *Variety Trial Results and Recommendations*

This last year Texas A&M initiated a State wide uniform variety trial consisting of 35 varieties. These same varieties were planted in 16 locations throughout the State. A summary of locations in the Panhandle and South Plains are attached. Because of the presence of greenbugs in most of the trials, the greenbug tolerant varieties TAM 110, TAM 110 CL, AP 502 CL, and the experimental entry TX98V9628, tended to out yield many of the other varieties even though most trials were sprayed.

### **Irrigated Trials**

In the irrigated trials, TAM 111 was clearly the best variety for 2004 (Table 1). TAM 111 had the highest yield average across locations, while yielding in the top 20% in five of the six locations. TAM 111 is a new variety from Texas A&M and will be marketed by AgriPro that will be available for planting this fall. It is a relatively tall variety that should have

some tolerance to wheat streak mosaic virus and stripe rust. Other top yielding varieties were Cisco, TAM 110 CL and TAM 110, Stanton, Jagalene, Dumas, OK 101 and 102.

| <b>Variety Recommendations</b> |                           |                |
|--------------------------------|---------------------------|----------------|
| <b>Full Irrigation</b>         | <b>Limited Irrigation</b> | <b>Dryland</b> |
| Dumas                          | Dumas                     | Cutter         |
| TAM 111                        | TAM 111                   | TAM 111        |
| Jagalene                       | TAM 110                   | TAM 110        |
|                                | Jagalene                  | TAM 105        |

Shattering was a problem this year due to late June rains that delayed harvest and clearly reduced yield of some varieties. Varieties with a high percentage of grain loss due to shattering included Sturdy 2K, Overly, Venango, TAM 202, and Thunderbolt. Those varieties that yielded well in the irrigated trials also tended to have very little shattering. The exceptions were Dumas and Jagalene where significant shattering occurred, yet good yield levels were still achieved. The yield of these two varieties would have been exceptional if shattering had been eliminated. Cisco is a variety from Goertzen Seed Company of Colorado. This is the second year we have included Cisco in our trials. In 2003 yield was considered average, yet this year Cisco performed well in both irrigated and dryland trials. It is a soil-borne mosaic resistant variety making it a possible fit for the Dalhart area. Stanton is a Kansas variety released in 2000 that has TAM 107 in its pedigree. It is thought to have some Russian wheat tolerance which may explain its good performance in 2004.

Lodging was also a problem in 2004. Of the top irrigated varieties, Dumas, TAM 111, and OK 102 had the least amount of lodging.

### **Dryland Trials**

Top dryland varieties in 2004 were TAM 110, TAM 110 CL, AP 502 CL, Cutter, and Cisco (Table 2). TAM 110, TAM 110 CL, and AP 502 CL are all closely related and have greenbug tolerance. The CL stands for Clearfield wheat which means these varieties can be used with Beyond herbicide to control grass. Cutter is an AgriPro wheat that has consistently performed well throughout the Panhandle the last three years. Cutter has good height, with some tolerance to wheat streak mosaic virus and stripe rust. TAM 111 was a little disappointing in 2004 in the dryland trials. However, it has performed well in previous years and at other locations.

### **Other Comments**

Two white wheats tested were Trego and Intrada. Trego has consistently been one of the top yielding varieties over the last three years. Keep in mind that white wheat cannot be mixed with hard red winter wheat. Only consider planting a white wheat if you have a specific market in mind with a place to store the grain.

Three A&M varieties that are being considered for release were included in the trials. TX98V9828 is a greenbug tolerant variety with superior milling and baking qualities. The variety performed well in both dryland and irrigated trials. It is an early heading variety that should yield well in those years where we have a hot, dry May and June. Lodging was significant in the irrigated trials, so it may be best suited for dryland. TX98D1170 strength should be in its leaf and stripe rust resistance. It yielded in the top 20% in three of five irrigated locations. TX01M5009 is a beardless early maturing variety that is being looked at as a dual purpose wheat.

