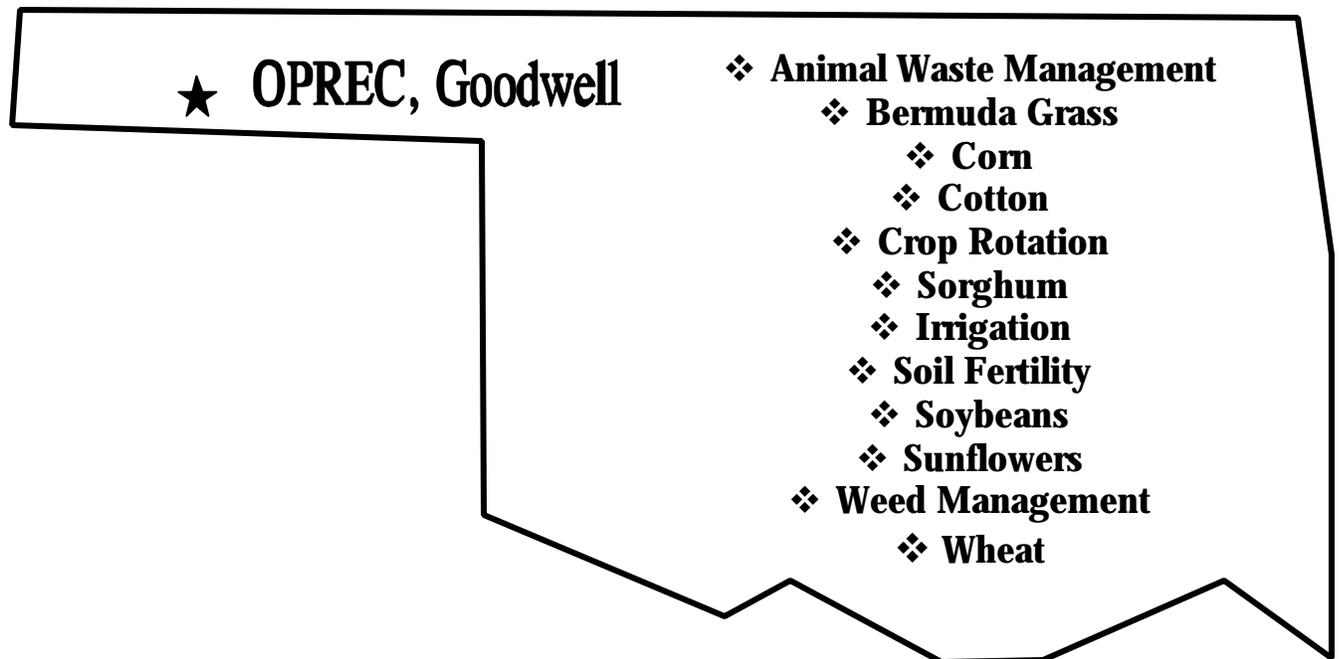


# Oklahoma Panhandle Research & Extension Center

Route 1, Box 86M Goodwell, Oklahoma 73939-9705 (580) 349-5440  
<http://oaes.pss.okstate.edu/goodwell>



## 2005 Research Highlights

Division of Agricultural Sciences and Natural Resources  
Oklahoma Panhandle Research and Extension Center  
Oklahoma State University  
Department of Animal Science  
Department of Entomology and Plant Pathology  
Department of Plant and Soil Sciences  
Department of Biosystems and Agricultural Engineering  
USDA – ARS

**With Greatest Respect  
for**

**Dr. Chuck Strasia**

...eyes open, mouth shut, back to the wall

## OKLAHOMA PANHANDLE RESEARCH AND EXTENSION CENTER

The Division of Agricultural Sciences and Natural Resources (DASNR), Oklahoma Agricultural Experiment Stations (OAES), and Oklahoma Cooperative Extension Service (OCES) at Oklahoma State University (OSU) have a long history of working cooperatively with Oklahoma Panhandle State University (OPSU). The initial Panhandle Research Experiment Station was established at Goodwell in 1923. A Memorandum of Agreement that outlined the major missions of each entity strengthened and enlarged this cooperative effort in July 1994, resulting in the formation of the Oklahoma Panhandle Research and Extension Center (OPREC). OPSU's primary role is teaching. OAES is the research arm of the DASNR and is responsible for the fundamental research. OCES transfers technology generated for the research programs to clientele. These entities constitute a true partnership in solving problems related to panhandle agriculture.

The Department of Plant and Soil Sciences with support from OAES and OCES has staffed the Oklahoma Panhandle Research and Extension Center (OPREC) with people who are making a difference in research, extension, and teaching in the panhandle area. Curtis Bensch as Director of OPREC, Rick Kochenower as Area Crop-Soil Research/Extension Specialist, Britt Hicks as Area Livestock Extension Specialist, and Lawrence Bohl as Senior Station Superintendent are addressing critical production issues that face Oklahoma producers. Other essential OPREC personnel include Donna George (Senior Administrative Assistant), Craig Chesnut (Field Foreman), Matt Lamar (Field Assistant/Equipment Operator), and several wage payroll and part-time OPSU student laborers. OSU faculty from Plant and Soil Sciences, Entomology and Plant Pathology, Horticulture, Biosystems and Agricultural Engineering, Agriculture Economics, Animal Science, and USDA/ARS use OPREC to conduct research and extension efforts in the panhandle area. In addition, commodity associations and agriculture industries also use OPREC facilities to hold meetings and other activities.

OPREC welcomed Dr. Britt Hicks in August 2005 as the new Area Livestock Specialist. Britt refills the position vacated in 2004 by Chuck Strasia when he retired. Britt has spent the last several years working in industry as an animal nutritionist before accepting the position at OPREC. He grew up at Hereford, TX and earned a B.S. degree in Animal Science at Texas A&M in 1980, and a M.S. and Ph.D. in Animal Science at OSU in 1985 and 1988, respectively. He is married (Mona) and has two children (Brad and Courtney). Britt hit the ground running and has already formed alliances with OSU and OPSU Animal Science faculty and with industry to begin beef cattle research trials here at Goodwell.

One additional administrative change this year was the realignment of OSU field research stations (including OPREC) and the creation of a new "Field and Research Services Unit" (FRSU). The FRSU was created to provide a central focus for station operation and management and will improve efficiency allowing all OAES faculty members to have access for research at outlying stations. The FRSU also provides a systematic means for budget management, facility upgrades, maintenance and repair of equipment, buildings, and other infrastructure needs. Dr. Brent Westerman accepted the position as director of the FRSU and is serving as "Coordinator of Research Operations".

On a sad note, Chuck Strasia passed away in October 2005. Chuck served as the Area Livestock Specialist for 24 years before retiring in 2004. Chuck is sorely missed and this Research Highlights is dedicated to the memory of our dear friend and colleague.

Progress made in development of research and education programs adapted to the panhandle area has been significant since establishment of OPREC in 1994. All involved recognize the importance of agriculture in the Oklahoma Panhandle and are dedicated to the continued success and development of OPREC. Your continued support of our research and extension programs will help us to better serve the clientele of the panhandle area.

Curtis Bensch,  
Director OPREC

The staff at OPREC, Department of Plant and Soil Sciences, and Department of Biosystems and Ag Engineering at Oklahoma State University would like to thank the companies and individuals listed below, for providing resources utilized in research projects. These contributions and support allow researchers to better utilize research dollars. This research is important for producers in the high plains region, not just the Oklahoma panhandle. We would ask that next time you see these individuals and companies that you say thank you with us.

Dupont (Jack Lyons and Robert Rupp)  
Pioneer Seed (Ramey seed)  
Golden Harvest (Bart Arbuthnot)  
Frontier Hybrids (Dan Ryan)  
Monsanto (Mike Marlow, Ben Mathews, T.K. Baker, Bob Klein)  
NC+ Hybrids (Ron Joiner)  
Orthman Manufacturing  
Hitch Farms  
Panhandle Implement (Jr. and Kevin Allard)  
Liquid Control Systems (Tim Nelson)  
Sorghum Partners  
Seed Resource (Chick Childress)  
OPSU  
Joe Webb  
JB and Jarrod Stewart  
Steve Franz  
Dow AgroSciences (Jodie Stockett)  
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## **2005 Oklahoma Panhandle Research and Extension Center**

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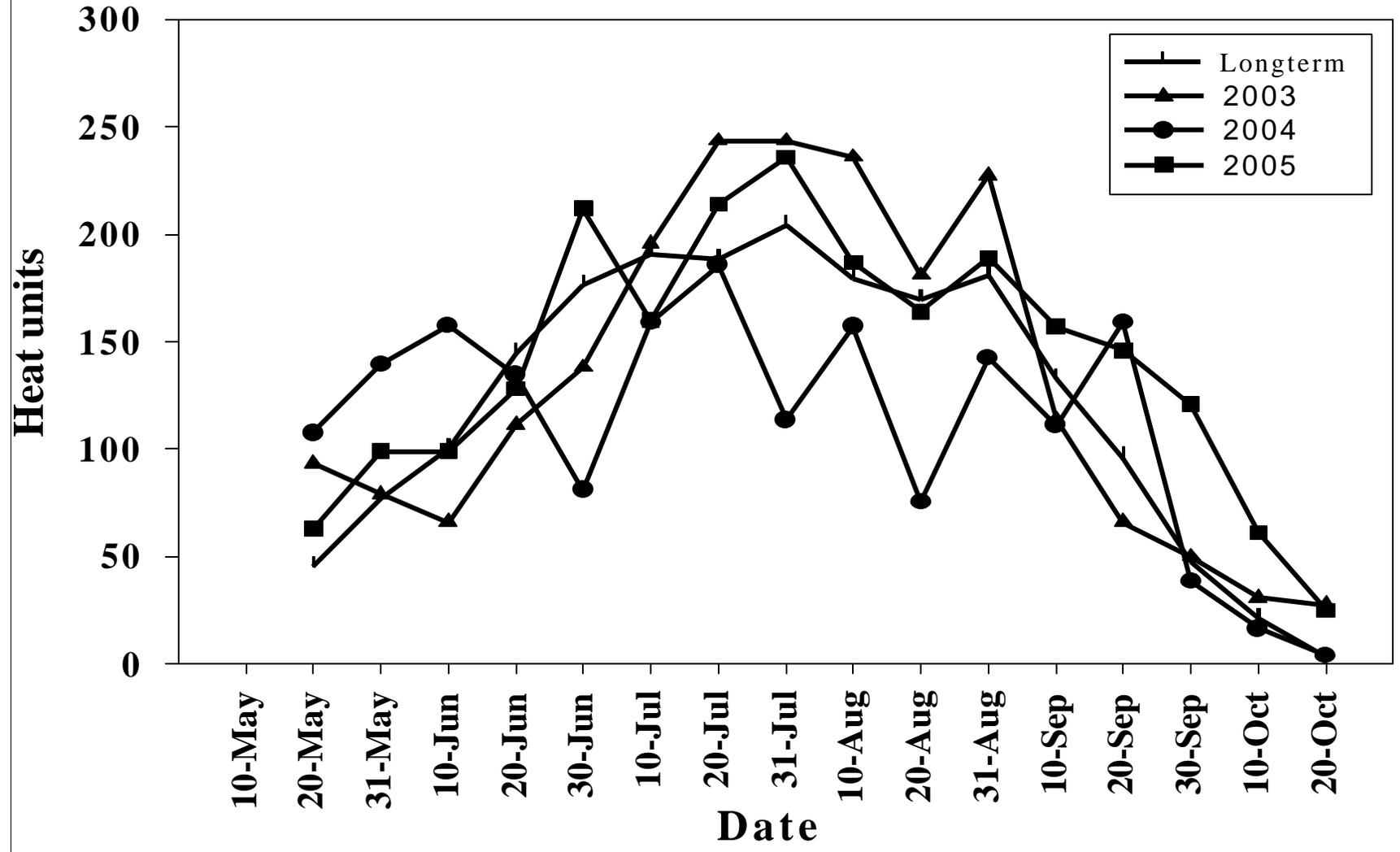
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**Climatological data for Oklahoma Panhandle Research and Extension Center, 2005.**

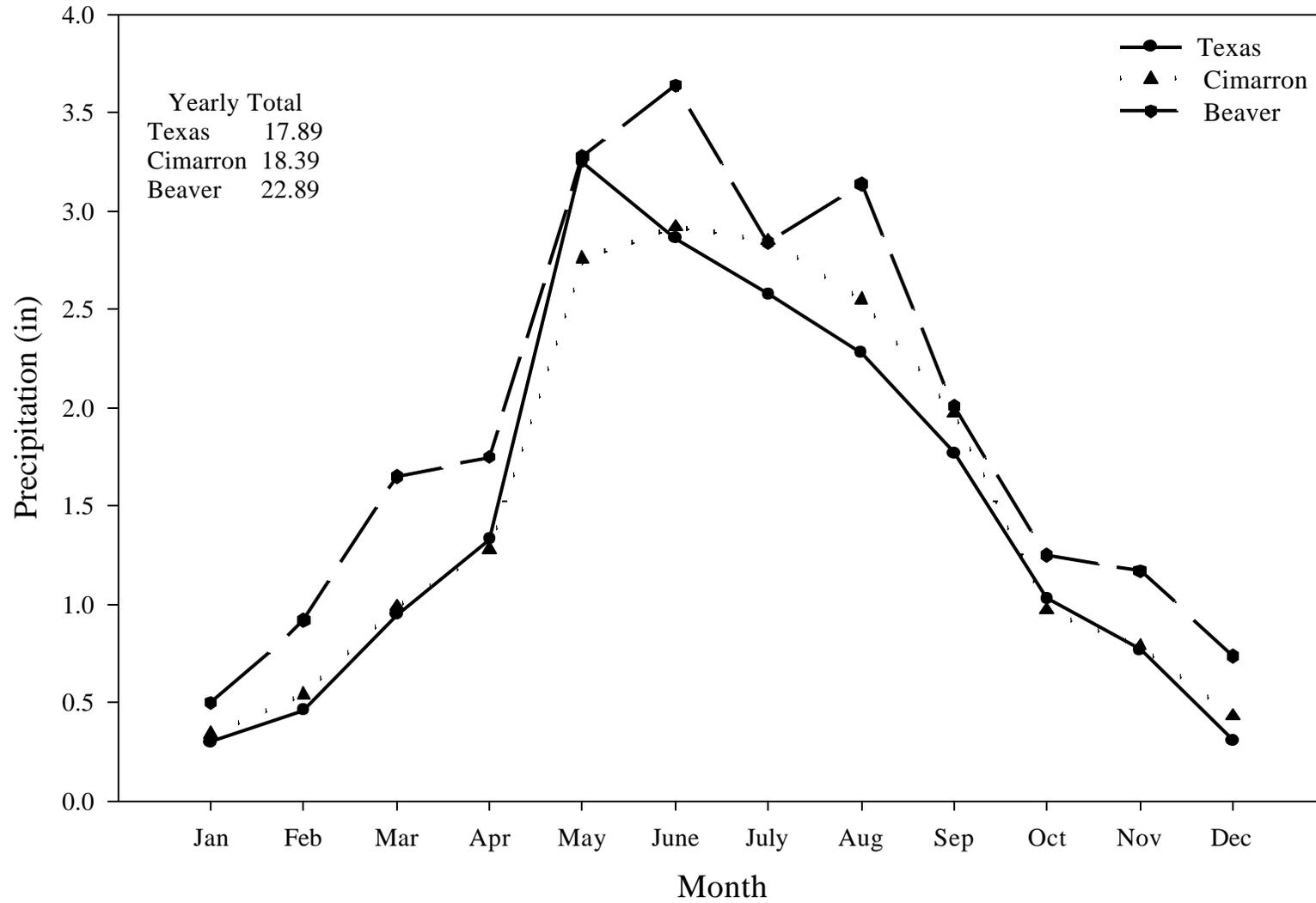
| Month        | Temperature |     |           |           | Precipitation |                |               | Wind    |         |
|--------------|-------------|-----|-----------|-----------|---------------|----------------|---------------|---------|---------|
|              | Max         | Min | Max. mean | Min. mean | Inches        | Long term mean | One day total | AVG mph | Max mph |
| Jan          | 75          | 3   | 47        | 24        | 0.73          | 0.30           | 0.21          | 10.3    | 45.0    |
| Feb          | 74          | 22  | 52        | 30        | 1.04          | 0.46           | 0.60          | 11.2    | 49.4    |
| March        | 82          | 20  | 58        | 30        | 1.14          | 0.95           | 0.26          | 12.8    | 52.3    |
| April        | 84          | 26  | 68        | 38        | 0.93          | 1.33           | 0.26          | 14.6    | 64.3    |
| May          | 99          | 34  | 76        | 50        | 2.85          | 3.25           | 0.78          | 11.5    | 44.5    |
| June         | 100         | 47  | 88        | 59        | 2.01          | 2.86           | 1.23          | 13.2    | 75.6    |
| July         | 102         | 50  | 94        | 63        | 1.46          | 2.58           | 0.79          | 12.4    | 50.9    |
| Aug          | 100         | 54  | 89        | 63        | 3.21          | 2.28           | 1.44          | 9.8     | 47.6    |
| Sept         | 98          | 45  | 87        | 59        | 0.35          | 1.77           | 0.22          | 13.4    | 41.9    |
| Oct          | 94          | 27  | 73        | 44        | 1.06          | 1.03           | 0.62          | 11.8    | 57.6    |
| Nov          | 85          | 13  | 65        | 32        | 0.12          | 0.77           | 0.12          | 13.1    | 55.9    |
| Dec          | 72          | -8  | 53        | 23        | 0.16          | 0.31           | 0.08          | 10.7    | 40.7    |
| Annual total |             |     | 70.8      | 42.9      | 15.06         | 17.9           | NA            | NA      | NA      |

Data from Mesonet Station at OPREC

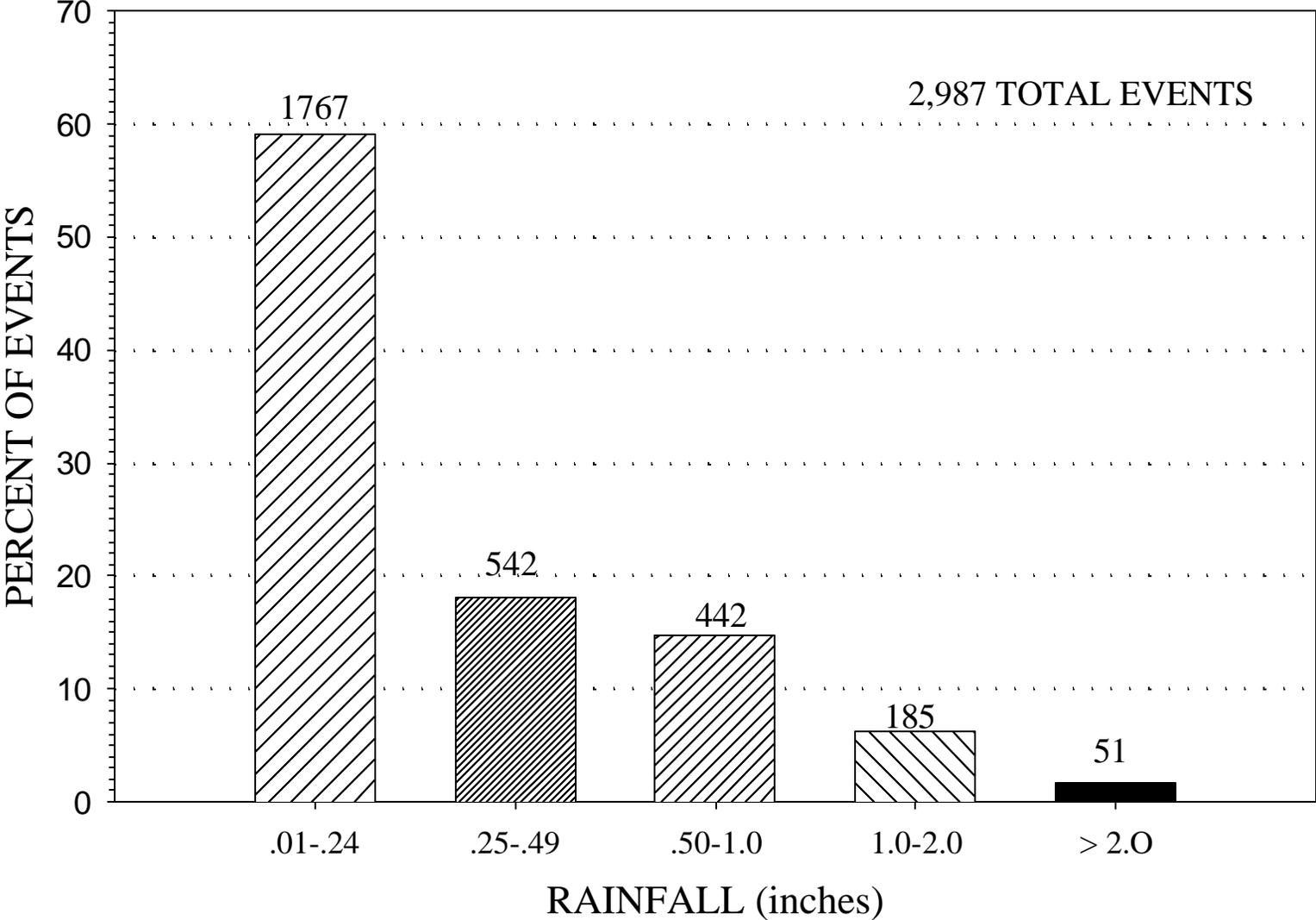
# 2003 - 2005 Cotton Heat Units



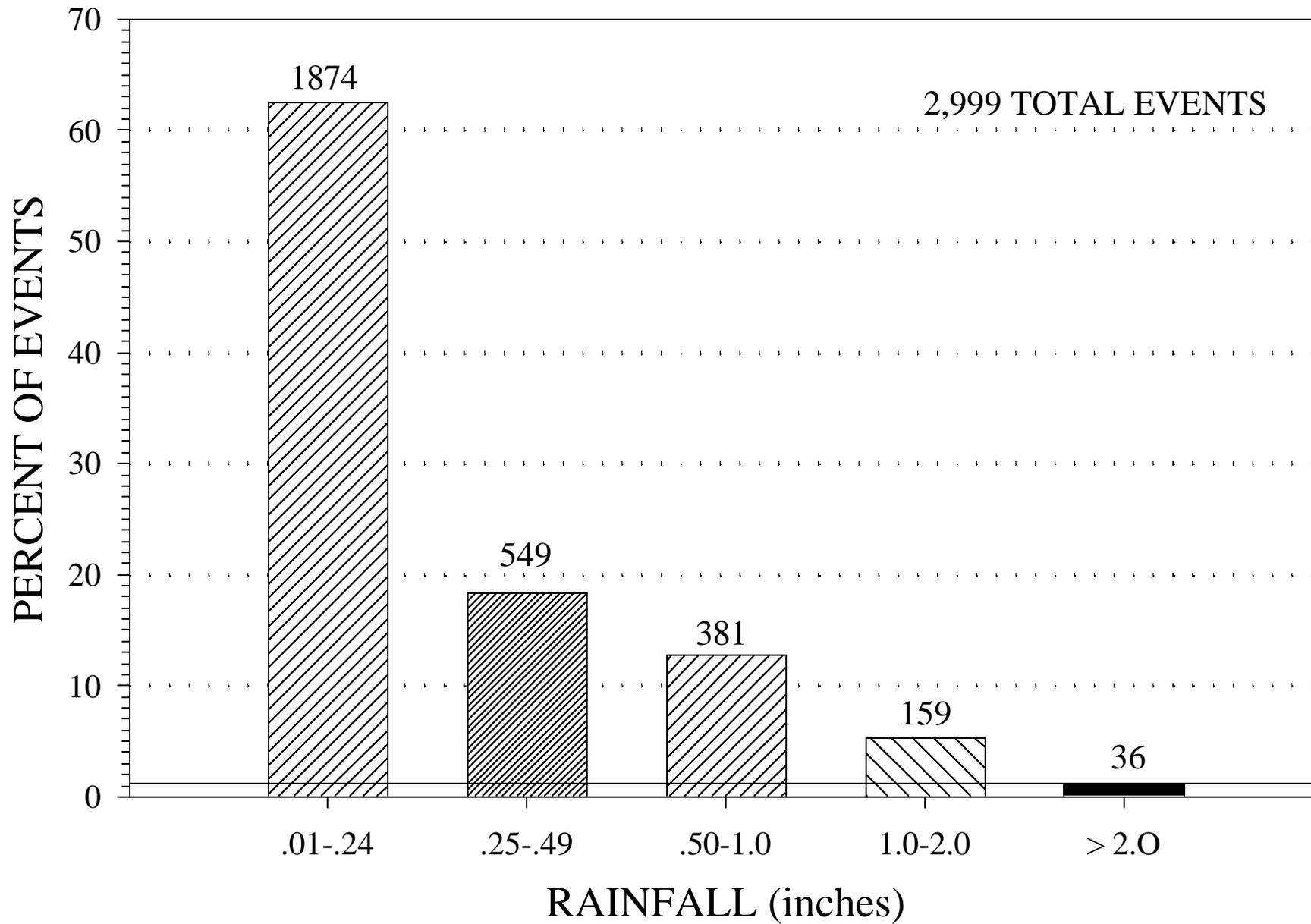
## Longterm Average Precipitation by county (1948-98)



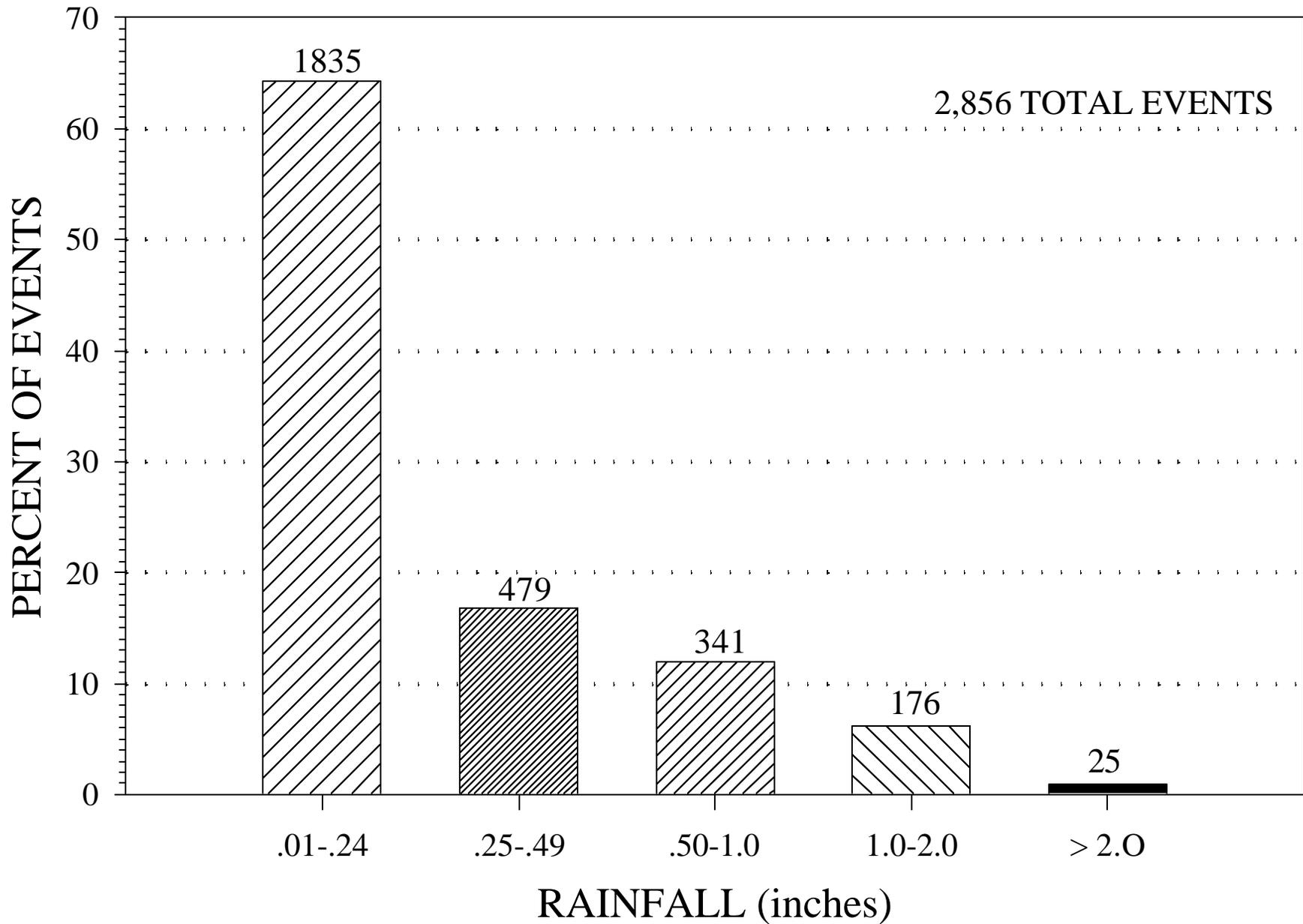
# BEAVER COUNTY 1948-99



# CIMARRON COUNTY 1948-99



# TEXAS COUNTY 1948-99



# Oklahoma Panhandle Research & Extension Center

## 2004 Research Highlights

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## GRAIN YIELDS FROM SWINE EFFLUENT APPLICATIONS

J. Clemn Turner, Jeff Hattey, and Josh Morris—Department of Plant and Soil Sciences

Oklahoma State University, Stillwater

Rick Kochenower—Oklahoma Panhandle Research and Extension Center, Goodwell

### OBJECTIVES

1. To evaluate the grain yields of continuous corn production under conventional tillage practices utilizing beef manure, swine effluent and anhydrous ammonia in the southern Great Plains region as part of an animal waste management system.
2. To evaluate the grain yields of a multi-year no-till corn–wheat–sunflower–fallow crop rotation production system in the southern Great Plains regions as part of a swine effluent management system.
3. Evaluate the effects of long-term land application of animal wastes on biological, chemical and physical properties of the soil.

### INTRODUCTION

Swine and cattle production are important components to agriculture production in the Oklahoma panhandle. Therefore an effort to evaluate integration of swine and cattle production systems through the use of swine effluent and beef manure applications to crop production systems is important. Current production practices will be evaluated, in addition to a crop production practice aimed at maximizing the utilization of available water resources in a no-till rotational cropping scheme.

### PROCEDURE

Research plots were established in 1995 for the continuously cropped, conventionally tilled corn (*Zea mays* L.) production system (E701) with soil samples collected prior to fertilizer applications and establishment. During the 2005 growing season N was applied at rates of 50, 150, and 450 lb. N ac<sup>-1</sup> as swine effluent (SE), beef manure (BM) or anhydrous ammonia (AA). In 1999 research plots were established to evaluate a no-till corn–wheat–sunflower–fallow crop rotation production system (E703) with soil samples collected prior to fertilizer applications and establishment. During the 2005 growing season N was applied at rates of 100, 200, and 400 lb. N ac<sup>-1</sup> as swine effluent (SE) or anhydrous ammonia (AA); a tillage control plot was also included. Plot establishment for research were 15x30 ft with borders separating the plots and replications to minimize effluent movement between the plots.

### RESULTS

Corn grain yields in 2005 for E701 demonstrated no significant differences for corn that has been continuously cropped, under conventional cultivation for ten years ( $TRT_{9,26,a=0.05}$ ;  $F = 0.59$ ;  $Pr = 0.7953$ ). Corn grain production for each treatment effect is listed in Table 1. While a response to N applications was not statistically computed, it is noted that swine effluent (SE) at the high N loading rate has increased yields above all other treatments; however, the yield is well below typical yields commonly recorded in this region. Wind effects, water limitations, insect damage, along with the worst recorded smut damage recorded since the inception of this experiment (E701) all contributed to the lower than expected yields.

