Oklahoma Panhandle
Research & Extension Center

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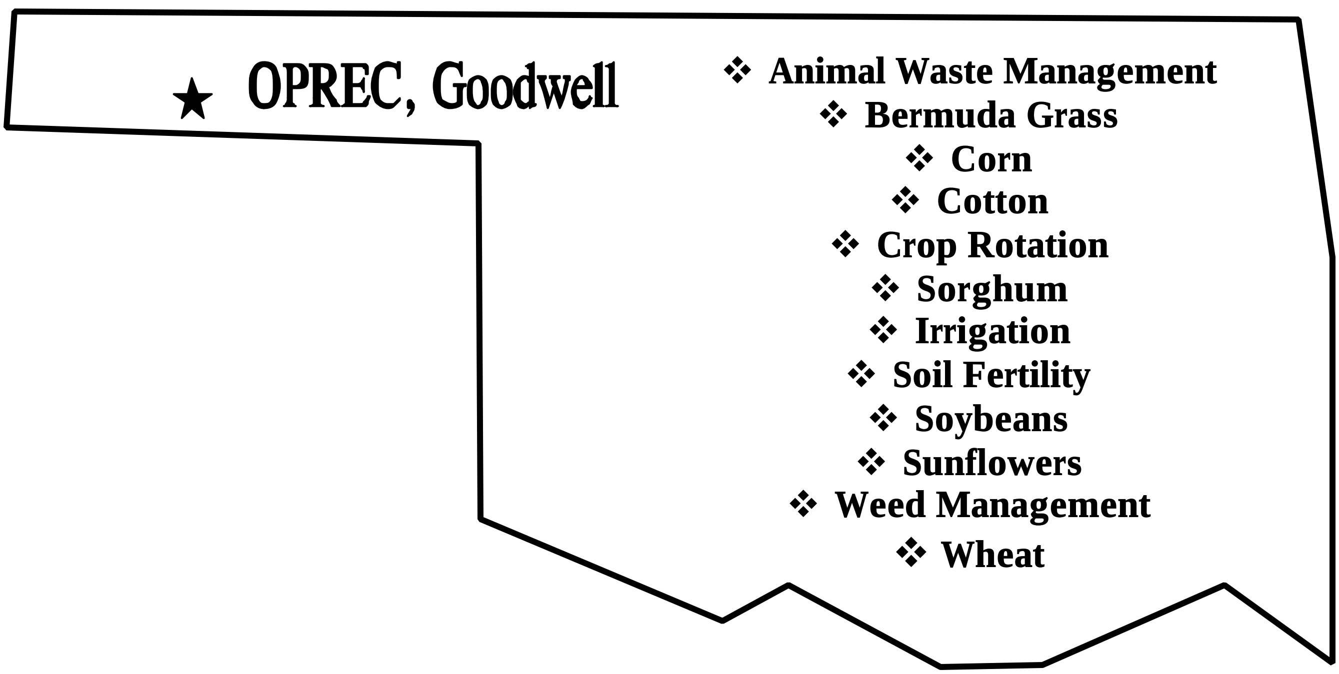

2005 Research Highlights

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 Sate University we would like to think 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
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Rick Nelson
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Oklahoma Panhandle Research and Extension Center

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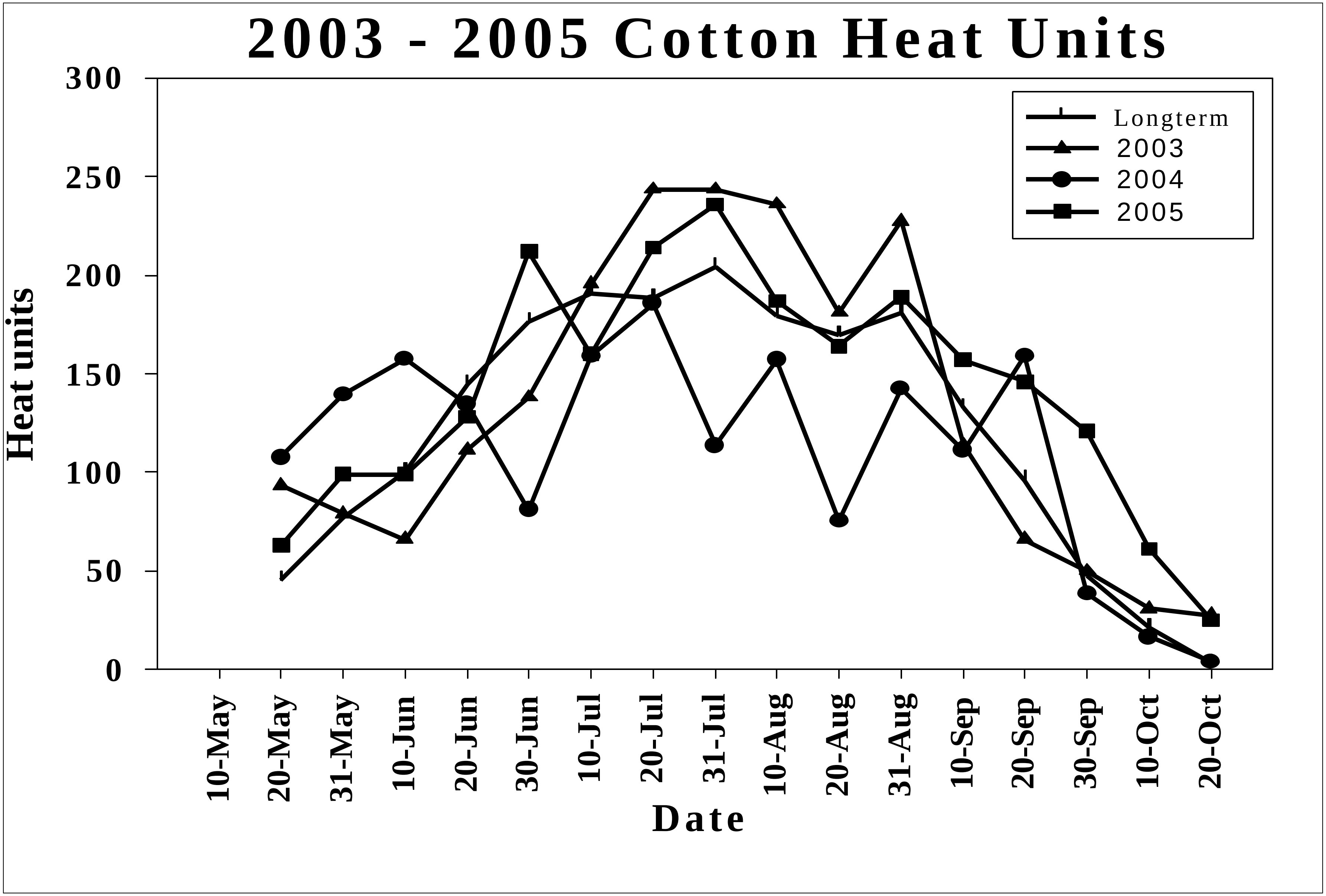
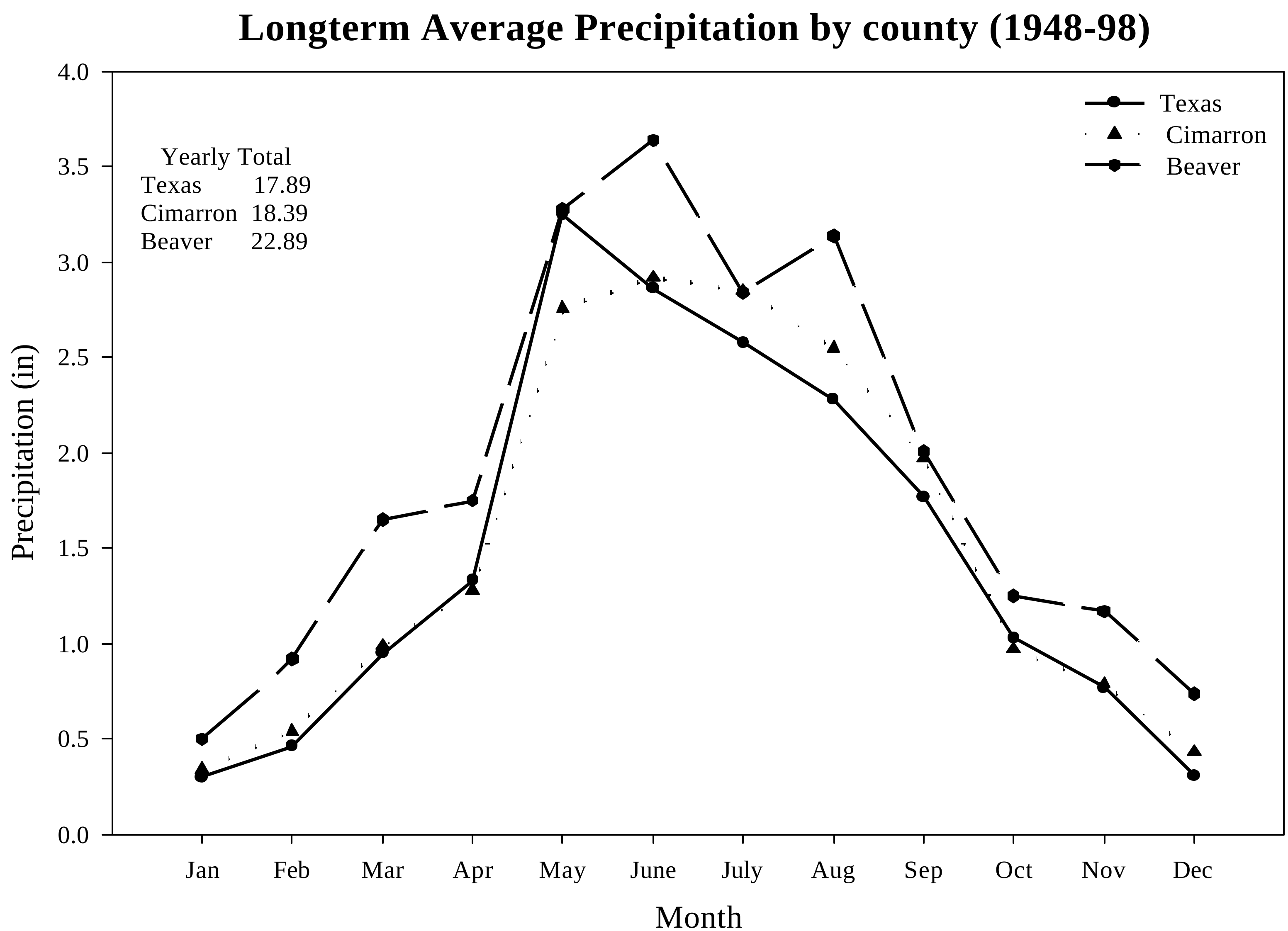
J. C. Banks (580) 482-2120	Professor/Director-Extension, Cotton Specialist, SW Research & Extension Center, Altus, OK