### **Acknowledgments**

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**Table 1. Irrigated Wheat Variety Trials Harvested in 2004 in the Texas and New Mexico High Plains**

Contributors: Brent Bean, Jackie Rudd, Gary Peterson, Jonny Simmons, Ravindra Devkota, Ed Hutcherson, Jake Robinson, Texas Cooperative Extension and Texas Agricultural Experiment Station, and Rex Kirksey, New Mexico State Agricultural Experiment Station

| Variety           | Yield, bu/Acre by Location |           |           |            |           |           |                  | Other Data               |                             |                           |                        |                        |
|-------------------|----------------------------|-----------|-----------|------------|-----------|-----------|------------------|--------------------------|-----------------------------|---------------------------|------------------------|------------------------|
|                   | Bushland                   | Etter     | Dalhart   | Nazareth   | Clovis    | Perryton  | Avg <sup>1</sup> | TW <sup>2</sup><br>lb/bu | Heading <sup>3</sup><br>doy | Height <sup>4</sup><br>cm | Lodg <sup>5</sup><br>% | Shat <sup>6</sup><br>% |
| 2137              | 92                         | 51        | 53        | <b>107</b> | 77        | 44        | 76.1             | 58.7                     | 127                         | 87.0                      | 28                     | 33                     |
| 2145              | 115                        | 33        | 52        | <b>115</b> | 79        | 49        | 78.7             | 58.6                     | 126                         | 79.8                      | 22                     | 32                     |
| 2174              | 101                        | 60        | 54        | <b>110</b> | 73        | <b>74</b> | 79.7             | 59.1                     | 128                         | 87.2                      | 16                     | 17                     |
| AP 502 CL         | 105                        | <b>80</b> | <b>63</b> | 82         | 74        | 65        | 80.7             | 57.6                     | 120                         | 84.0                      | 63                     | 3                      |
| Cisco             | <b>116</b>                 | <b>80</b> | <b>64</b> | 92         | <b>85</b> |           | <b>87.3</b>      | 60.0                     | 126                         | 88.7                      | 52                     | 3                      |
| Coronado          | 104                        | 66        | 59        | <b>107</b> | 78        | 73        | 82.8             | 59.3                     | 125                         | 81.1                      | 20                     | 8                      |
| Custer            | 108                        | 61        | 57        | <b>114</b> | 72        | 67        | 82.4             | 59.4                     | 123                         | 87.2                      | 20                     | 8                      |
| Cutter            | 103                        | 51        | 55        | 82         | 82        | 51        | 74.6             | 59.3                     | 125                         | 89.0                      | 67                     | 37                     |
| Dumas             | 98                         | 62        | <b>66</b> | <b>111</b> | 82        | 61        | <b>83.9</b>      | 60.9                     | 126                         | 85.4                      | 17                     | 27                     |
| Fannin            | 88                         | 29        | 51        | 75         | 79        |           | 64.4             | 59.7                     | 125                         | 85.8                      | 46                     | 28                     |
| Intrada (white)   | 100                        | 59        | 56        | 78         | 78        | 46        | 74.1             | 61.9                     | 126                         | 84.0                      | 63                     | 13                     |
| Jagalene          | 106                        | 61        | <b>63</b> | 98         | <b>88</b> | <b>76</b> | 83.0             | 60.7                     | 126                         | 86.0                      | 49                     | 30                     |
| Jagger            | 110                        | 54        | 54        | 81         | <b>86</b> | 45        | 77.0             | 58.7                     | 122                         | 84.2                      | 59                     | 22                     |
| Kalvesta          | 106                        | 53        | 58        | 82         | 77        |           | 75.2             | 60.3                     | 126                         | 81.5                      | 33                     | 9                      |
| Lockett           | 90                         | 67        | 48        | 61         | 72        | 53        | 67.7             | 57.4                     | 128                         | 88.7                      | 82                     | 3                      |
| Longhorn          | 92                         | 63        | 54        | 76         | 66        | 49        | 70.2             | 58.8                     | 128                         | 92.6                      | 16                     | 12                     |
| Ogallala          | 102                        | 52        | 57        | 96         | 81        | 63        | 77.3             | 60.6                     | 127                         | 77.9                      | 19                     | 33                     |
| OK 101            | <b>118</b>                 | 71        | 60        | 89         | 80        | 62        | <b>83.7</b>      | 59.8                     | 124                         | 85.8                      | 28                     | 17                     |
| OK 102            | <b>117</b>                 | <b>72</b> | 53        | 98         | 74        | 66        | 82.8             | 59.7                     | 128                         | 84.1                      | 18                     | 5                      |