Table 1 Corn grain yields in 2005 for E701 using applications of anhydrous ammonia (AA), beef manure (BM), and swine effluent (SE) at N loading rates of 0, 50, 150, and 450 lb N ac<sup>-1</sup>. Study is located at OPREC, Goodwell, OK.

| Year | N Source <sup>†</sup> | N Rate <sup>‡</sup><br>lb N ac <sup>-1</sup> | Yield<br>—Bu ac <sup>-1</sup> — | Std Err | DF | T Value | Pr >  t |
|------|-----------------------|--|---------------------------------|---------|----|---------|---------|
| 2005 | CONTROL               | 0  | 68.02                           | 11.37   | 26 | 5.981   | <.0001  |
|      |                       | 50   | 86.88                           | 19.69   | 26 | 4.410   | 0.0002  |
|      |                       | 150  | 90.83                           | 19.69   | 26 | 4.611   | <.0001  |
|      |                       | 450  | 67.00                           | 19.69   | 26 | 3.401   | 0.0022  |
|      | SE                    | 50   | 82.90                           | 19.69   | 26 | 4.209   | 0.0003  |
|      |                       | 150  | 73.49                           | 19.69   | 26 | 3.731   | 0.0009  |
|      |                       | 450  | 112.33                          | 19.69   | 26 | 5.702   | <.0001  |
|      | AA                    | 50   | 77.09                           | 19.69   | 26 | 3.914   | 0.0006  |
|      |                       | 150  | 93.63                           | 19.69   | 26 | 4.753   | <.0001  |
|      |                       | 450  | 78.98                           | 19.69   | 26 | 4.009   | 0.0005  |

<sup>†</sup> Nitrogen source (BM=beef manure, SE=swine effluent, AA=anhydrous ammonia).

<sup>‡</sup> Annual N additions using N source.

Corn grain harvested under no-till (E703) management practices yielded greater quantities than the conventionally tilled corn. Grain yields of a no-till corn-wheat-sunflower-fallow rotation study are included in Table 2 for corn, wheat, and sunflower. In the no-till rotation study, corn yields were significantly increased above the control with N additions (TRT<sub>12,28,a=0.05</sub>; F = 7.25; Pr < .0001; Table 2; Figure 2). The benefit of tillage was negligible Table 2 (TCHK). When SE was compared to anhydrous ammonia (AA) at similar N loading rates no significant differences were observed. Corn grain yields increased regardless of N source used (i.e. AA or SE).

Results of wheat (*Triticum aestivum* L.) grain (E703) yields also increased as N loading increased in this no-till study. However, a difference between wheat grain when compared to corn grain yields is that SE increased wheat grain yields greater than AA applied at the high N loading rates (Figure 1). Treatment effects were significant for wheat grain yields (TRT<sub>12,29,a=0.05</sub>; F = 6.47; Pr < .0001; Table 2; Figure 1). Surface applied SE had slightly higher wheat grain yields at each N loading rate when compared to sprinkler (SPR) applications (Table 2).

Sunflower (*Helianthus annuus*) yields (E703) had no significant treatment effects (TRT<sub>12,29,a=0.05</sub>; F = 0.62; Pr = 0.8066; Table 2; Figure 1). However, research conducted thus far indicates strongly that bird damage will consistently be problematic in this study; it being too close to bird aeries.

## FUTURE WORK

Grain yield evaluation will continue on a yearly basis. In addition, soil samples will be collected to measure soil properties, biological changes in soil environment due to additions of moisture, organic C, and readily available nutrients. Other soil properties of interest are inorganic N, phosphorus loading, soil organic C, micronutrients, and salt levels. Of particular importance in these soils will be movement of salts at various depths within the soil profile. With high rates of evapotranspiration in this semiarid environment there is a potential for increased levels of salt accumulation in the upper portion of the soil profile. Long term high rates of salt accumulation in the profile will limit agronomic production and be a major concern in this agroecosystem. Physical properties examined include bulk density, soil structure, and water infiltration.

Table 2 Grain yields in a No-Till Corn-Wheat-Sunflower-Fallow rotation evaluating surface and sprinkler applications of SE. Study is located at OPREC, Goodwell, OK.

| YEA<br>R | TRT <sup>§</sup> | N<br>App <sup>†</sup> | N<br>Rate <sup>‡</sup> | Corn                         |       |      | Wheat   |         | Sunflower                    |        |     |
|----------|------------------|-----------------------|------------------------|------------------------------|-------|------|---------|---------|------------------------------|--------|-----|
|          |                  |                       |                        | bu ac <sup>-1</sup> ±Std Err |       |      |         |         | lb ac <sup>-1</sup> ±Std Err |        |     |
| 2005     | 1                | SPR                   | 0.5                    | 152.8                        | ***   | 24.4 | 10.1    | *       | 1299.67                      | 617.98 | *   |
|          |                  |                       |                        | 0                            | 16.28 | 6    | 1       |         |                              |        |     |
|          | 2                |                       | 1                      | 186.0                        | ***   | 56.2 | 10.1    | ***     | 1775.69                      | 617.98 | **  |
|          |                  |                       |                        | 3                            | 16.28 | 8    | 1       |         |                              |        |     |
|          | 3                |                       | 2                      | 180.9                        | ***   | 83.4 | 10.1    | ***     | 2596.53                      | 617.98 | *** |
|          |                  |                       |                        | 0                            | 16.28 | 5    | 1       |         |                              |        |     |
|          | 4                | SUR                   | 0.5                    | 158.9                        | ***   | 30.2 | 10.1    | **      | 1409.62                      | 617.98 | *   |
|          |                  |                       |                        | 3                            | 16.28 | 2    | 1       |         |                              |        |     |
|          | 5                |                       | 1                      | 164.1                        | ***   | 58.7 | 10.1    | ***     | 1327.57                      | 617.98 | *   |
|          |                  |                       |                        | 0                            | 16.28 | 5    | 1       |         |                              |        |     |
|          | 6                |                       | 2                      | 184.7                        | ***   | 84.5 | 10.1    | ***     | 1621.33                      | 617.98 | *   |
|          |                  |                       |                        | 5                            | 16.28 | 5    | 1       |         |                              |        |     |
|          | 7                | INJ                   | 0.5                    | 115.9                        | ***   | 19.9 | 10.1    | NS      | 1004.97                      | 617.98 | NS  |
|          |                  |                       |                        | 6                            | 16.28 | 8    | 1       |         |                              |        |     |
| 8        |                  | 1                     | 80.27                  | ***                          | 15.4  | 10.1 | NS      | 1651.80 | 617.98                       | *      |     |
|          |                  |                       | 16.28                  | 3                            | 1     |      |         |         |                              |        |     |
| 9        |                  | 2                     | 97.42                  | ***                          | 25.7  | 10.1 | *       | 2686.34 | 617.98                       | ***    |     |
|          |                  |                       | 16.28                  | 8                            | 1     |      |         |         |                              |        |     |
| 12       | AA               | 1                     | 179.7                  | ***                          | 55.5  | 10.1 | ***     | 1651.29 | 617.98                       | *      |     |
|          |                  |                       | 2                      | 16.28                        | 8     | 1    |         |         |                              |        |     |
| 13       |                  | 2                     | 182.0                  | ***                          | 55.8  | 10.1 | ***     | 1760.41 | 617.98                       | **     |     |
|          |                  |                       | 1                      | 19.94                        | 5     | 1    |         |         |                              |        |     |
| 10       | CHK              | 0                     | 88.34                  | ***                          | 19.2  |      | *       | 1773.59 | 436.98                       | ***    |     |
|          |                  |                       | 11.51                  | 16.7                         | 10.1  | NS   |         |         |                              |        |     |
| 14       | TCHK             | 0                     | 93.60                  | ***                          | 2     | 1    | 1279.92 | 617.98  | *                            |        |     |

\*, \*\*, \*\*\* Significant at the 0.05, 0.01, and 0.001 probability levels, respectfully.

§ Treatment number.

† Method of N application (SPR= sprinkler; SUR=surface; INJ= injection; AA=anhydrous ammonia; CHK=check; TCHK=tillage check).

‡ Rate of N applied annually (0.5X, 1X, and 2X, where X=200 lb N ac<sup>-1</sup>).

Table 3 The Standard Error of Differences (SED) in a corn-wheat-sunflower-fallow study. Where the control has been subtracted from the mean of each treatment, then statistically computed to determine the effect of each treatment. Yields are ± the control

| TRT <sup>†</sup> | Corn                |    |     | Wheat |    |     | Sunflower           |     |    |
|------------------|---------------------|----|-----|-------|----|-----|---------------------|-----|----|
|                  | bu ac <sup>-1</sup> |    |     |       |    |     | lb ac <sup>-1</sup> |     |    |
| 1                | 64                  | 20 | *   | 5     | 12 | NS  | -474                | 757 | NS |
| 2                | 98                  | 20 | *** | 37    | 12 | NS  | 2                   | 757 | NS |
| 3                | 93                  | 20 | *** | 64    | 12 | *** | 823                 | 757 | NS |
| 4                | 71                  | 20 | *   | 11    | 12 | NS  | -364                | 757 | NS |
| 5                | 76                  | 20 | **  | 40    | 12 | *   | -446                | 757 | NS |
| 6                | 96                  | 20 | *** | 65    | 12 | *** | -152                | 757 | NS |
| 7                | 28                  | 20 | NS  | 1     | 12 | NS  | -769                | 757 | NS |
| 8                | -8                  | 20 | NS  | -4    | 12 | NS  | -122                | 757 | NS |
| 9                | 9                   | 20 | NS  | 7     | 12 | NS  | 913                 | 757 | NS |
| 12               | 91                  | 20 | *** | 36    | 12 | NS  | -122                | 757 | NS |
| 13               | 94                  | 23 | *** | 37    | 12 | NS  | -13                 | 757 | NS |
| 14               | 5                   | 20 | NS  | -2    | 12 | NS  | -494                | 757 | NS |

† Treatment number, refer to Table 2 for a more complete explanation.

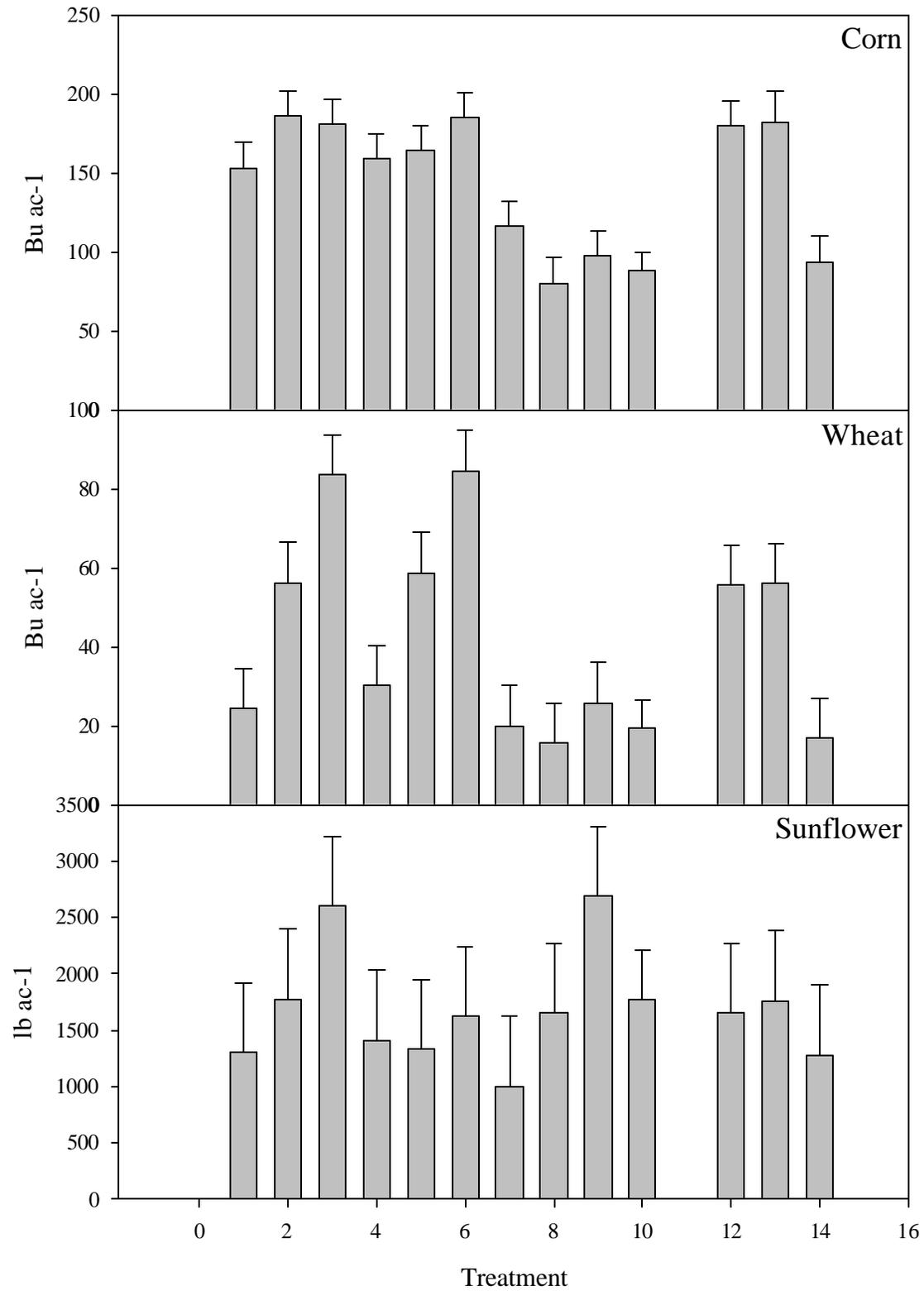


Figure 1 Grain yields in a no-till corn-wheat-sunflower-fallow rotation. Refer to Table 2 for complete information about treatment numbers relating to N application method and rates.

## **Yields of a forage production system in the Oklahoma Panhandle**

**Joshua Morris, Jeff A. Hattey, and J. Clemm Turner**

### **OBJECTIVES:**

1. To evaluate the effect of annual applications of animal manures on a forage production system.

### **INTRODUCTION:**

The Oklahoma panhandle is an important center for animal production in the US where large quantities of animal manure are generated on an annual basis. According to the 1992 Census of Agriculture the United States Department of Agriculture's National Agricultural Statistics Service (USDA-NASS) reports there were; 18,780 total swine (*Sus scrofa domesticus*) in Beaver, Cimarron, and Texas Counties, Panhandle region of Oklahoma. By 2004, the population had increased to 1,580,000 total swine, a 8400% increase. With this large increase of swine in the last twelve years an important question is: What to do with all of the fecal waste produced? Wastes generated from confined animal feeding operations (CAFO) are in the liquid form with current methods using irrigation systems to land apply them. These land applications could possibly take place on, but are not limited to, row crops, native range pastures, or introduced forage species. The applications are used to meet the nutrient requirements of the plant species the effluent is applied to. Use of land resources in this manner requires a better understand how these species respond to the applied swine effluent. With current mandates, producers concerned about land-use resources need alternative uses for swine-effluent (SE) utilization. One, such use is to land apply SE to high yielding forage production systems.

### **PROCEEDURE:**

Forage plots were arranged in a random split-plot design with four replications established in 1998, on a Richfield clay loam soil (fine mesic aridic Argiustolls) with 1.52m wide by 4.56m in length plots utilizing a center-pivot irrigation system. Four different forage species were included in this experiment: bermudagrass (*Cynodon dactylon* (L.) Pers), buffalograss (*Buchloe dactyloides* (Nutt.) Engelm.), orchardgrass (*Dactylis glomerata* L.), and tall wheatgrass (*Thinopyrum ponticum* (Podp.) Z.-W. Liut R.-C. Wang). Swine effluent (SE) and urea (U) were surface applied at N rates of 0, 56, 168, and 504 kg N ha<sup>-1</sup> respectively. The 56 and 168 kg N ha<sup>-1</sup> were applied prior to the first harvest period; while the 504 kg N ha<sup>-1</sup> rate was split applied in the month prior and post harvest of the first cutting. Initial soil samples were taken to determine the nutrient status of the soil before the plots were established. Harvesting occurred at approximately a 28-day cycle beginning in June and going to September. Monthly samples were used to estimate forage yield. The cool-season forage species; orchardgrass and tall wheatgrass, were harvested in May, June, and September. The warm-season forage species; bermudagrass and buffalograss, were harvested in June, July, August, and September. The harvester had a 1m cutting width and had an adjustable cutting height. Cool-season forages were cut to an average height of 10.16cm, while warm-season forages were harvested at an average height of 5.08cm

## RESULTS:

Figures 1 and 2 show the yield of the different forage species. The warm-season forages; bermudagrass and buffalograss, the 2005 harvest season is included. The cool-season forages; orchardgrass and tall wheatgrass, do not include the 2005 harvest season. In figures 1 and 2 it can be seen that there is linear increase with increasing amounts of nitrogen. It was found that there was a significant three way interaction between forage\*year\*treatment, ( $\alpha=0.05$  and  $p=0.0001$ ). During the 2000 harvest season data was the lowest for all forages because of irrigation well failure mid growing season.

Among the bermudagrass and buffalograss forages it was found comparing the 0 N rates to the higher nitrogen rates, 168 and 504, the higher N rates had a significant impact on yields. For bermudagrass only two years, 2001 and 2004, was there a significant difference among the 56 SE and U treatments, 4.6 and 5.2 Mg ha<sup>-1</sup> respectively, more for the SE treatments. Only in 2001 was there a significant difference between the 168 SE and U treatments, 168 SE had 2.4 Mg ha<sup>-1</sup> more than the 168 U. No significant difference was found between the 504 SE and U treatments. Buffalograss no significant difference was found between the 56 and 168 SE and U treatments. There was a significant difference found among the 504 SE and U treatments. In 2002, 2003, and 2004 the 504 SE had 11.7, 5.2, and 5.8 Mg ha<sup>-1</sup> respectively more than the 504 U.

For both bermudagrass and buffalograss forages, dry matter production was similar for all years. In years 1999-2005 the buffalograss had higher yields three out of the seven years; 1999, 2000, and 2003. Bermudagrass had higher yields four out of seven years; 2001, 2002, 2004, and 2005, as seen in figure 1.

In figure 2 it can be seen that the 1999 season was among the highest yields of all other years, especially in the tall wheatgrass. This was a result of no prior forage harvest during the year of establishment. For orchardgrass it was observed in 2001 there was no significant difference among treatments. Comparing all other treatments to the 0 N rate there was only a significant difference among the 168 and 504 N rates for both sources. It was found that in 2001 and 2002 among the tall wheatgrass, there was no significant difference in treatments. Comparing all other treatments to the 0 N rate only the 504 SE and U were the most significant. For both cool-season forages there was no significant difference between the SE and U treatments at the same N levels of 56, 168, and 504.

## CONCLUSIONS:

All forages had a greater response to the higher nitrogen rates in terms of dry matter production. The use of SE as fertilizer source was beneficial in helping to increase dry matter production for all forages. The use of buffalograss as a receiver of SE additions could possibly be beneficial to the Oklahoma Panhandle, since buffalograss is native to this area. The buffalograss responded to SE additions similarly to that of bermudagrass in this intensively managed system. The dry matter yield of the bermudagrass and buffalograss closely followed each other.

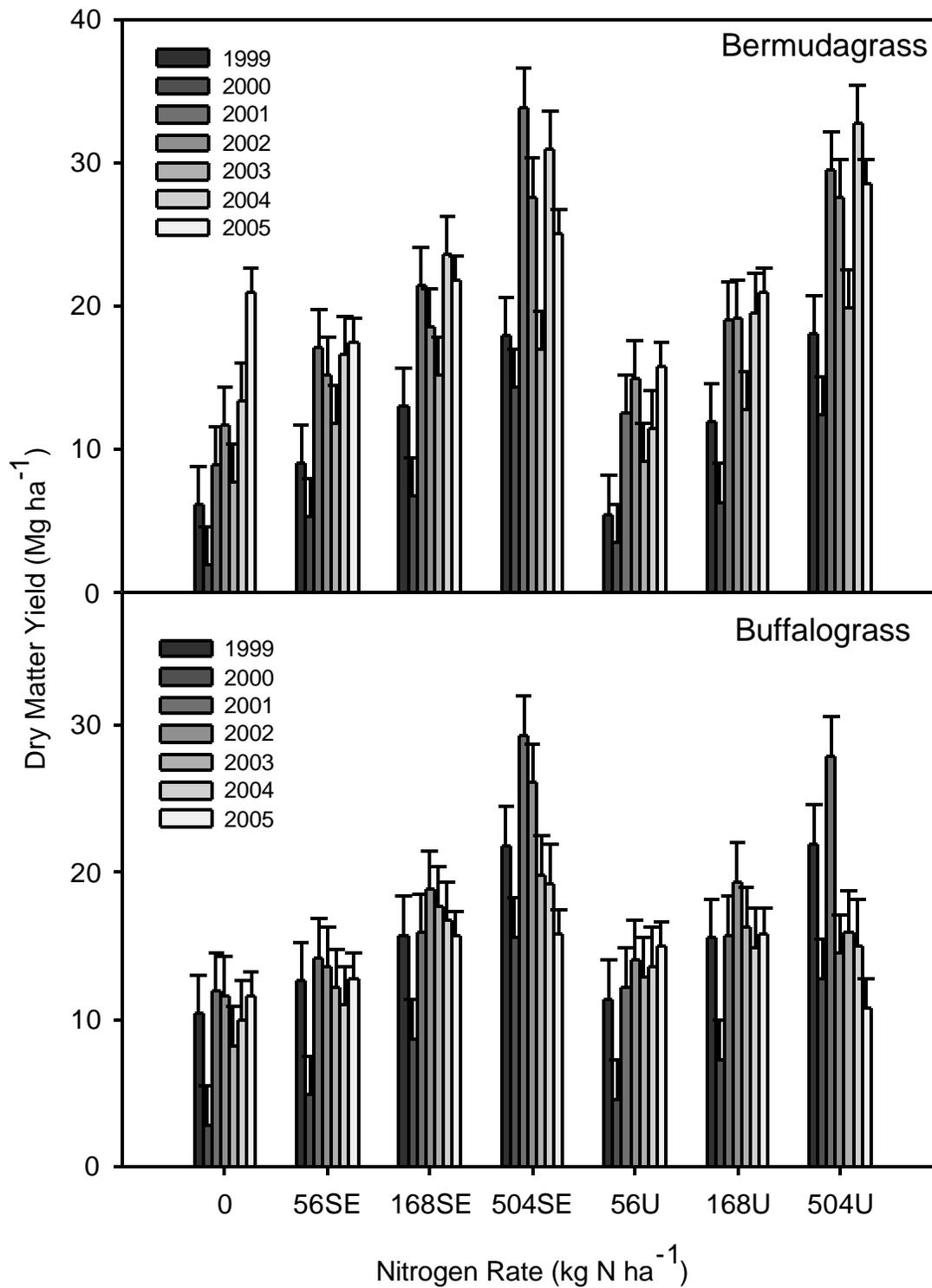
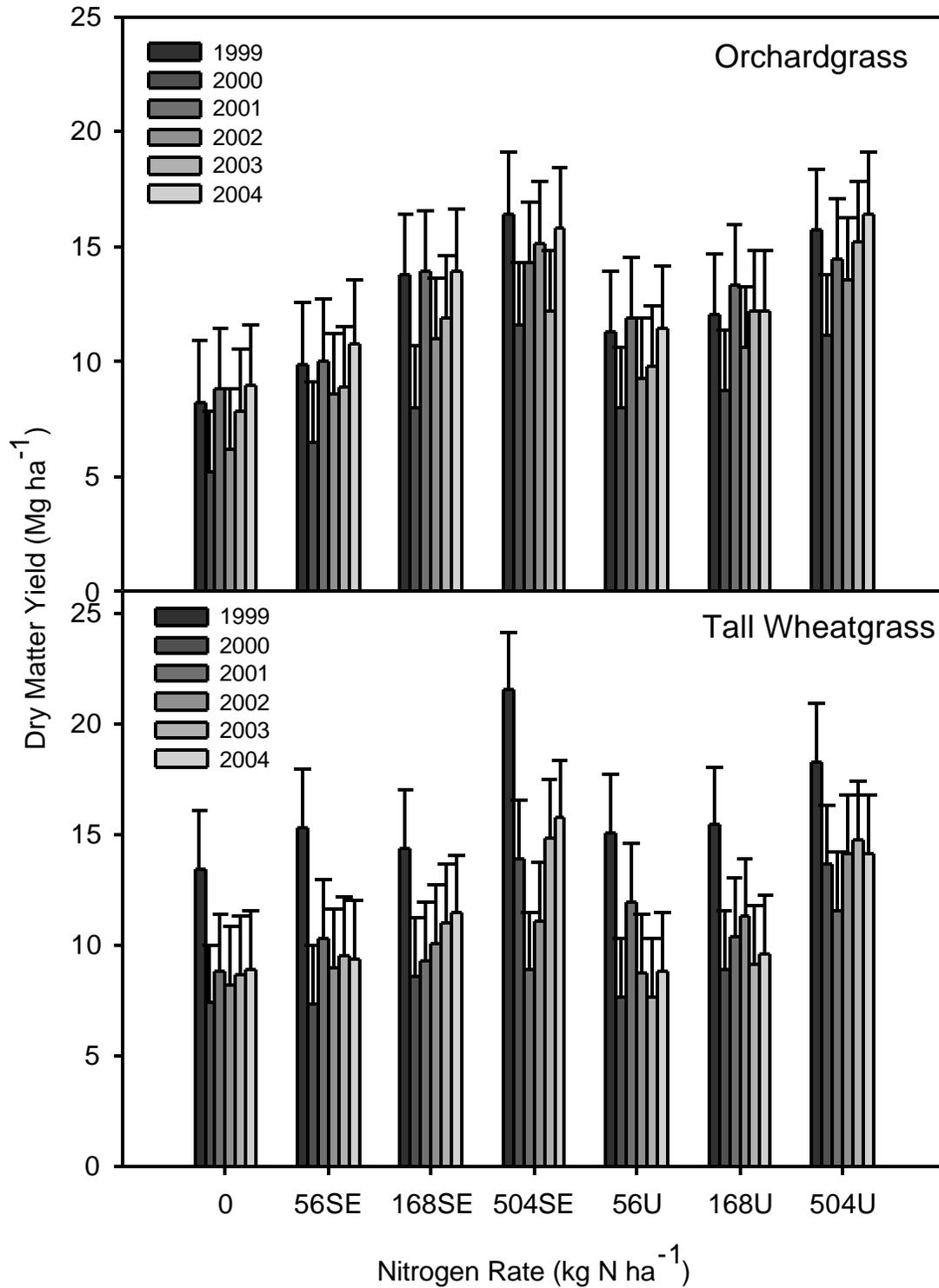


Figure 1: The effects of swine effluent (SE) and urea (U) applied at 0, 56, 168, and 504 kg N ha<sup>-1</sup> to bermudagrass and buffalograss yields (dry matter basis).



**Figure 2: The effects of swine effluent (SE) and urea (U) applied at 0, 56, 168, and 504 kg N ha<sup>-1</sup> to orchardgrass and tall wheatgrass yields (dry matter basis).**

### **Bermudagrass for the High Plains**

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Interest in utilizing irrigation for production of improved grasses has grown in the recent years in the high plains. With higher fuel cost and declining capacity of irrigation wells, producers have begun to adopt bermudagrass for grazing. With this increased interest, a bermudagrass variety trial was established in 2003. Varieties were selected from a trial established in 1997 and abandoned after data collection in 2003. In 2004 data was collected and reported for the first time (Tables 1 and 2). Data was not collected in 2004 on Midland and OSU Greenfield, plots had contamination and had to be re-established in 2004.

Also in 2004, a circle of bermudagrass was established to collect cattle performance data. The variety selected was an experimental that has shown early greenup, good cold tolerance, and high yield performance in previous variety trials at OPREC. The line LCB 84X 16-66 was selected. One half a circle on the Joe Webb farm south of Guymon was sprigged in May of 2004, and the other half was sprigged in May of 2005. The half sprigged in 2004 was grazed in 2005 with a stocking rate of 5.1 head/ac for 109 days. The average daily gain for these cattle was 1.49 lb/day. The total amount of beef removed from the half circle was 50,100 pounds. The bermudagrass was then inter-seeded with wheat in the fall of 2005. With the late first frost in 2005, not enough wheat forage was grown in the fall, to allow winter grazing of the wheat. More data will be collected in future years to determine when optimum cattle performance is obtained when grazing bermudagrass. We will also determine how many months cattle can be grazed on the same area when inter-seeded with wheat.

Table 1. Forage yields (dry tons/acre) of commercial and experimental bermudagrass varieties in Test 2003-1, Oklahoma Panhandle Research & Extension Center, Goodwell, OK. 2005.

| Variety  | 2005 Harvest Dates |         |        |          | Total |
|--|--------------------|---------|--------|----------|-------|
|  | June 6             | July 11 | Aug. 8 | Sept. 26 |       |
| <b>Commercial Varieties – Available for Farm Use</b>       |                    |         |        |          |       |
| Ozark  | 3.33               | 3.13    | 2.44   | 3.77     | 12.66 |
| Tifton 44  | 2.14               | 2.68    | 1.92   | 3.51     | 10.25 |
| Midland 99   | 2.28               | 3.21    | 1.88   | 2.75     | 10.12 |
| Vaughns # 1  | 2.57               | 2.21    | 1.50   | 2.95     | 9.22  |
| Midland  | 2.27               | 2.41    | 1.59   | 2.46     | 8.73  |
| OSU Greenfield   | 1.87               | 2.40    | 1.35   | 2.65     | 8.26  |
| World Feeder   | 2.07               | 2.13    | 1.35   | 2.32     | 7.87  |
| Nokes Greenfield   | 2.17               | 1.74    | 0.96   | 2.29     | 7.14  |
| <b>Experimental Varieties – Not Available for Farm Use</b> |                    |         |        |          |       |
| LCB84X 16-66   | 4.13               | 2.88    | 1.48   | 3.80     | 12.28 |
| A-12245  | 2.87               | 2.78    | 1.68   | 3.49     | 10.82 |
| Shrimplin  | 2.05               | 1.45    | 1.07   | 1.71     | 6.27  |
|  |                    |         |        |          |       |
| Mean   | 2.52               | 2.45    | 1.56   | 2.88     | 9.42  |
| CV (%)   | 14.41              | 11.97   | 20.29  | 33.80    | 16.02 |
| 5% LSD   | 0.52               | 0.42    | 1.56   | NS       | 2.18  |

Table 2 Forage yields (dry tons/acre) of commercial and experimental bermudagrass varieties in Test 2003-1, Oklahoma Panhandle Research & Extension Center, Goodwell, OK. 2004-2005.

| Variety  | 2004   | 2005   | 2-Yr Mean |
|--|--------|--------|-----------|
|  | 3-Cuts | 4-Cuts |           |
| <b>Commercial Varieties – Available for Farm Use</b>       |        |        |           |
| Ozark  | 10.47  | 12.66  | 11.57     |
| Midland 99   | 10.33  | 10.12  | 10.22     |
| Tifton 44  | 10.16  | 10.25  | 10.20     |
| Vaughn's #1  | 8.99   | 9.22   | 9.10      |
| World Feeder   | 8.71   | 7.87   | 8.28      |
| Greenfield-Nokes   | 8.90   | 7.14   | 8.02      |
| <b>Experimental Varieties – Not Available for Farm Use</b> |        |        |           |
| LCB 84X 16-66  | 11.57  | 12.28  | 11.92     |
| A-12245  | 9.85   | 10.82  | 10.34     |
| Shrimplin  | 5.72   | 6.27   | 5.99      |
|  |        |        |           |
| Mean   | 9.41   | 9.42   | 9.52      |
| 5% LSD   | 2.07   | 2.18   | 1.52      |
| CV (%)   | 15     | 16     | 16        |

Midland (Entry 1) and OSU Greenfield (Entry 9) not included in the 2-yr analyzes. Plots were initially contaminated and re-established in 2004. No data were taken on these two entries in 2004

## Corn Planting Date

Rick Kochenower, Oklahoma Panhandle Research and Extension Center, Goodwell

Previous research indicates that planting corn before the optimum date reduces yields less than planting after the optimum date (Fig. 1). Therefore, in 2000, a long-term study was initiated to determine the effect of planting date and starter fertilizer on corn ensilage, grain yield, and test weight. Six planting dates were selected April (1, 10, 20, 30) and May (10 and 20). On each selected date, corn was planted with and without a starter fertilizer (5 gal/ac 10-34-0) in the row. No yield increases were observed with starter fertilizer in 2000 - 2002. Therefore, starting in 2003 the starter fertilizer treatment was replaced with a 107-day maturity corn hybrid NC<sup>+</sup> 3721B. The use of a shorter season hybrid will determine if corn maturity will influence planting date. Pre-plant fertilizer applications were based on soil test N levels of 250 lb/ac (soil test + applied). P and K are applied to 100% sufficiency based on a soil test. The Dekalb hybrid DK 647BtY was planted in 2000, and in 2001 the hybrid was switched to Pioneer 33B51. Plots were planted in four 30-inch rows by 30 feet long with a target plant population of 32,000 plants per acre. Ten feet of one outside row was harvested for ensilage and the two middle rows harvested for grain.