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

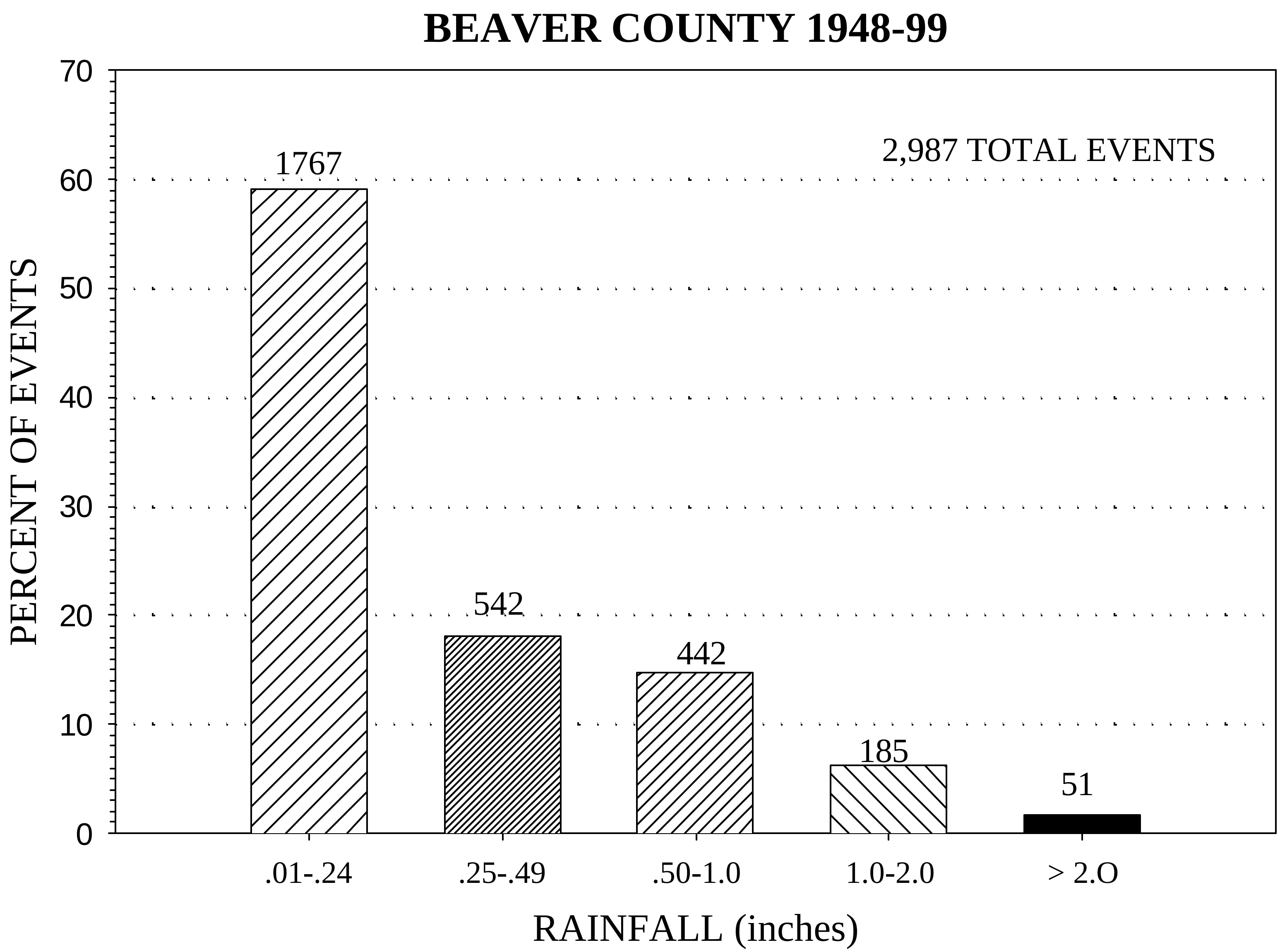
	Temperature				Precipitation			Wind	
Month	**Max**	**Min**	**Max. mean**	**Min. mean**	**Inches**	**Long term mean**	**One day total**	**AVG mph**	**Max mph**
Jan	75	3	47	24	0.73	0.30	0.21	10.3	45.0
Feb	74	22	52	30	1.04	0.46	0.60	11.2	49.4
March	82	20	58	30	1.14	0.95	0.26	12.8	52.3
April	84	26	68	38	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

