Oklahoma Cooperative Extension Service CR-2162
04/2023
Current Report
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Grain Sorghum Performance Trials in Oklahoma, 2022

Josh Lofton
Associate Professor
Department of Plant and Soil Sciences

Gary Strickland
SWREC Regional Agronomy Specialist
Department of Plant and Soil Sciences

Chase Harris
Senior Agriculturist
Department of Plant and Soil Sciences

Josie Rice
Graduate Research Assistant
Department of Plant and Soil Sciences

Matt Drendel
Graduate Research Assistant
Department of Plant and Soil Sciences

Sumit Sharma
Assistant Irrigation Specialist
Department of Plant and Soil Sciences

Trial Objectives and Procedures

Performance trials for hybrid grain sorghum are conducted by Oklahoma State University Extension each year. These trials provide producers, Extension educators, industry representatives and researchers with information for grain sorghum hybrids marketed in Oklahoma. Performance trials were conducted at nine locations in 2022. However, due to dry conditions at planting, the Adams, Homestead and Nardin locations were terminated. The only location that did not receive any irrigation throughout the season was Tipton. All other trials received supplemental irrigation to ensure the trial continued to survive. All trials, with the exception of Tipton, were planted within the timeframe that would be considered full-season. Due to early season dry conditions, the Tipton location was planted following a rain event in early June (which would be typical of double-crop systems). Trials at Chickasha, McCaull and Bixby were irrigated using overhead sprinkler irrigation. Supplemental irrigation was supplied to the Perkins location using a Rain Gun reel irrigation system. Goodwell location was irrigated with a mix of overhead sprinkler irrigation (at planting) and drip irrigation. Yields presented in this document are for the early, medium and late maturity hybrids for all locations. Most cultivars are similar among all locations. The exception to this is several early and medium cultivars, which are solely marketed to the panhandle region. Therefore, a number of cultivars are present in only the three panhandle locations.

Grain sorghum hybrid trial entrants (Table 1) were assigned by companies to their respective maturity groups (early represented less than <60 days to mid-bloom (DMB), medium was 60 to 70 DMB, with late being than >70 DMB). If a cultivar was exactly 60 or 70 DMB, previous years' data was used to determine which maturity the cultivar fell into. Companies designated all hybrid characteristics, including tolerance to sugarcane aphids, are presented in Table 1. This information was not determined or verified by OSU. Company participation was voluntary; therefore, not all hybrids marketed in Oklahoma were included in the trials.

In 2022, 47 hybrids were entered by five seed companies (Table 1). For the hybrid performance trials, each maturity group was tested independently with individual hybrids being arranged in a randomized complete block design and having a minimum of four replications. All locations were two row plots with 30-inch spacing and 35 feet in length. Plots were trimmed to 25 feet prior to harvest. Tractor-powered cone planters were used to plant all trials with seeding rates adjusted for the trial location. Trials were harvested with a Kincaid model 8XP plot combine.

Planting densities, cooperating producers, cultural practices, soil series, herbicides and insecticides used in all trials are listed individually in result tables. Rainfall data from the nearest Mesonet sites are also listed. Some trials are long distances from the nearest Mesonet site; therefore, rainfall could be greater or less than reported.

Soil fertility practices will be discussed for each individual location following their yield tables. All applications were made in accordance to OSU Extension best management practices for management. Soil samples were collected in the winter and early spring prior to planting and submitted to the Soil, Water and Forage Analytical Laboratory (SWFAL) for analysis. All N, P and K applications were made based on these results. Nitrogen applications were made based on a 120 bu/ac yield goal, with the exception of Goodwell and McCaull, which were made based on a 150 bu/ac yield goal. At all research station sites, soil pH is managed to be suitable for grain sorghum production. Locations on grower's fields are not as controlled; however, all location this season were within reasonable limits (5.5-7.5).

Growing Conditions

Due to the degree of variability between the sites in the study and grower's fields around the state, discussions regarding the growing conditions will be made prior to each individual location.

Results

Grain yields are reported in pounds per acre and bushels per acre of threshed grain, adjusted to a moisture content of 14% (Tables 2 through 19). Test weight is also reported in pounds per bushel. Different plant populations at each location prevent accurate comparison between locations. Also, comparisons across maturity were not conducted as they were treated as independent trials. Producers should note that late-maturing hybrids, due to longer periods of vegetative and early reproductive growth, will generally yield more than early and medium-maturity hybrids. The availability of moisture at critical crop development stages; however, 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 PSS-2034 Grain Sorghum Planting Rates and Dates, and Fact Sheet PSS-2113 Grain Sorghum Production Calendar.

Least Significant Difference (LSD) is a statistical test of yield differences and is shown at the bottom of each table. Unless two hybrids differ by at least the LSD shown, little confidence can be placed in one hybrid being superior to another and the difference is probably not real.

The Coefficient of Variation (CV) 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, multi-year means for yields and test weights 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 entries. Models with CVs greater than 25 have not been included in this report.