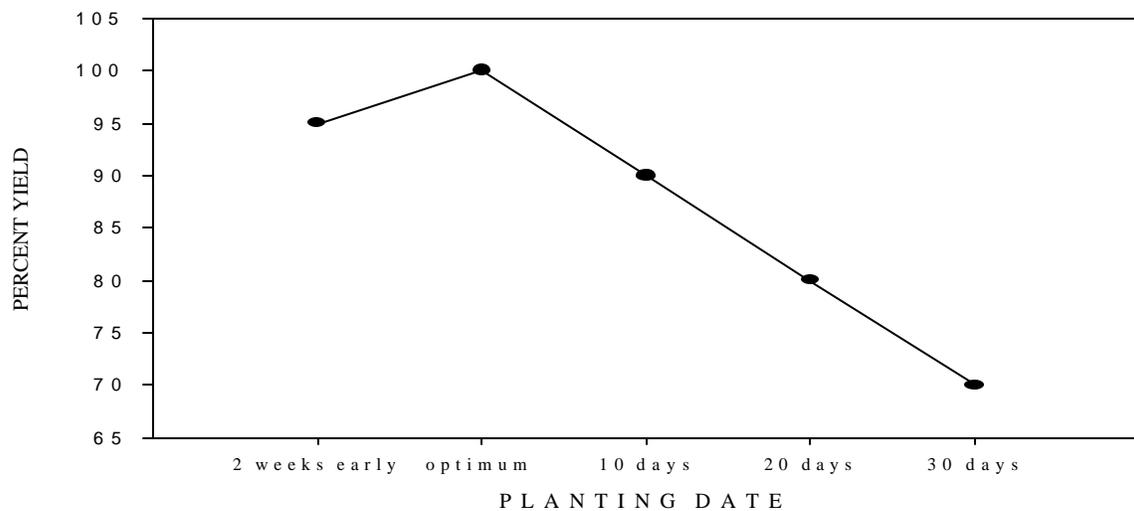


Figure 1. Ten years of grain yields at Lansing, Michigan. Source modern corn production

Aldrich, S.A., W.O. Scott, and R.G. Hoeft. Modern Corn Production. 1986, A & L Publications.

### Results

Data not collected in 2002 due to irrigation well problems.

In 2005 with the cool wet spring some dates were unable to be planted therefore data was no collected.

### Grain Yield

Climate and hybrid maturity appear to impact which date is optimum for planting corn. The full season (114 day) and short season (107 day) hybrids reacted differently in 2003 and 2004 (Table 1). No difference in grain yield was observed for any planting date in 2003 or 2004 for the full season hybrid (Table 1). Although differences were observed for the shorter season hybrid, with yield significantly reduced when planted after May 1. For the full season hybrid, when the yield environment was lower as in (2000 and 2001), the April 10 planting date had the highest yield, and yield was reduced 15 and 21% when planted May 10 or 20, respectively. With the higher yield environment of 2003 and 2004, the highest yield obtained was on April 10, which was approximately 17% higher when compared to 2000 and 2001 (Table 1). Four-year averages for the full season hybrid also show the highest yield for the April 10 planting date. With the difference in yield environments in the preceding years it is difficult to determine which date is ideal for planting corn. Therefore more years of data are required to determine what effect environment and maturity has on corn planting date.

Table 1. Mean grain yields (bu/ac) for selected years, maturities, and corn planting dates at OPREC.

| Planting date | 2000 – 01<br>114 day | 2003 – 04<br>114 day | 4-year<br>114 day    | 2003 –04<br>107 day   |
|---------------|----------------------|----------------------|----------------------|-----------------------|
| April 10      | 175.9 a <sup>†</sup> | 205.2 a <sup>†</sup> | 190.6 a <sup>†</sup> | 176.0 ab <sup>†</sup> |
| April 1       | 167.6 ab             | 196.9 a              | 182.2 ab             | 173.1 ab              |
| April 30      | 161.7 ab             | 198.4 a              | 180.1 ab             | 183.1 a               |
| April 20      | 155.2 bc             | 202.6 a              | 178.9 bc             | 178.4 a               |
| May 10        | 152.6 bc             | 202.8 a              | 177.7 bc             | 160.7 bc              |
| May 20        | 145.5 cc             | 192.1 a              | 168.8 cc             | 150.2 c               |

<sup>†</sup>Yields with same letter not significantly different

### Test Weight

Test weight decreased when planted after April 10 but remained above the 56 lb/bu level (data not shown) until the April 20 planting. Lower test weights can be attributed to higher grain moisture at harvest for the later planting dates.

## Corn Ensilage

As with grain yield, environment has an impact on which date is optimum for planting corn utilized for ensilage (Table 1). In years when environment for grain yield is low (as in 2000 and 2001), an earlier planting date had significant impact on ensilage yield (Table 1). The April 1 planting date had ensilage yields 17% higher in 2000 – 2001, when compared to 2003 – 2004. In years with a high grain yield environment, planting date had no effect on ensilage yields. When looking at four-year means ensilage yields were significantly lower when planted May 20, and consequently corn should be planted earlier. Although hybrid maturity affected grain yield, no differences in ensilage yield were observed in 2003 and 2004 for either the short or full season hybrid.

Table 2. Mean ensilage yields (tons/ac) for selected years and maturities for corn planting date at OPREC.

| Planting date | 2000 – 01<br>114 day | 2003 – 04<br>114 day | 4-year<br>114 day   | 2003 –04<br>107 day |
|---------------|----------------------|----------------------|---------------------|---------------------|
| April 1       | 26.7 a <sup>†</sup>  | 22.8 a <sup>†</sup>  | 25.0 a <sup>†</sup> | 22.0 a <sup>†</sup> |
| April 10      | 25.8 a               | 22.8 a               | 24.4 a              | 23.9 a              |
| April 30      | 24.4 bc              | 23.1 a               | 24.4 a              | 21.6 a              |
| April 20      | 25.0 a               | 24.5 a               | 24.2 a              | 22.8 a              |
| May 10        | 22.3 c               | 25.2 a               | 23.5 a              | 22.9 a              |
| May 20        | 19.6 d               | 20.5 a               | 19.9 b              | 24.0 a              |

<sup>†</sup>Yields with same letter not significantly different

## **UTILIZING GRAIN SORGHUM IN IRRIGATED CROP ROTATIONS**

Rick Kochenower, Oklahoma Panhandle Research and Extension Center, Goodwell

In 1999, an irrigated crop rotation study was established to determine if the crop rotation effect reported by researchers in dry-land systems exist under a high yield environment. In 2000, problems with insects, birds, and water well were encountered so data was not collected. Researchers at Kansas State University have reported 12 bu/ac yield increases in grain sorghum rotated yearly with soybeans when proper fertilization is used (Gordon, B., et al., 1999). Researchers at the University of Minnesota have reported yield increases of 12% (138 vs. 122 bu/ac) in corn rotated with soybeans when compared to continuous corn (Porter, P.M., et al., 1997). The crop rotation effect is not clearly understood and has many possible explanations. What is understood are the benefits in weed management, disruption of insect and disease cycles, improved soil physical properties, and increased water use efficiency. Rotations include corn-soybean (CS), corn-sorghum (CM), soybean-sorghum (SM), along with continuous corn (CC), soybeans (SS), and grain sorghum (MM). Plots size was 10 feet by 30 feet long, planted with a John Deere 1710 Maxemerge 4-row 30-inch planter.

### **Results**

Due to herbicide drift all crop results were affected in 2003 and therefore not reported.

The crop rotation effect appears to exist for corn when grown with irrigation (Table 1). Although in years with higher yields the effect is less than for years with lower yields. Corn grain yields for the three years that were harvested (2001-02, 2004) were 19.3% and 18.2% higher when rotated with soybean and grain sorghum respectively. The increase in yields for corn rotated with soybean is similar to what other researchers have found. The increase may be explained by rootworm control in the rotations, although a soil applied insecticide is utilized for rootworm control in the CC rotation. The yield increase for corn rotated with grain sorghum has been unexpected, most researchers do not look at this type of a rotation. The most common rotations generally have used a broadleaf crop or a winter crop in rotation with corn. Weed control in the CS has been the best, but the CM rotation is generally better than with continuous grain sorghum. With limited herbicides for grain sorghum, Johnsongrass infestation is a problem in the MM rotation. Rotations have had no effect on test weight of any crop.

Table 1. Corn grain yield (bu/ac) for Irrigated Crop Rotation Study at OPREC.

| Rotation | 2001         | 2002         | 2004         | 3-year |
|----------|--------------|--------------|--------------|--------|
| SC       | 137.8 (30.6) | 166.7 (14.4) | 209.3 (16.7) | 171.3  |
| CM       | 143.2 (35.7) | 163.9 (12.5) | 202.1 (12.5) | 169.7  |
| CC       | 105.5        | 145.7        | 179.6        | 143.6  |
| Mean     | 125.5        | 155.5        | 189.2        | 161.5  |
| CV%      | 16.7         | 8.2          | 10.2         | 7.6    |
| L.S.D.   | NS           | 20.3         | NS           | 10.4   |

Note: number in () indicates percent yield increase as compared to continuous corn

Neither soybean or grain sorghum yields have been affected by any rotation although yields have been numerically higher for both crops with rotation when compared to continuous crops (Table 2). Future rotations may include sunflowers and/or cotton to determine if these crops have an effect on yields when utilized in rotations.

Table 2. Grain yields (bu/ac) for soybean and grain sorghum for Irrigated Crop Rotation Study at OPREC.

| Rotation   | 2001    |         | 2002    |         | 2004    |         | 3-year  |         |
|------------|---------|---------|---------|---------|---------|---------|---------|---------|
|            | Sorghum | Soybean | Sorghum | Soybean | Sorghum | Soybean | Sorghum | Soybean |
| Continuous | 102.7   | 53.2    | 147.5   | 55.5    | 134.7   | 36.6    | 124.2   | 47.2    |
| SM         | 119.2   | 51.9    | 163.1   | 56.6    | 110.9   | 37.5    | 128.1   | 49.3    |
| CS         | ----    | 54.4    | ----    | 56.6    | ----    | 34.6    | ----    | 48.7    |
| CM         | 105.1   | ----    | 139.6   | ----    | 116.9   | ----    | 120.2   | ----    |

### References:

Gordon, B., D. Whitney, and R. Lamond. 1999. Grain Sorghum Nutrient Management in Reduced Tillage Systems. Proceeding of the 21<sup>st</sup> Biennial Grain Sorghum Research and Utilization Conference. p 8-10.

Porter, P.M., J.G. Lauer, W.E. Lueschen, J.H. Ford, T.R. Hoverstad, E.S. Oplinger, and R.K. Crookston. 1997. Environment affects the corn and soybean rotation effect. *Agron. J.* 89:442-449.

## 2005 EVALUATION OF PALMER AMARANTH CONTROL WITH VARIOUS BAYER CORN HERBICIDES

Curtis Bensch

An experiment was conducted at the Oklahoma Panhandle Research and Extension Center at Goodwell, OK to examine efficacy of various corn herbicides. Treatment particulars were:

**Crop/Variety:** corn / Golden Harvest 9250BtRR

**Location:** Goodwell, OK

**Planting Date:** April 27, 2005

**Experimental Design:** RCB

**# of reps:** 4

**plot size:** 10' x 30'

**row spacing:** 30"

**Planting Rate/Depth:** 31,763 / 1.5"

**Harvest Date:** September 19, 2005

**Soil Type:** Gruver clay loam

**% sand/silt/clay:** 23-40-37

**% OM:** 0.8

**pH:** 7.7

**Uniform std. treatment:**

| Application type              | PRE                         | POST                        |
|-------------------------------|-----------------------------|-----------------------------|
| Date applied [mm/dd/yy]       | 04/28/05                    | 05/27/05                    |
| Time [hh:mm – hh:mm]          | 1:30 pm                     |                             |
| Incorporation equipment       | na                          | na                          |
| Incorporation depth [in]      | na                          | na                          |
| Air/ 4" Soil temperature [°F] | 48F/ 57F                    | 74F                         |
| Relative humidity [%]         |                             | 55%                         |
| Wind [mph, direction]         | 8 mph, NNE                  | 4-8mph, E                   |
| Weather [sunny, etc.]         | overcast                    | overcast                    |
| Soil moisture                 | adequate                    | adequate                    |
| Crop stage/Height             | na                          | 3-leaf/ 9"                  |
| Sprayer type/mph              | CO <sub>2</sub> backpack, 3 | CO <sub>2</sub> backpack, 3 |
| Nozzle type/Size              | TeeJet 8015vs               | TeeJet 8015vs               |
| Boom ht/# Noz/Spacing (in)    | 19" / 4@19"                 | 19" / 4@19"                 |
| GPA/PSI                       | 15 / 40                     | 15 / 40                     |
| Applied by                    | Bensch                      | Bensch                      |
| Weed Species                  | Size/leaf                   | Size/leaf                   |
| Palmer amaranth               |                             | 1-2.5" / 5 to9-leaf         |

**Oklahoma Panhandle Research & Extension Center, Goodwell, OK**

**2005 VALUATION OF PALMER AMARANTH CONTROL WITH  
VARIOUS BAYER CORN HERBICIDES**

| #        | Rating Date Application            | Treatment   | Rate   | Palmer amaranth Control | Palmer amaranth Control | Palmer amaranth Control | GRAIN YIELD |
|----------|------------------------------------|---|--|-------------------------|-------------------------|-------------------------|-------------|
| 1        |                                    | Untreated   |  | 0                       | 0                       | 0                       | 39.5        |
| 2        | POST                               | Option corn herbicide<br>Callisto 480sc<br>Methylated seed oil<br>Nitrogen 28%        | 1.5 oz/a<br>1.5 oz/a<br>1.5 pt/a<br>1.5 qt/a               | 0                       | 93.8                    | 94.8                    | 173.5       |
| 3        | POST                               | Option corn herbicide<br>Distinct<br>Methylated seed oil<br>Nitrogen 28%              | 1.5 oz/a<br>4 oz/a<br>1.5 pt/a<br>1.5 qt/a                 | 0                       | 99.8                    | 100                     | 182.6       |
| 4        | EPOST                              | Option corn herbicide<br>Define sc<br>Atrazine<br>Methylated seed oil<br>Nitrogen 28% | 1.5 oz/a<br>10 oz/a<br>1 lb<br>a/a<br>1.5 pt/a<br>1.5 qt/a | 0                       | 95.5                    | 95.3                    | 175.4       |
| 5        | POST                               | Equip corn herbicide<br>Callisto 480sc<br>Methylated seed oil<br>Nitrogen 28%         | 1.5 oz/a<br>1.5 oz/a<br>1.5 pt/a<br>1.5 qt/a               | 0                       | 97                      | 98.8                    | 171.7       |
| 6        | POST                               | Equip corn herbicide<br>Distinct<br>Methylated seed oil<br>Nitrogen 28%               | 1.5 oz/a<br>4 oz/a<br>1.5 pt/a<br>1.5 qt/a                 | 0                       | 99.5                    | 99.8                    | 194.1       |
| 7        | EPOST                              | Equip corn herbicide<br>Define sc<br>Atrazine<br>Methylated seed oil<br>Nitrogen 28%  | 1.5 oz/a<br>10 oz/a<br>1 lb<br>a/a<br>1.5 pt/a<br>1.5 qt/a | 0                       | 98.8                    | 99.8                    | 171.6       |
| 8        | PRE                                | Balance pro<br>Atrazine   | 2 floz/<br>a lb<br>1.5 a/a                                 | 99.8                    | 99.8                    | 99.5                    | 185.6       |
| 9        | PRE                                | Balance pro<br>Define sc<br>Atrazine  | 1.75 floz/<br>a oz/a<br>14.5 lb<br>1.5 a/a                 | 100                     | 100                     | 99.8                    | 175.0       |
| 10       | PRE<br>PRE<br>POST<br>POST<br>POST | Define sc<br>Atrazine<br>Equip corn herbicide<br>Nitrogen 28%<br>Methylated seed oil  | 18 oz/a<br>1.5 lb/a<br>1 oz/a<br>1.5 qt/a<br>1.5 pt/a      | 99.8                    | 100                     | 100                     | 184.4       |
| 11       | PRE<br>PRE<br>POST<br>POST         | Define sc<br>Atrazine<br>Buctril+atrazine<br>Callisto                                 | 18 oz/a<br>1.5 lb/a<br>2 pt/a<br>1 oz/a                    | 99.8                    | 100                     | 99.8                    | 179.3       |
| LSD      |                                    |   |  | 0.4                     | 1.6                     | 3.1                     | 25.3        |
| 5%<br>CV |                                    |   |  | 0.7                     | 1.4                     | 2.6                     | 11.2        |

**2005 EVALUATION OF JOHNSONGRASS CONTROL WITH  
VARIOUS POSTEMERGENT CORN HERBICIDES**

Curtis Bensch

An experiment was conducted at the Oklahoma Panhandle Research and Extension Center at Goodwell, OK to examine efficacy of various postemergent corn herbicides on Johnsongrass. Palmer amaranth was present in the plots and its control was also evaluated. The density of Johnsongrass was extremely high in this study, and consequently regrowth and escapes caused yield reduction even in plots where control was rated high. Crop injury was observed with primisulfuron. Treatment particulars were:

**Crop/Variety:** corn / Golden Harvest 9253BtRR

**Location:** Goodwell, OK

**Planting Date:** April 13, 2005

**Experimental Design:** RCB

**# of reps:** 4

**plot size:** 10' x 30'

**row spacing:** 30"

**Planting Rate/Depth:** 22,000 / 1.5"

**Harvest Date:** September 19, 2005

**Soil Type:** Gruver clay loam

**Uniform std. treatment:**

| <b>APPLICATION TYPE</b>       | <b>POST</b>                 |
|-------------------------------|-----------------------------|
| Date applied [mm/dd/yy]       | 05/12/2005                  |
| Time [hh:mm – hh:mm]          | 11:30 am                    |
| Incorporation equipment       | na                          |
| Incorporation depth [in]      | na                          |
| Air/ 4" Soil temperature [°F] | 70                          |
| Relative humidity [%]         | 40                          |
| Wind [mph, direction]         | 7-11, N                     |
| Weather [sunny, etc.]         | partly cloudy               |
| Soil moisture                 | adequate                    |
| Crop stage/Height             | 2-3 leaf/ 6-8"              |
| Sprayer type/mph              | CO <sub>2</sub> backpack, 3 |
| Nozzle type/Size              | TeeJet 8015vs               |
| Boom ht/# Noz/Spacing (in)    | 19" / 4@19"                 |
| GPA/PSI                       | 15 / 40                     |
| Applied by                    | Bensch                      |
| <b>Weed Species</b>           | <b>Size/leaf</b>            |
| Johnsongrass                  | 1-4"/1-3leaf                |

Oklahoma Panhandle Research & Extension Center, Goodwell

| 2005 EVALUATION OF JOHNSONGRASS CONTROL WITH VARIOUS POSTEMERGENT CORN HERBICIDES |   |                                      |                           |                             |                 |                           |                             |                 |                     |
|---|---|--------------------------------------|---------------------------|-----------------------------|-----------------|---------------------------|-----------------------------|-----------------|---------------------|
| Trt #   | POST Treatment  | Rating Date Rate                     | Johnson grass Control (%) | Palmer amaranth control (%) | Crop Injury (%) | Johnson-grass Control (%) | Palmer amaranth control (%) | Crop Injury (%) | GRAIN YIELD (bu/ac) |
|   |   |                                      | 05/26/05                  | 05/26/05                    | 05/26/05        | 06/09/05                  | 06/09/05                    | 06/09/05        | 09/19/05            |
| 1   | <b>Accent</b><br>(nicosulfuron)<br>COC<br>28% UAN                                   | 0.67 oz/A<br>1% v/v<br>2 qt/A        | 70                        | 46                          | 1               | 45                        | 15                          | 0               | 66                  |
| 2   | <b>Beacon</b><br>(primisulfuron)<br>COC<br>28% UAN                                  | 0.76 oz/A<br>1% v/v<br>2 qt/A        | 95                        | 63                          | 24              | 94                        | 20                          | 6               | 44                  |
| 3   | <b>Celebrity Plus</b><br>(nicosulfuron + dicamba + diflufenzopyr)<br>NIS<br>28% UAN | 4.7 oz/A<br><br>0.25% v/v<br>2 qt/A  | 80                        | 91                          | 0               | 55                        | 90                          | 0               | 82                  |
| 4   | <b>Equip</b><br>(foramsulfuron + iodosulfuron)<br>MSO<br>28% UAN                    | 1.5 oz/A<br><br>1.5 pt/A<br>1.5 qt/A | 85                        | 48                          | 8               | 41                        | 33                          | 0               | 40                  |
| 5   | <b>Roundup Weathermax</b><br>(glyphosate)<br>Ammonium sulfate                       | 22 fl oz/A<br>17 lb/100 gal          | 30                        | 41                          | 0               | 0                         | 0                           | 0               | 62                  |
| 6   | <b>Option</b><br>(foramsulfuron)<br>MSO<br>28% UAN                                  | 1.5 oz/A<br>1.5 pt/A<br>1.5 qt/A     | 79                        | 74                          | 0               | 74                        | 3                           | 0               | 67                  |
| 7   | <b>Spirit</b><br>(primisulfuron + prosulfuron)<br>COC<br>28% UAN                    | 1 oz/A<br>1% v/v<br>2 qt/A           | 95                        | 81                          | 33              | 94                        | 58                          | 15              | 40                  |
| 8   | <b>Steadfast</b><br>(nicosulfuron + rimsulfuron)<br>COC<br>28% UAN                  | 0.75 oz/A<br>1% v/v<br>2 qts/A       | 92                        | 69                          | 0               | 83                        | 50                          | 0               | 93                  |
| 9   | <b>Basis</b><br>(thifensulfuron + rimsulfuron)<br>COC<br>28% UAN                    | 0.33 oz/A<br>1% v/v<br>2qts/A        | 83                        | 83                          | 0               | 90                        | 73                          | 0               | 67                  |
| 10  | <b>Resolve</b><br>(rimsulfuron)<br>[DuPont DPX-e9636 25DF]<br>NIS<br>28% UAN        | 1 oz/A<br><br>0.25% v/v<br>2 qt/A    | 91                        | 82                          | 0               | 88                        | 74                          | 0               | 100                 |
| 11  | <b>Northstar</b><br>(primisulfuron + dicamba)<br>NIS<br>28% UAN                     | 5 oz/A<br>0.25% v/v<br>2 qt/A        | 93                        | 94                          | 25              | 88                        | 56                          | 9               | 56                  |
| 12  | Weedy Check   |                                      | 0                         | 0                           | 0               | 0                         | 0                           | 0               | 51                  |
|   | LSD 5%  |                                      | 15                        | 32                          | 11              | 17                        | 39                          | 5               | 39                  |

## 2005 EVALUATION OF VARIOUS DUPONT CORN HERBICIDES

Curtis Bensch

An experiment was conducted at the Oklahoma Panhandle Research and Extension Center at Goodwell, OK to examine efficacy of various herbicides in corn. Treatment particulars were:

**Crop/Variety:** corn / Golden Harvest 9250BtRR

**Location:** Goodwell, OK

**Planting Date:** April 27, 2005

**Experimental Design:** RCB

**# of reps:** 4

**plot size:** 10' x 30'

**row spacing:** 30"

**Planting Rate/Depth:** 31,763 / 1.5"

**Harvest Date:** September 19, 2005

**Soil Type:** Gruver clay loam

**% sand/silt/clay:** 23-40-37

**% OM:** 0.8

**pH:** 7.7

**Uniform std. treatment:**

| <b>Application type</b>       | <b>PRE</b>                  | <b>POST</b>                 |
|-------------------------------|-----------------------------|-----------------------------|
| Date applied [mm/dd/yy]       | 04/28/05                    | 05/27/05                    |
| Time [hh:mm – hh:mm]          | 1:30 pm                     | 6:00 pm                     |
| Incorporation equipment       | na                          | na                          |
| Incorporation depth [in]      | na                          | na                          |
| Air/ 4" Soil temperature [°F] | 48/46                       | 74/70                       |
| Relative humidity [%]         | 80%                         | 55%                         |
| Wind [mph, direction]         | 8 mph / NNE                 | 4-8/E                       |
| Weather [sunny, etc.]         | overcast                    | overcast                    |
| Soil moisture                 | adequate                    | adequate                    |
| Crop stage/Height             | na                          | 3-leaf/9"                   |
| Sprayer type/mph              | CO <sub>2</sub> backpack, 3 | CO <sub>2</sub> backpack, 3 |
| Nozzle type/Size              | TeeJet 8015vs               | TeeJet 8015vs               |
| Boom ht/# Noz/Spacing (in)    | 19" / 4@19"                 | 19" / 4@19"                 |
| GPA/PSI                       | 15 / 40                     | 15 / 40                     |
| Applied by                    | Bensch                      | Bensch                      |
| Weed Species                  | Size/leaf/density           | Size/leaf/density           |
| *AMAPA                        |                             | 1-3" tall/ 5 to 9-leaf/     |

**Oklahoma Panhandle Research & Extension Center, Goodwell OK.**

| <b>EVALUATION OF VARIOUS DUPONT HERBICIDES IN CORN 2005</b> |  |   |   |                               |                               |                               |                |
|---|--|---|---|-------------------------------|-------------------------------|-------------------------------|----------------|
|   |  |   |   | Palmer<br>amaranth<br>Control | Palmer<br>amaranth<br>Control | Palmer<br>amaranth<br>Control | GRAIN<br>YIELD |
|   | Rating Date  |   |   | 5-27-05                       | 6-10-05                       | 6-24-05                       | 9-19-05        |
| #   | Treatment  | Rate  | Appl  | %                             | %                             | %                             | bu/A           |
| 1   | Cinch ATZ Lite<br>Steadfast<br>Callisto<br>Atrazine<br>COC<br>28-0-0 or 32-0-0     | 2 pts/a<br>0.75 oz/a<br>2 floz/a<br>0.5 lbs ai/a<br>1 qt/a<br>4 qts/a             | PRE<br>POST<br>POST<br>POST<br>POST<br>POST | 100                           | 100                           | 100                           | 157.7          |
| 2   | Cinch ATZ Lite<br>Steadfast<br>Clarity<br>COC<br>28-0-0 or 32-0-0                  | 2 pts/a<br>0.75 oz/a<br>4 floz/a<br>1 qt/a<br>4 qts/a                             | PRE<br>POST<br>POST<br>POST<br>POST         | 100                           | 100                           | 100                           | 144.3          |
| 3   | Cinch ATZ Lite<br>Resolve 25% DF<br>Roundup<br>Weathermax<br>AMS                   | 2 pts/a<br>1 oz/a<br>22 floz/a<br>17 lbs/100 gal                                  | PRE<br>POST<br>POST<br>POST                 | 99                            | 100                           | 100                           | 156.1          |
| 4   | Cinch ATZ Lite<br>Steadfast<br>Lumax<br>Atrazine<br>Non-ionic<br>Surfactant        | 2 pts/a<br>0.75 oz/a<br>2 pts/a<br>0.75 lbs ai/a<br>1 qt / 100 gal                | PRE<br>POST<br>POST<br>POST<br>POST         | 100                           | 100                           | 100                           | 154.1          |
| 5   | Basis<br>Balance Pro<br>Atrazine<br>Resolve 25% DF<br>Roundup<br>Weathermax<br>AMS | 0.33 oz/a<br>0.75 floz/a<br>0.5 lbs ai/a<br>1 oz/a<br>22 floz/a<br>17 lbs/100 gal | PRE<br>PRE<br>PRE<br>POST<br>POST<br>POST   | 100                           | 100                           | 100                           | 161.1          |
| 6   | Resolve 25% DF<br>Roundup<br>Weathermax<br>AMS                                     | 1 oz/a<br>22 fl oz/a<br>17 lbs/100 gal  | POST<br>POST<br>POST                        | na                            | 100                           | 100                           | 152.3          |
| 7   | Roundup<br>Weathermax<br>AMS   | 22 fl oz<br>17 lbs/100 gal  | POST<br>POST                                | na                            | 100                           | 100                           | 128.8          |
| 8   | Untreated Check  |   |   | 0                             | 0                             | 0                             | 36.0           |
|   |  |   | LSD(.05)                                    | 0.3                           | 0                             | 0                             | 23.3           |
|   |  |   | CV  | 0.3                           | 0                             | 0                             | 11.4           |

**2005 EVALUATION OF PALMER AMARANTH CONTROL  
IN A ROUNDUP READY CORN SYSTEM**

Curtis Bensch

An experiment was conducted at the Oklahoma Panhandle Research and Extension Center at Goodwell, OK to examine efficacy of various herbicides in a Roundup Ready corn system. Treatment particulars were:

**Crop/Variety:** corn / Golden Harvest 9250BtRR

**Location:** Goodwell, OK

**Planting Date:** April 27, 2005

**Experimental Design:** RCB

**# of reps:** 4

**plot size:** 10' x 30'

**row spacing:** 30"

**Planting Rate/Depth:** 31,763 / 1.5"

**Harvest Date:** September 19, 2005

**Soil Type:** Gruver clay loam

**% sand/silt/clay:** 23-40-37

**% OM:** 0.8

**pH:** 7.7

**Uniform std. treatment:**

| Application type              | PRE                         | POST                        |
|-------------------------------|-----------------------------|-----------------------------|
| Date applied [mm/dd/yy]       | 04/28/05                    | 05/27/05                    |
| Time [hh:mm – hh:mm]          | 1:30 pm                     | 6:00 pm                     |
| Incorporation equipment       | na                          | na                          |
| Incorporation depth [in]      | na                          | na                          |
| Air/ 4" Soil temperature [°F] | 48F /                       | 74F /                       |
| Relative humidity [%]         |                             | 55%                         |
| Wind [mph, direction]         | 8 mph NNE                   | 4-8mph, E                   |
| Weather [sunny, etc.]         | Overcast                    | Overcast                    |
| Soil moisture                 | adequate                    | adequate                    |
| Crop stage/Height             | na                          | 3-leaf, 9"                  |
| Sprayer type/mpg              | CO <sub>2</sub> backpack, 3 | CO <sub>2</sub> backpack, 3 |
| Nozzle type/Size              | TeeJet 8015vs               | TeeJet 8015vs               |
| Boom ht/# Noz/Spacing (in)    | 19" / 4@19"                 | 19" / 4@19"                 |
| GPA/PSI                       | 15 / 40                     | 15 / 40                     |
| Applied by                    | Bensch                      | Bensch                      |
| Weed Species                  | Size/leaf/density           | Size/leaf/density           |
| Palmer amaranth               |                             | 1-2.5", 5-9 leaf            |

Oklahoma Panhandle Research & Extension Center, Goodwell, OK

| 2005 VALUATION OF PALMER AMARANTH CONTROL<br>IN A ROUNDUP READY CORN SYSTEM |                               |                          |      |                               |                               |                               |                |
|---|-------------------------------|--------------------------|------|-------------------------------|-------------------------------|-------------------------------|----------------|
|   |                               |                          |      | Palmer<br>amaranth<br>Control | Palmer<br>amaranth<br>Control | Palmer<br>amaranth<br>Control | GRAIN<br>YIELD |
|   | Rating Date                   |                          |      | 5/27/05                       | 6/10/05                       | 6/24/05                       | 9/19/05        |
| #   | Treatment                     | Rate                     | Appl |                               |                               |                               |                |
| 1   | Weedy Check                   |                          |      | 0.0                           | 0.0                           | 0.0                           | 41.8           |
| 2   | Lexar                         | 3.0 qt/acre              | PRE  | 100.0                         | 99.8                          | 99.8                          | 178.7          |
| 3   | Lexar                         | 3.5 qt/acre              | PRE  | 100.0                         | 100.0                         | 100.0                         | 182.9          |
| 4   | Bicep II Magnum 5.5 SC        | 2.1 qt/acre              | PRE  | 100.0                         | 100.0                         | 99.3                          | 155.5          |
| 5   | Lumax 3.94 SE                 | 2.5 qt/acre              | PRE  | 100.0                         | 100.0                         | 100.0                         | 167.5          |
| 6   | Lexar (A14224 )<br>Princep 4L | 3.0 qt/acre<br>2 pt/acre | PRE  | 100.0                         | 100.0                         | 99.5                          | 177.7          |
| 7   | Guardsman Max 5SC             | 3 pt/acre                | PRE  | 100.0                         | 100.0                         | 99.8                          | 165.1          |
| 8   | Harness Xtra 5.6L             | 2 qt/acre                | PRE  | 100.0                         | 100.0                         | 99.5                          | 162.3          |
| 9   | Epic 58 WG                    | 10 oz/acre               | PRE  | 97.8                          | 98.5                          | 96.8                          | 149.6          |
| 10  | Keystone 5.25 SE              | 2.6 qt/acre              | PRE  | 100.0                         | 100.0                         | 99.8                          | 167.9          |
| 11  | Lexar 3.7 SE<br>NIS           | 3.0 qt/acre<br>0.25 %v/v | POST | 0                             | 100.0                         | 99.8                          | 186.6          |
| 12  | Bicep II Magnum 5.5 SC<br>NIS | 2.1 qt/acre<br>0.25% v/v | POST | 0                             | 92.0                          | 98.0                          | 161.4          |
| 13  | Roundup Weathermax<br>AMS     | 26 fl oz<br>2 lbs/A      | POST | 0                             | 99.8                          | 97.8                          | 180.0          |
| 14  | Roundup Weathermax<br>AMS     | 22 fl oz<br>2 lbs/A      | POST | 0                             | 100.0                         | 97.8                          | 173.3          |
|   |                               |                          |      |                               |                               |                               |                |
|   |                               |                          | LSD  | 0.8                           | 3.3                           | 2.2                           |                |
|   |                               |                          | 5%   | 0.9                           | 2.5                           | 1.7                           | 17.4           |
|   |                               |                          | CV   |                               |                               |                               | 7.6            |

# EVALUATION OF YUKON FOR PALMER AMARANTH CONTROL IN CORN

## Gowan Trial #YUK-05-01-T2

Curtis Bensch

An experiment was conducted at the Oklahoma Panhandle Research and Extension Center at Goodwell, OK to examine efficacy of Yukon (a premix of dicamba and halosulfuronmethyl) in corn on Palmer amaranth.