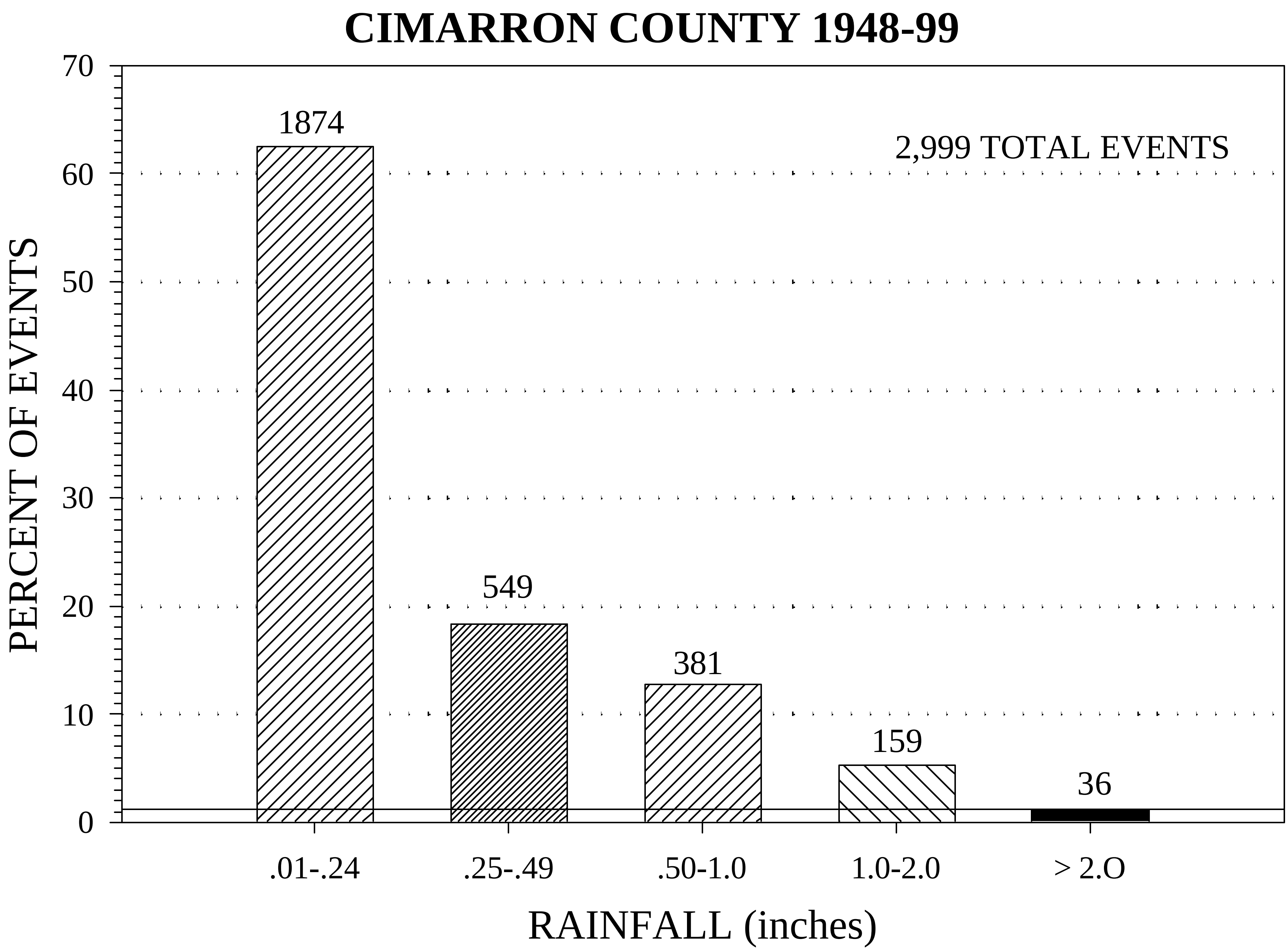
Data from Mesonet Station at OPREC

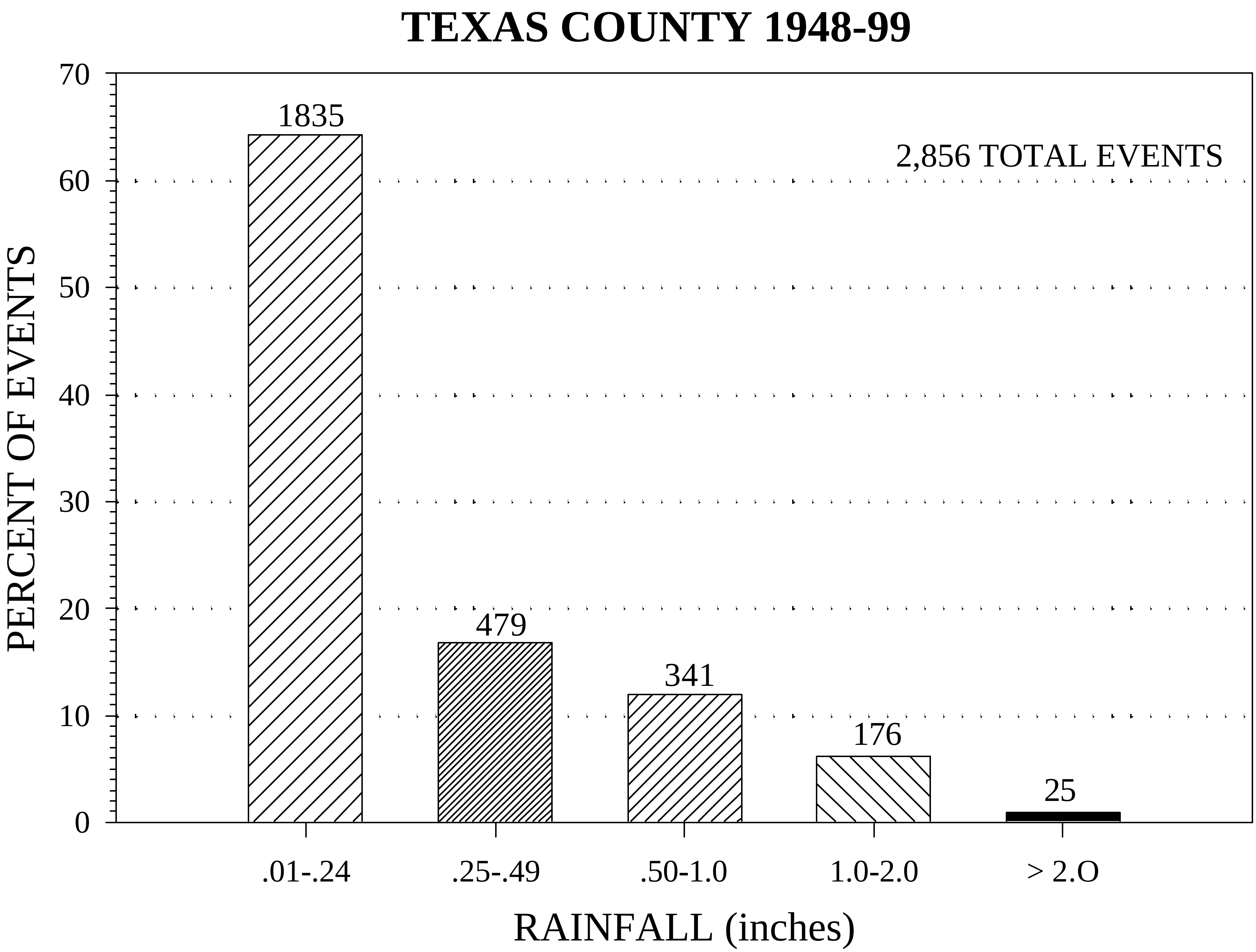

2003 - 2005 Cotton Heat Units
Heat units
300
250
200
150
100
50
0
Longterm
2003
2004
2005
10-May
20-May
31-May
10-Jun
20-Jun
30-Jun
10-Jul
20-Jul
31-Jul
10-Aug
20-Aug
31-Aug
10-Sep
20-Sep
30-Sep
10-Oct
20-Oct
Date



Longterm Average Precipitation by county (1948-98)
Yearly Total
Texas 17.89
Cimarron 18.39
Beaver 22.89
Texas
Cimarron
Beaver
Precipitation (in)
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Jan
Feb
Mar
Apr
May
June
July
Aug
Sep
Oct
Nov
Dec
Month


BEAVER COUNTY 1948-99
2,987 TOTAL EVENTS
PERCENT OF EVENTS
70
60
50
40
30
20
10
0
1767
542
442
185
51
.01-.24
.25-.49
.50-1.0
1.0-2.0
> 2.O
RAINFALL (inches)


CIMARRON COUNTY 1948-99
2,999 TOTAL EVENTS
PERCENT OF EVENTS
70
60
50
40
30
20
10
0
1874
549
381
159
36
.01-.24
.25-.49
.50-1.0
1.0-2.0
> 2.O
RAINFALL (inches)


TEXAS COUNTY 1948-99
2,856 TOTAL EVENTS
PERCENT OF EVENTS
0
10
20
30
40
50
60
70
1835
479
341
176
25
.01-.24
.25-.49
.50-1.0
1.0-2.0
> 2.O
RAINFALL (inches)

Oklahoma Panhandle Research & Extension Center
2004 Research Highlights

Crops

Appendix

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 anima 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-1 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-1 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^{-1}. Study is located at OPREC, Goodwell, OK.

Year	N Source†	N Rate‡ lb N ac-1	Yield	Std Err	DF	T Value	Pr > |t|
			——Bu ac^{-1}——				
2005	CONTROL	0	68.02	11.37	26	5.981	<.0001
	BM	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

† Nitrogen source (BM=beef manure, SE=swine effluent, AA=anhydrous ammonia).
‡ 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 ($TRT_{12,28,a=0.05}$; $F = 7.25$; $Pr < .0001$; 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 ($TRT_{12,29,a=0.05}$; $F = 6.47$; $Pr < .0001$; 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 ($TRT_{12,29,a=0.05}$; $F = 0.62$; $Pr = 0.8066$; 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 evapotransporation 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 agroecosysytem. 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.

YEAR	TRT§	N App†	N Rate‡	Corn (Bu ac^{-1})	±Std Err		Wheat (Bu ac^{-1})	±Std Err		Sunflower (lb ac^{-1})	±Std Err	
2005	1	SPR	0.5	152.80	16.28	***	24.46	10.11	*	1299.67	617.98	*
	2		1	186.03	16.28	***	56.28	10.11	***	1775.69	617.98	**
	3		2	180.90	16.28	***	83.45	10.11	***	2596.53	617.98	***
	4	SUR	0.5	158.93	16.28	***	30.22	10.11	**	1409.62	617.98	*
	5		1	164.10	16.28	***	58.75	10.11	***	1327.57	617.98	*
	6		2	184.75	16.28	***	84.55	10.11	***	1621.33	617.98	*
	7	INJ	0.5	115.96	16.28	***	19.98	10.11	NS	1004.97	617.98	NS
	8		1	80.27	16.28	***	15.43	10.11	NS	1651.80	617.98	*
	9		2	97.42	16.28	***	25.78	10.11	*	2686.34	617.98	***
	12	AA	1	179.72	16.28	***	55.58	10.11	***	1651.29	617.98	*
	13		2	182.01	19.94	***	55.85	10.11	***	1760.41	617.98	**
	10	CHK	0	88.34	11.51	***	19.20	7.15	*	1773.59	436.98	***
	14	TCHK	0	93.60	16.28	***	16.72	10.11	NS	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^{-1}).