Acknowledgements

The financial support of the participating companies and the Oklahoma Sorghum Commission is gratefully acknowedged, as well as the efforts and resources provided by the producer-cooperators: Brook Strader, Brent and Anna Ballagh, Leon Richards and Kent Martin. The authors are also grateful for research support from Michael Pettijohn of SCREC, Mike Schulz of SWREC, Cameron Murley and Skeate Beck of OPREC, Butch Havener of MVRS and Erich Wehrenberg of CVRS. We are also grateful for the help of OSU Extension agricultural educators: Aaron Henson (Tillman County), Troy Gosney (Major County), Gus Holland (Tulsa County) and David Nowlin (Caddo County) who gave generously of their time to this project in 2022.

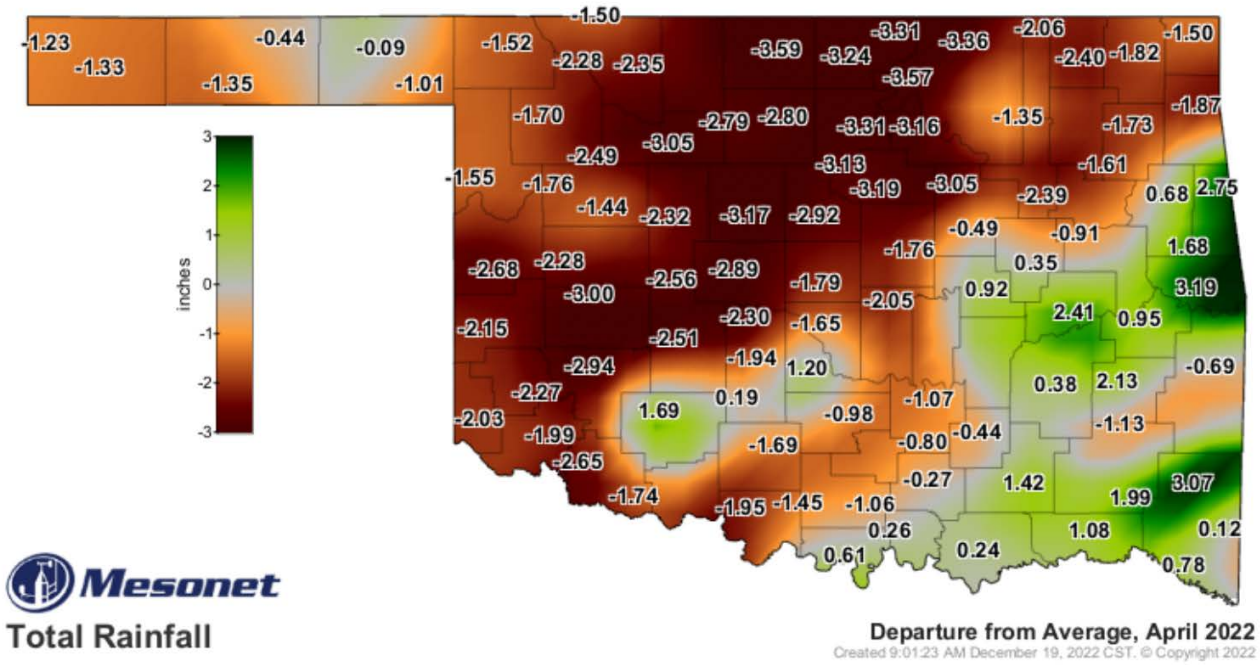

Figure 1. Departure from average rainfall for April 2022.