Treatment particulars were:

**Crop/Variety:** corn / Golden Harvest H-92250bt/RR

**Location:** Goodwell, OK

**Planting Date:** 5-9-05

**Experimental Design:** RCB

**# of reps:** 3

**plot size:** 10' x 25'

**row spacing:** 30"

**Planting Rate/Depth:** 31,000 1.5"

**Harvest Date:** 9-19-05

**Soil Type:** Gruver clay loam

**% sand/silt/clay:** 23-40-37

**% OM:** 0.8

**pH:** 7.7

**Uniform std. treatment:**

|                            |                             |
|----------------------------|-----------------------------|
| Application type           | POST                        |
| Date applied [mm/dd/yy]    | 6-2-05                      |
| Time [hh:mm – hh:mm]       | 1:30 pm                     |
| Incorporation equipment    | NA                          |
| Incorporation depth [in]   | NA                          |
| Air temperature [F]        | 80                          |
| Relative humidity [%]      | 58                          |
| Wind [mph, direction]      | 5, S                        |
| Weather [sunny, etc.]      | Partly cloudy               |
| Soil moisture              | Adequate                    |
| Crop stage/Height          | 4-leaf, 12"                 |
| Sprayer type/mph           | CO <sub>2</sub> backpack, 3 |
| Nozzle type/Size           | TeeJet 8002vs               |
| Boom ht/# Noz/Spacing (in) | 19" / 4@19"                 |
| GPA/PSI                    | 20 / 40                     |
| Applied by                 | Bensch                      |

| Weed Species | Size/leaf/density |
|--------------|-------------------|
| AMAPA        | 3-4", 7-leaf,     |
|              |                   |

**Oklahoma Panhandle Research & Extension Center, Goodwell, OK**

| <b>EVALUATION OF YUKON FOR PALMER AMARANTH CONTROL IN CORN<br/>Gowan Trial #YUK-05-01-T2</b> |                 |                     |      |  |  |                        |
|--|-----------------|---------------------|------|--|--|------------------------|
|  |                 |                     |      | <b>Palmer<br/>amaranth<br/>Control</b> | <b>Palmer<br/>amaranth<br/>Control</b> | <b>GRAIN<br/>YIELD</b> |
|  | Rating Date     |                     |      | 6-16-05                                | 6-30-05                                | 9-19-05                |
| #  | Treatment       | Rate                | Appl | %                                      | %                                      | bu/A                   |
| 1  | Yukon<br>NIS    | 4 oz/a<br>0.25% v/v | POST | 70                                     | 69                                     | 68                     |
| 2  | Yukon<br>NIS    | 6 oz/a<br>0.25% v/v | POST | 93                                     | 91                                     | 143                    |
| 3  | Yukon<br>NIS    | 8 oz/a<br>0.25% v/v | POST | 85                                     | 84                                     | 144                    |
| 4  | Untreated check |                     |      | 0                                      | 0                                      | 10                     |
| LSD (P=.05)  |                 |                     |      | 9                                      | 10                                     | 51                     |
| CV   |                 |                     |      | 9                                      | 11                                     | 17                     |

## **WINTER WHEAT VARIETY DEVELOPMENT: RELEVANCE TO THE OKLAHOMA PANHANDLE**

### ***The Wheat Improvement Team***

Now in its seventh year of partnership, the Wheat Improvement Team (WIT) brings eight OSU and USDA-ARS scientists together, with more than 35 scientists on and off campus, to develop winter wheat varieties custom-fit for Oklahoma's wheat industry. Highlights of the 2004 crop included placing several candidate varieties under breeder-seed increase at the OPREC; intensive selection for dual adaptation to grazing and grain-only systems; continued emphasis on unraveling the wheat-aphid-BYDV pathosystem and developing lines resistant to the aphid-BYDV complex; the continued treasure hunt in CIMMYT materials (including a goldmine of new synthetic wheats) for unique and effective genes for leaf rust and stripe rust resistance; a relatively new initiative to understand how resistance to wheat soilborne-mosaic virus might be compromised by the presence of wheat spindle streak mosaic virus; and a gluten protein-based method of predicting premium functional quality. Other traits targeted statewide by the WIT include drought resistance, Asian noodle quality, powdery mildew resistance, coleoptile elongation, timing of first-hollow-stem appearance, and pre-harvest sprouting resistance.

### ***OSU Wheat Variety Releases***

The WIT is committed to developing new, improved varieties with adaptation to all wheat-production zones in Oklahoma. The panhandle area, or the High Plains region, is considered one of those zones, unique from others in rainfall pattern, temperature, and disease pressure. Depending on adaptation characteristics, improved varieties are targeted for either the central corridor of the wheat acreage in Oklahoma, the High Plains, or possibly both.

Though final approval of the OAES is forthcoming, we can announce that a new hard white wheat variety named 'Guymon' is under foundation seed increase near Hardesty. One of the hurdles to expansion of the hard white wheat acreage in Oklahoma has been the lack of genetic diversity from which producers can choose to satisfy their specific management needs. Further growth of the HW wheat industry requires aggressive infusion of new varieties to motivate producers to adopt HW wheat varieties as an addition to, or even a displacement of, the HRW varieties they currently grow. Guymon marks the beginning of a new generation of HW wheat varieties expected to emerge from the OSU Wheat Improvement Program. Guymon resulted from the cross, Intrada/Platte, and exceeds the grain yield of Intrada by up to 20% at similar test weight. Guymon is positioned strictly for the panhandle of Oklahoma. Its juvenile plant characteristics are befitting for a dual-purpose management system. Fall forage accumulation up to cattle turnout should approximate, but likely not exceed, that of Intrada; forage regrowth will provide ample winter grazing without breaching winter dormancy. Guymon delivers a relatively high level of wheat protein, exceeding 14.5% in its targeted area. Desirable features of bread baking performance, including water absorption and loaf volume, justify its adoption in commercial, large-scale baking

operations, but preliminary evaluation of alkaline noodle performance indicates color stability between Intrada (poor) and Platte (good).

Also under foundation seed increase is the *Clearfield\** variety, 'Okfield', which features parentage of 2174 and a sister selection of TAM 110 equipped with tolerance to the imidazolinone class of herbicides. Okfield is a more widely adapted variety than current Clearfield varieties, with exception of areas challenged by wheat soilborne mosaic virus in north-central Oklahoma. It shows exceptional recovery from early-planted grazing systems common in the southern Great Plains. Forage accumulation in the early fall is average, whereas forage regrowth during the grazing period and recovery from grazing are above-average. We do not recommend extremely early seeding of Okfield due to its heat-sensitive germination response. Additional attributes in its favor compared with Above or AP502CL are slightly better tolerance to leaf rust, as evidenced by extended green-leaf retention and later first-hollow-stem stage (i.e., greater dormancy retention) by several days. Okfield also carries the potential to move into more drought-prone environments in the panhandle where 2174 has experienced some difficulty. Its milling and baking characteristics are satisfactory, with above-average kernel size, below-average test weight, intermediate dough strength, and mean wheat protein content of 12.8%. Its protein content is expected to be at least one percentage point higher in the panhandle.

### ***Importance of the Oklahoma Panhandle to OSU Wheat Breeding***

The Oklahoma Panhandle offers a unique environment for testing and selecting new varieties. With reduced pressure from foliar diseases, the irrigated breeding trials located at the OPREC provide critical information on "yield potential" of breeding lines, reflecting the upper range of performance. Without irrigation, grain production is primarily limited by drought stress, reflecting the lower end of the yield distribution. Yield potential, however, only partially explains performance under drought. Our breeding strategy is to identify and select lines having improved yield potential in irrigated trials and improved water-use efficiency or drought tolerance in dryland trials, before they are promoted for release.

Approximately 2500 irrigated field plots and 600 dryland plots are dedicated to breeding line evaluation at the Center in 2004-2005. This includes a USDA-ARS sponsored regional nursery containing candidate varieties from public and private breeding programs throughout the Great Plains. This nursery, labeled the Southern Regional Performance Nursery (SRPN), contains 50 entries in 2005, four of which are long-term check varieties. The full SRPN report for all regional locations, including Goodwell, can be found on the USDA-ARS website at <http://www.ianr.unl.edu/arslincoln/wheat/default.htm>.

*For only the second time in the history of the OSU wheat breeding program, we expanded a pivotal mid-generation nursery called the DPON (Dual-Purpose Observation Nursery) to include Goodwell as one of the testing sites, in addition to the traditional sites at Stillwater and Lahoma. Nearly 2000 lines comprise this nursery each year, and they are evaluated under dual-purpose and grain-only conditions as the nursery name implies. Our intent each year is to identify about 250 lines worthy of statewide yield testing in subsequent years. With the proportion of hard white lines in the DPON*

*gradually increasing over the past five years, we decided to relocate the hard white portion of the DPON at Lahoma to Goodwell. Hence, our initial look at hard white breeder lines in conventional yield plots now occurs in the panhandle where this component of our breeding program is targeted. We expect this shift in selection strategy to increase the probability of identifying hard white lines best adapted to the panhandle. In 2005, the Goodwell component of the DPON was planted on dryland to hopefully skew our selection toward better adaptation to rainfed conditions. What was considered a risky move in the fall of 2004 has turned out thus far to be not much different than planting on irrigated ground! We will re-attempt this practice for the 2005-2006 crop year.*

*Finally, the Center continues to serve a critical function to the wheat improvement program by supplying a high-yielding environment for breeder seed multiplication of candidate varieties. We have placed the following candidates under final breeder seed increase in 2005:*

***OK99212** (Tomahawk/2174//Tonkawa), a high-quality HRW wheat with statewide adaptation and almost zero yield loss with grazing,*

***OK00514** (KS93U206/Jagger), a large-kernel, high test weight, very high quality HRW wheat with statewide adaptation,*

***OK00611W** (KS93U206/Jagger), a hard white wheat with unusual adaptation and sprouting tolerance to central Oklahoma,*

***OK98G508W** **reselections** (Rio Blanco/KSWGRC10), another series of hard white sister selections that have broader adaptation than Guymon but slightly lower yield potential,*

***OK93P656H3299** **reselections** (a Pioneer double-cross), a HRW wheat with the best disease resistance package of the bunch but suspicious quality,*

***OK99610** (AgSeco 7853/2174), another good disease-resistant HRW wheat with high test weight and outstanding quality,*

***OK00421** (Tonkawa/GK50), a HRW wheat that yields best in the western third of the state though its disease resistance should allow it to move further east, and **four Clearfield HRW** wheat varieties, all with statewide adaptation and partly derived from 2174, Jagger, Intrada, or Cutter (only one will be eventually released).*

*Large plots of all of these candidates are available for observation by visitors to the Center.*

## **SEEDING RATE FOR DRY-LAND WHEAT IN THE OKLAHOMA PANHANDLE**

Rick Kochenower, Oklahoma Panhandle Research and Extension Center, Goodwell  
Jeff Edwards, Dept. of Plant and Soil Sciences, Oklahoma State University, Stillwater

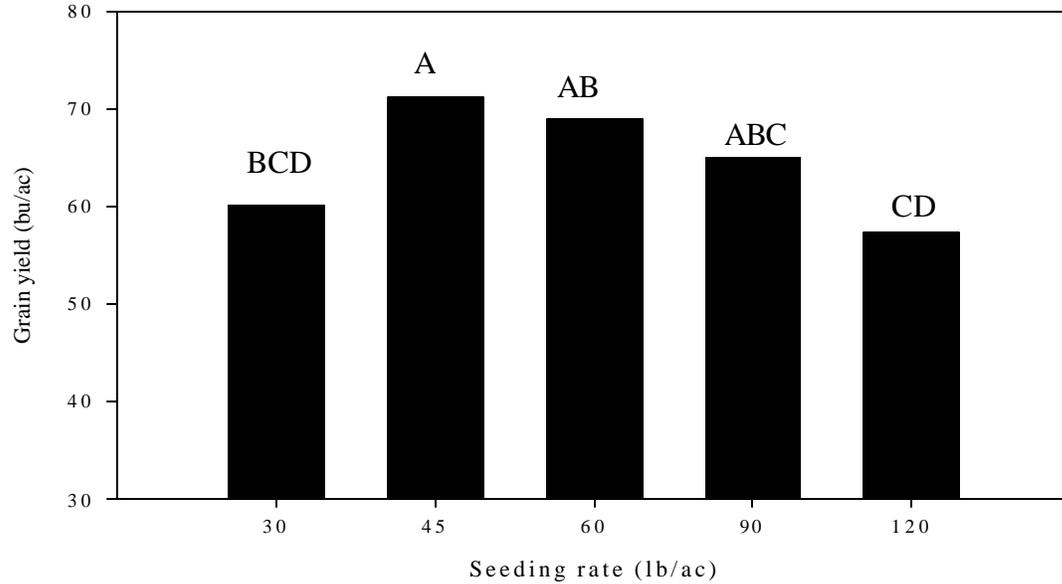
When adequate fall moisture is present, dry-land wheat producers in the southern high plains region utilize wheat for both cattle grazing and grain production (dual-purpose). In the fall of 2001 a dry-land seeding rate study was established near Keyes, to determine the effect of seeding rate on dual-purpose wheat grain yield. The most widely grown dry-land wheat variety (TAM 110) was planted at rates of 30, 45, 60, 90, of 120 pounds per acre. The 30 and 45 pounds per acre rates represent standard practices for the region. The 60, 90, and 120 pounds per acre rates were used to determine if higher forage production associated with increased seeding rates in irrigated systems, would also be exhibited in a dry-land system. Collecting reliable accurate dryland fall forage data has been difficult in this and other studies in the panhandle region; therefore, due to differences in fall precipitation and in adequate forage growth data is not reported. Since forage data collection was not feasible the focus of the study was changed in 2004 to determine if increased seeding rate were required for higher grain yields when October planting dates were used. In addition another Variety (Intrada) was included in the fall of 2004. Plot size was 5 feet wide by 35 feet long and all plots planted with a Great Plain no-till plot drill.

### **Results**

Stripe rust affected grain yields in 2005 for most producers except those that sprayed with fungicide for control. In response to stripe rust, the producer sprayed the field were experiment was located with fungicide and the reward was the highest grain yields of any Oklahoma panhandle experiments. Average grain yield was 59.7 bu/ac, and TAM 110 averaged 10.4 bu/ac more than Intrada (64.9 and 54.5 bu/ac respectively). The 30 and 120 lb/ac seeding rates for TAM 110 were significantly lower than for the highest yielding rate of 45 lb/ac, although no difference was observed between 45, 60, and 90 lb/ac rates (Fig. 1). For Intrada no difference was found at any seeding rate, but the 30

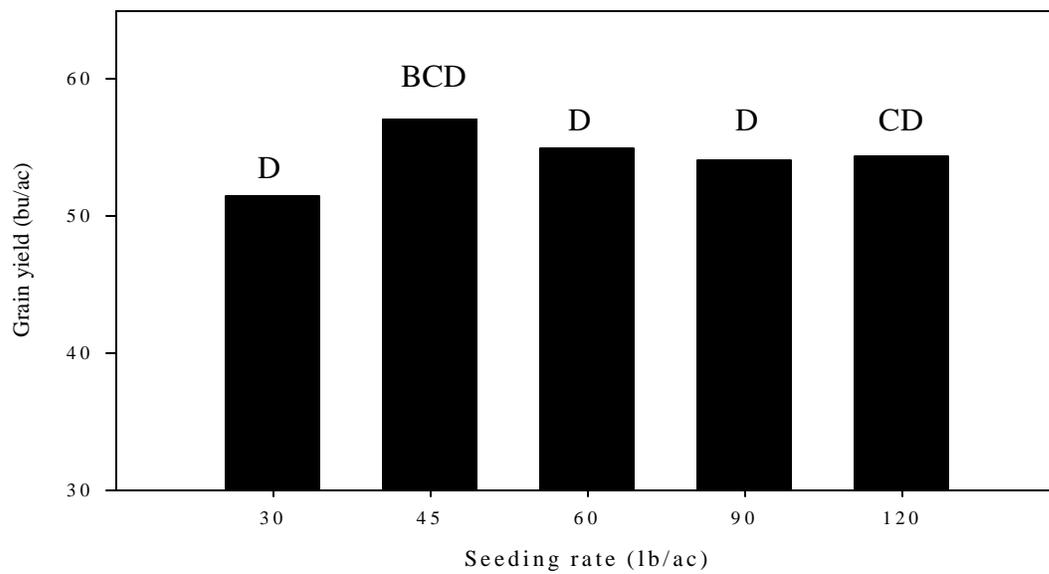
lb/ac rate was the lowest yielding (Fig. 2). Seeding rate had no effect on test weight of either variety, with Intrada and TAM 110 averaging 64.3 and 61.8 respectively.

Figure 1. Grain yields for TAM 110 at selected seeding rates planted fall of 2004.



Yields with same letter are not significantly different

Figure 2. Grain yield for Intrada at selected seeding rates planted fall of 2004.



Yields with same letter are not significantly different

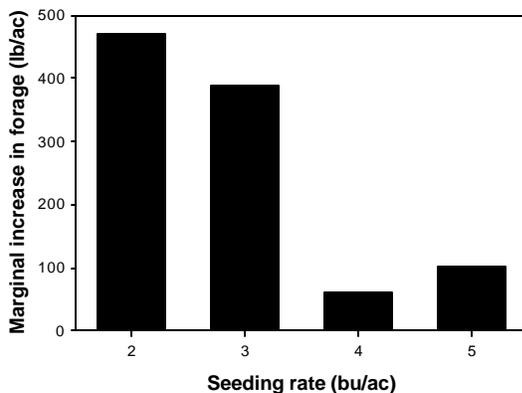
Wheat grain yields in 2003 and 2004 were low with the highest yield obtained from a mid October planting in 2003 of 17.6 bu/ac. More data is needed in years with favorable conditions for grain production before any conclusions can be determined. In the fall of 2004 a no-till dryland wheat planting date study, with wheat planted approximately every two weeks from September 1 until mid November was established at OPREC. This additional study will help determine the ideal planting date.

## WHEAT LIGHT INTERCEPTION

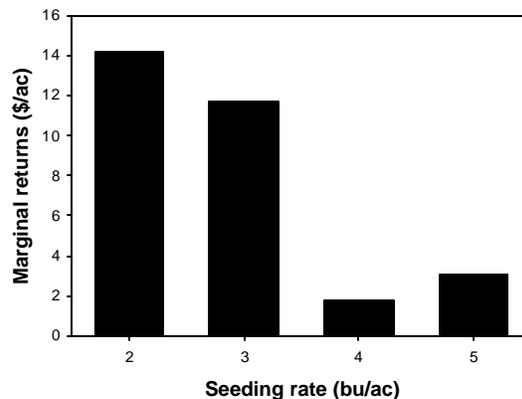
Rick Kochenower, Oklahoma Panhandle Research and Extension Center, Goodwell  
Jeff Edwards, Dept. of Plant and Soil Sciences, Oklahoma State University, Stillwater

Research conducted in the Panhandle region of Oklahoma over the past few years has indicated that fall forage production is significantly increased by increasing seeding rate (PT 2003-2). The highest seeding rate used in prior experiments, however, was 3 bu/ac; therefore, a study was initiated in 2004 to determine the response of fall wheat forage to increased seeding rates up to 5 bu/ac. The trial was planted September 4 at Goodwell, OK using the variety Intrada. Results from the fall of 2004 indicate that significant marginal increases in total fall forage production can be obtained by increasing seeding rates up to 3 bu/ac, but the feasibility of increased seeding rate depends entirely upon seed costs. For example, if we assume a value of \$0.03/lb for forage production, the marginal return for increasing seeding rate from 1 to 2 bu/ac was roughly \$14/ac. An additional \$12/ac was gained by increasing the seeding rate from 2 to 3 bu/ac, and would likely be feasible using most seed sources in Oklahoma. Marginal returns past this point, however, were less than \$4/ac and would have, at best, been a break-even proposition.

**Marginal Response of Fall Forage Production to Increased Seeding Rate at Goodwell in 2004**



**Marginal Return to Increased Seeding Rate at Goodwell in 2004**



More data is needed to determine if these results are applicable across a wide range of environments and varieties, but the response of increased forage production for seeding rates up to 3 bu/ac look promising for dual-purpose wheat farmers.

## **DETERMINATION OF FIRST HOLLOW STEM OF WINTER WHEAT IN THE PANHANDLE**

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Rick Kochenower, Oklahoma Panhandle Research and Extension Center, Goodwell  
J.D. Carlson, Dept. of Biosystems and Ag Engineering, OSU, Stillwater

Several varieties of winter wheat grown under dryland conditions were periodically sampled in February and March 2005 to determine the date when they first reached the first hollow stem (FHS) growth stage. FHS is the growth stage when hollow stem can first be identified above the root system and below the developing seed head. When 1.5 cm of hollow stem is present below the developing seed head the plant is considered to be at the FHS growth stage and cattle should be pulled off of wheat pasture to avoid reductions in grain yield.

The data collected at OPREC is being used in the development of a computer model to predict when wheat reaches this critical stage of plant development. FHS usually occurs in early March in the panhandle, although use of a calendar date is unreliable in determining when to terminate grazing. The wheat plant developmental processes are primarily driven by environmental conditions and actual calendar date of FHS will vary from year to year. The date when varieties first reached FHS in 2005 was between March 11 and March 22 (Table 1). The computer model used to estimate FHS is accessible through the Oklahoma MESONET weather website at <http://agweather.mesonet.org/crops/default.html>.

**Table 1.** Date when winter wheat varieties grown under dryland conditions first reached

First Hollow Stem growth stage at Goodwell, OK in 2005.

| <b>VARIETY</b> | <b>2005 DATE<br/>OF FHS</b> |
|----------------|-----------------------------|
| 2174           | March 22                    |
| Custer         | March 11                    |
| Guymon         | March 14                    |
| Ike            | March 14                    |
| Intrada        | March 11                    |
| Jagger         | March 11                    |
| OK101          | March 14                    |
| OK102          | March 22                    |

## PLANTING DATE FOR DRY-LAND WHEAT IN THE OKLAHOMA PANHANDLE

Rick Kochenower, Oklahoma Panhandle Research and Extension Center, Goodwell  
Jeff Edwards, Dept. of Plant and Soil Sciences, Oklahoma State University, Stillwater

Dryland wheat producers in the panhandle region often plant wheat when soil moisture is adequate whether that be the first of September or late October. In the fall of 2004 a study was initiated at OPREC to determine the effect of planting date on dryland wheat grain yield and test weight. Wheat planting dates were the first and fifteenth of September, October, and November 2004. Seeding rate were consistent with standard practice of most producers in the high plains and were 45 lb/ac for September dates, 60 lbs/ac for October 1, and 90 lb/ac for the last three dates. Two varieties were planted at each date. Varieties selected were TAM 110, one of the most widely grown hard red winter wheat varieties in the high plains, and Intrada a variety that consistently has one of the highest test weights in the panhandle wheat variety trials. Plot size was 5 feet wide by 35 feet long planted with a Great Plain no-till plot drill.

### Results

Yields were reduced at OPREC in 2005 due to stripe rust that affected the high plains region. Although yields were reduced the October 1 was the best planting date in 2005 at 43.3 bu/ac (Figure 1). Although differences were found, they were not as significant as previously reported results at Texas A&M for the region, this can be explained by the

Table 1. Long-term mean and 2004 rainfall (inches/month) for September through December at OPREC.

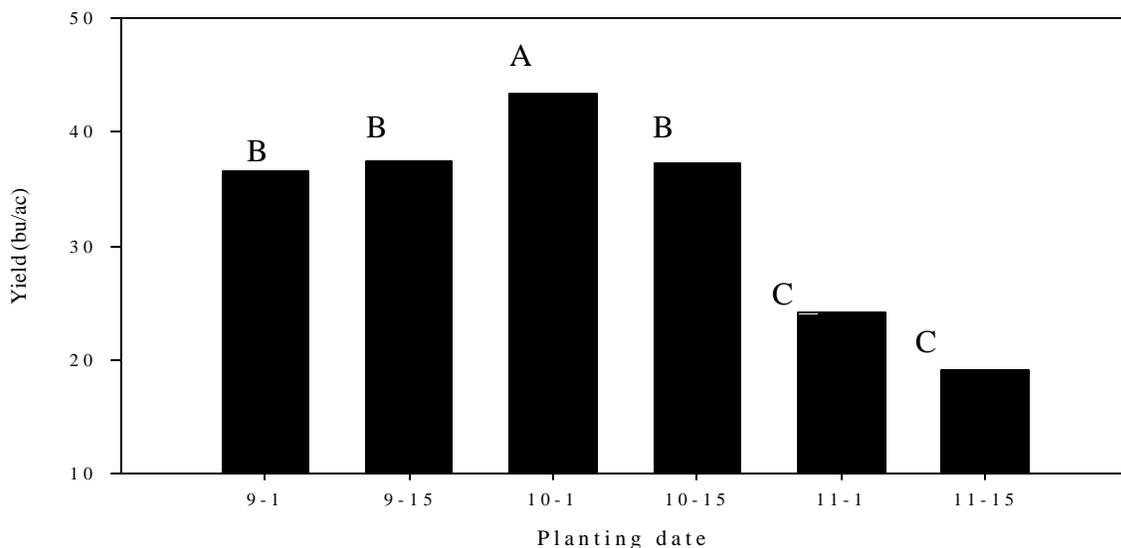
| Year | Sept | Oct  | Nov  | Dec  | Total |
|------|------|------|------|------|-------|
| Mean | 1.77 | 1.03 | 0.77 | 0.31 | 3.88  |
| 2004 | 2.56 | 0.64 | 3.51 | 0.16 | 6.87  |

amount of rainfall received during planting season and early winter (Table 1). No differences in grain yield between varieties were observed for the September through October 15 planting date. Likewise there was no

difference in grain yields for the September 1, 15, and October 15 dates. There was a variety-by-planting date interaction for the November 1 and 15, with Intrada yielding 6.7 and 7 bu/ac higher than TAM 110. As would be expected varieties differed in test weight. Intrada had an average test weight 2.5 lb/bu higher than TAM 110, with test weights of 59.0 and 56.5 lb/bu respectively. Planting date had an effect on test weight,

but differences among planting dates were larger for Intrada (3.3 lb/bu between highest and lowest), than for TAM 110 (1.4 lb/bu between highest and lowest) (Table 2). In terms of test weight November 1 was the optimal planting date for Intrada, while only the November 1 and September 1 differed for TAM 110. While differences in test weight among planting dates was greater for Intrada than TAM 110, Intrada still had higher test weight than TAM 110, regardless of planting date. Therefore, our data suggest that growers who are concerned with test weights may have more leeway when planting Intrada as compared to TAM 110. However, more years of data with different climatic and disease conditions are needed before any final conclusions should be made from this study.