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†	Corn (bu ac^{-1})			Wheat (bu ac^{-1})			Sunflower (lb ac^{-1})		
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.

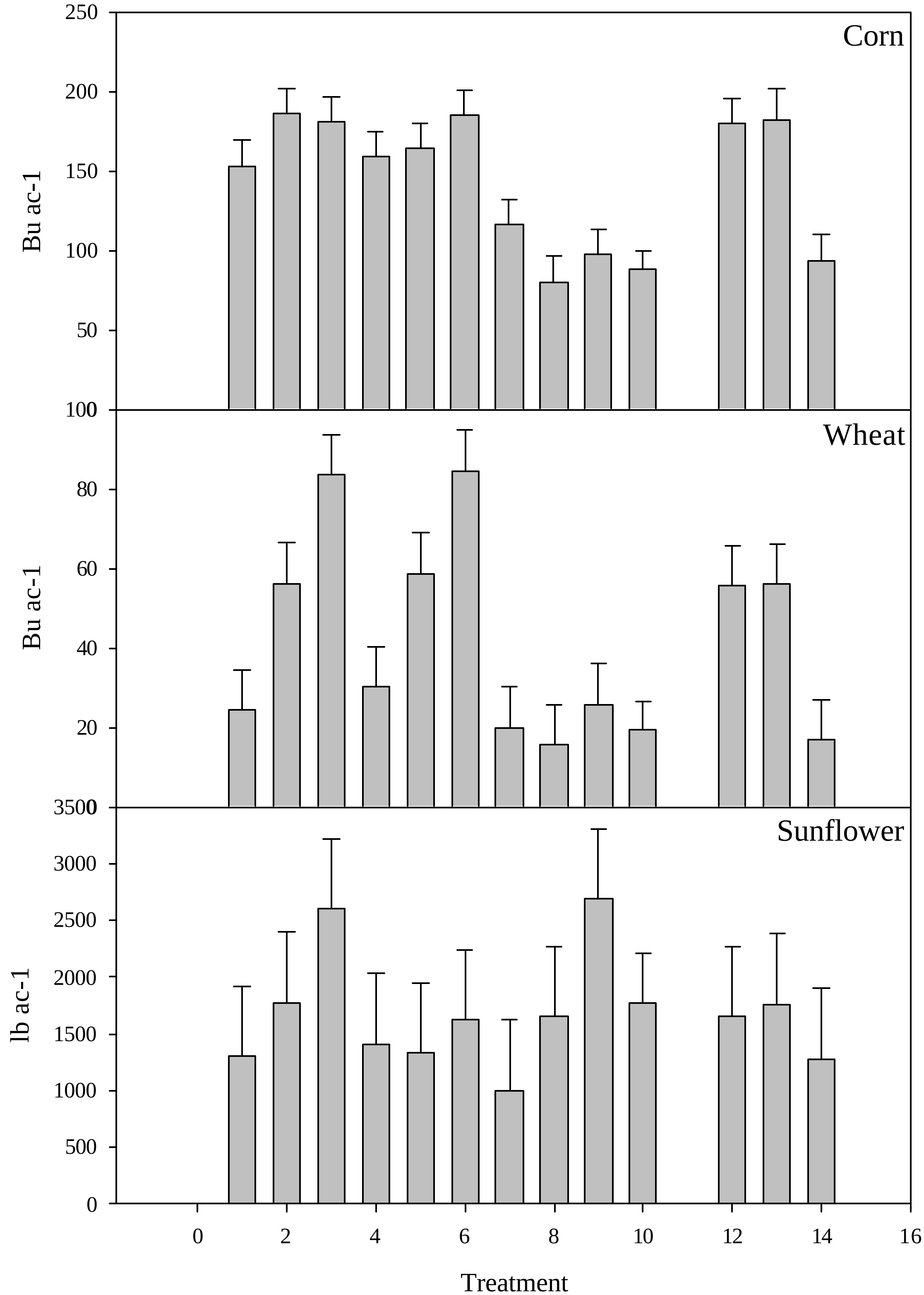


Figure 1 Grain yields in a no-till corn-wheat-sunflower-fallow rotation. Refer to Table 2 for complete information about treatment numbers relating to N application method and rates.

Yields of a forage production system in the Oklahoma Panhandle

Joshua Morris, Jeff A. Hattey, and J. Clemn 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^{-1} respectively. The 56 and 168 kg N ha^{-1} were applied prior to the first harvest period; while the 504 kg N ha^{-1} 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, (a=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^{-1} 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^{-1} 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^{-1} 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.

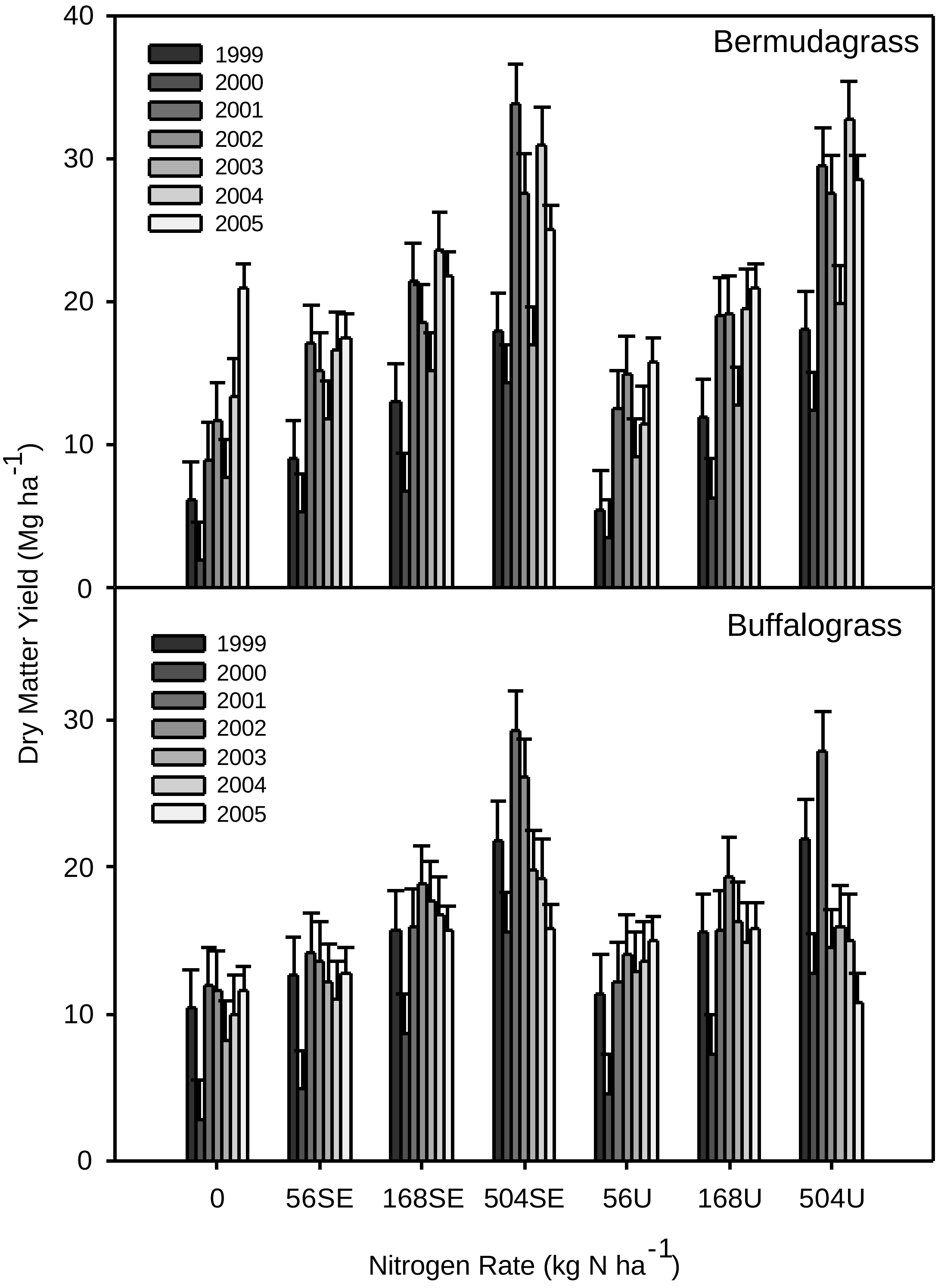


Figure 1: The effects of swine effluent (SE) and urea (U) applied at 0, 56, 168, and 504 kg N ha^{-1} to bermudagrass and buffalograss yields (dry matter basis).