| Overly            | 70                         | 27        | 56        | 68         | 76        | 31        | 59.4             | 59.9                     | 122                         | 88.3                      | 31                     | 60                     |
| Scout 66          | 87                         | 54        | 50        | 56         | 68        | 39        | 63.1             | 60.2                     | 129                         | 100.7                     | 89                     | 8                      |
| Stanton           | <b>127</b>                 | <b>72</b> | 56        | 95         | 72        | <b>78</b> | <b>84.6</b>      | 59.8                     | 126                         | 91.4                      | 32                     | 3                      |
| Sturdy 2K         | 43                         | 18        | 56        | 45         | 77        | 13        | 47.9             | 57.7                     | 128                         | 91.9                      | 22                     | 77                     |
| TAM 105           | 115                        | <b>94</b> | 49        | 89         | 72        | 71        | <b>83.9</b>      | 58.2                     | 125                         | 86.8                      | 51                     | 0                      |
| TAM 107           | 102                        | 70        | 52        | 94         | 72        |           | 78.0             | 58.7                     | 121                         | 81.2                      | 40                     | 3                      |
| TAM 110           | 107                        | <b>74</b> | 62        | 83         | <b>85</b> | 68        | 82.2             | 58.5                     | 120                         | 86.0                      | 46                     | 0                      |
| TAM 110 CL        | 106                        | 64        | <b>64</b> | <b>105</b> | <b>82</b> | <b>82</b> | <b>84.1</b>      | 58.7                     | 120                         | 84.9                      | 47                     | 0                      |
| TAM 111           | <b>126</b>                 | <b>72</b> | 56        | <b>118</b> | <b>84</b> | <b>81</b> | <b>91.2</b>      | 58.6                     | 126                         | 86.2                      | 25                     | 5                      |
| TAM 200           | 112                        | 70        | 48        | 93         | <b>83</b> |           | 81.2             | 60.0                     | 124                         | 83.8                      | 64                     | 12                     |
| TAM 202           | 77                         | 22        | <b>64</b> | 88         | 80        | 44        | 66.2             | 59.6                     | 122                         | 81.8                      | 21                     | 60                     |
| TAM W 101         | <b>115</b>                 | 71        | 53        | 79         | 72        | 66        | 78.0             | 59.5                     | 127                         | 80.6                      | 36                     | 8                      |
| Thunderbolt       | 85                         | 33        | 56        | 86         | 76        | 38        | 67.2             | 59.7                     | 127                         | 88.7                      | 34                     | 60                     |
| Trego             | <b>120</b>                 | 66        | <b>64</b> | 80         | 67        | <b>80</b> | 79.2             | 60.7                     | 127                         | 84.9                      | 58                     | 3                      |
| TX01M5009         | 84                         | 54        | 58        | 85         | 74        |           | 71.0             | 59.4                     | 125                         | 83.3                      | 18                     | 25                     |
| TX98D1170         | <b>122</b>                 | <b>75</b> | 57        | 78         | <b>85</b> |           | <b>83.3</b>      | 57.1                     | 124                         | 83.0                      | 37                     | 5                      |
| TX98V9628         | 99                         | 70        | <b>65</b> | 87         | 81        | 50        | 80.3             | 60.9                     | 120                         | 83.8                      | 69                     | 8                      |
| Venango           | 76                         | 39        | 55        | 98         | 76        |           | 68.8             | 59.6                     | 129                         | 84.2                      | 28                     | 57                     |
| <b>Statistics</b> |                            |           |           |            |           |           |                  |                          |                             |                           |                        |                        |
| n                 | 3                          | 3         | 3         | 3          | 3         |           | 5                | 3                        | 4                           | 4                         | 3                      | 2                      |
| Mean              | 101.3                      | 58.7      | 56.6      | 88.7       | 77.3      |           | 76.4             | 59.4                     | 125.1                       | 85.7                      | 39.6                   | 19.7                   |
| CV%               | 7.1                        | 8.0       | 10.3      | 18.5       | 7.7       |           |                  |                          |                             |                           |                        |                        |
| LSD(.05)          | 11.6                       | 7.4       | 9.5       | 26.6       | 9.7       |           |                  |                          |                             |                           |                        |                        |