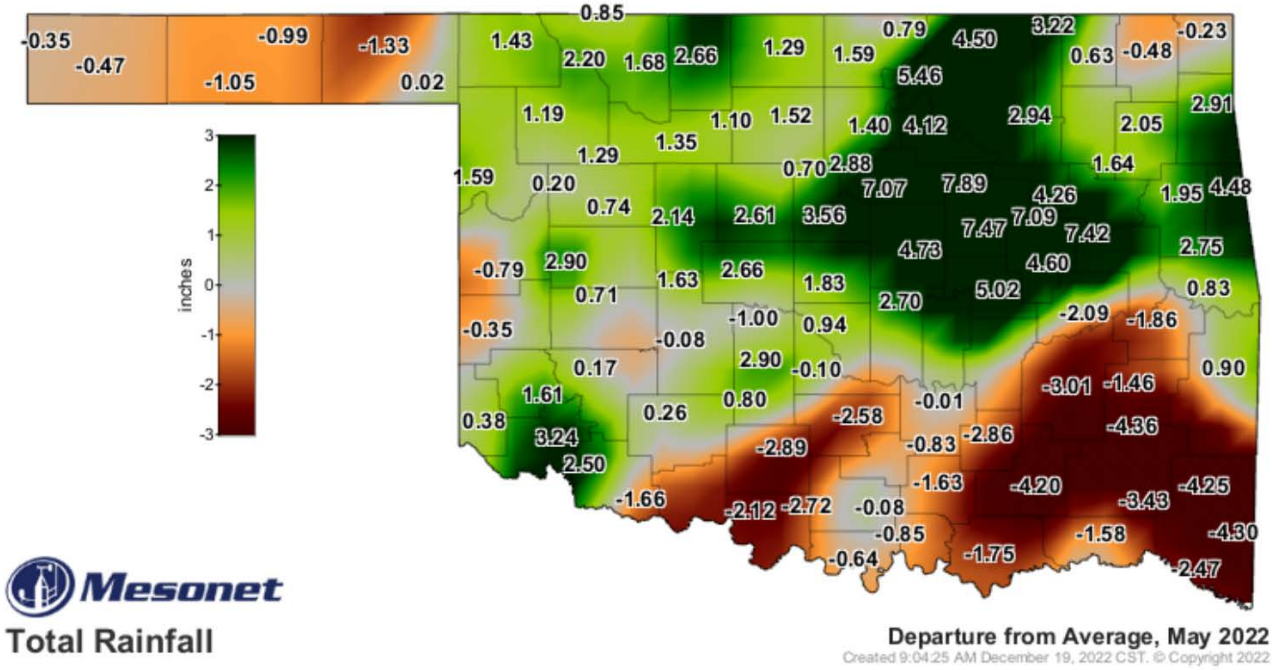

Figure 2. Departure from average rainfall for May 2022.

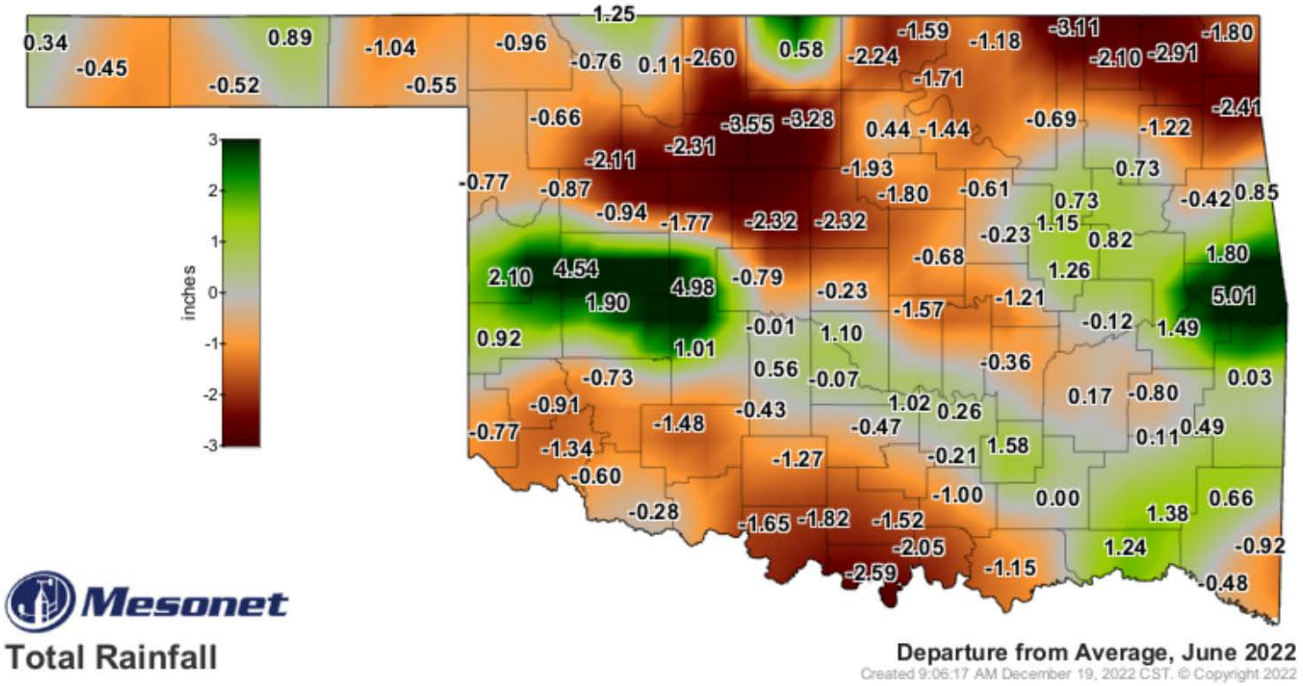

Figure 3. Departure from average rainfall for June 2022.