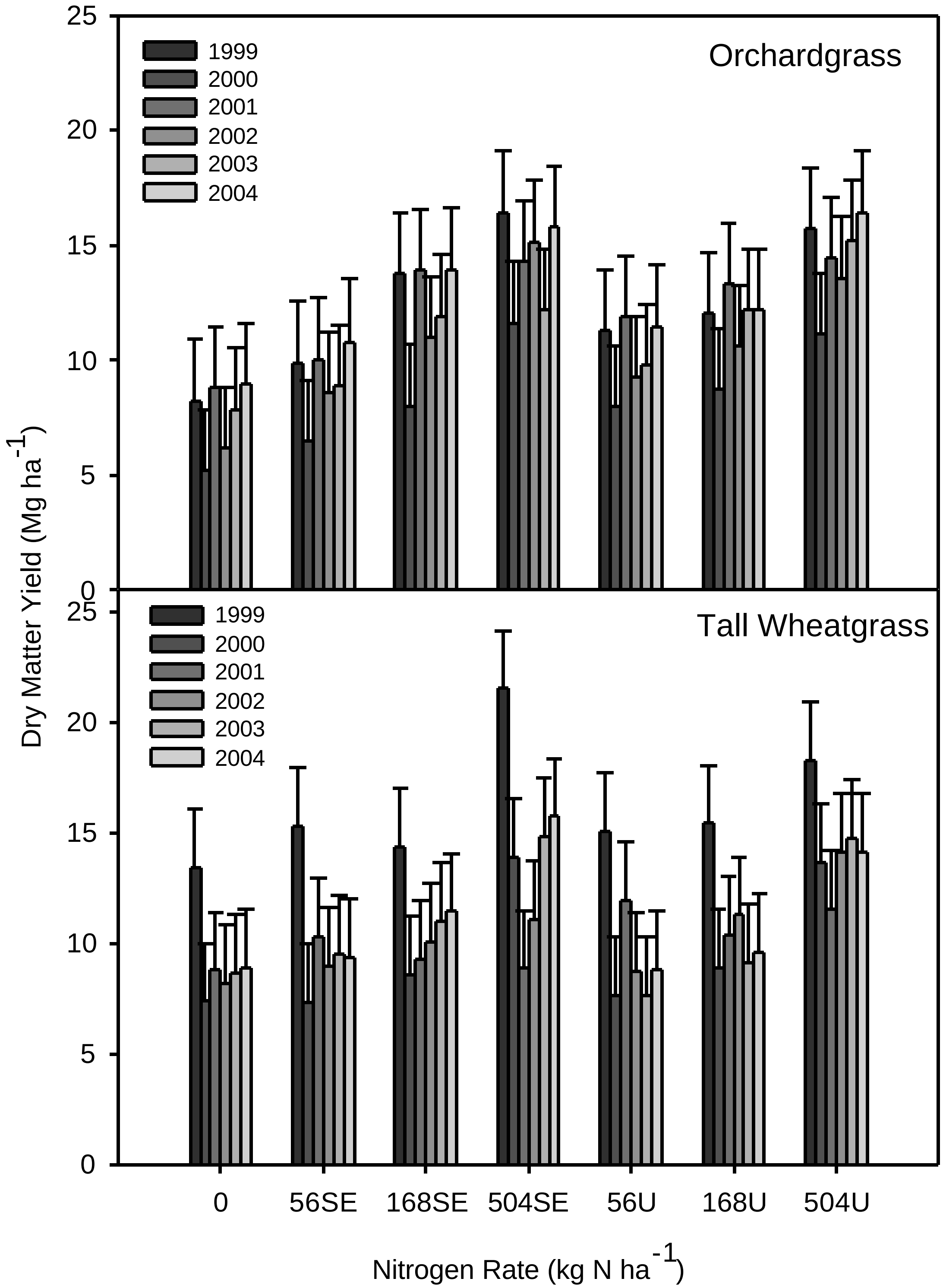


Figure 2: The effects of swine effluent (SE) and urea (U) applied at 0, 56, 168, and 504 kg N ha^{-1} to orchardgrass and tall wheatgrass yields (dry matter basis).

Bermudagrass for the High Plains

Dr. Charles Taliaferro, Dept. of Plant and Soil Sciences, Oklahoma State University, Stillwater
Rick Kochenower, Oklahoma Panhandle Research and Extension Center, Goodwell
Dr. Britt Hicks, Oklahoma Panhandle Research and Extension Center, Goodwell

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	
Commercial Varieties – Available for Farm Use					
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
Experimental Varieties – Not Available for Farm Use					
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	
Commercial Varieties – Available for Farm Use			
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
Experimental Varieties – Not Available for Farm Use			
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^+ 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.

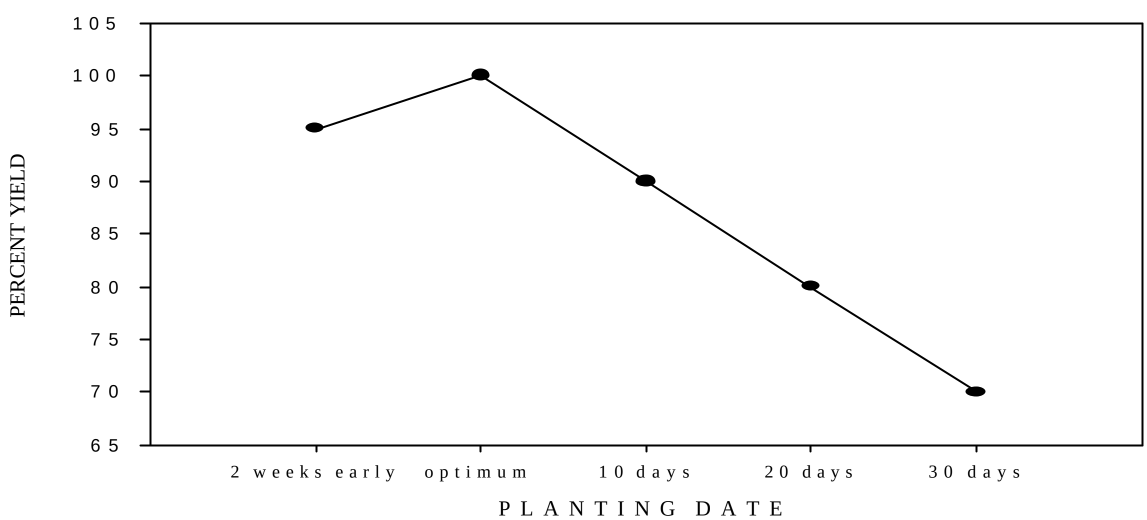


Figure 1. Ten years of grain yields at Lansing, Michigan. Source modern corn production

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 – 01 114 day	2003 – 04 114 day	4-year 114 day	2003 –04 107 day
April 10	175.9 a[†]	205.2 a[†]	190.6 a[†]	176.0 ab[†]
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

[†]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 too 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 – 01 114 day	2003 – 04 114 day	4-year 114 day	2003 –04 107 day
April 1	26.7 a†	22.8 a†	25.0 a†	22.0 a†
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

†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 21st 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_2 backpack, 3	CO_2 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 Callisto 480sc Methylated seed oil Nitrogen 28%	1.5 1.5 1.5 1.5	oz/a oz/a pt/a qt/a	0	93.8	94.8	173.5
3	POST	Option corn herbicide Distinct Methylated seed oil Nitrogen 28%	1.5 4 1.5 1.5	oz/a oz/a pt/a qt/a	0	99.8	100	182.6
4	EPOST	Option corn herbicide Define sc Atrazine Methylated seed oil Nitrogen 28%	1.5 10 1 a/a 1.5 1.5	oz/a oz/a lb pt/a qt/a	0	95.5	95.3	175.4
5	POST	Equip corn herbicide Callisto 480sc Methylated seed oil Nitrogen 28%	1.5 1.5 1.5 1.5	oz/a oz/a pt/a qt/a	0	97	98.8	171.7
6	POST	Equip corn herbicide Distinct Methylated seed oil Nitrogen 28%	1.5 4 1.5 1.5	oz/a oz/a pt/a qt/a	0	99.5	99.8	194.1
7	EPOST	Equip corn herbicide Define sc Atrazine Methylated seed oil Nitrogen 28%	1.5 10 1 a/a 1.5 1.5	oz/a oz/a lb pt/a qt/a	0	98.8	99.8	171.6
8	PRE	Balance pro Atrazine	2 a 1.5 a/a	 floz/ lb	99.8	99.8	99.5	185.6
9	PRE	Balance pro Define sc Atrazine	1.75 a 14.5 1.5 a/a	 floz/ oz/a lb	100	100	99.8	175.0
10	PRE PRE POST POST POST	Define sc Atrazine Equip corn herbicide Nitrogen 28% Methylated seed oil	18 1.5 1 1.5 1.5	oz/a lb/a oz/a qt/a pt/a	99.8	100	100	184.4
11	PRE PRE POST POST	Define sc Atrazine Buctril+atrazine Callisto	18 1.5 2 1	oz/a lb/a pt/a oz/a	99.8	100	99.8	179.3
LSD 5% CV					0.4 0.7	1.6 1.4	3.1 2.6	 25.3 11.2