<sup>1</sup> Average does not include Perryton location.<sup>2</sup> Test weight (TW) is an average of Bushland, Dalhart, and Clovis locations.<sup>3</sup> Heading (doy -day of year) is an average of Irrigated and dryland trials at Bushland and Clovis.<sup>4</sup> Height is an average of irrigated trials at Clovis, Bushland, Nazareth, and Dalhart.<sup>5</sup> Lodging scores are an average of irrigated trials at Nazareth, Etter, and Bushland.<sup>6</sup> Shattering scores are an average of irrigated trials at Etter and Bushland.

**Table 2. Dryland Wheat Variety Trials Harvested in 2004 in the Texas and New Mexico High Plains**

Contributors: Brent Bean, Jackie Rudd, Gary Peterson, Jonny Simmons, Ravindra Devkota, Ed Hutcherson, Jake Robinson, Texas Cooperative Extension and Texas Agricultural Experiment Station, and Rex Kirksey, New Mexico State Agricultural Experiment Station

| Variety           | Yield, bu/Acre by Location |           |           |           |           |                  | Other Data               |                             |                           |
|-------------------|----------------------------|-----------|-----------|-----------|-----------|------------------|--------------------------|-----------------------------|---------------------------|
|                   | Bushland                   | Claude    | Etter     | Clovis    | Perryton  | Avg <sup>1</sup> | TW <sup>2</sup><br>lb/bu | Heading <sup>3</sup><br>doy | Height <sup>4</sup><br>cm |
| 2137              | 35                         | 25        | 27        | 11        | 25        | 24.7             | 55.7                     | 127                         | 54.0                      |
| 2145              | 43                         | 26        | 37        | 7         | 13        | 28.2             | 56.8                     | 126                         | 52.3                      |
| 2174              | 33                         | <b>29</b> | 32        | 7         | 28        | 25.3             | 56.8                     | 128                         | 54.6                      |
| AP 502 CL         | <b>52</b>                  | 25        | 33        | <b>15</b> | 27        | <b>31.3</b>      | 56.4                     | 120                         | 61.3                      |
| Cisco             | <b>46</b>                  | 25        | <b>44</b> | 12        |           | <b>31.8</b>      | 56.5                     | 126                         | 59.1                      |
| Coronado          | 38                         | 25        | 37        | 14        | 27        | 28.3             | 55.7                     | 125                         | 50.7                      |
| Custer            | 42                         | 28        | 40        | 8         | 27        | 29.4             | 57.0                     | 123                         | 52.4                      |
| Cutter            | <b>45</b>                  | <b>30</b> | <b>42</b> | 11        | 25        | <b>32.0</b>      | 58.1                     | 125                         | 59.2                      |
| Dumas             | 41                         | <b>30</b> | 30        | 10        | <b>34</b> | 27.7             | 56.0                     | 126                         | 53.3                      |
| Fannin            | 37                         | 27        | 17        | 4         |           | 21.3             | 57.1                     | 125                         | 57.7                      |
| Intrada (white)   | 37                         | 27        | 33        | 9         | 27        | 26.5             | 58.7                     | 126                         | 51.4                      |
| Jagalene          | 41                         | <b>30</b> | 38        | 13        | <b>33</b> | 30.3             | 58.3                     | 126                         | 54.0                      |
| Jagger            | <b>45</b>                  | <b>30</b> | 36        | 11        | 26        | 30.5             | 56.2                     | 122                         | 58.7                      |
| Kalvesta          | 39                         | 24        | 34        | 10        |           | 26.6             | 57.8                     | 126                         | 53.2                      |
| Lockett           | 38                         | 22        | 34        | 9         | 21        | 25.7             | 55.3                     | 128                         | 53.7                      |
| Longhorn          | 29                         | 23        | 37        | 10        | 23        | 24.8             | 56.8                     | 128                         | 57.1                      |
| Ogallala          | 36                         | 28        | 37        | 7         | <b>32</b> | 27.2             | 56.6                     | 127                         | 49.7                      |
| OK 101            | 40                         | 26        | 37        | 11        | 27        | 28.6             | 56.4                     | 124                         | 59.4                      |