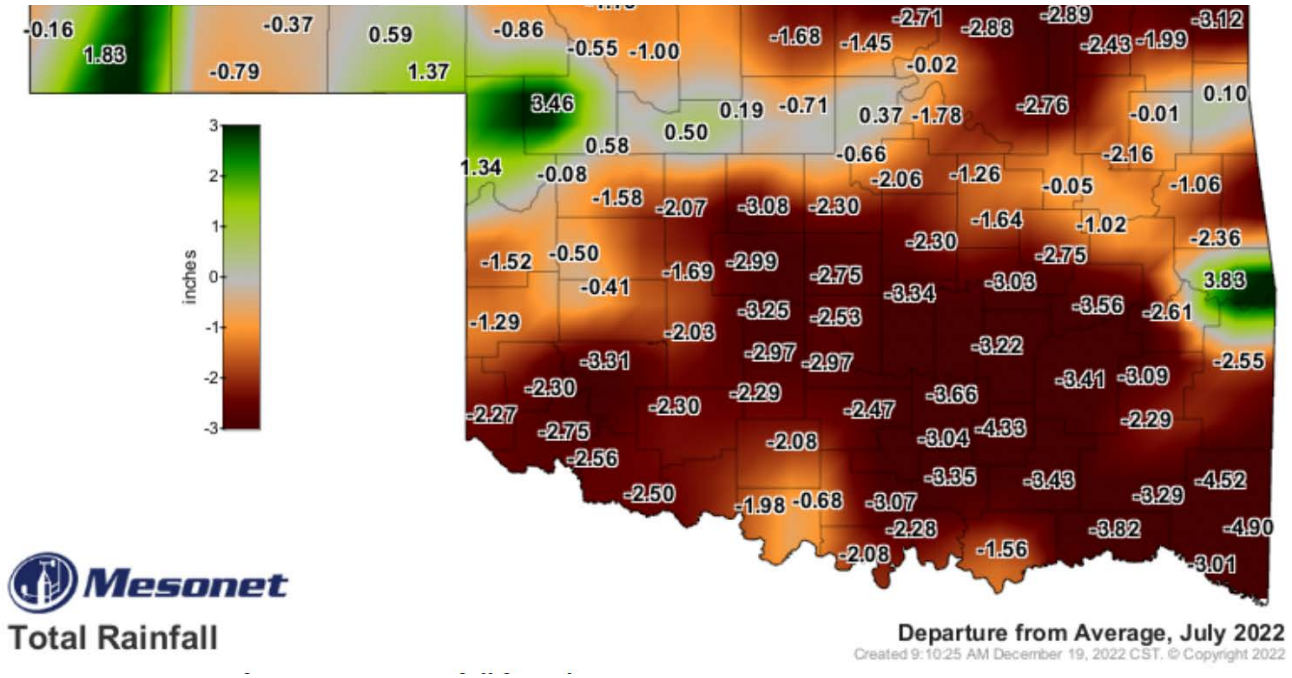

Figure 4. Departure from average rainfall for July 2022.

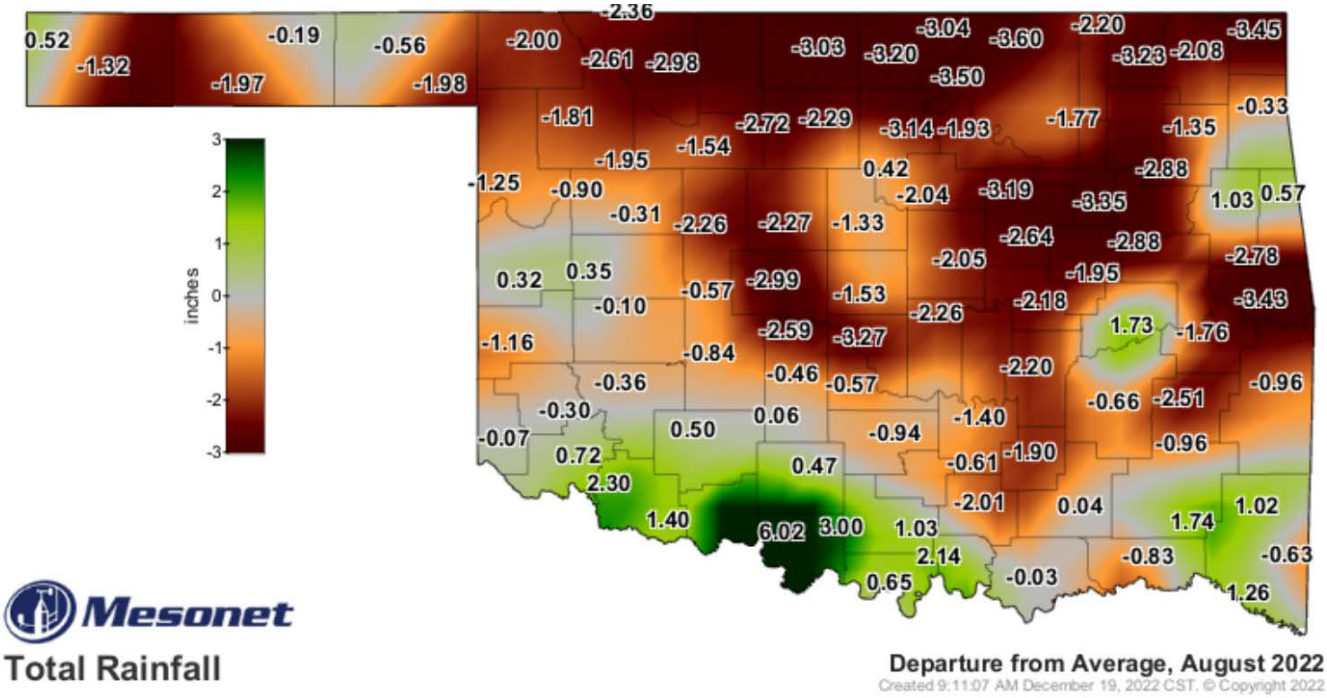

Figure 5. Departure from average rainfall in August 2022.