Figure 1. Grain yield (bu/ac) for dryland wheat planted at six different dates at OPREC in 2004



Yields with same letter are not significantly different

Table 2. Test weight for Intrada and TAM 110 hard red winter wheat planted at different dates at OPREC in 2004

| Planting date | Intrada | Planting date | TAM 110 |
|---------------|---------|---------------|---------|
| November 1    | 60.8 a  | November 1    | 57.2 a  |
| November 15   | 59.9 b  | October 1     | 56.8 a  |
| October 15    | 59.5 bc | November 15   | 56.8 a  |
| October 1     | 58.8 c  | September 15  | 56.4 ab |
| September 15  | 57.7 d  | September 1   | 56.0 ab |
| September 1   | 57.5 d  | October 15    | 55.8 b  |

Yields with same letter are not significantly different

## NO-TILL VS MINIMUM-TILL DRY-LAND CROP ROTATIONS

Rick Kochenower, Oklahoma Panhandle Research and Extension Center, Goodwell

In 1999, a study was initiated to evaluate four different dry-land cropping rotations and two tillage systems for their long-term sustainability in the panhandle region. Rotations evaluated include Wheat-Sorghum-Fallow (WSF), Wheat-Corn-Fallow (WCF), Wheat-Soybean-Fallow (WBF), and Continuous Sorghum (CS). Soybean and corn were never successful in this study; therefore in 2004 cotton replaced soybean and sunflower replaced corn in the rotation. Tillage systems include no-till and minimum tillage. Beginning in 2004 one half of the no-till plots were strip-tilled for planting of summer crops. Two maturity classifications were used with all summer crops in the rotations until 2001, at which time all summer crops were planted with single maturity hybrids or varieties. Most dry-land producers in the panhandle region utilize the WSF rotation. Other rotations would allow producers flexibility in planting, weed management, insect management, and marketing.

### Results

No corn or soybean data was collected in 2001 – 03.

Data from the Oklahoma Climatological Service indicated the summers (June – August) of 1999 through 2002 were some of the driest in the last 53 years. Precipitation for these years has averaged 43% of the long-term mean, with 2001 at 16.5% (Table 1). In 2003, 2004, and 2005 precipitation was 107%, 118%, and 86% of the long-term mean respectively. Although rainfall was above the long-term mean in 2003, it was not received at critical growth stages of grain sorghum and consequently yield was affected. In 2005, higher than normal rainfall in late the fall of 2004 and winter allowed for summer crops to be planted into the best soil moisture profile in last 7 years.

Table 1. Summer growing season precipitation at OPREC

| Month  | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | Long-term mean |
|--------|------|------|------|------|------|------|------|----------------|
| June   | 2.85 | 2.29 | 0.61 | 1.32 | 5.26 | 3.82 | 2.01 | 2.86           |
| July   | 0.20 | 0.76 | 0.00 | 2.52 | 1.87 | 2.43 | 1.40 | 2.58           |
| August | 0.75 | 1.09 | 0.66 | 0.27 | 1.19 | 2.87 | 3.21 | 2.28           |
| Total  | 3.80 | 4.14 | 1.27 | 4.11 | 8.32 | 9.12 | 6.62 | 7.72           |

## Wheat

In 2005, a difference in tillage treatments was observed in wheat yields for the first time. No-till wheat yielded 15.5 bu/ac more than conventional till when rotated with corn and grain sorghum. In 2003 and 2004 no biomass was grown on the soybean plots the previous summer, therefore tillage treatment differences were most likely masked. In 2003, differences were observed in wheat yield, with the WBF rotation having the highest yield at 66.1 bu/ac (Table 2). The WBF rotation yield increase may be attributed to having no biomass grown in the summer of 2001, while corn and grain sorghum both had significant biomass. Consequently, more soil moisture was stored in the soil profile. In 2004, wheat yields were reduced by a freeze on April 13. May of 2004 was also one of the driest on record with only 0.15 inches of rainfall. There was no difference in wheat yields in 2000 and 2001 (data not shown) among rotations or tillage treatments with a yield of 27 and 40 bushel per acre, respectively.

Table 2. Wheat yields (bu/ac) dry-land tillage and crop rotation study at OPREC.

| Rotation | Tillage | 2005 | 2004 | 2003    | 5-year |
|----------|---------|------|------|---------|--------|
| WBF      | Tilled  | 44.8 | 22.1 | 63.8 ab | 42.4   |
| WBF      | No-till | 43.4 | 13.9 | 66.1 a  | 39.5   |
| WCF      | No-till | 49.9 | 26.9 | 51.8 bc | 42.7   |
| WCF      | Tilled  | 33.7 | 29.2 | 44.5 cd | 37.2   |
| WSF      | No-till | 48.6 | 23.2 | 48.8 c  | 40.4   |
| WSF      | Tilled  | 33.8 | 25.2 | 31.7 d  | 33.3   |
|          | Mean    | 42.4 | 23.4 | 51.1    | 35.4   |
|          | L.S.D.  | 8.6  | NS   | 13.6    | NS     |

## Grain Sorghum

From 1999 – 2003 grain sorghum was the only summer crop successfully harvested. No-till yields tended to be higher during the period but no statistical difference was observed (Table 3). In 2004 and 2005, grain sorghum yields were the highest since 1999 (Table 4). With producer interest growing in strip-till in irrigated systems one half of each no-till plot was converted to strip-till for 2004 the crop season. This study is just looking at the affect of strip-till; therefore, all fertilizer was applied with sprayer on the soil surface. There was a significant difference among tillage treatments in 2004 with no-

till sorghum having the highest yield of 54.8 bu/ac (Table 4). In 2005, no difference was observed between tillage treatments, although yields the last two years for no-till have been higher than for either strip till or minimum till. The difference in yield for strip-till vs. minimum till was greater than the difference between no-till and strip-till in 2004. This difference may indicate that when fertilizer is applied by strip-till that it will compare to no-till. Another study will be initiated in 2005 to more effectively compare strip-till with fertilizer applied vs. fertilizer applied on surface. Planting was delayed in 2004 due to a lack of soil moisture; therefore, an early maturity sorghum was utilized instead of the normal medium maturity.

Table 3. Grain yields of grain sorghum (bu/ac) for dry-land tillage and crop rotation study at OPREC.

| Tillage | 1999 | 2000 | 2001 | 2003 | 4-year |
|---------|------|------|------|------|--------|
| No-till | 56.2 | 20.4 | 31.1 | 21.0 | 32.2   |
| Tilled  | 47.8 | 20.1 | 25.8 | 20.6 | 28.6   |
| CV %    | 6.3  | 20.4 | 13.2 | 29.2 | NA     |
| L.S.D.  | NS   | NS   | NS   | NS   | NS     |

Table 4. Yields of grain sorghum (bu/ac) for dry-land tillage and crop rotation study at OPREC.

| Tillage      | 2004 | 2005 | Two-year |
|--------------|------|------|----------|
| No-till      | 54.8 | 53.9 | 54.3 a   |
| Strip-till   | 44.2 | 46.4 | 41.2 b   |
| Minimum till | 28.0 | 38.3 | 37.2 b   |
| Mean         | 42.3 | 46.2 | NA       |
| CV %         | 6.4  | 13.6 | Na       |
| L.S.D.       | 6.1  | NS   |          |

#### Cotton

Cotton was planted for the first time in 2004 into marginal soil moisture conditions, and the resulting stands were less than ideal. Some cotton did not emerge until rainfall in late June with only 50-60% percent of any plot yielding cotton. Yields were not adjusted for reduced population fruit set. Yields may have been higher with adequate stands. There was no difference in yields between tillage treatments (Table 5). Although yields

were substantially higher in 2005 than 2004, no difference was observed in yield or quality between tillage treatments.

Table 5. Lint yields of cotton (lbs/ac) for dry-land tillage and crop rotation study at OPREC.

| Tillage      | 2004  | 2005  | Two year |
|--------------|-------|-------|----------|
| Minimum till | 196.3 | 594.2 | 395.2    |
| No-till      | 165.6 | 585.0 | 375.3    |
| Strip-till   | 193.9 | 505.8 | 349.8    |
| Mean         | 185.2 | 561.7 | 373.4    |
| CV %         | 17.4  | 13.7  | NA       |
| L.S.D.       | NS    | NS    | NA       |

#### Sunflower

Due to planter and herbicide problems, no sunflowers were harvested in 2004. In 2005 there was a perfect stand but two days later jackrabbits ate all of the plots. Due to lack of soil moisture we were unable to replant.

## **TIMING OF DRYLAND STRIP-TILLAGE IN THE HIGH PLAINS**

Rick Kochenower, Oklahoma Panhandle Research and Extension Center, Goodwell

With the interest growing in strip-till in the high plains, a study was initiated in the fall of 2003 to determine if timing of strip-till would affect yield of dryland summer row crops. Producer interest is growing due the ability to apply fertilizer at the same time that strip-till is done. One of the concerns many producers have with no-till is that nitrogen (N) is tied-up in the crop residue when surface applied. Nitrogen tie-up is eliminated with strip-till due to the N being placed below (generally 3 – 8 inches) seeding depth. Many irrigated producers in the region are doing strip-till from late fall to early spring. This study was designed to determine what the affect of strip-till (no fertilizer applied) at different dates would have on grain sorghum yield. Fertilizer for all treatments was applied on the surface with a sprayer. Grain sorghum was selected as the crop to be grown, because it is the most widely grown summer row crop in the region. Four dates were selected for strip-till September, November, January, and March. No-till was also included so comparisons could be made. Plots were four rows 50 foot long and strip-tilled with an Orthman two-row one-tripper at a depth of 7 inches.

### **Results**

Since no differences in grain yield were observed between any strip-till treatments in 2004, only winter and spring strip-till treatments, and no-till treatments were tested in 2005. Yields in 2005 were higher than in 2004, 75.4 and 49.3 bu/ac respectively. Although yields were higher in 2005, no difference among treatments was observed as was in 2004 (Table 1). In 2004 the no-till treatment yielded approximately 31% more than any of the strip-till treatments (Table 1). In 2005 and two-year means no differences were observed between treatments. The higher yield for no-till in 2004 was most likely due to higher moisture availability and was seen in the dryland rotation study as well. Yields may be increased in other strip-till studies in the future when fertilizer is applied with strip-till. Another study was initiated in 2005 to determine if applying fertilizer when strip-tilled had an effect on yield and is reported elsewhere in the highlights book. More years of data will need to be collected before it can be determined if strip-till will work for dryland producers in the high plains region.

Table 1. Grain sorghum yield (bu/ac from timing of dryland strip-till experiment at OPREC.

| Timing           | 2004                | 2005   | Two-year |
|------------------|---------------------|--------|----------|
| No-till          | 62.5 a <sup>†</sup> | 66.9 a | 64.7 a   |
| March (spring)   | 47.6 b              | 81.7 a | 64.7 a   |
| January (winter) | 37.9 b              | 77.6 a | 57.8 a   |
| September        | 42.1 b              |        |          |
| November         | 45.5 b              |        |          |

<sup>†</sup>Yields with same letter not significantly different

## UTILIZING STRIP-TILLAGE FOR DRYLAND CROP ROTATIONS IN THE HIGH PLAINS

Rick Kochenower, Oklahoma Panhandle Research and Extension Center, Goodwell

Producer interest is growing in the high plains for a dryland crop rotation system that utilizes strip-tillage. Many producers have concerns with applying N fertilizer on the surface in no-till systems because this increases the opportunity for volatilization or N becoming tied up in surface residue. In the fall of 2003, a study was initiated at OPREC to determine the effect timing of strip-till alone (no fertilizer applied) has on yield. After one year of the strip-till alone study a study where fertilizer was applied with the strip-tiller was begun. In 2005 a study with three treatments, no-till, strip-till, and strip-till with fertilizer applied was started. The fertilizer rate was the same for all treatments with the no-till and strip-till applied on surface with a sprayer. Both strip-till treatments and all the fertilizer was applied in mid March. This date was picked because no differences were observed among dates of the timing study in year one. Grain sorghum was selected as the crop to be grown because it is the most widely grown dryland summer crop in the high plains. Plots are four rows 50 ft long and strip-tilled with an Orthman two-row one-tripper at a depth of 7 inches.

### Results

There were no differences in yield or test weight among the treatments with a mean yield of 42.1 bu/ac (Table 1). Also, no difference was observed at other locations (Cherokee and Blackwell) where yields were higher at 112.9 and 68.2 bu/ac, respectively. More years of data are needed before we can determine if producers in the high plains will utilize strip-till in dryland systems.

Table 1. Grain sorghum yield and test weight in 2005 from strip-till fertility study at OPREC.

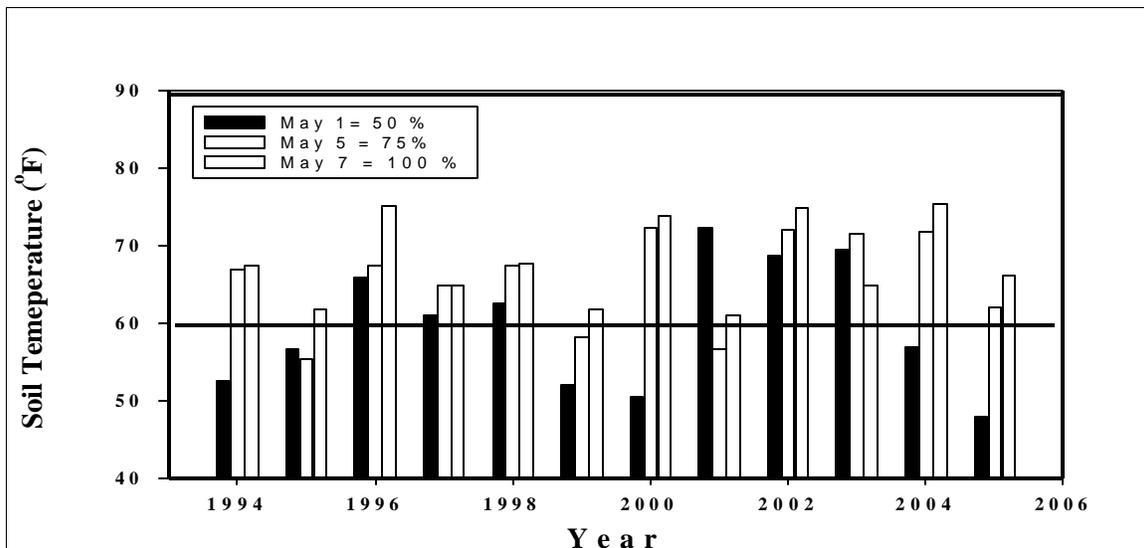
| Treatment                  | Grain Yield bu/ac | Test weight lb/bu |
|----------------------------|-------------------|-------------------|
| Strip-till only            | 43.4              | 57.4              |
| Strip-till with fertilizer | 41.9              | 57.4              |
| No-till                    | 41.0              | 57.1              |

## IMPACT OF PLANTING DATE AND VARIETY SELECTION ON COTTON YIELDS IN THE HIGH PLAINS

Rick Kochenower, Oklahoma Panhandle Research and Extension Center, Goodwell  
J.C. Banks, Southwest Research and Extension Center, Altus

In recent years cotton acres have increased in the high plains region. However, there was no data available for variety selection or the effect planting date would have on yields and quality of cotton. Therefore, in 2003, six cotton varieties (DP 555 B/R, PM 2280 B/R, PM 2266 RR, ST 2454 RR, PM 2145 RR, and PM 2167 RR) were planted on two dates, May 10 and May 30. These dates were selected because of the number of long-term cotton heat units available (1970 units) for the period from May 10 to October 20 is lower than in the traditional cotton producing areas. Therefore with limited heat units, maximizing those units is key to successfully growing cotton in this region. In 2005 the dates were changed to (May 1, 15, and 30), to determine if planting before May 10 would increase cotton yields and quality. In the last 12 year the average soil temperature on May 1 is above 60° F half the time, where as on May 7 the average soil temperature is above 60° F every year (Fig. 1). Many producers are growing cotton due to the lower water requirement for cotton compared to irrigated corn; therefore, maximum irrigation applied for this study was limited to 9 inches, although 6 inches has been the highest irrigation total to date. Plots were planted in 2-rows by 25 feet long, with tractor powered two-row cone planter. In 2003 plots were hand harvested and in 2004 and later plots were mechanically stripped.

Fig. 1 Mean soil temperatures for selected dates for last 12 years at OPREC.



## Results

It appears cotton can be successfully grown in the high plains, even with years like 2004 when the total heat units were 188 less than the long-term mean (heat unit graph is in climate section of highlights). With these decreased heat units in 2004, planting date severely affected cotton lint yield (Table 1). In 2005, the May 1 planting date (actually planted May 7) had higher yields than did May 15 and 30 (Table 2) although variety didn't have the same affect as in years past. The picker cotton DP 555 B/R will not work in this region because of short growing season, it was the only variety that was significantly different in yield in 2005 at all dates. It appears that cotton needs to be planted as soon as soil temperature will allow, to obtain the highest yields. From the last three years data, it appears as if PM 2145 R maybe the best variety to plant for the region. PM 2145 R has had the highest yield for all three years of the study at each date (Table 1 and 2.)

Table 1. Cotton lint yields (lbs/ac) for year, variety, and planting date at OPREC.

| Variety     | Planting Date | 2003                 | 2004                 | Two-year             |
|-------------|---------------|----------------------|----------------------|----------------------|
| PM 2145 R   | 5/10          | 1,087 a <sup>†</sup> | 1,153 a <sup>†</sup> | 1,120 a <sup>†</sup> |
| PM 2266 RR  | 5/10          | 1,029 a              | 1,049 a              | 1,039 a              |
| PM 2167 RR  | 5/10          | 1,033 a              | 1,024 a              | 1,029 a              |
| PM 2280 B/R | 5/10          | 746 bc               | 1,025 a              | 885 ab               |
| DP 555 B/R  | 5/10          | 664 bc               | 1,102 a              | 883 ab               |
| ST 2454 R   | 5/10          | 859 b                | 813 ab               | 836 abc              |
| PM 2167 RR  | 5/30          | 998 a                | 403 b                | 701 bc               |
| PM 2266 RR  | 5/30          | 885 b                | 434 b                | 659 bc               |
| ST 2454 R   | 5/30          | 795 b                | 468 b                | 632 bc               |
| PM 2145 R   | 5/30          | 923 a                | 281 b                | 602 bc               |
| DP 555 B/R  | 5/30          | 613 bc               | 502 b                | 558 c                |
| PM 2280 B/R | 5/30          | 747 bc               | 310 b                | 529 c                |

<sup>†</sup>Yields with same letter not significantly different

Table 2. Cotton lint yields (lbs/ac) for 2005 by planting date and highest yielding variety at OPREC.

| Planting date | Yield | PM 2145 R |
|---------------|-------|-----------|
| May 7         | 845   | 1,064     |
| May 15        | 682   | 786       |
| May 30        | 509   | 646       |
| L.S.D.        | 73    | NA        |

This report also contains the loan rates for all varieties at each planting date in 2005 (Table 3). The loan rate is a reflection of quality, the higher the rate, the higher the lint quality. The difference in loan rate was also affected by planting date more than variety selection in 2004 (data not shown). In 2005 no difference was found in loan rate between May 7 and 15, but both dates were of higher than for May 30. The loan rates in 2005 were significantly higher than 2004 approximately 4 cents per pound (2004 data no shown). Also included is gross value of lint per acre, with PM 215 R also having the highest gross in 2004 at \$517.57/ac.

Table 2. Gross returns for cotton varieties and planting date in 2005 at OPREC.

| Variety     | Planting Date | 2005 yield (lb/ac) | Loan Value | Dollars/ac |
|-------------|---------------|--------------------|------------|------------|
| PM 2145 R   | 5/7           | 1,064              | 0.487      | 518.19     |
| PM 2167 RR  | 5/7           | 958                | 0.497      | 475.88     |
| PM 2280 B/R | 5/7           | 889                | 0.479      | 425.73     |
| PM 2266 RR  | 5/7           | 952                | 0.440      | 419.47     |
| ST 2454 R   | 5/7           | 673                | 0.519      | 351.02     |
| DP 555 B/R  | 5/7           | 534                | 0.480      | 256.19     |
| PM 2167 RR  | 5/15          | 780                | 0.489      | 382.04     |
| PM 2145 R   | 5/15          | 787                | 0.485      | 381.90     |
| PM 2280 B/R | 5/15          | 739                | 0.463      | 342.21     |
| PM 2266 RR  | 5/15          | 713                | 0.476      | 339.08     |
| ST 2454 R   | 5/15          | 651                | 0.480      | 311.98     |
| DP 555 B/R  | 5/15          | 424                | 0.479      | 202.95     |
| PM 2145 R   | 5/30          | 646                | 0.429      | 277.20     |
| PM 2280 B/R | 5/30          | 618                | 0.434      | 268.29     |
| PM 2167 RR  | 5/30          | 546                | 0.441      | 240.91     |
| PM 2266 RR  | 5/30          | 568                | 0.423      | 240.31     |
| ST 2454 R   | 5/30          | 407                | 0.451      | 183.41     |
| DP 555 B/R  | 5/30          | 272                | 0.429      | 116.51     |

## EVALUATION OF PRICKLY PEAR CACTUS CONTROL WITH VARIOUS HERBICIDES

Curtis Bensch

An experiment was conducted at the Oklahoma Panhandle Research and Extension Center at Goodwell, OK to examine efficacy of various herbicides on prickly pear cactus. Treatment particulars were:

**Crop:** native range (dominated by buffalograss and blue grama)

**Location:** Goodwell, OK in OPSU Pasture #8

**Experimental Design:** RCB

**plot size:** 20' x 50'

**# of reps:** 4

**Soil Type:** Gruver Clay Loam

| APPLICATION TYPE              | POST                                |
|-------------------------------|-------------------------------------|
| Date applied [mm/dd/yy]       | 06/17/04                            |
| Time [hh:mm – hh:mm]          | 3:30 – 5:00                         |
| Incorporation equipment       | na                                  |
| Incorporation depth [in]      | na                                  |
| Air/ 4" Soil temperature [°F] | 83 / 86                             |
| Relative humidity [%]         | 85                                  |
| Wind [mph, direction]         | 5-10 mph, SE                        |
| Weather [sunny, etc.]         | partly cloudy                       |
| Soil moisture                 | adequate                            |
| Crop stage/Height             | buffalograss 1-3"                   |
| Sprayer type/mpg              | Cub tractor w/<br>compressed air/ 3 |
| Nozzle type/Size              | TeeJet 8015vs                       |
| Boom ht/# Noz/Spacing (in)    | 19"/ 20"                            |
| GPA/PSI                       | 15 / 40                             |
| Applied by                    | Bensch                              |
| <b>Weed Species</b>           | <b>growth stage</b>                 |
| Prickly pear cactus           | mid-bloom                           |

Oklahoma Panhandle Research & Extension Center, Goodwell, OK.

| EVALUATION OF PRICKLY PEAR CACTUS CONTROL<br>WITH VARIOUS HERBICIDES |  |           |                               |                                      |
|--|--|-----------|-------------------------------|--------------------------------------|
| trt #  | Rating Date<br>Application                           | Treatment | Rate                          | 7/21/2005<br>prickly pear<br>Control |
| 1  | 2,4-D  | POST      | 2 pt/A                        | 11                                   |
| 2  | 2,4-D  | POST      | 3 pt/A                        | 60                                   |
| 3  | Banvel (Dicamba)                                     | POST      | 3 pt/A                        | 50                                   |
| 4  | Weedmaster (2,4-D + dicamba)                         | POST      | 2 pt/A                        | 45                                   |
| 5  | Tordon 22k (picloram)                                | POST      | 1 pt/A                        | 75                                   |
| 6  | Tordon 22k (picloram)                                | POST      | 2 pt/A                        | 95                                   |
| 7  | Grazon P+D (picloram + 2,4-D)                        | POST      | 4 pt/A                        | 89                                   |
| 8  | Cimarron Max (metsulfuron + 2,4-D +<br>dicamba)      | POST      | 0.25 oz part A<br>1 pt part B | 86                                   |
| 9  | Overdrive (diflufenzopyr + dicamba)<br>NIS<br>AMS    | POST      | 6 oz<br>0.25% v/v<br>5 lbs/A  | 51                                   |
| 10   | Remedy (tricyclopyr)<br>NIS                          | POST      | 2 pt/A<br>0.5% v/v            | 44                                   |
| 11   | Remedy (tricyclopyr)<br>Tordon 22k (picloram)<br>NIS | POST      | 1 pt/A<br>1 pt/A<br>0.5% v/v  | 79                                   |
| 12   | Velpar L (hexazinone)                                | POST      | 2cc/plant                     | 33                                   |
| 13   | Weedy control  | POST      |                               | 0                                    |
| LSD 5%<br>CV   |  |           |                               | 30<br>38                             |

## EVALUATION OF SANDBUR CONTROL IN SORGHUM

Curtis Bensch, Case Medlin, and Rick Kochenower

An experiment was conducted on a cooperator's field (J.B. Stewart) east of Keys, OK to examine efficacy of various herbicides on longspine sandbur in grain sorghum. Herbicides evaluated included labeled and non-labeled products for grain sorghum. Herbicides were applied PPI and then again PRE. Treatment particulars were:

**Crop/Variety:** grain sorghum / Sorghum Partners KS 35Y5

**Location:** Keys, OK

**Planting Date:** June 21, 2005

**Experimental Design:** RCB

**# of reps:** 4

**plot size:** 10' x 25'

**row spacing:** 30"

**Planting Rate:** 22,000

**Harvest Date:** November 11, 2005

**Soil Type:** Conlen Dalhart Complex

| Application type              | PPI                         | PRE                         |
|-------------------------------|-----------------------------|-----------------------------|
| Date applied [mm/dd/yy]       | 06/13/2005                  | 06/22/2005                  |
| Time [hh:mm – hh:mm]          | 11:00 am                    | 6:00 pm                     |
| Incorporation equipment       | field cultivator            | na                          |
| Incorporation depth [in]      | 1 "                         | na                          |
| Air/ 4" Soil temperature [°F] | 75 / 67                     | 80 / 76                     |
| Wind [mph, direction]         | 5-10, NW                    | 10 SW                       |
| Weather [sunny, etc.]         | partly cloudy               | mostly sunny                |
| Soil moisture                 | adequate                    | adequate                    |
| Crop stage/Height             | na                          | na                          |
| Sprayer type/mph              | CO <sub>2</sub> backpack, 3 | CO <sub>2</sub> backpack, 3 |
| Nozzle type/Size              | TeeJet 8015vs               | TeeJet 8015vs               |
| Boom ht/# Noz/Spacing (in)    | 19" / 4@19"                 | 19" / 4@19"                 |
| GPA/PSI                       | 15 / 40                     | 15 / 40                     |
| Applied by                    | Bensch                      | Bensch                      |

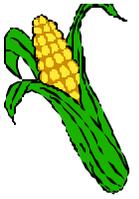
Oklahoma Panhandle Research & Extension Center, Goodwell, OK

| 2005 EVALUATION OF LONGSPINE SANDBUR CONTROL<br>WITH VARIOUS PRE and PPI HERBICIDES |             |                        |            |                           |                           |   |                           |
|---|-------------|------------------------|------------|---------------------------|---------------------------|---|---------------------------|
|   |             |                        |            | Sandbur<br>Control<br>(%) | Sandbur<br>Control<br>(%) | Sorghum<br>Injury<br>(% stand<br>reduction) | Grain<br>Yield<br>(bu/ac) |
|   | Rating Date |                        |            | 07/13/20<br>05            | 07/26/2005                | 07/26/2005                                  | 11/11/2005                |
| #   | Application | Treatment              | Rate       |                           |                           |   |                           |
| 1   | --          | Untreated Check        |            | 0                         | 0                         | 6   | 37                        |
| 2   | PPI         | Atrazine               | 1 qt/a     | 55                        | 38                        | 11  | 36                        |
| 3   | PPI         | Bicep II Magnum        | 2 qt/a     | 81                        | 83                        | 8   | 36                        |
| 4   | PPI         | Lumax                  | 2.5 qt/a   | 80                        | 66                        | 9   | 48                        |
| 5   | PPI         | Guardsman Max          | 1.75 qt/a  | 95                        | 81                        | 8   | 50                        |
| 6   | PPI         | Lexar                  | 3 qt/a     | 75                        | 69                        | 10  | 41                        |
| 7   | PPI         | Prowl H <sub>2</sub> O | 2 qt/a     | 95                        | 97                        | 55  | 27                        |
| 8   | PPI         | Callisto               | 6 fl oz/a  | 38                        | 18                        | 1   | 29                        |
| 9   | PPI         | Camix                  | 2 qt/a     | 86                        | 69                        | 5   | 48                        |
| 10  | PPI         | Axiom DF               | 11 oz wt/a | 33                        | 23                        | 4   | 29                        |
| 11  | --          | Untreated Check        |            | 0                         | 0                         | 10  | 28                        |
| 12  | PRE         | Atrazine               | 1 qt/a     | 13                        | 28                        | 4   | 32                        |
| 13  | PRE         | Bicep II Magnum        | 2 qt/a     | 75                        | 76                        | 10  | 37                        |
| 14  | PRE         | Lumax                  | 2.5 qt/a   | 44                        | 38                        | 9   | 41                        |
| 15  | PRE         | Guardsman Max          | 1.75 qt/a  | 36                        | 25                        | 15  | 32                        |
| 16  | PRE         | Lexar                  | 3 qt/a     | 34                        | 30                        | 8   | 38                        |
| 17  | PRE         | Prowl H <sub>2</sub> O | 2 qt/a     | 71                        | 59                        | 13  | 31                        |
| 18  | PRE         | Callisto               | 6 fl oz/a  | 13                        | 14                        | 4   | 29                        |
| 19  | PRE         | Camix                  | 2 qt/a     | 30                        | 36                        | 0   | 41                        |
| 20  | PRE         | Axiom DF               | 11 oz wt/a | 38                        | 34                        | 1   | 32                        |
|   |             |                        | LSD (0.05) | 35                        | 35                        | 11  | 19                        |
|   |             |                        | CV         | 50                        | 57                        | 82  | 37                        |

# Appendix



# OKLAHOMA PANHANDLE CORN PERFORMANCE TRIALS, 2005



## *PRODUCTION TECHNOLOGY CROPS*

OKLAHOMA COOPERATIVE EXTENSION SERVICE  
DEPARTMENT OF PLANT AND SOIL SCIENCES  
DIVISION OF AGRICULTURAL SCIENCES & NATURAL RESOURCES  
OKLAHOMA STATE UNIVERSITY

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## **TRIAL OBJECTIVES AND PROCEDURES**

Each year the Oklahoma Cooperative Extension Service conducts corn performance trials in the Oklahoma panhandle. These trials provide producers, extension educators, industry representatives, and researchers with information on corn hybrids marketed in Oklahoma. Company or brand name, entry designation, plant characteristics, and maturity information, was provided by the companies and was not validated by OSU; therefore, we strongly recommend consulting company representatives for more detailed information regarding these traits and disease resistance ratings (Table 2). Company participation was voluntary, so some hybrids marketed in Oklahoma were not included in the test.

Irrigated test plots were established at the Oklahoma Panhandle Research and Extension Center (OPREC), Goodwell and the Joe Webb farm, near Guymon. Fertility levels, herbicide use, and soil series (when available) are listed with data. Trials were two 25-foot rows seeded at the target population of 32,000 plants/ac. Plots were trimmed to 20 feet prior to being harvested for grain data. Ensilage trial was seeded the same as grain trial with 10 feet of one row harvested for yield. The experimental design was a randomized complete block with four replications. Grain yields are reported consistent with U.S. No. 1 grade corn i.e. 56 lbs/bu and adjusted to moisture content of 15.5%. Corn ensilage was harvested at the early dent stage with average moisture content of 67.5 % and production is reported as tons/ac adjusted to 65% moisture.

## **GROWING CONDITIONS**

The planting period was characterized by excellent soil moisture from rainfall received throughout the winter and spring. No pre-irrigation was required to obtain desired subsoil moisture levels. Soil temperature of 61° F on April 1 at the two-inch depth was consistent with observations in previous years, although soil temperatures cooled to 49° F on May 1. The cooler soil temperatures in late April and early May delayed emergence of corn planted the last half of April. During the growing season rainfall was below the long-term average (Table 1), therefore more irrigation was required than in 2004. Although OPREC didn't have hail for the third year in a row, the panhandle region had several yield reducing hailstorms from mid May until early July. Pollination period (July 1 through July 15) temperatures for 2005 were similar to 2002 - 2004, which were near the long-term average (Fig. 1). High moisture corn was cut without delays from weather in late August and early September, and there were no major delays for dry corn harvested from mid September to mid October.