| OK 102            | 40                         | <b>29</b> | <b>41</b> | 8         | 24        | 29.5             | 57.8                     | 128                         | 53.1                      |
| Overly            | <b>45</b>                  | <b>30</b> | <b>44</b> | 11        | 24        | <b>32.5</b>      | 57.0                     | 122                         | 59.8                      |
| Scout 66          | 28                         | 20        | 31        | 11        | 24        | 22.3             | 57.9                     | 129                         | 66.4                      |
| Stanton           | 43                         | 27        | <b>39</b> | 11        | 27        | 29.9             | 57.9                     | 126                         | 57.0                      |
| Sturdy 2K         | 36                         | 25        | 28        | 8         | 16        | 24.3             | 55.5                     | 128                         | 56.4                      |
| TAM 105           | 36                         | 23        | 37        | <b>19</b> | 26        | 28.9             | 55.7                     | 125                         | 55.5                      |
| TAM 107           | 36                         | 23        | 37        | <b>17</b> |           | 28.2             | 55.7                     | 121                         | 54.8                      |
| TAM 110           | <b>56</b>                  | 27        | <b>40</b> | <b>20</b> | <b>32</b> | <b>35.7</b>      | 57.4                     | 120                         | 61.1                      |
| TAM 110 CL        | <b>59</b>                  | 25        | 32        | <b>15</b> | <b>35</b> | <b>32.7</b>      | 57.5                     | 120                         | 61.0                      |
| TAM 111           | 37                         | <b>29</b> | 38        | 14        | <b>30</b> | 29.4             | 57.6                     | 126                         | 58.0                      |
| TAM 200           | <b>47</b>                  | 26        | 38        | 14        |           | <b>31.2</b>      | 58.7                     | 124                         | 53.8                      |
| TAM 202           | 40                         | <b>29</b> | 33        | <b>15</b> | 26        | 29.3             | 56.8                     | 122                         | 56.4                      |
| TAM W 101         | 40                         | 25        | 35        | 7         | 28        | 26.5             | 57.2                     | 127                         | 51.3                      |
| Thunderbolt       | 34                         | 26        | 36        | 11        | 19        | 26.8             | 58.0                     | 127                         | 56.9                      |
| Trego (white)     | 38                         | 26        | <b>43</b> | 13        | 27        | 30.1             | 58.9                     | 127                         | 52.2                      |
| TX01M5009         | 39                         | <b>29</b> | 36        | 10        |           | 28.3             | 54.2                     | 125                         | 57.2                      |
| TX98D1170         | 44                         | 27        | <b>39</b> | 14        |           | 31.1             | 54.4                     | 124                         | 56.5                      |
| TX98V9628         | <b>51</b>                  | <b>29</b> | 37        | <b>22</b> | 28        | <b>34.9</b>      | 58.4                     | 120                         | 61.8                      |
| Venango           | 36                         | 26        | 27        | 6         |           | 23.7             | 55.5                     | 129                         | 52.8                      |
| <b>Statistics</b> |                            |           |           |           |           |                  |                          |                             |                           |
| n                 | 3                          | 3         | 3         | 3         | 3         | 4                | 3                        | 4                           | 2                         |
| Mean              | 40.5                       | 26.5      | 35.7      | 11.5      |           | 28.5             | 56.9                     | 125.1                       | 56.0                      |
| CV%               | 7.4                        | 4.3       | 17.4      | 34.5      |           |                  |                          |                             |                           |
| LSD(.05)          | 4.9                        | 1.9       | 10.0      | 6.3       |           |                  |                          |                             |                           |

<sup>1</sup>Average does not include Perryton location.

<sup>2</sup>Test weight (TW) is an average of dryland trials Bushland, Etter, and Clovis.

<sup>3</sup>Heading (doy -day of year) is an average of Irrigated and dryland trials at Bushland and Clovis.

<sup>4</sup>Height is an average of dryland trials at Bushland and Clovis.