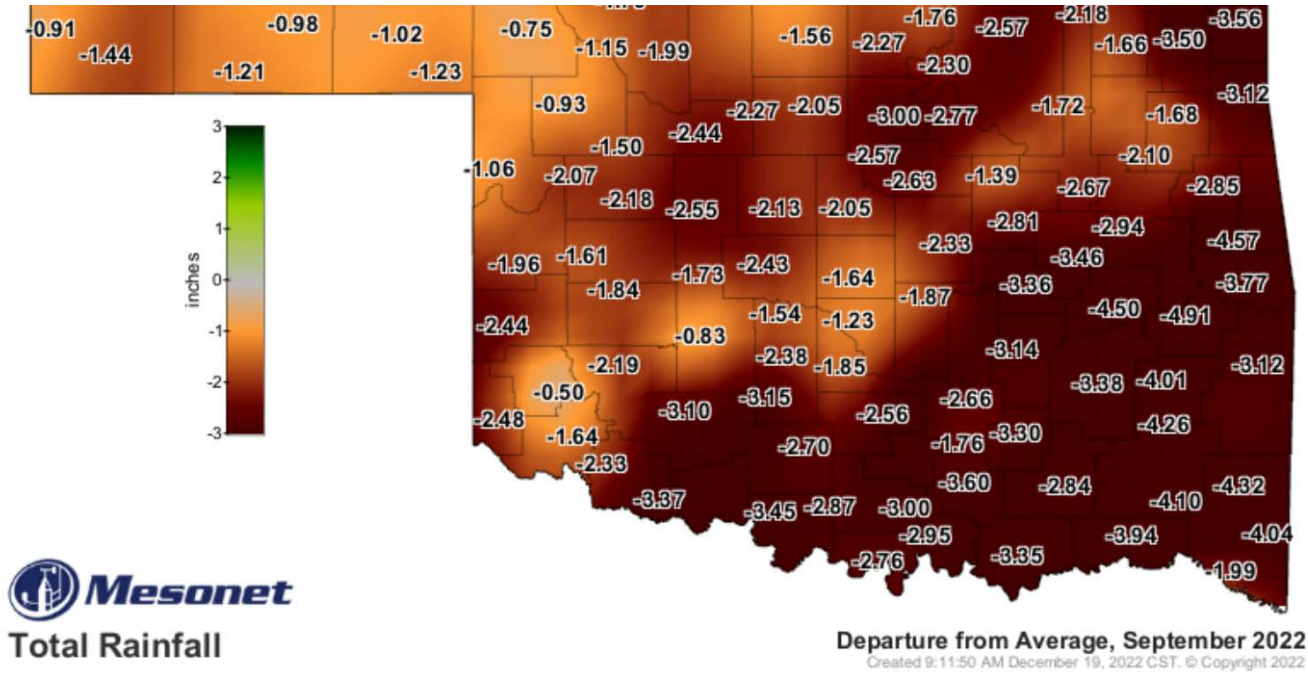

Figure 6. Departure from average rainfall in September 2022.