2005 EVALUATION OF JOHNSONGRASS CONTROL WITH VARIOUS POSTEMERGENTCORN 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 it's 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:

APPLICATION TYPE	POST
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_2 backpack, 3
Nozzle type/Size	TeeJet 8015vs
Boom ht/# Noz/Spacing (in)	19" / 4@19"
GPA/PSI	15 / 40
Applied by	Bensch

Weed Species	***Size/leaf***
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	**Accent** (nicosulfuron) COC 28% UAN	0.67 oz/A 1% v/v 2 qt/A	70	46	1	45	15	0	66
2	**Beacon** (primisulfuron) COC 28% UAN	0.76 oz/A 1% v/v 2 qt/A	95	63	24	94	20	6	44
3	**Celebrity Plus** (nicosulfuron + dicamba + diflulfenzopyr) NIS 28% UAN	4.7 oz/A 0.25% v/v 2 qt/A	80	91	0	55	90	0	82
4	**Equip** (foramsulfuron + iodosulfuron) MSO 28% UAN	1.5 oz/A 1.5 pt/A 1.5 qt/A	85	48	8	41	33	0	40
5	**Roundup Weathermax** (glyphosate) Ammonium sulfate	22 fl oz/A 17 lb/100 gal	30	41	0	0	0	0	62
6	**Option** (foramsulfuron) MSO 28% UAN	1.5 oz/A 1.5 pt/A 1.5 qt/A	79	74	0	74	3	0	67
7	**Spirit** (primisulfuron + prosulfuron) COC 28% UAN	1 oz/A 1% v/v 2 qt/A	95	81	33	94	58	15	40
8	**Steadfast** (nicosulfuron + rimsulfuron) COC 28% UAN	0.75 oz/A 1% v/v 2 qts/A	92	69	0	83	50	0	93
9	**Basis** (thifensulfuron + rimsulfuron) COC 28% UAN	0.33 oz/A 1% v/v 2qts/A	83	83	0	90	73	0	67
10	**Resolve** (rimsulfuron) [DuPont DPX-e9636 25DF] NIS 28% UAN	1 oz/A 0.25% v/v 2 qt/A	91	82	0	88	74	0	100
11	**Northstar** (primisulfuron + dicamba) NIS 28% UAN	5 oz/A 0.25% v/v 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:

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]	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_2 backpack, 3	CO_2 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.

EVALUATION OF VARIOUS DUPONT HERBICIDES IN CORN 2005							
				Palmer amaranth Control	Palmer amaranth Control	Palmer amaranth Control	GRAIN YIELD
	Rating Date			5-27-05	6-10-05	6-24-05	9-19-05
#	Treatment	Rate	Appl	%	%	%	bu/A
1	Cinch ATZ Lite Steadfast Callisto Atrazine COC 28-0-0 or 32-0-0	2 pts/a 0.75 oz/a 2 floz/a 0.5 lbs ai/a 1 qt/a 4 qts/a	PRE POST POST POST POST POST	100	100	100	157.7
2	Cinch ATZ Lite Steadfast Clarity COC 28-0-0 or 32-0-0	2 pts/a 0.75 oz/a 4 floz/a 1 qt/a 4 qts/a	PRE POST POST POST POST	100	100	100	144.3
3	Cinch ATZ Lite Resolve 25% DF Roundup Weathermax AMS	2 pts/a 1 oz/a 22 floz/a 17 lbs/100 gal	PRE POST POST POST	99	100	100	156.1
4	Cinch ATZ Lite Steadfast Lumax Atrazine Non-ionic Surfactant	2 pts/a 0.75 oz/a 2 pts/a 0.75 lbs ai/a 1 qt / 100 gal	PRE POST POST POST POST	100	100	100	154.1
5	Basis Balance Pro Atrazine Resolve 25% DF Roundup Weathermax AMS	0.33 oz/a 0.75 floz/a 0.5 lbs ai/a 1 oz/a 22 floz/a 17 lbs/100 gal	PRE PRE PRE POST POST POST	100	100	100	161.1
6	Resolve 25% DF Roundup Weathermax AMS	1 oz/a 22 fl oz/a 17 lbs/100 gal	POST POST POST	na	100	100	152.3
7	Roundup Weathermax AMS	22 fl oz 17 lbs/100 gal	POST POST	na	100	100	128.8
8	Untreated Check			0	0	0	36.0
			LSD(.05) CV	0.3 0.3	0 0	0 0	23.3 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/mph	CO_2 backpack, 3	CO_2 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 IN A ROUNDUP READY CORN SYSTEM							
				Palmer amaranth Control	**Palmer amaranth Control**	**Palmer amaranth Control**	**GRAIN 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) Princep 4L	3.0 qt/acre 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 NIS	3.0 qt/acre 0.25 %v/v	POST	0	100.0	99.8	186.6
12	Bicep II Magnum 5.5 SC NIS	2.1 qt/acre 0.25% v/v	POST	0	92.0	98.0	161.4
13	Roundup Weathermax AMS	26 fl oz 2 lbs/A	POST	0	99.8	97.8	180.0
14	Roundup Weathermax AMS	22 fl oz 2 lbs/A	POST	0	100.0	97.8	173.3
			LSD 5% CV	0.8 0.9	3.3 2.5	2.2 1.7	17.4 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_2 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

EVALUATION OF YUKON FOR PALMER AMARANTH CONTROL IN CORN Gowan Trial #YUK-05-01-T2						
				Palmer amaranth Control	**Palmer amaranth Control**	**GRAIN YIELD**
	Rating Date			6-16-05	6-30-05	9-19-05
#	Treatment	Rate	Appl	%	%	bu/A
1	Yukon NIS	4 oz/a 0.25% v/v	POST	70	69	68
2	Yukon NIS	6 oz/a 0.25% v/v	POST	93	91	143
3	Yukon NIS	8 oz/a 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 <u>and</u> 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

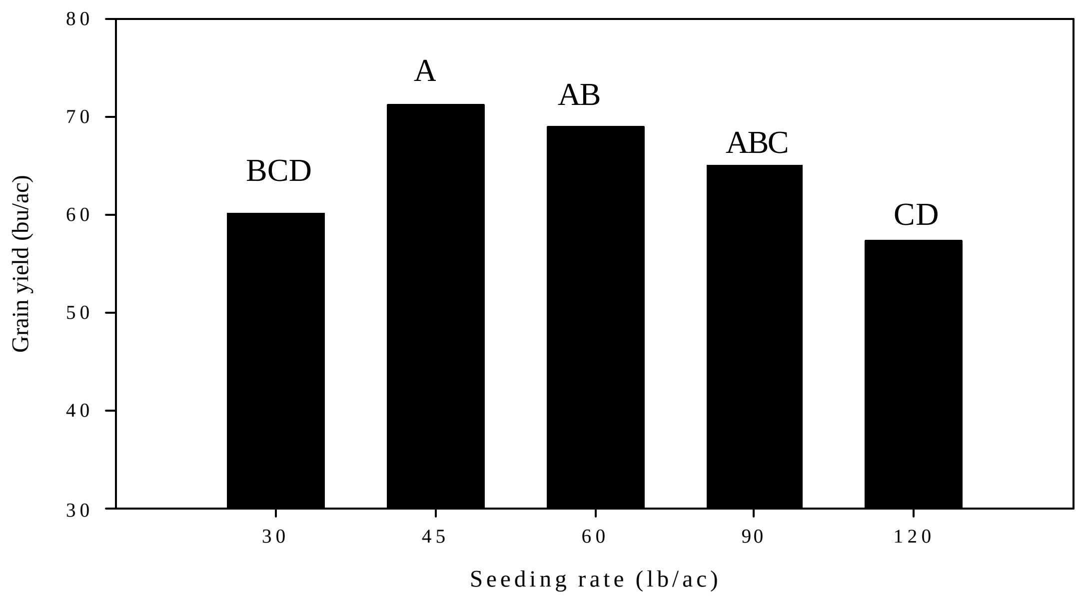
Rick Kochenower, Oklahoma Panhandle Research and Extension Center, Goodwell
Jeff Edwards, Dept. of Plant and Soil Sciences, Oklahoma State University, Stillwater