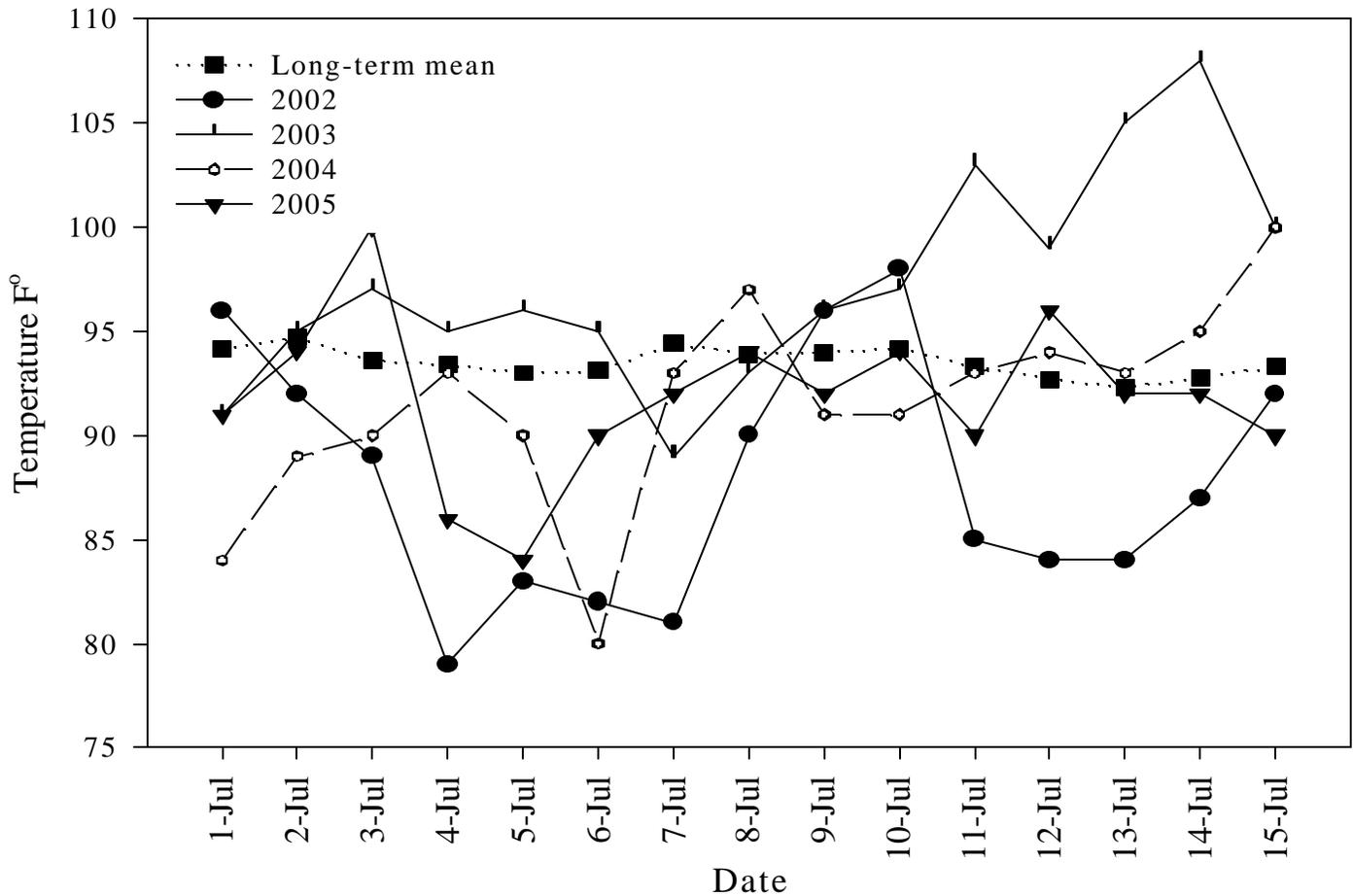
## **RESULTS**

Grain yield, test weight, harvest moisture, and plant populations for OPREC and Webb trials are presented (Tables 3-6). Ensilage yields are reported in Table 6. Crude protein, ADF, and TDN, however are not reported, because no differences existed among hybrids. Averages were 8.6, 31.0, and 64.7 %, for Crude Protein, ADF, and TDN respectively. Similarly, there were no differences among hybrids in energy values for, maintenance, lactation, and gain values and averages were 0.66, 0.67, and 0.40 respectively.

Small differences in yield or other parameters should not be overemphasized. Least Significant Differences (L.S.D.) are shown at the bottom of each table. Unless two entries differ by at least the L.S.D. shown, little confidence can be placed in one being superior to another. The coefficient of variation (C.V.) is provided as an estimate of the precision of the data with respect to the mean. To provide some indication of yield stability, 2-year means are provided in tables 5, 6, and 7. Producers interested in comparing hybrids for consistency of yield should consult these tables.

The following people have contributed to this report by assisting in crop production, data collection, and publication; Donna George, Lawrence Bohl, Matt LaMar, Jason Weirich, Justin Stauffer, Tony Mills, and Craig Chesnut. Their efforts are greatly appreciated.

**Figure 1. Daily OPREC high temperatures for July 1 through July 15, 2002 through 2005, and long-term mean.**



**Table 1. Rainfall and irrigation for irrigated corn performance trial locations, 2005.**

| Location       | April | May  | June | July | Aug  | Total |
|----------------|-------|------|------|------|------|-------|
| Long-term mean | 1.33  | 3.25 | 2.86 | 2.58 | 2.28 | 12.30 |
| Texas county   | 0.93  | 2.85 | 2.01 | 1.40 | 3.21 | 10.04 |
| Irrigation     |       |      |      |      |      |       |
| OPREC          | 0.0   | 2.0  | 4.0  | 5.0  | 3.0  | 14.0  |
| Joe Webb       | 0.0   | 2.0  | 5.0  | 5.0  | 5.0  | 17.0  |

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**Table 2. Characteristics of Corn Hybrids in Panhandle Corn Performance Trials, 2005.**

| Company                                     | Hybrid             | Plant Characteristics |    |    |     | Maturity<br>Days |
|---|--------------------|-----------------------|----|----|-----|------------------|
|   |                    | SV                    | SS | SG | EP  |                  |
| Stauffer Seeds                              | 2721               | 3                     | 2  | 3  | M   |                  |
| Garst Seed Company                          | 8292YGI            | 2                     | 3  | 2  | H   | 118              |
| Garst Seed Company                          | 8377YGI/RR         | 2                     | 4  | 3  | M   | 115              |
| Garst Seed Company                          | 8270 RR            | 3                     | 2  | 2  | H   | 118              |
| Garst Seed Company                          | 8275 YG1           | 2                     | 3  | 3  | M   | 116              |
| Garst Seed Company                          | 8383YGI            | 2                     | 3  | 3  | M-H | 114              |
| Garst Seed Company                          | 8380 IT            | 2                     | 2  | 3  | M-H | 116              |
| Golden Harvest Seeds                        | H-9250 Bt/RR       | 3                     | 3  | 3  | M   | 114              |
| Golden Harvest Seeds                        | H-9485 Bt          | 3                     | 5  | 4  | M-H | 115              |
| Laser Brand (Distributed by Golden Harvest) | L-9H50 Bt/RR       | 3                     | 3  | 3  | M   | 114              |
| Frontier Hybrids, Inc.                      | PB 654 YGCB        | 1                     | 1  | 2  | H   | 117              |
| Frontier Hybrids, Inc.                      | F-3175             | 1                     | 1  | 2  | M   | 116              |
| Frontier Hybrids, Inc.                      | F-3250             | 1                     | 1  | 2  | M   | 117              |
| NC+ Hybrids                                 | 5433 RB            | 2                     | 2  | 2  | M   | 114              |
| NC+ Hybrids                                 | 7401               | NA                    | 2  | 2  | H   | 118              |
| Frontier Hybrids, Inc.                      | PB 661 RR          | 1                     | 1  | 1  | M   | 118              |
| Dekalb Genetics                             | DKC 60-19 RR2/YGCB | 3                     | 3  | 5  | M-L | 110              |
| Dekalb Genetics                             | DKC 63-62 RR2      | 3                     | 4  | 5  | M-H | 113              |
| Dekalb Genetics                             | DKC 66-21 YGCB     | 2                     | 5  | 3  | M   | 116              |
| Dekalb Genetics                             | DKC 61-72 RR2      | 3                     | 3  | 3  | M-L | 111              |
| Asgrow Seed                                 | RX752YG            | 3                     | 4  | 5  | M   | 112              |
| Triumph Seed Co., Inc                       | 1866Bt             | 2                     | 2  | 2  | H   | 116              |
| Triumph Seed Co., Inc                       | 1536 CbRR          | 2                     | 2  | 2  | M   | 114              |
| Triumph Seed Co., Inc                       | 1416 Bt            | 2                     | 2  | 2  | M   | 114              |
| NTI-SPRRS                                   | WWFH01             | 3                     | 2  | NA | M   | 90               |
| NTI-SPRRS                                   | WWFH02             | 3                     | 2  | NA | M   | 90               |
| NTI-SPRRS                                   | WWFH04             | 3                     | 2  | NA | M   | 90               |
| NTI-SPRRS                                   | WWFH05             | 3                     | 2  | NA | M   | 90               |
| NTI-SPRRS                                   | WWFH06             | 3                     | 2  | NA | M   | 90               |
| NTI-SPRRS                                   | WWFH07             | 3                     | 2  | NA | M   | 90               |
| NTI-SPRRS                                   | WWFH10             | 3                     | 2  | NA | M   | 90               |
| NTI-SPRRS                                   | WWFH11             | 3                     | 2  | NA | M   | 90               |
| NTI-SPRRS                                   | WWFH15             | 3                     | 2  | NA | M   | 90               |

\* Plant Characteristics: SV - Seedling Vigor; SS - stalk strength; SG - stay green; EP - ear placement (Low, Medium, High)  
 Rating scale for above characteristics except ear placement 1 = excellent - 9 = poor

**Table 3. Grain Yield and Harvest Parameters from OPREC location for hybrids more than 110 days to maturity Oklahoma Corn Performance Trials, 2005.**

| Company Brand Name                          | Entry Designation  | Grain Yield bu/ac |          | Test Weight lb/bu |          | Harvest Moisture | Plant Population plants/ac |
|---|--------------------|-------------------|----------|-------------------|----------|------------------|----------------------------|
|   |                    | 2005              | Two year | 2005              | Two year |                  |                            |
| Garst Seed Company                          | 8377YGI/RR         | 184.7             | 206.0    | 55.8              | 55.4     | 17.8             | 28,800                     |
| Garst Seed Company                          | 8292YGI            | 192.5             | 203.8    | 55.7              | 55.5     | 21.1             | 29,000                     |
| Triumph Seed Co., Inc                       | 1416 Bt            | 193.8             | 202.0    | 56.0              | 55.5     | 16.2             | 28,300                     |
| Garst Seed Company                          | 8270 RR            | 184.6             | 200.1    | 56.3              | 55.6     | 19.6             | 28,800                     |
| Triumph Seed Co., Inc                       | 1866Bt             | 170.9             | 196.0    | 57.2              | 57.2     | 18.3             | 26,400                     |
| Frontier Hybrids, Inc.                      | F-3175             | 164.6             | 194.1    | 56.8              | 56.3     | 20.5             | 27,200                     |
| Garst Seed Company                          | 8383YGI            | 174.5             | 192.3    | 56.0              | 56.4     | 16.9             | 26,400                     |
| Asgrow Seed                                 | RX752YG            | 178.5             | 189.7    | 56.6              | 56.2     | 16.7             | 29,100                     |
| Frontier Hybrids, Inc.                      | F-3250             | 172.8             | 186.7    | 56.8              | 57.0     | 20.0             | 28,500                     |
| Dekalb Genetics                             | DKC 60-19 RR2/YGCB | 172.9             | 182.8    | 57.0              | 56.8     | 16.1             | 27,800                     |
| Garst Seed Company                          | 8275 YG1           | 191.8             | ----     | 55.7              | ----     | 18.0             | 26,700                     |
| Triumph Seed Co., Inc                       | 1536 CbRR          | 190.7             | ----     | 55.3              | ----     | 18.1             | 27,700                     |
| Laser Brand (Distributed by Golden Harvest) | L-9H50 Bt/RR       | 188.7             | ----     | 55.8              | ----     | 17.9             | 28,100                     |
| Dekalb Genetics                             | DKC 66-21 YGCB     | 187.2             | ----     | 55.8              | ----     | 18.4             | 29,200                     |
| Golden Harvest Seeds                        | H-9250 Bt/RR       | 186.5             | ----     | 56.1              | ----     | 17.1             | 28,100                     |
| Stauffer Seeds                              | 2721               | 185.0             | ----     | 54.4              | ----     | 18.2             | 28,200                     |
| NC+ Hybrids                                 | 5433 RB            | 180.0             | ----     | 55.9              | ----     | 17.7             | 24,400                     |
| Golden Harvest Seeds                        | H-9485 Bt          | 179.8             | ----     | 56.7              | ----     | 16.8             | 27,300                     |
| Garst Seed Company                          | 8380 IT            | 177.0             | ----     | 54.9              | ----     | 18.2             | 26,100                     |
| Dekalb Genetics                             | DKC 63-62 RR2      | 167.1             | ----     | 57.7              | ----     | 14.9             | 26,200                     |
| Dekalb Genetics                             | DKC 61-72 RR2      | 162.6             | ----     | 54.2              | ----     | 15.4             | 27,800                     |
| Frontier Hybrids, Inc.                      | PB 654 YGCB        | 156.6             | ----     | 57.4              | ----     | 17.9             | 28,000                     |
| NC+ Hybrids                                 | 7401               | 153.3             | ----     | 53.1              | ----     | 21.6             | 27,200                     |
| Frontier Hybrids, Inc.                      | PB 661 RR          | 136.5             | ----     | 56.4              | ----     | 18.6             | 26,400                     |
|   | Mean               | 176.5             | 195.4    | 56.0              | 56.2     | 18.0             | 27,600                     |
|   | CV%                | 7.5               | NA       | 1.3               | NA       | 4.7              | 10.4                       |
|   | L.S.D.             | 18.6              | 13.5     | 1.0               | 0.8      | 1.2              | NS                         |

**Table 4. Grain Yield and Harvest Parameters hybrids less than 110 days to maturity, at OPREC and Joe Webb locations Oklahoma Corn Performance Trials, 2005.**

| Company Brand Name | Entry Designation | Grain Yield lb/bu |          | Test Weight bu/ac |          | Harvest Moisture |          | Plant Population plants/ac |          |
|--------------------|-------------------|-------------------|----------|-------------------|----------|------------------|----------|----------------------------|----------|
|                    |                   | OPREC             | Joe Webb | OPREC             | Joe Webb | OPREC            | Joe Webb | OPREC                      | Joe Webb |
| NTI-SPRRS          | WWFH11            | 170.2             | 161.3    | 56.1              | 57.2     | 18.9             | 19.2     | 27,000                     | 25,900   |
| NTI-SPRRS          | WWFH01            | 148.3             | 153.4    | 58.4              | 57.8     | 15.7             | 14.7     | 25,300                     | 26,700   |
| NTI-SPRRS          | WWFH05*           |                   | 153.1    |                   | 57.2     |                  | 13.0     |                            | 29,100   |
| NTI-SPRRS          | WWFH15            | 137.7             | 150.1    | 58.4              | 58.5     | 15.7             | 13.9     | 25,500                     | 27,700   |
| NTI-SPRRS          | WWFH10            | 131.8             | 147.4    | 54.4              | 56.8     | 16.0             | 15.1     | 22,100                     | 26,100   |
| NTI-SPRRS          | WWFH04            | 132.6             | 145.2    | 57.6              | 58.1     | 15.1             | 13.8     | 27,400                     | 29,400   |
| NTI-SPRRS          | WWFH06*           |                   | 144.7    |                   | 59.4     |                  | 12.6     |                            | 27,400   |
| NTI-SPRRS          | WWFH02            | 112.7             | 141.4    | 58.8              | 58.8     | 16.3             | 13.8     | 25,800                     | 28,700   |
| NTI-SPRRS          | WWFH07            | 124.1             | 131.5    | 56.5              | 57.0     | 12.4             | 11.7     | 25,800                     | 27,200   |
|                    | Mean              | 136.8             | 147.6    | 57.2              | 57.9     | 15.7             | 14.2     | 25,600                     | 27,600   |
|                    | CV%               | 9.1               | 8.9      | 1.2               | 0.8      | 5.0              | 6.4      | 10.2                       | 5.8      |
|                    | L.S.D.            | 18.6              | 19.1     | 1.0               | 0.7      | 1.2              | 1.3      | NS                         | 2,300    |

\* Only had enough seed for Joe Webb trial

Cooperator: OPREC

Soil Series: Richfield Clay Loam

Conventional tillage following soybean in 2004

Soil Test: N: 38 P: 14 K: 936 pH: 7.6

Fertilizer: N: 200 lbs/ac P: 50 lbs/ac P<sub>2</sub>O<sub>5</sub> K: 0

Herbicide: 2 qt/ac Cinch ATZ Lite (Preemergence)

Planting Date: April 7, 2005

Harvest Date: Grain September 15, 2005;

Ensilage August 19, 2005

Cooperator: Joe Webb

Soil Series: Richfield Clay Loam

Strip-Till: Following wheat and sunflowers in 2004

Soil Test: N: NA P: NA K: NA pH: NA

Fertilizer: N: 230 lbs/ac P: 0 K: 0

Herbicide: 1.5qt/ac Harness Extra (Preemergence)

Planting Date: April 6, 2005

Harvest Date: Grain September 13, 2005

**Table 5. Grain Yield and Harvest Parameters from Joe Webb location for hybrids more than 110 days to maturity Oklahoma Corn Performance Trials, 2005.**

| Company Brand Name                          | Entry Designation  | Grain Yield bu/ac |          | Test Weight lb/bu |          | Harvest Moisture | Plant Population plants/ac |
|---|--------------------|-------------------|----------|-------------------|----------|------------------|----------------------------|
|   |                    | 2005              | Two year | 2005              | Two year |                  |                            |
| Triumph Seed Co., Inc                       | 1866Bt             | 219.5             | 244.8    | 57.9              | 57.5     | 18.0             | 31,100                     |
| Frontier Hybrids, Inc.                      | F-3175             | 211.1             | 237.1    | 57.5              | 57.0     | 19.1             | 29,300                     |
| Garst Seed Company                          | 8292YGI            | 221.5             | 228.2    | 56.7              | 55.8     | 21.7             | 31,800                     |
| Stauffer Seeds                              | 2721               | 198.9             | 222.9    | 56.8              | 56.2     | 16.4             | 31,300                     |
| Garst Seed Company                          | 8377YGI/RR         | 202.4             | 212.5    | 56.9              | 56.0     | 17.5             | 31,700                     |
| Triumph Seed Co., Inc                       | 1416 Bt            | 190.5             | 208.6    | 57.1              | 56.0     | 16.3             | 30,900                     |
| Asgrow Seed                                 | RX752YG            | 190.1             | 207.6    | 57.7              | 57.2     | 17.1             | 31,100                     |
| Garst Seed Company                          | 8270 RR            | 196.6             | 205.6    | 55.8              | 55.1     | 18.1             | 30,800                     |
| Garst Seed Company                          | 8383YGI            | 183.7             | 202.1    | 57.4              | 56.7     | 16.6             | 27,000                     |
| Dekalb Genetics                             | DKC 60-19 RR2/YGCB | 175.8             | 193.8    | 57.9              | 57.3     | 15.2             | 30,700                     |
| Frontier Hybrids, Inc.                      | F-3250             | 176.5             | 186.3    | 57.6              | 56.6     | 19.5             | 27,200                     |
| NC+ Hybrids                                 | 5433 RB            | 208.8             | ----     | 57.0              | ----     | 16.8             | 30,300                     |
| Garst Seed Company                          | 8275 YG1           | 208.5             | ----     | 55.9              | ----     | 18.0             | 32,100                     |
| Garst Seed Company                          | 8380 IT            | 207.6             | ----     | 56.5              | ----     | 18.2             | 29,800                     |
| Golden Harvest Seeds                        | H-9250 Bt/RR       | 198.3             | ----     | 57.5              | ----     | 16.6             | 30,500                     |
| NC+ Hybrids                                 | 7401               | 198.3             | ----     | 53.1              | ----     | 22.1             | 28,100                     |
| Dekalb Genetics                             | DKC 66-21 YGCB     | 198.1             | ----     | 56.9              | ----     | 18.8             | 29,700                     |
| Laser Brand (Distributed by Golden Harvest) | L-9H50 Bt/RR       | 194.2             | ----     | 56.9              | ----     | 17.2             | 29,400                     |
| Frontier Hybrids, Inc.                      | PB 654 YGCB        | 193.6             | ----     | 57.1              | ----     | 18.6             | 30,500                     |
| Triumph Seed Co., Inc                       | 1536 CbRR          | 193.4             | ----     | 56.4              | ----     | 17.0             | 29,800                     |
| Dekalb Genetics                             | DKC 63-62 RR2      | 190.3             | ----     | 57.9              | ----     | 15.8             | 31,700                     |
| Dekalb Genetics                             | DKC 61-72 RR2      | 189.4             | ----     | 57.0              | ----     | 16.1             | 30,800                     |
| Frontier Hybrids, Inc.                      | PB 661 RR          | 184.6             | ----     | 56.6              | ----     | 18.7             | 27,700                     |
| Golden Harvest Seeds                        | H-9485 Bt          | 170.2             | ----     | 56.0              | ----     | 18.3             | 29,900                     |
|   | Mean               | 195.9             | 213.6    | 56.8              | 56.5     | 17.8             | 30,100                     |
|   | CV%                | 12                | ----     | 0.9               | ----     | 4.7              | 7.0                        |
|   | L.S.D.             | NS                | 22.0     | 0.7               | 0.6      | 1.2              | 3,000                      |

**Table 6. Ensilage Yields and Quality Panhandle Corn Performance Trial, 2005.**

| Company<br>Brand<br>Name                    | Entry<br>Designation | YIELD<br>Tons/ac |          | Plant<br>Population<br>plants/ac |
|---|----------------------|------------------|----------|----------------------------------|
|   |                      | 2005             | Two-year |                                  |
| Frontier Hybrids, Inc.                      | F-3175               | 25.4             | 27.5     | 25,700                           |
| Triumph Seed Co., Inc                       | 1866Bt               | 25.6             | 26.4     | 26,400                           |
| Garst Seed Company                          | 8270 RR              | 23.7             | 24.3     | 28,000                           |
| Garst Seed Company                          | 8292YGI              | 24.5             | 24.2     | 29,800                           |
| Garst Seed Company                          | 8377YGI/RR           | 24.1             | 24.1     | 31,500                           |
| Frontier Hybrids, Inc.                      | F-3250               | 22.9             | 23.9     | 26,900                           |
| Dekalb Genetics                             | DKC 60-19 RR2/YGCB   | 22.9             | 23.5     | 28,900                           |
| Triumph Seed Co., Inc                       | 1416 Bt              | 21.4             | 22.8     | 28,800                           |
| Asgrow Seed                                 | RX752YG              | 22.5             | 22.2     | 30,400                           |
| Garst Seed Company                          | 8383YGI              | 21.6             | 22.1     | 27,000                           |
| Garst Seed Company                          | 8275 YG1             | 26.0             |          | 30,700                           |
| Dekalb Genetics                             | DKC 66-21 YGCB       | 25.8             |          | 28,000                           |
| NC+ Hybrids                                 | 5433 RB              | 24.7             |          | 29,300                           |
| Triumph Seed Co., Inc                       | 1536 CbRR            | 24.6             |          | 29,900                           |
| Frontier Hybrids, Inc.                      | PB 654 YGCB          | 24.4             |          | 29,500                           |
| Garst Seed Company                          | 8380 IT              | 23.9             |          | 28,900                           |
| Laser Brand (Distributed by Golden Harvest) | L-9H50 Bt/RR         | 23.5             |          | 28,600                           |
| NTI-SPRRS                                   | WWFH11               | 23.3             |          | 27,700                           |
| Golden Harvest Seeds                        | H-9485 Bt            | 22.1             |          | 24,900                           |
| Golden Harvest Seeds                        | H-9250 Bt/RR         | 21.9             |          | 30,200                           |
| Dekalb Genetics                             | DKC 61-72 RR2        | 21.9             |          | 27,500                           |
| NTI-SPRRS                                   | WWFH01               | 21.9             |          | 25,600                           |
| NTI-SPRRS                                   | WWFH06               | 21.0             |          | 27,600                           |
| NTI-SPRRS                                   | WWFH07               | 20.9             |          | 28,500                           |
| NTI-SPRRS                                   | WWFH15               | 20.9             |          | 28,400                           |
| NC+ Hybrids                                 | 7401                 | 20.8             |          | 30,300                           |
| Frontier Hybrids, Inc.                      | PB 661 RR            | 20.4             |          | 26,400                           |
| Dekalb Genetics                             | DKC 63-62 RR2        | 20.4             |          | 27,500                           |
| NTI-SPRRS                                   | WWFH04               | 20.2             |          | 26,400                           |
| NTI-SPRRS                                   | WWFH10               | 19.4             |          | 27,800                           |
| Stauffer Seeds                              | 2721                 | 19.3             |          | 28,200                           |
| NTI-SPRRS                                   | WWFH05               | 19.1             |          | 29,100                           |
| NTI-SPRRS                                   | WWFH02               | 18.9             |          | 27,700                           |
|   | Mean                 | 22.4             | 24.1     | 28,200                           |
|   | CV%                  | 10.7             | 9.3      | 6.9                              |
|   | L.S.D.               | 3.9              | 2.6      | 3,200                            |



# GRAIN SORGHUM PERFORMANCE TRIALS IN OKLAHOMA, 2005

## PRODUCTION TECHNOLOGY CROPS

OKLAHOMA COOPERATIVE EXTENSION SERVICE  
DEPARTMENT OF PLANT AND SOIL SCIENCES  
DIVISION OF AGRICULTURAL SCIENCES & NATURAL RESOURCES  
OKLAHOMA STATE UNIVERSITY

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### TRIAL OBJECTIVES AND PROCEDURES

Each year, performance trials for hybrid grain sorghums are conducted by the Oklahoma Cooperative Extension Service to provide producers, extension educators, industry representatives, and researchers with information for hybrid grain sorghums marketed in Oklahoma.

Performance trials are conducted at eight locations in Oklahoma: Altus, Blackwell, Cherokee, Enid, Goodwell, Homestead, Keyes, and Tipton. Dry-land trials are conducted at all locations, with an additional irrigated trial at Goodwell. The Cherokee and Homestead locations are unique trials to evaluate certain hybrids (generally early and medium maturity) for planting in late April. In 2004 a trial was established at Enid to evaluate hybrids for use as a double crop. **All trial locations also have DK-44 and KS 585 planted with and without (WO) seed applied insecticide to determine the affect of these treatments.**

Grain sorghum hybrids entered (Table 1) were assigned by companies to their respective maturity groups (early, medium, and late) and trial locations,

therefore, all hybrids are not in all locations. Hybrids tested at the Cherokee, Homestead, and Enid locations were determined by Oklahoma State University. Companies submitted all hybrid characteristics presented in Table 1. This information was not determined or verified by Oklahoma State University. Company participation was voluntary; therefore some hybrids marketed in Oklahoma were not included in the test. Each maturity group was tested in a randomized complete block design with four replications. Plots were 2 30-inch rows by 25 feet. Plots were trimmed to 20 feet prior to harvest.

#### Highlights

The highest dryland grain yields in the last 8 years of trials were harvested in 2005. The highest yielding hybrids at Cherokee and Keyes were 136.6 and 135.3 bu/ac respectively. The high yields were due to timely rainfall at critical periods of plant development and sufficient nitrogen fertilizer. The trial at Cherokee averaged 111.0 bu/ac while the medium/full season maturities at Keyes averaged 108.2 bu/ac.

The trial at Homestead was dusted in, and when adequate rainfall occurred for emergence the stand was inadequate so the trial was abandoned.

combine.

Target populations, cooperating producers, fertilization, cultural practices, soil series, and herbicide use on all trials are listed with the results tables. Rainfall data from the nearest Mesonet site is also listed. Some trials are long distances from the nearest Mesonet site, therefore rainfall could be greater or less than reported. In 2005 only in-season rainfall is reported instead of yearly as in the past. Tractor powered cone planters were used to plant all trials with seeding rates adjusted for trial location. Trials were harvested with a (Massey-Ferguson 8) plot

### GROWING CONDITIONS

#### Moisture

Soil moisture conditions were poor for early-planted sorghum (mid April to early May) for most of the

state except the panhandle region. At the Blackwell, Cherokee, and Homestead locations emergence was delayed up to 3 weeks. In the panhandle, moisture was excellent for most of the planting season. As the season progressed rainfall was adequate during the vegetative stage of growth (approximately the first 40 days) for most of the state. Most drought stress occurred at or after flowering across the state. North central Oklahoma again had the highest dryland yield, with yields of 130 bu/ac reported for early-planted grain sorghum. Double crop yields were also near 100 bu/ac again at the Enid trial. The panhandle yields were above average even though plants exhibited drought stress during late July and early August. The Tipton and Altus locations were affected by drought stress during grain fill, which explains the low test weights observed at these trials.

## RESULTS

All trial locations were harvested in 2005 for the first time in several years except for Homestead, which had inadequate stands and varying emergence. Yields were average or better for all locations in 2005. Harvest for the Altus and Tipton locations was delayed due to rainfall in August, but no other major delays were experienced at trial locations or for producers around the state.

Grain yields are reported both as pounds per acre and bushel per acre threshed grain, adjusted to a moisture content of 14.0% (Tables 2-7). Test weight, plant population, and the number of heads per acre at harvest are reported. Bird damage and lodging are also reported when present at a location.

Different plant populations at each location precluded comparison between locations. Comparisons across maturity groups were not conducted. Producers should note that late maturing hybrids will generally yield more than early and medium maturity hybrids. However, the availability of moisture at critical crop

development periods often influences yield more than the yield differences associated with maturity groups.

When choosing a maturity group, the type of cropping system, planting date, planting rate and potential moisture should be taken into consideration. For more information consult Fact Sheet No. **2034** Grain Sorghum Planting Rates and Dates, and Fact Sheet No. **2113** Grain Sorghum Production Calendar.

Small differences in yield or other characteristics among hybrids should not be overemphasized. Least Significant Difference (L.S.D.) is a statistical test of yield differences and are shown at the bottom of each table. Unless two hybrids differ by at least the L.S.D. shown, little confidence can be placed in one hybrid being superior to another and the difference is probably not real.

The coefficient of variation (C.V.) is provided as an estimate of the precision of the data with respect to the mean for that location and maturity group. To provide some indication of yield stability, 2-year means for yield and test weight are provided where trials have been conducted for more than one year with more than three entries per maturity group. Producers interested in comparing hybrids for consistency of yield in a specific area should consult these tables.