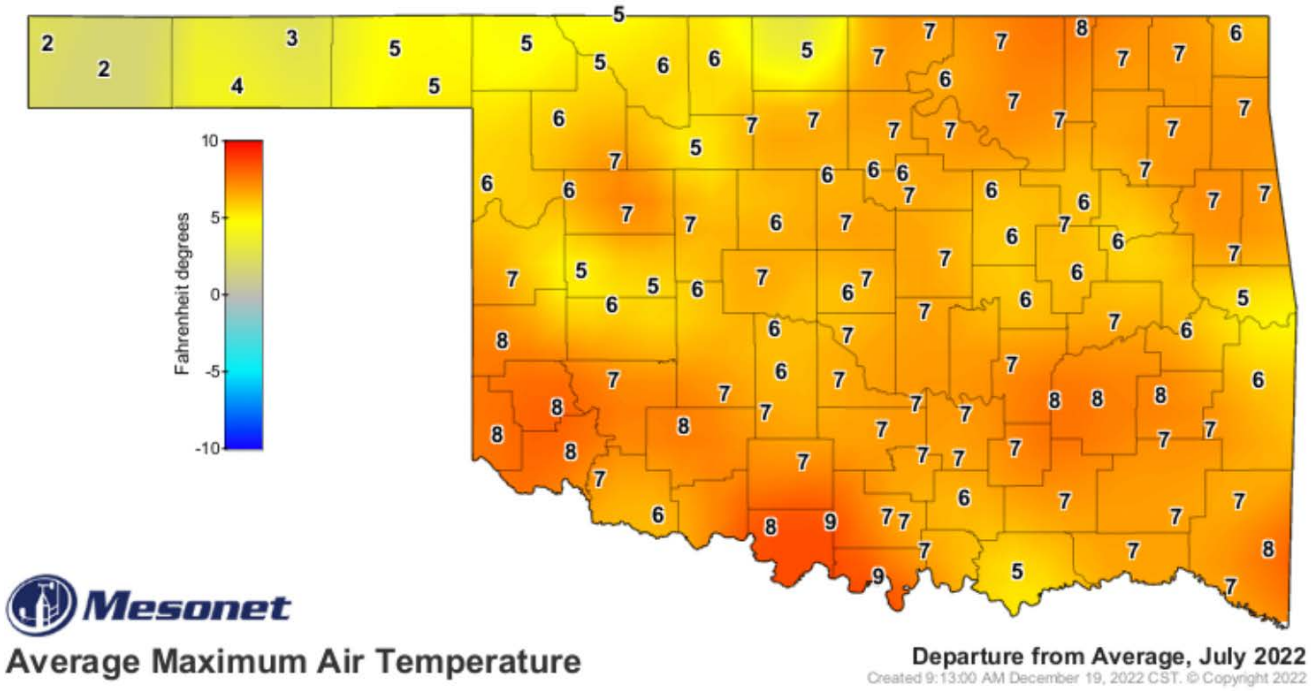

Figure 7. Departure from average maximum temperatures in July 2022.

Table 1. Seed source and hybrid characteristics of grain sorghum in Oklahoma Performance.

Company	Hybrid	Maturity	Seed Color	DMB	SCA Tolerance
Advanta	ADV G1329	E	CRM	58	Y
Advanta	ADV XG272	E	--	60	Y
Advanta	ADV XG160	E	--	60	Y
Advanta	ADV G1120IG	E	RED	61	N
Advanta	ADV XG22209	E	RED	62	Y
Advanta	ADV XG22213	E	RED	62	Y
Advanta	ADV G2165	MED	RED	66	Y
Advanta	ADV G2168IG	MED	RED	66	Y
Alta Grain	AG 1203	MED	BRZ	63	Y
Alta Grain	AG 1301	MED	CRM	63	Y
Midland Genetics	5482	E	BRZ	58	Y
Midland Genetics	GS101X	E	BRZ	58	Y
Midland Genetics	GS205X	E	CRM	58	Y
Midland Genetics	5710	MED	BRZ	64	Y
Midland Genetics	GS103X	MED	BRZ	64	Y
Midland Genetics	GS102X	MED	RED	64	Y
Midland Genetics	GS209XIG	MED	RED	65	Y
Midland Genetics	5730	MED	RED	69	Y
Midland Genetics	5740	LATE	RED	70	Y
Midland Genetics	5727	LATE	BRZ	72	Y
DYNA GRO	M54FR24	E	RED	54	Y
DYNA GRO	M57GC29	E	CRM	57	Y
DYNA GRO	M29GB57	E	BRZ	59	Y
DYNA GRO	M59GB94	E	BRZ	60	Y
DYNA GRO	M60GB31	E	BRZ	60	Y
DYNA GRO	M60GB88	E	BRZ	60	Y
DYNA GRO	M63GB78	MED	BRZ	63	Y
DYNA GRO	M67GB87	MED	BRZ	67	Y
DYNA GRO	GX22932	MED	RED	68	Y
DYNA GRO	GX22934	LATE	BRZ	70	Y
DYNA GRO	M71GR91	LATE	RED	71	Y
DYNA GRO	GX21965	LATE	BRZ	71	Y
DYNA GRO	M72GB71	LATE	BRZ	72	Y
Sorghum Partners	SP 31A15	E	BRZ	56	N
Sorghum Partners	SP 43M80	MED	BRZ	60	Y
Sorghum Partners	SP 68M57	MED	BRZ	65	Y
Sorghum Partners	SP 66M16	MED	BRZ	66	Y
Sorghum Partners	SP 67B17	MED	BRZ	67	Y
Sorghum Partners	SPSD352	MED	BRZ	67	Y
Sorghum Partners	SPSD353	MED	BRZ	67	Y
Sorghum Partners	SPSD455	MED	BRZ	68	Y
Sorghum Partners	SP 74M21	LATE	BRZ	72	Y
Dekalb	DKS 33-07	MED	BRZ	62	Y
Dekalb	DKS 36-07	MED	BRZ	62	Y
Dekalb	DKS 44-07	MED	RED	66	Y
Dekalb	DKS 50-07	MED	RED	68	Y
Dekalb	DKS 54-07	LATE	RED	72	Y

Downstate Trials

Perkins

The Perkins location was planted during the first week of May into a field that had recently received a significant rain fall. It was during this rain event that the preplant herbicides were incorporated. Early stands were near perfect with excellent and even emergence. However, the trial experienced several rainfall events that left most of the trial area completely saturated with standing water for several days. This did decrease stands but because of the way the field was laid out, this primarily affected the fourth replication. The greatest overall impact of these early rainfall events was several flushes of weeds across the area. The weeds were manually removed early in the season. Due to persistent flushes, an application of Huskie was made in-season prior to canopy closure. As most of the weeds were between rows, applications were made with an in-row hooded sprayer to minimize impact on the growing plants (since they were beginning to stress with higher temperatures and drier conditions paired with early flooding events). Continued heat and moisture stress following flowering required irrigation in order to maintain the plots. Three 1-inch irrigations were applied with a reel gun irrigator. These irrigation events were applied at flowering, milk and soft dough. Even with these applications, sorghum prematurely matured and also resulted in later maturing cultivars not filling grain. Therefore, yields of the later-maturing cultivars were substantially lower than would be expected in a normal season. Chinch bugs were present early-season. Pyrethroids were applied to manage these but only achieved 40-50% control. These pests moved off by reproductive growth but due to the higher stress in-season, the impact of the chinch bugs was exacerbated this year compared to a normal year.