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

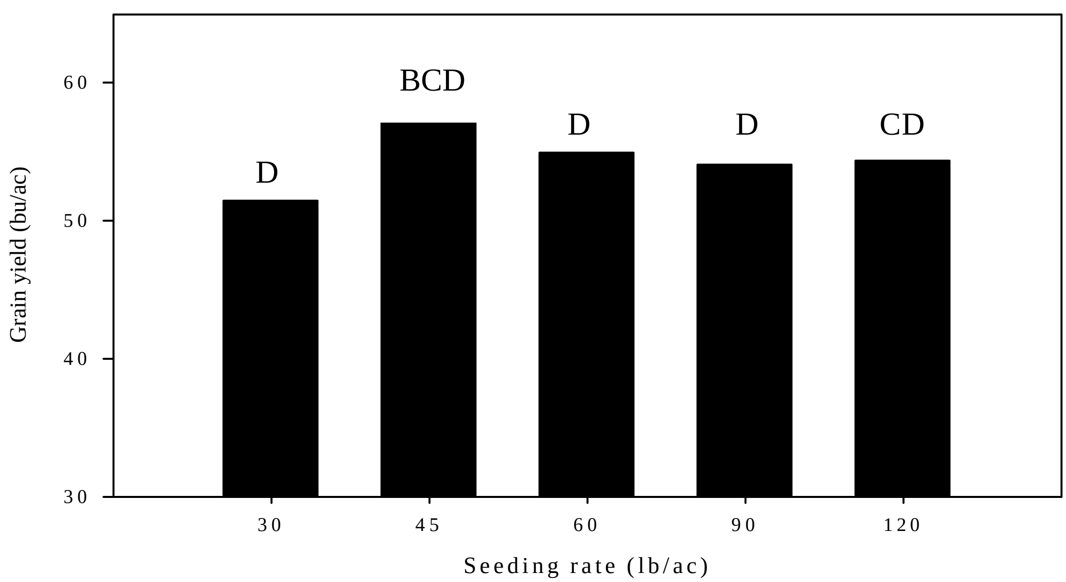
Stripe rust affected grain yields in 2005 for most producers except those that sprayed with fungicide for control. In response to stripe rust, the producer sprayed the field were experiment was located with fungicide and the reward was the highest grain yields of any Oklahoma panhandle experiments. Average 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.



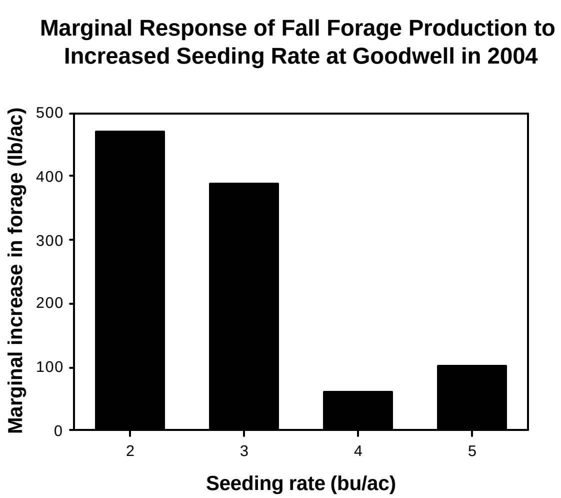
Yields with same letter are not significantly different

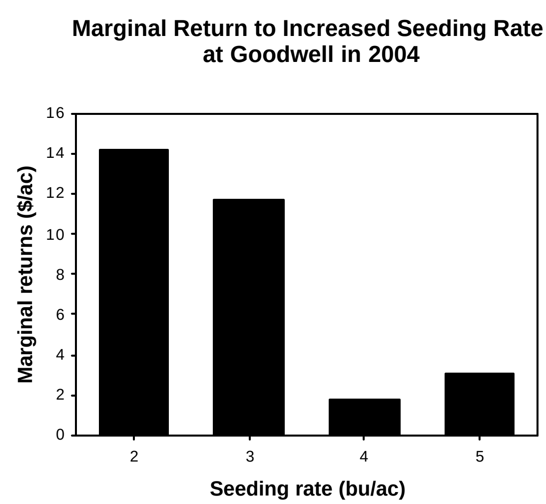
Wheat grain yields in 2003 and 2004 were low with the highest yield obtained from a mid October planting in 2003 of 17.6 bu/ac. More data is needed in years with favorable conditions for grain production before any conclusions can be determined. In the fall of 2004 a no-till dryland wheat planting date 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.





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

Curtis Bensch, Oklahoma Panhandle Research and Extension Center, Goodwell
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.

VARIETY	2005 DATE OF FHS
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

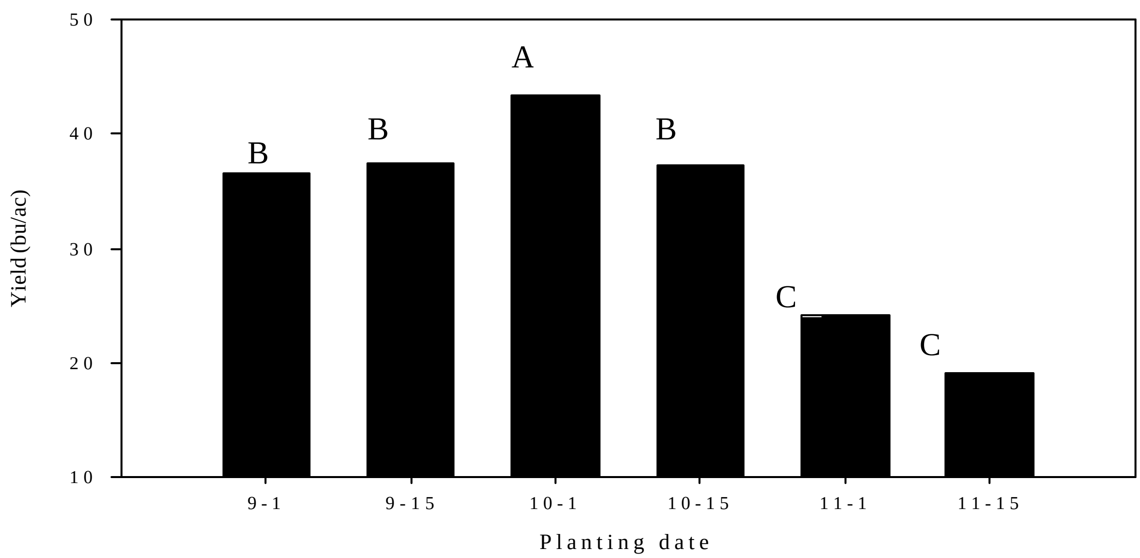
Yields were reduced at OPREC in 2005 due to stripe rust that affected the high plains region. Although yields were reduced the October 1 was the best planting date in 2005 at 43.3 bu/ac (Figure 1). Although differences were found, they were not as significant as previously reported results at Texas A&M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

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

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 2004was 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 too 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†	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		

†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 began. 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.

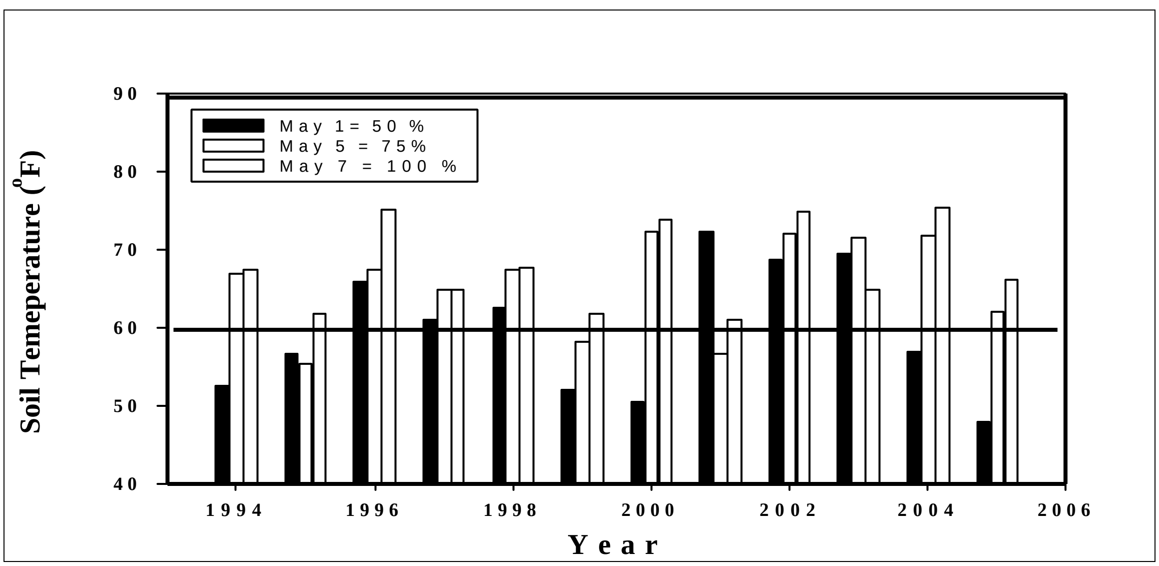
Treatment	Grain Yield bu/ac	Test weight lb/bu
Strip-till only	43.4	57.4
Strip-till with fertilizer	41.9	57.4
No-till	41.0	57.1

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 60º F half the time, where as on May 7 the average soil temperature is above 60º 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 1and 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†	1,153 a†	1,120 a†
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

†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/mph	Cub tractor w/ compressed air/ 3
Nozzle type/Size	TeeJet 8015vs
Boom ht/# Noz/Spacing (in)	19"/ 20"
GPA/PSI	15 / 40
Applied by	Bensch

Weed Species	**growth stage**
Prickly pear cactus	mid-bloom

Oklahoma Panhandle Research & Extension Center, Goodwell, OK.