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**Table 1. Seed source and hybrid characteristics of grain sorghum in the Oklahoma Grain Sorghum Performance Trials, 2005. All hybrids are susceptible to birds and are single cross.**

| Company Brand Name       | Hybrid     | Seed Color | Endo-sperm | Days to Mid-bloom | Greenbug Resistance |
|--------------------------|------------|------------|------------|-------------------|---------------------|
| Early Maturity           |            |            |            |                   |                     |
| Asgrow Seed              | Reward     | Bz         | Hy         | 56                | none                |
| Frontier Hybrids, Inc    | F-303C     | C          | Y          | 59                | E                   |
| Walter Moss Seed Co. LTD | M-927-ER   | R          | NA         | 56                | NA                  |
| Triumph Seed Co., Inc.   | TR 434     | R          | W          | 58                | C, E                |
| Dekalb Genetics Corp.    | DKS 36-00  | Bz         | HY         | 59                | C,E,I               |
| Asgrow Seed              | Pulsar     | Bz         | HY         | 60                | C,E,I               |
| Dekalb Genetics Corp.    | DKS 37-07  | Bz         | HY         | 60                | C,E,I               |
| Dekalb Genetics Corp.    | DKS 29-28  | Bz         | HY         | 56                | C,E                 |
| Frontier Hybrids, Inc    | F-222E     | R          | Y          | 50                | E                   |
| Medium Maturity          |            |            |            |                   |                     |
| Frontier Hybrids, Inc    | F-457E     | R          | Y          | 64                | E                   |
| Sorghum Partners Inc     | KS 585     | Bz         | HY         | 67                | C, E                |
| Garst Seed Company       | 5401       | R          | HY         | 68                | E                   |
| Garst Seed Company       | 5515       | Bz         | HY         | 67                | NA                  |
| NC+ Hybrids              | 6B50       | Bz         | HY         | 62                | None                |
| NC+ Hybrids              | 7C22       | C          | HY         | 68                | None                |
| NC+ Hybrids              | 5B89       | Bz         | HY         | 61                | C                   |
| Dekalb Genetics Corp.    | DKS 42-20  | Bz         | Hy         | 62                | C, E                |
| Dekalb Genetics Corp.    | DK 44      | Bz         | HY         | 67                | C, E                |
| Seed Resource            | SR 421     | Bz         | HY         | 64                | None                |
| Seed Resource            | SR 424     | R          | HY         | 64                | C, E                |
| Late Maturity            |            |            |            |                   |                     |
| Asgrow Seed              | A567       | Bz         | HY         | 71                | None                |
| Dekalb Genetics Corp.    | DKS 54-00  | Bz         | HY         | 72                | C,E,I               |
| Walter Moss Seed Co. LTD | M -929-MB  | Bz         | NA         | 80                | NA                  |
| Walter Moss Seed Co. LTD | M-1024-DPW | W          | NA         | 75                | NA                  |
| Asgrow Seed              | A571       | Bz         | HY         | 72                | NONE                |
| Sorghum Partners Inc     | NK 6673    | Bz         | HY         | 70                | C                   |
| Sorghum Partners Inc     | NK 8831    | Bz         | HY         | 74                | NONE                |
| Dekalb Genetics Corp.    | DKS 53-11  | Bz         | HY         | 71                | C,E,I               |

Seed Color: Br – Brown; W – White; Y – Yellow; Bz – Bronze; R – Red; C – Cream

Endosperm: HW – heterowaxy; W – waxy; HY – Heteroyellow; Y – Yellow; N – Non-waxy

Maturity group: Early (less than 60 days to mid-bloom); Medium (60 – 70 days to mid-bloom); Late – (70+ days to mid-bloom)

Greenbug Resistance: Biotype hybrid is resistance too

**Table 2. Results from Altus grain sorghum performance trial, 2005.**

| Company Brand Name       | Entry Designation | Grain Yield bu/ac 2005 | Test weight Lb/bu 2005 | Plant Population plants/ac | Head Population heads/plant |
|--------------------------|-------------------|------------------------|------------------------|----------------------------|-----------------------------|
| Early                    |                   |                        |                        |                            |                             |
| Triumph Seed Co., Inc.   | TR 434            | 44.2                   | 49.0                   | 23,400                     | 2.20                        |
| Frontier Hybrids, Inc    | F-222E            | 43.5                   | 49.4                   | 22,200                     | 2.00                        |
| Walter Moss Seed Co. LTD | M-927-ER          | 40.5                   | 49.5                   | 21,400                     | 2.57                        |
| Frontier Hybrids, Inc    | F-303C            | 32.8                   | 48.0                   | 21,200                     | 2.17                        |
|                          | Mean              | 40.3                   | 49.0                   | 22,100                     | 2.23                        |
|                          | C.V.%             | 11.8                   | 4.7                    | 2.7                        | 6.4                         |
|                          | L.S.D.            | 7.6                    | NS                     | 1,700                      | 0.23                        |

| Company Brand Name    | Entry Designation | Grain Yield bu/ac |          | Test weight lb/bu |          | Plant Population plants/ac | Head Population heads/plant |
|-----------------------|-------------------|-------------------|----------|-------------------|----------|----------------------------|-----------------------------|
|                       |                   | 2005              | Two-year | 2005              | Two-year |                            |                             |
| Medium                |                   |                   |          |                   |          |                            |                             |
| Sorghum Partners Inc. | KS 585 WO         | 63.3              | 64.2     | 52.7              | 55.9     | 23,700                     | 2.75                        |
| Sorghum Partners Inc  | KS 585            | 67.8              | 64.1     | 51.0              | 54.8     | 24,400                     | 2.64                        |
| Dekalb Genetics Corp. | DK 44             | 50.2              | 62.3     | 50.5              | 54.1     | 24,100                     | 2.10                        |
| Dekalb Genetics Corp. | DK 44 WO          | 41.6              | 56.1     | 47.3              | 52.5     | 21,300                     | 2.36                        |
| Frontier Hybrids, Inc | F-457E            | 44.7              | 53.2     | 50.5              | 53.9     | 22,300                     | 2.85                        |
| NC+ Hybrids           | 6B50              | 64.7              | ----     | 51.2              | ----     | 23,200                     | 2.64                        |
| Garst Seed Company    | 5515              | 44.9              | ----     | 47.2              | ----     | 22,000                     | 2.51                        |
| Seed Resource         | SR 424            | 38.8              | ----     | 48.1              | ----     | 21,200                     | 2.55                        |
| NC+ Hybrids           | 7C22              | 36.6              | ----     | 47.6              | ----     | 22,600                     | 2.46                        |
| Seed Resource         | SR 421            | 35.8              | ----     | 48.3              | ----     | 19,100                     | 2.39                        |
| Garst Seed Company    | 5401              | 32.2              | ----     | 50.9              | ----     | 20,800                     | 3.22                        |
|                       | Mean              | 47.3              | 60.0     | 49.6              | 54.2     | 22,200                     | 2.59                        |
|                       | C.V.%             | 13.2              | 17.4     | 4.7               | 3.2      | 8.9                        | 12.3                        |
|                       | L.S.D.            | 9.0               | 10.7     | 3.3               | 1.8      | 2,900                      | 0.46                        |

**Table 2. Continued**

| Company Brand Name       | Entry Designation | Grain Yield bu/ac | Test weight Lb/bu | Plant Population plants/ac | Head Population heads/plant |
|--------------------------|-------------------|-------------------|-------------------|----------------------------|-----------------------------|
| Late                     |                   |                   |                   |                            |                             |
| Walter Moss Seed Co. LTD | M -929-MB         | 51.5              | 50.7              | 22,400                     | 2.93                        |
| Sorghum Partners Inc     | NK 6673           | 46.9              | 47.7              | 22,400                     | 3.00                        |
| Walter Moss Seed Co. LTD | M-1024-DPW        | 40.4              | 52.3              | 19,400                     | 2.68                        |
| Sorghum Partners Inc     | NK 8831           | 30.5              | 46.6              | 20,200                     | 2.67                        |
|                          | Mean              | 42.3              | 49.3              | 21,100                     | 2.82                        |
|                          | C.V.%             | 17.6              | 2.6               | 12.6                       | 12.0                        |
|                          | L.S.D.            | 11.9              | 2.1               | NS                         | NS                          |

Cooperator: Southwest Research and Extension Center

Soil Series: Tillman Hollister Clay Loam

Conventional tillage Practices: Fallowed following wheat in 2004

Soil Test: N: 28 lbs/ac                      P: 67 lbs/ac                      K: 1014 lbs/ac                      pH: 5.8

Fertilizer: N: 92 lb N/ac                      P: 22 lbs/ac                      K: none

Herbicide: 2 qt/ac Cinch ATZ Lite (Preemergence)

Planting Date: April 23, 2005    Target Population: 45,000 plants/ac

Harvest Date: September 3, 2005

Monthly Rainfall (in.)

|                 | Apr. | May  | June | July | Aug. | Total        |
|-----------------|------|------|------|------|------|--------------|
| 2005:           | 1.07 | 4.31 | 1.98 | 2.39 | 3.26 | <b>13.01</b> |
| Long term mean: | 1.92 | 4.23 | 3.51 | 1.76 | 2.45 | <b>13.87</b> |

**Table 3. Results from Blackwell grain sorghum performance trial, 2005.**

| Company Brand Name       | Entry Designation | Grain Yield bu/ac 2005 | Test weight Lb/bu 2005 | Plant Population plants/ac | Head Population heads/plant |
|--------------------------|-------------------|------------------------|------------------------|----------------------------|-----------------------------|
| Early                    |                   |                        |                        |                            |                             |
| Frontier Hybrids, Inc    | F-222E            | 69.7                   | 53.1                   | 31,100                     | 1.24                        |
| Dekalb Genetics Corp.    | DKS 37-07         | 66.0                   | 53.5                   | 30,200                     | 1.42                        |
| Frontier Hybrids, Inc    | F-303C            | 63.3                   | 52.3                   | 36,300                     | 1.34                        |
| Dekalb Genetics Corp.    | DKS 36-00         | 62.5                   | 55.3                   | 30,500                     | 1.41                        |
| Dekalb Genetics Corp.    | DKS 29-28         | 60.8                   | 55.1                   | 34,500                     | 1.39                        |
| Triumph Seed Co., Inc.   | TR 434            | 59.3                   | 52.3                   | 29,200                     | 1.34                        |
| Asgrow Seed              | Reward            | 58.0                   | 52.8                   | 30,300                     | 1.48                        |
| Walter Moss Seed Co. LTD | M-927-ER          | 55.8                   | 51.6                   | 27,000                     | 2.09                        |
| Asgrow Seed              | Pulsar            | 53.0                   | 55.8                   | 29,800                     | 1.47                        |
|                          | Mean              | 60.9                   | 53.5                   | 31,000                     | 1.46                        |
|                          | C.V.%             | 15.8                   | 5.3                    | 8.5                        | 15.3                        |
|                          | L.S.D.            | NS                     | NS                     | 4,600                      | 0.39                        |

| Company Brand Name    | Entry Designation | Grain Yield bu/ac | Test weight Lb/bu | Plant Population plants/ac | Head Population heads/plant | Lodging % |
|-----------------------|-------------------|-------------------|-------------------|----------------------------|-----------------------------|-----------|
| Medium                |                   |                   |                   |                            |                             |           |
| Seed Resource         | SR 421            | 78.1              | 53.4              | 28,900                     | 1.45                        | 17        |
| Garst Seed Company    | 5401              | 71.1              | 56.1              | 27,900                     | 1.79                        | 23        |
| NC+ Hybrids           | 6B50              | 70.7              | 53.5              | 31,000                     | 1.43                        | 37        |
| Dekalb Genetics Corp. | DKS 42-20         | 66.7              | 55.1              | 31,200                     | 1.39                        | 47        |
| Dekalb Genetics Corp. | DK 44             | 65.9              | 56.3              | 30,300                     | 1.35                        | 38        |
| Frontier Hybrids, Inc | F-457E            | 65.3              | 54.9              | 24,900                     | 1.67                        | 35        |
| Seed Resource         | SR 424            | 64.0              | 54.4              | 29,400                     | 1.45                        | 27        |
| Dekalb Genetics Corp. | DK 44 WO          | 62.0              | 56.0              | 27,800                     | 1.37                        | 35        |
| NC+ Hybrids           | 7C22              | 59.3              | 55.0              | 28,500                     | 1.45                        | 30        |
| Garst Seed Company    | 5515              | 57.5              | 53.6              | 28,500                     | 1.33                        | 50        |
| Sorghum Partners Inc  | KS 585 WO         | 54.3              | 56.2              | 28,500                     | 1.61                        | 40        |
| Sorghum Partners Inc  | KS 585            | 42.8              | 55.8              | 33,000                     | 1.33                        | 35        |
|                       | Mean              | 63.1              | 55.0              | 29,200                     | 1.47                        | ----      |
|                       | C.V.%             | 13.4              | 1.2               | 8.0                        | 8.8                         | ----      |
|                       | L.S.D.            | 12.1              | 0.9               | 3,400                      | 0.19                        | ----      |

**Table 3. Continued**

| Company Brand Name       | Entry Designation | Grain Yield bu/ac | Test weight Lb/bu | Plant Population plants/ac | Head Population heads/plant | Lodging % |
|--------------------------|-------------------|-------------------|-------------------|----------------------------|-----------------------------|-----------|
| Full                     |                   |                   |                   |                            |                             |           |
| Walter Moss Seed Co. LTD | M -929-MB         | 66.6              | 55.6              | 27,200                     | 1.51                        | 38        |
| Walter Moss Seed Co. LTD | M-1024-DPW        | 66.1              | 54.9              | 22,100                     | 1.67                        | 10        |
| Sorghum Partners Inc     | NK 6673           | 62.1              | 54.9              | 32,100                     | 1.39                        | 58        |
| Sorghum Partners Inc     | NK 8831           | 46.8              | 53.0              | 32,500                     | 1.16                        | 60        |
|                          | Mean              | 60.4              | 54.6              | 28,500                     | 1.43                        | ----      |
|                          | C.V.%             | 12.1              | 1.3               | 11.5                       | 10.4                        | ----      |
|                          | L.S.D.            | 11.1              | 1.2               | 5,200                      | 0.24                        | ----      |

Cooperator: Bill and Louise Rigdon

Soil Series: Brewer Silty Clay Loam

No-till Practices: Followed Soybean in 2004

Soil Test: N: NA P: NA K: NA pH: NA

Fertilizer: N: 125 lbs/ac P: 0 K: 0

Herbicide: 2 qt/ac Cinch ATZ Lite (Preemergence)

Planting Date: May 5, 2005 medium and full, early planted June 9, Target Population: 45,000 plants/ac

Harvest Date: October 8, 2005

Monthly Rainfall (in.)

|                 | Apr. | May  | June | July | Aug. | Sep. | Total        |
|-----------------|------|------|------|------|------|------|--------------|
| 2005:           | 0.52 | 1.47 | 7.03 | 3.02 | 5.12 | 1.30 | <b>18.46</b> |
| Long term mean: | 3.28 | 5.83 | 4.05 | 2.68 | 3.19 | 3.59 | <b>22.62</b> |

**Table 4. Results from Cherokee grain sorghum performance trial, 2005.**

| Company Brand Name  | Entry Designation | Days To Midbloom | Grain Yield bu/ac |          | Test weight lb/bu |          | Plant Population plants/ac | Head Population heads/plant |
|---|-------------------|------------------|-------------------|----------|-------------------|----------|----------------------------|-----------------------------|
|   |                   |                  | 2005              | Two-year | 2005              | Two-year |                            |                             |
| Dekalb Genetics Corp.   | DKS 42-20         | 65               | 119.2             | 98.0     | 55.6              | 57.7     | 22,200                     | 3.73                        |
| Sorghum Partners Inc  | KS 585            | 65               | 128.0             | 98.0     | 57.0              | 58.6     | 20,500                     | 3.79                        |
| Sorghum Partners Inc  | KS 310            | 57               | 136.6             | 94.4     | 53.5              | 56.0     | 27,200                     | 2.51                        |
| Dekalb Genetics Corp.   | DK 44             | 62               | 110.5             | 91.3     | 55.2              | 57.4     | 23,000                     | 2.53                        |
| Sorghum Partners Inc  | K 35-Y5           | 59               | 110.5             | 90.0     | 51.2              | 55.0     | 20,600                     | 4.70                        |
| Asgrow Seed   | Reward            | 56               | 127.0             | 88.8     | 50.8              | 54.1     | 23,600                     | 3.36                        |
| Dekalb Genetics Corp.   | DKs 37-07         | 60               | 101.9             | 86.0     | 56.9              | 58.2     | 21,600                     | 2.88                        |
| Frontier Hybrids, Inc   | F-303 C           | 59               | 82.7              | 67.2     | 53.2              | 55.8     | 19,000                     | 3.10                        |
| Seed Resource   | SR 421            | 64               | 123.2             | ----     | 54.9              | ----     | 21,800                     | 2.65                        |
| NC+ Hybrids   | 6B50              | 62               | 110.4             | ----     | 52.8              | ----     | 22,600                     | 2.77                        |
| Garst Seed Company  | 5515              | 67               | 102.9             | ----     | 54.3              | ----     | 21,900                     | 2.18                        |
| Frontier Hybrids, Inc   | F-222E            | 50               | 98.9              | ----     | 54.5              | ----     | 20,700                     | 3.11                        |
| Triumph Seed Co., Inc.  | TR 434            | 58               | 91.6              | ----     | 54.3              | ----     | 19,600                     | 3.24                        |
| Note: DK 44 and KS 585 without seed treated insecticide never emerged therefore were not harvested. |                   | Mean             | 111.0             | 89.2     | 54.2              | 56.6     | 21,900                     | 3.12                        |
|   |                   | C.V.%            | 11.0              | 17.9     | 1.4               | 1.91     | 18.6                       | 20.0                        |
|   |                   | L.S.D.           | 17.6              | 16.1     | 1.1               | 1.1      | NS                         | 0.92                        |

Cooperator: Doug McMurtrey

Soil Series: Dale Silt Loam

No-till Practices: Soybeans in 2004

Soil Test: NA

Fertilizer: N: 125 lbs N/ac                      P: none                      K: none

Herbicide 2 qt/ac Cinch ATZ Lite Preemergence

Planting Date: April 21, 2005 Target Population: 45,000 plants/ac

Harvest Date: September 4, 2005

Monthly Rainfall (in.)

|                 | Apr. | May  | June | July | Aug. | Total        |
|-----------------|------|------|------|------|------|--------------|
| 2005:           | 0.45 | 0.92 | 6.38 | 3.39 | 5.74 | <b>16.88</b> |
| Long term mean: | 3.28 | 5.83 | 4.05 | 2.68 | 3.19 | <b>19.03</b> |

**Table 5. Results from Enid double-crop grain sorghum performance trial, 2005.**

| Company Brand Name    | Entry Designation | Grain Yield bu/ac |          | Test weight lb/bu |          | Plant Population plants/ac | Head Population heads/plant |
|-----------------------|-------------------|-------------------|----------|-------------------|----------|----------------------------|-----------------------------|
|                       |                   | 2005              | Two-year | 2005              | Two-year |                            |                             |
| Sorghum Partners Inc  | KS 585            | 92.3              | 88.1     | 61.9              | 58.0     | 37,200                     | 1.35                        |
| Dekalb Genetics Corp. | DK 44             | 95.7              | 87.6     | 61.0              | 57.0     | 35,000                     | 1.17                        |
| Dekalb Genetics Corp. | DKs 37-07         | 99.5              | 83.7     | 62.4              | 58.3     | 35,500                     | 1.21                        |
| Frontier Hybrids, Inc | F-303 C           | 80.8              | 75.5     | 59.7              | 55.6     | 39,200                     | 1.18                        |
| Asgrow Seed           | Seneca            | 76.5              | 73.5     | 59.1              | 56.5     | 43,400                     | 1.29                        |
| Sorghum Partners Inc  | K 35-Y5           | 75.6              | 69.9     | 59.5              | 55.2     | 35,500                     | 1.49                        |
| Dekalb Genetics Corp. | DKS 29-28C        | 65.9              | 67.1     | 56.8              | 54.8     | 39,300                     | 1.31                        |
| Sorghum Partners Inc  | KS 310            | 69.7              | 66.0     | 57.6              | 55.6     | 39,900                     | 1.42                        |
| Seed Resource         | SR 421            | 91.8              |          | 60.4              |          | 37,300                     | 1.24                        |
| Walter Moss Seed      | M-927-ER          | 84.8              |          | 59.1              |          | 36,100                     | 1.43                        |
|                       | Mean              | 83.3              | 76.4     | 59.7              | 56.4     | 37,800                     | 1.31                        |
|                       | C.V.%             | 7.2               | 11.1     | 1.0               | 2.5      | 8.2                        | 10.1                        |
|                       | L.S.D.            | 8.7               | 8.5      | 0.9               | 1.4      | 4,500                      | 0.19                        |

Cooperator: Ed Regier

Soil Series: Grant Silt Loam

No-till Practices: Double crop following wheat harvest in 2004

Soil Test: NA

Fertilizer: N: 125 lbs N/ac                      P: none                      K: none

Herbicide: Cinch ATZ Lite 1.5qts/ac (Preemergence)

Planting Date: June 9, 2005 Target Population: 45,000 plants/ac

Harvest Date: November 5, 2005

Monthly Rainfall during growing season (in.)

|                 | ----- 2004 ----- |      |      |      |      |              |
|-----------------|------------------|------|------|------|------|--------------|
|                 | June             | July | Aug. | Sep. | Oct. | <b>Total</b> |
|                 | 4.61             | 3.27 | 4.03 | 0.34 | 3.89 | <b>16.14</b> |
| Long term mean: | 4.26             | 2.89 | 3.35 | 3.39 | 3.17 | <b>17.06</b> |

**Table 6. Results from Goodwell dryland grain sorghum performance trial, 2005.**

| Company Brand Name    | Entry Designation | Grain Yield bu/ac | Test weight Lb/bu | Plant Population plants/ac | Head Population heads/plant |
|-----------------------|-------------------|-------------------|-------------------|----------------------------|-----------------------------|
| Early                 |                   |                   |                   |                            |                             |
| Dekalb Genetics Corp. | DKS 37-07         | 63.6              | 58.6              | 15,200                     | 2.52                        |
| Asgrow Seed           | Pulsar            | 61.5              | 57.8              | 16,400                     | 2.56                        |
| Dekalb Genetics Corp. | DKS 36-00         | 59.9              | 58.2              | 18,200                     | 2.27                        |
| Asgrow Seed           | Reward            | 51.0              | 56.6              | 21,200                     | 1.89                        |
| Dekalb Genetics Corp. | DKS 29-28         | 50.2              | 57.3              | 19,500                     | 2.11                        |
|                       | Mean              | 57.2              | 57.7              | 18,100                     | 2.27                        |
|                       | C.V.%             | 7.0               | 0.9               | 8.6                        | 10.7                        |
|                       | L.S.D.            | 6.2               | 0.8               | 2,400                      | 0.37                        |

| Company Brand Name    | Entry Designation | Grain Yield bu/ac 2005 | Test weight Lb/bu 2005 | Plant Population plants/ac | Head Population heads/ac |
|-----------------------|-------------------|------------------------|------------------------|----------------------------|--------------------------|
| Medium/Full           |                   |                        |                        |                            |                          |
| Dekalb Genetics Corp. | DKS 42-20         | 67.3                   | 58.3                   | 18,400                     | 1.71                     |
| NC+ Hybrids           | 7C22              | 61.9                   | 57.5                   | 17,000                     | 1.81                     |
| Sorghum Partners Inc  | NK 6673           | 58.5                   | 56.9                   | 20,200                     | 1.93                     |
| Seed Resource         | SR 421            | 56.8                   | 55.7                   | 19,500                     | 1.76                     |
| Seed Resource         | SR 424            | 56.1                   | 58.1                   | 18,500                     | 1.71                     |
| Sorghum Partners Inc  | KS 585            | 53.4                   | 57.7                   | 19,100                     | 1.87                     |
| Sorghum Partners Inc  | KS 585 WO         | 51.3                   | 57.5                   | 17,000                     | 1.92                     |
| Sorghum Partners Inc  | NK 8831           | 51.2                   | 57.1                   | 18,500                     | 2.27                     |
| NC+ Hybrids           | 5B89              | 50.0                   | 57.8                   | 17,900                     | 1.70                     |
| Dekalb Genetics Corp. | DK 44 WO          | 49.6                   | 58.4                   | 14,200                     | 2.59                     |
| Dekalb Genetics Corp. | DK 44             | 46.1                   | 58.3                   | 16,200                     | 2.30                     |
|                       | Mean              | 54.7                   | 57.6                   | 17,900                     | 1.93                     |
|                       | C.V.%             | 16.9                   | 1.3                    | 9.4                        | 20.00                    |
|                       | L.S.D.            | 13.4                   | 1.1                    | 2,400                      | NS                       |

Cooperator: OPREC

No-till Practices: Following wheat 2004

Soil Test: N: 51 P: 28 K: 912 pH: 7.5

Planting Date: June 7, 2005

Target Population: 25,000 plants/ac

Soil Series: Richfield Clay Loam

Herbicide 2 qt/ac Cinch ATZ Lite Preemergence

Fertilizer: N: 50 lbs N/ac P: 40 lb/ac P<sub>2</sub>O<sub>5</sub> K: none

Harvest Date: October 18, 2005

Monthly Rainfall (in.)

|                 | May  | June | July | Aug. | Sep. | Total        |
|-----------------|------|------|------|------|------|--------------|
|                 | 2.85 | 2.01 | 1.40 | 3.21 | 0.35 | <b>9.82</b>  |
| Long term mean: | 3.25 | 2.86 | 2.58 | 2.28 | 1.77 | <b>12.74</b> |

**Table 7. Results from Goodwell irrigated grain sorghum performance trial, 2005.**

| Company Brand Name    | Entry Designation | Grain Yield bu/ac 2005 | Test weight Lb/bu 2005 | Plant Population plants/ac | Head Population heads/ac |
|-----------------------|-------------------|------------------------|------------------------|----------------------------|--------------------------|
| Early                 |                   |                        |                        |                            |                          |
| Dekalb Genetics Corp. | DKS 37-07         | 150.3                  | 59.7                   | 47,800                     | 1.53                     |
| Asgrow Seed           | Pulsar            | 139.6                  | 59.3                   | 53,900                     | 1.58                     |
| Dekalb Genetics Corp. | DKS 36-00         | 137.7                  | 58.8                   | 57,900                     | 1.49                     |
| Asgrow Seed           | Reward            | 122.6                  | 58.0                   | 56,200                     | 1.51                     |
| Dekalb Genetics Corp. | DKS 29-28         | 108.3                  | 58.4                   | 59,000                     | 1.38                     |
|                       | Mean              | 131.7                  | 58.8                   | 55,000                     | 1.49                     |
|                       | C.V.%             | 7.8                    | 0.8                    | 14.5                       | 11.4                     |
|                       | L.S.D.            | 15.9                   | 0.7                    | NS                         | NS                       |

| Company Brand Name    | Entry Designation | Grain Yield bu/ac |          | Test weight lb/bu |          | Plant Population plants/ac | Head Population heads/ac |
|-----------------------|-------------------|-------------------|----------|-------------------|----------|----------------------------|--------------------------|
|                       |                   | 2005              | Two-year | 2005              | Two-year |                            |                          |
| Medium                |                   |                   |          |                   |          |                            |                          |
| Sorghum Partners Inc  | KS 585 WO         | 157.4             | 156.0    | 59.6              | 58.1     | 56,400                     | 1.36                     |
| Sorghum Partners Inc  | KS 585            | 143.0             | 148.8    | 59.6              | 58.2     | 55,800                     | 1.35                     |
| Dekalb Genetics Corp. | DK 44             | 136.2             | 142.1    | 57.5              | 55.4     | 54,200                     | 1.29                     |
| Dekalb Genetics Corp. | DK 44 WO          | 132.3             | 139.6    | 58.2              | 56.2     | 50,800                     | 1.29                     |
| NC+ Hybrids           | 7C22              | 148.0             | ----     | 58.6              | ----     | 49,800                     | 1.49                     |
| Seed Resource         | SR 424            | 145.6             | ----     | 58.8              | ----     | 54,600                     | 1.33                     |
| Dekalb Genetics Corp. | DKS 42-20         | 143.9             | ----     | 59.5              | ----     | 52,800                     | 1.44                     |
| Seed Resource         | SR 421            | 137.3             | ----     | 57.4              | ----     | 54,600                     | 1.16                     |
| NC+ Hybrids           | 5B89              | 118.9             | ----     | 57.5              | ----     | 50,100                     | 1.49                     |
|                       | Mean              | 140.3             | 146.6    | 58.5              | 57.0     | 53,200                     | 1.35                     |
|                       | C.V.%             | 8.3               | 7.2      | 1.4               | 1.9      | 7.5                        | 7.3                      |
|                       | L.S.D.            | 17.0              | 11.0     | 1.2               | NS       | 5,800                      | 0.14                     |

**Table 7. Continued**

| Company Brand Name    | Entry Designation | Grain Yield bu/ac |          | Test weight lb/bu |          | Plant Population plants/ac | Head Population heads/ac |
|-----------------------|-------------------|-------------------|----------|-------------------|----------|----------------------------|--------------------------|
|                       |                   | 2005              | Two-year | 2005              | Two-year |                            |                          |
| Full                  |                   |                   |          |                   |          |                            |                          |
| Asgrow Seed           | A567              | 154.5             | 153.6    | 58.2              | 55.9     | 53,800                     | 1.25                     |
| Dekalb Genetics Corp. | DKS 53-11         | 149.4             | 150.2    | 58.4              | 56.9     | 49,900                     | 1.23                     |
| Dekalb Genetics Corp. | DKS 54-00         | 147.2             | 149.2    | 56.8              | 55.3     | 58,900                     | 1.27                     |
| Asgrow Seed           | A571              | 158.7             | 148.7    | 57.5              | 55.6     | 64,500                     | 1.14                     |
| Sorghum Partners Inc  | NK 6673           | 146.7             | ----     | 57.6              | ----     | 57,500                     | 1.39                     |
| Sorghum Partners Inc  | NK 8831           | 139.9             | ----     | 57.4              | ----     | 60,400                     | 1.22                     |
|                       | Mean              | 149.4             | 150.5    | 57.6              | 55.9     | 57,500                     | 1.25                     |
|                       | C.V.%             | 4.1               | 9.2      | 1.3               | 2.7      | 7.0                        | 6.2                      |
|                       | L.S.D.            | 9.3               | NS       | NS                | 1.6      | 6,100                      | 0.11                     |

Cooperator: OPREC

Soil Series: Richfield Clay Loam

Conventional Tillage Practices: Planted on fallow soil following Soybeans in 2003

Soil Test: N: 45 lbs/ac      P: 26      K: 1192      pH: 7.2

Fertilizer: N: 200 lbs N/ac      P: 40 lbs P<sub>2</sub>O<sub>5</sub>/ac      K: 0

Herbicide: Cinch ATZ Lite 2 qts/ac (Preemergence)

Planting Date: June 20, 2005      Target Population: 70,000 plants/ac

Harvest Date: November 2, 2005

Monthly Rainfall (in.)

|                 |      |      |      |      |      |              |
|-----------------|------|------|------|------|------|--------------|
|                 | May  | June | July | Aug. | Sep. | <b>Total</b> |
|                 | 2.85 | 2.01 | 1.40 | 3.21 | 0.35 | <b>9.82</b>  |
| Long term mean: | 3.25 | 2.86 | 2.58 | 2.28 | 1.77 | <b>12.74</b> |

----- Irrigation (in.) -----

|     |      |      |      |       |
|-----|------|------|------|-------|
| May | Jun. | Jul. | Aug. | Sept. |
| 0.0 | 2.0  | 3.0  | 3.0  | 2.0   |