Table 2. Early maturity (≤60 DMB) sorghum hybrids at Perkins, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight	Population	Head Count
	lbs/ac	bu/ac		%	lbs/bu	plants/ac (x1000)	heads/plant
M54GC24	2412	43.1	115.2	13.9	55.3	29.1	2.1
M57GC29	2374	42.4	113.4	12.5	55.2	30.7	1.7
M59GB57	2315	41.3	110.6	12.4	53.6	31.2	1.8
M59GB94	2408	43.0	115.0	15.8	54.9	30.8	2.0
ADV G1329	2559	45.7	122.2	11.9	55.1	28.6	1.9
ADV XG272	1190	21.2	56.8	28.2	53.2	26.1	1.4
ADV XG160	755	13.5	36.0	27.5	45.1	24.8	1.5
5482	2387	42.6	114.0	13.7	53.9	28.4	1.9
GS101X	2298	41.0	109.8	12.0	53.5	25.9	2.1
GS205X	2239	40.0	106.9	14.3	53.5	29.6	2.0
Average	2094	37.4		16.2	53.3	28.5	1.8
CV (%)	11.7						
LSD (0.05)	194.7						

Table 3. Medium maturity (60-70 DMB) sorghum hybrids at Perkins, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight	Population	Head Count
	lbs/ac	bu/ac		%	lbs/bu	plants/ac (x1000)	heads/plant
M60GB31	1,658	29.6	95.9	14.7	52.2	34.2	2.1
M60GB88	1,903	34.0	110.1	19.3	53.2	30.9	2.3
M63GB78	2,080	37.1	120.3	15.5	52.7	31.6	2.0
M67GB87	1,107	19.8	64.0	23.9	51.6	28.5	1.7
ADV G2165	1,369	24.5	79.2	20.6	52.7	33.4	1.6
AG1203	1,730	30.9	100.1	14.5	52.9	30.6	2.1
AG1301	2,129	38.0	123.1	12.3	51.9	31.8	2.0
ADV G2168IG	2,167	38.7	125.3	14.3	54.4	36.7	2.3
ADV G1120IG	1,520	27.2	87.9	19.6	49.9	32.5	1.7
ADV XG22209	1,163	20.8	67.3	24.8	50.3	30.9	1.4
ADV XG22213	1,439	25.7	83.2	21.3	50.6	31.4	1.9
SP 43M80	2,264	40.4	130.9	13.5	52.7	35.5	2.5
SP 68M57	1,548	27.6	89.5	17.4	51.4	32.8	2.0
SP 67B17	1,206	21.5	69.8	19.6	45.6	29.7	1.6
SPSD352	1,994	35.6	115.3	12.9	56.0	35.0	2.1
SPSD353	2,191	39.1	126.7	15.8	54.2	33.6	2.2
SPSD455	1,578	28.2	91.2	15.8	50.1	30.7	2.0
5710	1,452	25.9	84.0	17.5	51.0	29.8	2.1
5730	821	14.7	47.5	26.9	45.4	30.1	1.4
GS103X	1,978	35.3	114.4	14.0	54.6	36.7	2.2
GS102X	2,280	40.7	131.8	12.8	55.1	33.5	2.3
GS209XIG	1,950	34.8	112.8	14.6	50.2	34.9	2.0
33-07	2,009	35.9	116.2	14.9	51.4	33.2	1.9
36-07	2,572	45.9	148.8	13.9	54.3	30.7	2.1
44-07	1,584	28.3	91.6	17.8	52.0	31.1	1.7
50-07	1,266	22.6	73.2	25.8	51.1	30.8	1.6
Average	1,729	30.9		17.5	51.8	32.3	2.0
CV (%)	15.4						
LSD (0.05)	203.1						

Table 4. Late maturity (≥70 DMB) sorghum hybrids at Perkins, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight	Population	Head Count
	lbs/ac	bu/ac		%	lbs/bu	plants/ac (x1000)	heads/plant
M71GR91	843	15.0	81.2	22.1	46.4	25.6	1.4
M72GB71	1,125	20.1	108.4	19.8	47.6	30.1	1.7
GX22932	1,266	22.6	122.0	18.3	47.8	31.7	1.7
GX22934	1,341	24.0	129.2	13.9	47.8	29.6	2.0
GX21965	1,178	21.0	113.5	17.3	47.7	30.5	1.9
SP 74M21	945	16.9	91.0	15.1	44.8	28.7	1.7
5740	893	15.9	86.0	13.1	43.8	29.1	1.5
5727	935	16.7	90.1	19.4	46.0	28.0	1.5
54-07	816	14.6	78.6	22.0	47.5	24.1	1.3
Average	1,038	18.5		17.9	46.6	28.6	1.6
CV (%)	19.7						
LSD (0.05)	208.9						