EVALUATION OF PRICKLY PEAR CACTUS CONTROL WITH VARIOUS HERBICIDES				
	Rating Date			7/21/2005
trt #	**Application**	**Treatment**	**Rate**	**prickly pear 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 + dicamba)	POST	0.25 oz part A 1 pt part B	86
9	Overdrive (diflufenzopyr + dicamba) NIS AMS	POST	6 oz 0.25% v/v 5 lbs/A	51
10	Remedy (tryclopyr) NIS	POST	2 pt/A 0.5% v/v	44
11	Remedy (tryclopyr) Tordon 22k (picloram) NIS	POST	1 pt/A 1 pt/A 0.5% v/v	79
12	Velpar L (hexazinone)	POST	2cc/plant	33
13	Weedy control	POST		0
LSD 5% CV				30 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_2 backpack, 3	CO_2 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 WITH VARIOUS PRE and PPI HERBICIDES							
				Sandbur Control (%)	**Sandbur Control (%)**	**Sorghum Injury (% stand reduction)**	**Grain Yield (bu/ac)**
	Rating Date			07/13/2005	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_2O	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_2O	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.

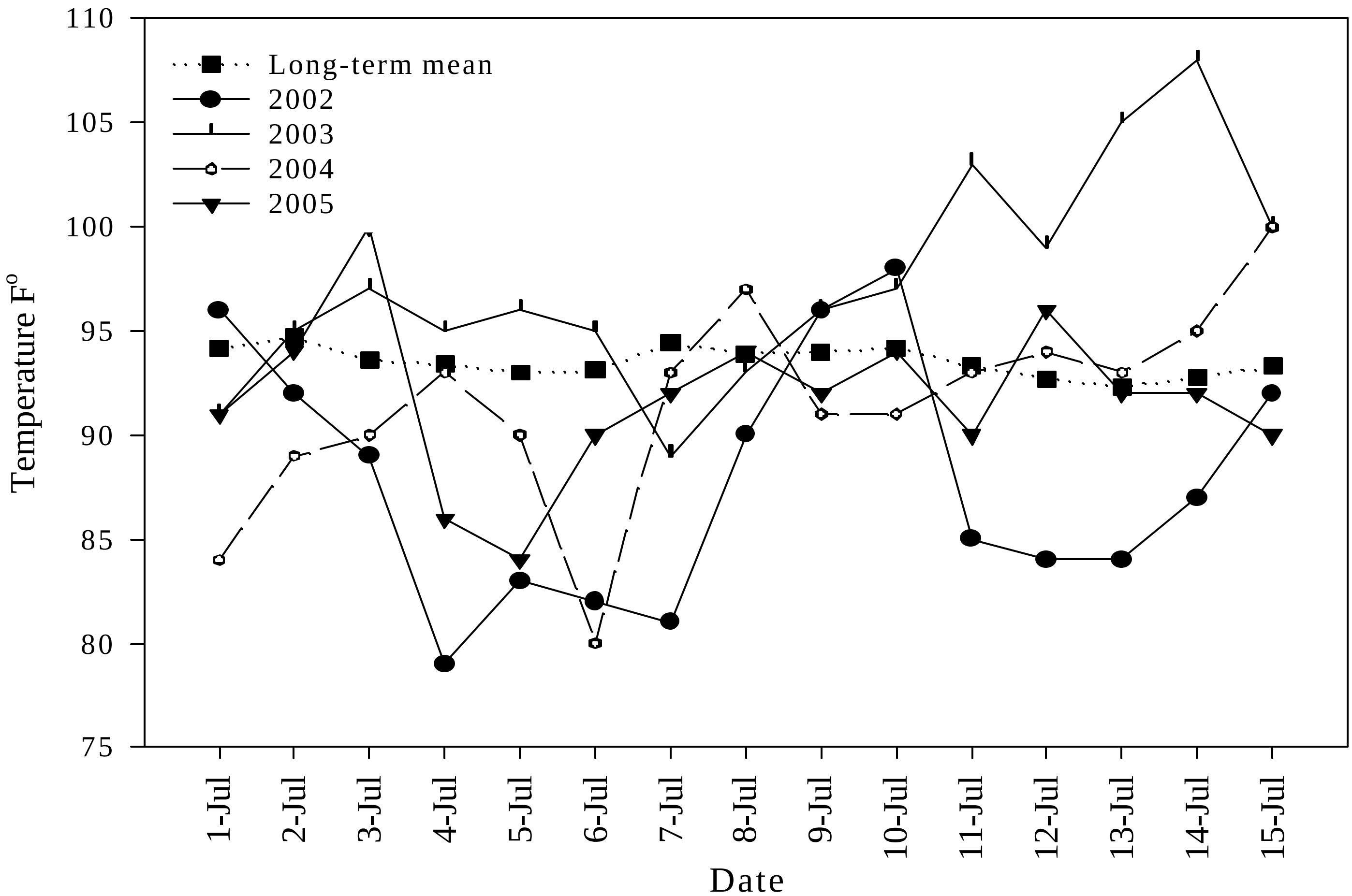


Table 1. Rainfall and irrigation for irrigated corn performance trial locations, 2005.

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

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

Company	Hybrid	Plant Characteristics				Maturity
		SV	SS	SG	EP	Days
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_2O_5 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

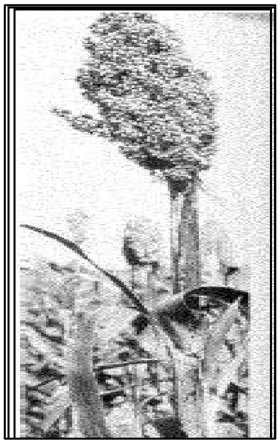
Cooperator: Joe Webb
Soil Series: Richfield Clay Loam
Strip-Till: Following wheat and sunflowers in 2004
Soil Test: N: NA P: NA K: NA pH: NA
Fertilizer: N: 230 lbs/ac P: 0 K: 0
Herbicide: 1.5qt/ac Harness Extra (Preemergence)
Planting Date: April 6, 2005
Harvest Date: Grain September 13, 2005

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 Brand Name	Entry Designation	YIELD Tons/ac		Plant Population 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.

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 combine.

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.

The following people have contributed to this report by assisting in crop production, data collection, and publication: Donna George, Lawrence Bohl, Rocky Thacker, Toby Kelly, Alton Young, Roger Don Gribble, Jason Weirich, Bart Cardwell Justin Stauffer, and Tony Mills. Their efforts are greatly appreciated. Also would like to thank the ***Oklahoma Grain Sorghum Commission*** *for their financial support.*

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	**13.01**
Long term mean:	1.92	4.23	3.51	1.76	2.45	**13.87**

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	**18.46**
Long term mean:	3.28	5.83	4.05	2.68	3.19	3.59	**22.62**

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
		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

Note: DK 44 and KS 585 without seed treated insecticide never emerged therefore were not harvested.

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	**16.88**
Long term mean:	3.28	5.83	4.05	2.68	3.19	**19.03**

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.)

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

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_2O_5 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	**9.82**
Long term mean:	3.25	2.86	2.58	2.28	1.77	**12.74**

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_2O_5/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.	**Total**
	2.85	2.01	1.40	3.21	0.35	**9.82**
Long term mean:	3.25	2.86	2.58	2.28	1.77	**12.74**

------- 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	**9.76**
Long term mean:	2.76	2.92	2.85	2.55	1.97	0.97	**14.02**

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

Table 9. Results from Tipton 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					
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

Company Brand Name	Entry Designation	Grain Yield bu/ac	Test weight lb/bu	Plant Population plants/ac	Head Population heads/plant
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

Company Brand Name	Entry Designation	Grain Yield bu/ac	Test weight lb/bu	Plant Population plants/ac	Head Population heads/plant
		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.	**Total**
2005:	0.83	3.42	3.42	2.47	2.70	**12.84**
Long term mean:	2.30	4.30	3.45	2.08	2.71	**14.84**

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

PT 2005-11 JULY 2005 Vol. 17, No. 11

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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

Financial Support by the Oklahoma Wheat Commission

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 2004-05	Grain Yield 2-Year	Test Weight 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 $_{(0.05)}$	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

		Grain Yield		Test Weight
Source	Variety	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
	Mean	69	68	59
	LSD $_{(0.05)}$	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	Grain Yield 2004-05	Test Weight 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 $_{(0.05)}$	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 2004-05	Test Weight 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 $_{(0.05)}$	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)[1]	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

[1] 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
Totals:	8.03	10.52

Soil: Gruver Clay Loam

Tillage: No-Till; double cropped following wheat

Fertilizer: **N**: 120 lbs/ac **P_2O_5**: 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