**Table 8. Results from Keyes dryland grain sorghum performance trial, 2005.**

| Company Brand Name    | Entry Designation | Grain Yield bu/ac |          | Test weight Lb/bu |          | Plant Population plants/ac | Head Population heads/ac |
|-----------------------|-------------------|-------------------|----------|-------------------|----------|----------------------------|--------------------------|
|                       |                   | 2005              | Two year | 2005              | Two year |                            |                          |
| Early                 |                   |                   |          |                   |          |                            |                          |
| Dekalb Genetics Corp. | DKS 36-00         | 92.0              | 60.7     | 56.4              | 54.3     | 19,100                     | 2.13                     |
| Asgrow Seed           | Reward            | 89.1              | 56.8     | 55.2              | 51.7     | 22,200                     | 2.36                     |
| Dekalb Genetics Corp. | DKS 37-07         | 75.9              | 54.9     | 56.1              | 55.6     | 18,500                     | 1.89                     |
| Asgrow Seed           | Pulsar            | 69.8              | 48.3     | 56.9              | 55.1     | 21,400                     | 2.31                     |
| Dekalb Genetics Corp. | DKS 29-28         | 84.3              | ----     | 56.1              | ----     | 21,400                     | 1.95                     |
|                       | Mean              | 82.2              | 55.2     | 56.4              | 54.2     | 20,500                     | 2.13                     |
|                       | C.V.%             | 9.3               | 17.4     | 1.8               | 3.2      | 15.7                       | 14.1                     |
|                       | L.S.D.            | 11.8              | 10.8     | NS                | 1.9      | NS                         | NS                       |

| Company Brand Name    | Entry Designation | Grain Yield bu/ac 2005 | Test weight Lb/bu 2005 | Plant Population plants/ac | Head Population heads/ac |
|-----------------------|-------------------|------------------------|------------------------|----------------------------|--------------------------|
| Medium/full           |                   |                        |                        |                            |                          |
| Sorghum Partners Inc  | KS 585            | 135.3                  | 56.7                   | 21,600                     | 2.22                     |
| Sorghum Partners Inc  | NK 6673           | 109.4                  | 54.9                   | 20,100                     | 2.17                     |
| Sorghum Partners Inc  | KS 585            | 109.0                  | 57.0                   | 20,900                     | 2.39                     |
| Dekalb Genetics Corp. | DKS 42-20         | 108.6                  | 55.4                   | 20,300                     | 2.16                     |
| Seed Resource         | SR 424            | 107.3                  | 56.0                   | 20,900                     | 1.91                     |
| Seed Resource         | SR 421            | 105.0                  | 55.6                   | 21,500                     | 1.99                     |
| Sorghum Partners Inc  | NK 8831           | 104.4                  | 53.0                   | 20,500                     | 1.87                     |
| NC+ Hybrids           | 7C22              | 103.3                  | 55.7                   | 22,500                     | 1.74                     |
| Dekalb Genetics Corp. | DK 44             | 102.5                  | 54.3                   | 19,900                     | 1.67                     |
| NC+ Hybrids           | 5B89              | 97.5                   | 55.6                   | 21,100                     | 2.47                     |
|                       | Mean              | 108.2                  | 55.4                   | 20,900                     | 2.06                     |
|                       | C.V.%             | 7.5                    | 2.5                    | 12.1                       | 14.8                     |
|                       | L.S.D.            | 11.7                   | NS                     | NS                         | 0.44                     |

Cooperator: J.B. Stewart

No-till Practices: Following wheat 2004

Soil Test: NA

Planting Date: June 7, 2005

Target Population: 25,000 plants/ac

Soil Series: Pond Creek Silt Loam

Herbicide 2 qt/ac Cinch ATZ Lite Preemergence

Fertilizer: N: 150 lbs N/ac P: none K: none

Harvest Date: November 11, 2005

Monthly Rainfall (in.)

|                 | May  | June | July | Aug. | Sep. | Oct. | Total        |
|-----------------|------|------|------|------|------|------|--------------|
|                 | 2.86 | 2.38 | 1.34 | 2.41 | 0.07 | 0.70 | <b>9.76</b>  |
| Long term mean: | 2.76 | 2.92 | 2.85 | 2.55 | 1.97 | 0.97 | <b>14.02</b> |

Note: Rainfall at Keyes was higher than at Mesonet site near Boise City

**Table 9. Results from Tipton dryland grain sorghum performance trial, 2005.**

| <b>Company Brand Name</b> | <b>Entry Designation</b> | <b>Grain Yield bu/ac</b> | <b>Test weight lb/bu</b> | <b>Plant Population plants/ac</b> | <b>Head Population heads/plant</b> |
|---------------------------|--------------------------|--------------------------|--------------------------|-----------------------------------|------------------------------------|
| Early                     |                          |                          |                          |                                   |                                    |
| Walter Moss Seed Co. LTD  | M-927-ER                 | 62.9                     | 47.3                     | 23,600                            | 2.60                               |
| Triumph Seed Co., Inc.    | TR 434                   | 57.7                     | 47.1                     | 24,100                            | 2.26                               |
| Frontier Hybrids, Inc     | F-222E                   | 39.8                     | 48.2                     | 24,200                            | 2.42                               |
| Frontier Hybrids, Inc     | F-303C                   | 38.1                     | 42.2                     | 23,100                            | 2.09                               |
|                           | Mean                     | 49.6                     | 46.2                     | 23,800                            | 2.34                               |
|                           | C.V.%                    | 14.9                     | 1.8                      | 8.8                               | 12.9                               |
|                           | L.S.D.                   | 11.9                     | 1.3                      | NS                                | NS                                 |

| <b>Company Brand Name</b> | <b>Entry Designation</b> | <b>Grain Yield bu/ac</b> | <b>Test weight lb/bu</b> | <b>Plant Population plants/ac</b> | <b>Head Population heads/plant</b> |
|---------------------------|--------------------------|--------------------------|--------------------------|-----------------------------------|------------------------------------|
| Medium                    |                          |                          |                          |                                   |                                    |
| Sorghum Partners Inc      | KS 585 WO                | 81.8                     | 52.1                     | 28,600                            | 2.68                               |
| Sorghum Partners Inc      | KS 585                   | 75.9                     | 51.0                     | 27,600                            | 2.74                               |
| NC+ Hybrids               | 6B50                     | 74.4                     | 48.8                     | 27,900                            | 2.21                               |
| Frontier Hybrids, Inc     | F-457E                   | 62.6                     | 48.3                     | 26,000                            | 2.14                               |
| Seed Resource             | SR 424                   | 59.4                     | 46.6                     | 28,700                            | 2.17                               |
| Dekalb Genetics Corp.     | DK 44                    | 59.2                     | 46.6                     | 28,100                            | 1.97                               |
| Dekalb Genetics Corp.     | DK 44 WO                 | 57.3                     | 47.7                     | 29,800                            | 1.85                               |
| Garst Seed Company        | 5401                     | 57.1                     | 49.9                     | 24,900                            | 2.84                               |
| Seed Resource             | SR 421                   | 53.5                     | 46.8                     | 24,900                            | 2.20                               |
| Garst Seed Company        | 5515                     | 52.3                     | 47.7                     | 26,500                            | 1.88                               |
| NC+ Hybrids               | 7C22                     | 39.1                     | 45.5                     | 27,000                            | 2.21                               |
|                           | Mean                     | 61.1                     | 48.3                     | 27,300                            | 2.26                               |
|                           | C.V.%                    | 13.7                     | 5.0                      | 11.6                              | 12.0                               |
|                           | L.S.D.                   | 12.1                     | 3.5                      | NS                                | 0.39                               |

**Table 9. Continued**

| <b>Company Brand Name</b> | <b>Entry Designation</b> | <b>Grain Yield bu/ac</b> | <b>Test weight lb/bu</b> | <b>Plant Population plants/ac</b> | <b>Head Population heads/plant</b> |
|---------------------------|--------------------------|--------------------------|--------------------------|-----------------------------------|------------------------------------|
| Full                      |                          |                          |                          |                                   |                                    |
| Walter Moss Seed Co. LTD  | M -929-MB                | 66.4                     | 49.9                     | 26,800                            | 2.60                               |
| Sorghum Partners Inc      | NK 6673                  | 47.6                     | 45.8                     | 25,200                            | 2.58                               |
| Walter Moss Seed Co. LTD  | M-1024-DPW               | 38.6                     | 48.3                     | 22,100                            | 2.49                               |
| Sorghum Partners Inc      | NK 8831                  | 37.0                     | 43.6                     | 27,800                            | 2.07                               |
|                           | Mean                     | 47.4                     | 46.9                     | 25,500                            | 2.43                               |
|                           | C.V. %                   | 9.2                      | 2.5                      | 8.3                               | 8.60                               |
|                           | L.S.D.                   | 6.9                      | 1.9                      | NS                                | NS                                 |

Cooperator: Southwest Research and Extension Center

Soil Series: Tipton Silt Loam

Conventional Tillage Practices: Sorghum-fallow-sorghum rotation

Soil Test: N: 10 lbs/ac      P: 53      K: 639      pH: 6.2

Fertilizer: N: 120 lbs/ac      P: 0      K: 0

Herbicide: 2 qt/ac Cinch ATZ Lite Preemergence

Planting Date: April 22 , 2005 Target Population: 45,000 plants/ac

Harvest Date: September 3, 2005

Monthly Rainfall (in.)

|                 | Apr. | May  | June | July | Aug. | <b>Total</b> |
|-----------------|------|------|------|------|------|--------------|
| 2005:           | 0.83 | 3.42 | 3.42 | 2.47 | 2.70 | <b>12.84</b> |
| Long term mean: | 2.30 | 4.30 | 3.45 | 2.08 | 2.71 | <b>14.84</b> |



# OKLAHOMA PANHANDLE WHEAT VARIETY TRIALS, 2004-05

## PRODUCTION TECHNOLOGY CROPS



OKLAHOMA COOPERATIVE EXTENSION SERVICE  
DEPARTMENT OF PLANT AND SOIL SCIENCES  
DIVISION OF AGRICULTURAL SCIENCES & NATURAL RESOURCES  
OKLAHOMA STATE UNIVERSITY

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The 2004-05 Panhandle wheat crop was the best since 1998-99. Reported dryland yields ranged from 25 to 78 bu/ac and irrigated yields ranged from the 50 to 90 bu/ac. Stripe rust can explain some of the lowest yield, although some irrigated fields that were sprayed had lower than expected yields. The lower yields for irrigated wheat planted following corn, may have been due to nitrogen (N) deficiency. Corn yields in the summer of 2004 were higher than expected, and little residual N was left for wheat. So if N was not applied preplant or as a topdress it may have limited yields. Most wheat was planted with good to excellent soil moisture. Wheat did show some drought stress for a short period of time in early May, but for the most part moisture conditions were excellent for most of the crop year.

### **Trial Locations**

There were 4-variety tests in the panhandle region this year. The dry-land variety test at the Oklahoma Panhandle Research and Extension Center (OPREC, Goodwell) and Balko were wheat-grain sorghum-fallow rotation. An irrigated grain only trial was planted at OPREC. In 2004 a Hard White Wheat only trial was initiated at Guymon. This trial was planted no-till following corn and was grazed. The only trial sprayed for stripe rust was the Hard White Wheat trial, but this trial also had 15 – 20% hail damage from a storm on May 25.

### **Growing Conditions**

Most wheat was planted in October with excellent soil moisture as a result of rains in late September (Table 1). The wheat had excellent moisture throughout most of the growing season, although moisture stress was observed for short periods in April and May. The most damaging disease stripe rust, which was detected in April and early May, caused the most yield reduction. Some producers sprayed for stripe rust and increased yields by 30 – 40%, and test weights by up to 4 lb/bu. For example, yield for TAM 110 in studies at Goodwell and Keyes was 49.9 and 71.6 bu/ac respectively. With the largest difference between studies being that Keyes was sprayed for stripe rust control and Goodwell was not. For more information on Stripe rust go to <http://oaes.pss.okstate.edu/goodwell/>

### **Grain-filling Conditions**

Temperatures were below the long-term averages during the grain-filling period. The mean high temperature for Goodwell was 76° F while the long-term mean is 78.5° F. The long-term mean number of days with high temperatures above 90° F is 4.5. In 2005 there were 3 days above 90° F. The lower temperatures and rainfall near long-term averages explains why grain yields were not reduced as severely as expected due to severity of the Strip rust infection.

### **New Varieties for 2004-05**

Newly released varieties included in the trial this year include Okfield, OK00514, and Guymon. Okfield is an OSU-released herbicide-tolerant variety that shows promise for producers looking to implement the Clearfield herbicide system. OK00514 is soon-to-be-named, OSU-released variety that has good yield potential and excellent

milling and baking characteristics. Finally, Guymon is an OSU-released hard white winter wheat variety, that, as the name implies, is well-suited for production in the Panhandle Oklahoma.

Several OSU candidate cultivars that have potential for release in the next year or two were included in the trials. These were included to evaluate their capability at sites not normally used as test locations in the OSU wheat breeding program. Characteristics of the experimental lines are available by selecting candidate cultivars on the web at <http://www.wit.okstate.edu>.

### Testing and Reporting Procedures

All plots were planted in 7.5-inch rows with seeding rate indicated in the tables. The purpose of this testing program is to provide Oklahoma wheat producers with performance data on varieties that are presently grown or available in Oklahoma. Within each table varieties are listed in decreasing order of yield for current year, followed by varieties with 2-year averages, and then varieties having 3-years of data. It is recommended that specific emphasis be given to multi-year averages when selecting varieties. Varieties that consistently rank high over 3-year averages are good choices.

Small differences in yield should not be overemphasized. Least Significant Differences (L.S.D.) are a statistical test of yield differences and are shown at the bottom of each table. Unless two entries differ by at least the L.S.D. shown, little confidence can be placed in one being superior to the other.

### Additional Information on Web

For information on coleoptile length and other characteristics of varieties grown in Oklahoma see the "Wheat Variety Characteristic Chart" under Variety information on the Wheat Improvement Team web page at <http://www.wit.okstate.edu>. This information is updated regularly to give the latest in disease ratings. From the above address you can also connect to the latest fall and full-season forage data.

### Cooperation Acknowledged

*These data result from cooperative efforts of the Oklahoma Agricultural Experiment Station, Oklahoma Cooperative Extension Service, Oklahoma Wheat Commission, and cooperating producers. The following people have contributed to this report by assisting in crop production, data collection, and publication: Lawrence Bohl, Craig Chesnut, Matt LaMar, Jason Weirich, Justin Stauffer, and Hanna Slatten. Their efforts are greatly appreciated.*

Table 1. Long-term average and 2003-04 panhandle precipitation data.

| PERIOD   | JULY | AUG  | SEPT | OCT  | NOV  | DEC  | JAN  | FEB  | MAR  | APR  | MAY  | JUNE | TOT   |
|----------|------|------|------|------|------|------|------|------|------|------|------|------|-------|
| BEAVER   |      |      |      |      |      |      |      |      |      |      |      |      |       |
| Average  | 2.84 | 3.14 | 2.01 | 1.25 | 1.17 | 0.74 | 0.50 | 0.92 | 1.65 | 1.75 | 3.28 | 3.64 | 22.89 |
| 2004-05  | 1.82 | 3.73 | 2.60 | 1.46 | 4.42 | 0.15 | 1.76 | 1.21 | 0.21 | 0.79 | 1.99 | 5.58 | 25.72 |
| CIMARRON |      |      |      |      |      |      |      |      |      |      |      |      |       |
| Average  | 2.85 | 2.55 | 1.97 | 0.97 | 0.79 | 0.43 | 0.34 | 0.54 | 0.99 | 1.28 | 2.76 | 2.92 | 18.39 |
| 2004-05  | 1.96 | 2.71 | 2.50 | 0.22 | 2.53 | 0.22 | 0.43 | 1.22 | 0.79 | 1.82 | 2.86 | 2.38 | 19.64 |
| TEXAS    |      |      |      |      |      |      |      |      |      |      |      |      |       |
| Average  | 2.58 | 2.28 | 1.77 | 1.03 | 0.77 | 0.31 | 0.30 | 0.46 | 0.95 | 1.33 | 3.25 | 2.86 | 17.89 |
| 2004-05  | 2.43 | 2.87 | 2.56 | 0.64 | 3.51 | 0.16 | 0.73 | 1.04 | 1.14 | 0.93 | 2.85 | 2.01 | 20.87 |

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## Balko Variety Trial

Cooperator: Steve Frantz

Management: Grain only

Soil type: Ulysses-Richfield Complex

Soil test information: pH=8.1, P=32, K=836

Planting date: 10-18-04

| Source                | Variety       | Grain Yield    |        | Test Weight     |
|-----------------------|---------------|----------------|--------|-----------------|
|                       |               | 2004-05        | 2-Year | 2004-05         |
|                       |               | -----bu/ac---- |        | -----lb/bu----- |
| Texas                 | TAM 111       | 50             | -      | 59              |
| Oklahoma              | OK00514       | 44             | 32     | 60              |
| Kansas                | Overley       | 43             | 28     | 57              |
| Kansas                | Jagger        | 43             | 27     | 57              |
| Agripro               | Jagalene      | 42             | 29     | 59              |
| Agripro               | Cutter        | 42             | 29     | 58              |
| Oklahoma              | Okfield       | 41             | 30     | 58              |
| Agripro               | Fannin        | 41             | 23     | 59              |
| Oklahoma              | Deliver       | 40             | 29     | 57              |
| Agripro               | Thunderbolt   | 39             | 28     | 59              |
| Kansas                | Stanton       | 39             | 27     | 58              |
| Oklahoma              | Endurance     | 39             | 27     | 58              |
| Pioneer               | 2158          | 38             | 26     | 57              |
| Kansas                | Trego (W)     | 38             | 28     | 58              |
| Kansas                | 2145          | 37             | 26     | 58              |
| Oklahoma              | Guymon (W)    | 37             | 27     | 58              |
| Oklahoma              | Intrada (W)   | 36             | 25     | 59              |
| Kansas                | Ike           | 35             | 23     | 58              |
| Oklahoma              | 2174          | 35             | 25     | 58              |
| Oklahoma              | Custer        | 34             | 21     | 59              |
| Texas                 | TAM 110       | 34             | 22     | 56              |
| Oklahoma              | Ok102         | 33             | 25     | 58              |
| Oklahoma              | Ok101         | 33             | -      | 57              |
| Agripro               | AP502CL       | 32             | 21     | 54              |
| Kansas                | 2137          | 30             | 23     | 55              |
| Colorado              | Avalanche (W) | 29             | 18     | 58              |
| Texas                 | Sturdy 2K     | 28             | -      | 57              |
| Kansas                | Lakin (W)     | 27             | 15     | 56              |
| Experimentals         |               |                |        |                 |
|                       | OK00508W      | 42             | -      | 58              |
|                       | OK00421       | 32             | -      | 60              |
| Mean                  |               | 37             | 25     | 58              |
| LSD <sub>(0.05)</sub> |               | 8              | 4      | 1               |

(W) = Hard white wheat variety

## Goodwell Irrigated Variety Trial

**Cooperator: Oklahoma Panhandle**

**Research and Extension Center**

**Management: Grain only**

**Soil type: Richfield clay loam**

**Soil test information: pH=7.8, P=41, K=1023**

**Planting date: 10-01-04**

| Source        | Variety               | Grain Yield     |        | Test Weight     |
|---------------|-----------------------|-----------------|--------|-----------------|
|               |                       | 2004-05         | 2-Year | 2004-05         |
|               |                       | -----bu/ac----- |        | -----lb/bu----- |
| Kansas        | Jagger                | 95              | 72     | 58              |
| Texas         | TAM 111               | 94              | 94     | 61              |
| Kansas        | Overley               | 93              | 79     | 60              |
| Oklahoma      | OK00514               | 87              | 80     | 61              |
| Agripro       | Cutter                | 85              | 71     | 61              |
| Agripro       | Fannin                | 83              | 66     | 60              |
| Agripro       | Jagalene              | 81              | 73     | 60              |
| Oklahoma      | Deliver               | 76              | 67     | 59              |
| Kansas        | 2145                  | 75              | 68     | 59              |
| Oklahoma      | Ok101                 | 72              | -      | 59              |
| Oklahoma      | Endurance             | 72              | 72     | 59              |
| Agripro       | Thunderbolt           | 71              | 55     | 60              |
| Texas         | Sturdy 2K             | 70              | -      | 58              |
| Oklahoma      | Intrada (W)           | 69              | 64     | 61              |
| Pioneer       | 2158                  | 69              | 69     | 58              |
| Oklahoma      | Okfield               | 68              | 68     | 58              |
| Texas         | TAM 110               | 67              | 67     | 58              |
| Oklahoma      | Guymon (W)            | 67              | 75     | 61              |
| Colorado      | Avalanche (W)         | 66              | 66     | 59              |
| Agripro       | AP502CL               | 64              | 67     | 57              |
| Kansas        | Ike                   | 61              | 61     | 57              |
| Oklahoma      | Custer                | 58              | 67     | 58              |
| Oklahoma      | Ok102                 | 56              | 71     | 58              |
| Kansas        | 2137                  | 55              | 65     | 57              |
| Oklahoma      | 2174                  | 52              | 63     | 59              |
| Kansas        | Lakin (W)             | 48              | 61     | 56              |
| Kansas        | Trego (W)             | 47              | 62     | 59              |
| Kansas        | Stanton               | 44              | 44     | 59              |
| Experimentals |                       |                 |        |                 |
|               | OK00421               | 68              | -      | 60              |
|               | OK00508W              | 63              | -      | 58              |
| <hr/>         |                       |                 |        |                 |
|               | Mean                  | 69              | 68     | 59              |
|               | LSD <sub>(0.05)</sub> | 6               | 10     | 1               |

(W) = Hard white wheat variety

## Goodwell Nonirrigated Variety Trial

**Cooperator: Oklahoma Panhandle**

**Research and Extension Center**

**Management: Grain only**

**Soil type: Richfield clay loam**

**Soil test information: pH=7.9, P=57, K=1126**

**Planting date: 10-01-04**

| Source                | Variety       | <u>Grain Yield</u> | <u>Test Weight</u> |
|-----------------------|---------------|--------------------|--------------------|
|                       |               | 2004-05            | 2004-05            |
|                       |               | -----bu/ac----     | -----lb/bu-----    |
| Kansas                | Jagger        | 46                 | 55                 |
| Texas                 | TAM 111       | 45                 | 59                 |
| Texas                 | TAM 110       | 44                 | 56                 |
| Kansas                | Overley       | 42                 | 56                 |
| Colorado              | Avalanche (W) | 40                 | 57                 |
| Pioneer               | 2158          | 40                 | 55                 |
| Agripro               | Cutter        | 40                 | 56                 |
| Kansas                | Ike           | 39                 | 57                 |
| Oklahoma              | Deliver       | 39                 | 57                 |
| Oklahoma              | Ok101         | 38                 | 56                 |
| Oklahoma              | OK00514       | 37                 | 58                 |
| Oklahoma              | Endurance     | 37                 | 57                 |
| Agripro               | Fannin        | 37                 | 57                 |
| Agripro               | AP502CL       | 37                 | 54                 |
| Oklahoma              | Intrada (W)   | 36                 | 58                 |
| Agripro               | Jagalene      | 36                 | 58                 |
| Agripro               | Thunderbolt   | 35                 | 58                 |
| Oklahoma              | Custer        | 34                 | 57                 |
| Oklahoma              | Okfield       | 34                 | 56                 |
| Oklahoma              | Guymon (W)    | 33                 | 57                 |
| Texas                 | Sturdy 2K     | 30                 | 56                 |
| Oklahoma              | 2174          | 28                 | 56                 |
| Kansas                | Stanton       | 26                 | 58                 |
| Kansas                | 2145          | 25                 | 58                 |
| Kansas                | Trego (W)     | 25                 | 60                 |
| Kansas                | 2137          | 24                 | 56                 |
| Oklahoma              | Ok102         | 22                 | 56                 |
| Kansas                | Lakin (W)     | 18                 | 56                 |
| Experimentals         |               |                    |                    |
|                       | OK00508W      | 38                 | 56                 |
|                       | OK00421       | 27                 | 58                 |
| Mean                  |               | 34                 | 57                 |
| LSD <sub>(0.05)</sub> |               | 10                 | 1                  |

(W) = Hard white wheat variety

## Guymon White Wheat Dual-Purpose Variety Trial

Cooperator: Joe Webb

Management: Dual purpose

Planting date: 9-30-04

| Source                | Variety        | Grain Yield     | Test Weight     |
|-----------------------|----------------|-----------------|-----------------|
|                       |                | 2004-05         | 2004-05         |
|                       |                | -----bu/ac----- | -----lb/bu----- |
| Agripro               | Platte (W)     | 57              | 61              |
| Oklahoma              | Guymon (W)     | 55              | 62              |
| Kansas                | Trego (W)      | 54              | 65              |
| Colorado              | Avalanche (W)  | 53              | 61              |
| Kansas                | Lakin (W)      | 50              | 60              |
| Oklahoma              | Intrada (W)    | 47              | 62              |
| Experimentals         |                |                 |                 |
|                       | OK98G508W-2-40 | 66              | 59              |
|                       | OK98G508W-2-30 | 62              | 59              |
|                       | OK02518W       | 61              | 60              |
|                       | OK02522W       | 61              | 64              |
|                       | OK98G508W-2-12 | 60              | 59              |
|                       | OK98G508W-2-47 | 59              | 59              |
|                       | OK02507W       | 56              | 57              |
|                       | OK99504W-396   | 54              | 60              |
| Mean                  |                | 57              | 61              |
| LSD <sub>(0.05)</sub> |                | 8               | 5               |

# SUNFLOWER PERFORMANCE TRIAL IN THE OKLAHOMA PANHANDLE, 2005

## *PRODUCTION TECHNOLOGY CROPS*

OKLAHOMA COOPERATIVE EXTENSION SERVICE  
DEPARTMENT OF PLANT AND SOIL SCIENCES  
DIVISION OF AGRICULTURAL SCIENCES & NATURAL RESOURCES  
OKLAHOMA STATE UNIVERSITY

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Department of Plant and Soil Science

An irrigated sunflower performance trial was conducted in 2005 at the Oklahoma Panhandle Research and Extension Center (OPREC) near Goodwell, Oklahoma to provide farmers, extension workers, and private industry with unbiased agronomic information on many of the oilseed sunflower hybrids marketed in the region. A dryland trial was not harvested due to poor germination and rabbit damage. Companies marketing oilseed sunflowers were invited to participate and enter hybrids on a voluntary fee-entry basis. As a result, not all sunflower hybrids grown in the state were included in the trial. The trial was financed in part by the entry fees from the sunflower companies. Information presented in this publication on maturity, oil type, and other hybrid characteristics were supplied by the seed companies. Some hybrids were experimental cultivars and may not be available for purchase from seed companies. The cultivars also vary as to the oil type (conventional, Nusun, and high oleic). Growers should verify a marketing outlet or secure a contract for the type of oilseed hybrid they intend to plant (especially the high oleic type).

The trial was established as a randomized complete block design with four replications. The sunflower hybrids were seeded in two-row plots (30 inch row spacing) and 30 feet in length using a tractor powered cone planter. The trial was double cropped sunflower following wheat harvest, and was planted July 11 at a target population of 23,000 plants per acre.

Roundup Ultramax herbicide was applied at 20 fl oz/acre to kill emerged weeds prior to planting. Spartan at 3 oz/acre plus Dual II Magnum 0.75 pt/acre was applied premergent for weed control. Pheromone traps were used to monitor for sunflower moth. Sunflower moth activity was minimal and no insecticide applications were required. Irrigation was applied as needed over the growing season (6 inches). The study was harvested November 2 using a Massey-Ferguson plot combine.

Hybrid height, grain yield, percent oil content, and actual plant populations were determined (Table 1). Small differences in results of reported data should not be over emphasized. Results of the statistical analyses of variance are reported in terms of a least significant difference (LSD = .05). If two means differ by more than the LSD value, such a difference would be due to chance variation only 5% of the time. Therefore, it is 95% probable that the observed difference is due to the hybrid. The coefficient of variability (CV) is another statistic that is provided as an estimate of the precision of replicated trials. Treatments with a CV less than 20% are usually acceptable for performance comparisons. Treatments with a CV greater than 20% provide only a rough guide to hybrid performance.

*The following people have contributed to this report: Lawrence Bohl, Jason Nusz, Chase Carlin, Tony Mills, Justin Stauffer, and Donna George. Their efforts are greatly appreciated.*

**Table 1.** Results of 2005 irrigated sunflower performance trial at Goodwell, OK.

| Company          | Hybrid          | Oil Type     | Maturity (DPM) <sup>1</sup> | Height (inches) | Grain Yield (lb/ac) | Oil (%) | Test Weight | Plant Population |
|------------------|-----------------|--------------|-----------------------------|-----------------|---------------------|---------|-------------|------------------|
| Kaystar          | 9501            | Conventional | --                          | 63              | 1,362               | 36.2    | 25.2        | 13,068           |
| Garst            | Hysun 454       | NuSun        | 102                         | 63              | 1,342               | 37.4    | 28.2        | 14,157           |
| Garst            | Exp 03TH 004251 | NuSun        | --                          | 66              | 1,341               | 40.1    | 24.7        | 16,045           |
| Croplan Genetics | 378DMR, HO      | High Oleic   | 97                          | 65              | 1,336               | 38.5    | 25.5        | 10,164           |
| Triumph          | S672            | NuSun        | 95-105                      | 41              | 1,334               | 38.6    | 27.7        | 12,342           |
| Triumph          | 660CL           | NuSun        | 95-105                      | 58              | 1,251               | 36.6    | 25.3        | 14,230           |
| Dekalb           | DKF35-10NS      | NuSun        | 103                         | 61              | 1,160               | 40.1    | 26.8        | 12,052           |
| Triumph          | 645             | NuSun        | 95-105                      | 60              | 1,150               | 39.2    | 25.3        | 13,939           |
| Dekalb           | MH4331B         | NuSun        | --                          | 54              | 1,135               | 36.9    | 27.6        | 14,520           |
| Garst            | Exp 03TH 004205 | High Oleic   | --                          | 61              | 1,127               | 35.8    | 25.9        | 12,632           |
| Garst            | Exp 02TH 003896 | High Oleic   | --                          | 64              | 1,087               | 35.6    | 26.6        | 15,682           |
| Croplan Genetics | 308             | NuSun        | 90                          | 53              | 1,019               | 40.3    | 25.2        | 18,731           |
| Dekalb           | DKF 33-33NS     | NuSun        | 105                         | 55              | 868                 | 38.9    | 26.4        | 15,754           |
|                  |                 |              |                             | Mean            | 1,193               | 38.0    | 26.2        | 15,019           |
|                  |                 |              |                             | LSD             | 352                 | 3.5     | 1.5         | 5,695            |
|                  |                 |              |                             | C.V. %          | 20                  | 6.4     | 3.9         | 28               |

<sup>1</sup> DPM is days to physiological maturity

-- not stated by seed company

### Precipitation

| Month          | 2005        | Normal       |
|----------------|-------------|--------------|
| June           | 2.01        | 2.86         |
| July           | 1.40        | 2.58         |
| August         | 3.21        | 2.28         |
| Sept.          | 0.35        | 1.77         |
| Oct.           | 1.06        | 1.03         |
| <b>Totals:</b> | <b>8.03</b> | <b>10.52</b> |

**Soil:** Gruver Clay Loam

**Tillage:** No-Till; double cropped following wheat

**Fertilizer:** N: 120 lbs/ac P<sub>2</sub>O<sub>5</sub>: 30 lbs/ac

**PRE Herbicide:** 1 pint Dual II Magnum + 3 oz Spartan

**Planting Date:** July 11, 2005 Target Population 23,000

**Harvest Date:** November 2, 2005

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