Cooperator: Erich Wehrenberg
Tillage Practice: Conventional
Soil Series: Dale Silt Loam
Seeding rate: 37,600 seeds/ac
Herbicide: Preemergence: 1.6 qt/ac Charger Max ATZ + 32oz glyphosate/ac
In-season: 16 oz Huskie in-season
Fertilizer: N- 140 lbs/ac
Planting Date: May 9
Harvest Date: August 24

Chickasha

The Chickasha location was originally planted the last week of April. However, due to excessive moisture during and immediately following emergence followed by overly warm conditions, stands were severely reduced and were highly variable. The trial was replanted three weeks later. After the replant, a similar issue occurred but the trial had only a slight decrease in stands but more importantly it occurred evenly throughout the trial. Early to mid-season weed pressure existed and weeds were manually removed. Beyond this, little weed pressure existed. Headworm pressure was present during early seed fill. A mix of pyrethroids and prevathon was applied in order to adequately control the pests. The trial was scouted in the trials the following weeks to make sure headworms were controlled and to check for sugarcane aphids.

Table 5. Early maturity (≤60 DMB) sorghum hybrids at Chickasha, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight	Population	Head Count
	lbs/ac	bu/ac		%	lbs/bu	plants/ac (x1000)	heads/plant
M54GC24	1,884	33.6	98.5	17.4	48.0	34.5	2.1
M57GC29	1,957	34.9	102.3	20.8	54.6	36.8	2.6
M59GB57	1,929	34.4	100.9	21.4	50.3	34.1	2.8
M59GB94	1920	34.3	100.4	22.7	56.9	35.0	2.6
ADV G1329	1,853	33.1	96.9	18.5	51.1	31.8	2.0
ADV XG272	1,757	31.4	91.9	21.6	49.9	30.6	2.4
ADV XG160	2,353	42.0	123.0	24.2	51.6	36.5	2.6
5482	1,905	34.0	99.6	17.5	52.2	30.9	2.1
GS101X	1,787	31.9	93.5	20.7	50.1	30.4	2.3
GS205X	1,774	31.7	92.8	19.6	52.0	31.0	2.0
Average	1,912	34.1		20.4	51.7	33.2	2.4
CV (%)	10.5						
LSD (0.05)	178.4						

Table 6. Medium maturity (60-70 DMB) sorghum hybrids at Chickasha, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight	Population	Head Count
	lbs/ac	bu/ac		%	lbs/bu	plants/ac (x1000)	heads/plant
M60GB31	5,163	92.2	126.4	14.5	52.3	36.5	2.6
M60GB88	5,195	92.8	127.1	14.0	51.3	37.1	2.9
M63GB78	4,425	79.0	108.3	18.2	50.9	35.4	2.4
M67GB87	5,366	95.8	131.3	16.4	50.2	35.8	2.2
ADV G2165	3,167	56.6	77.5	23.3	51.1	30.1	1.9
AG1203	4,989	89.1	122.1	15.4	53.7	36.5	2.5
AG1301	2,633	47.0	64.4	18.9	53.5	29.6	1.8
ADV G2168IG	3,051	54.5	74.7	20.1	56.4	30.5	2.0
ADV G1120IG	3,654	65.2	89.4	21.8	53.9	32.2	2.1
ADV XG22209	5,430	97.0	132.9	17.0	56.0	36.9	2.6
ADV XG22213	3,470	62.0	84.9	14.8	54.4	33.7	2.4
SP 43M80	2,332	41.6	57.1	19.9	51.6	30.2	1.9
SP 68M57	3,863	69.0	94.5	24.1	54.3	33.7	2.4
SP 67B17	3,471	62.0	84.9	23.0	52.5	34.0	2.1
SPSD352	4,391	78.4	107.5	14.9	53.4	36.6	2.5
SPSD353	4,722	84.3	115.6	16.5	52.7	37.1	2.4
SPSD455	2,647	47.3	64.8	24.4	54.7	31.8	1.7
5710	5,287	94.4	129.4	14.3	53.1	37.4	2.6
5730	6,001	107.2	146.9	14.9	51.8	35.9	2.4
GS103X	5,530	98.8	135.3	15.4	50.5	36.0	2.7
GS102X	1,476	26.4	36.1	16.6	59.2	20.9	2.0
GS209XIG	2,076	37.1	50.8	17.8	53.0	28.7	1.8
33-07	1,933	34.5	47.3	16.7	50.7	30.4	1.9
36-07	4,145	74.0	101.4	17.2	54.2	33.6	2.1
44-07	5,379	96.1	131.6	15.1	53.7	39.8	2.4
50-07	6,434	114.9	157.5	15.7	52.9	37.1	2.6
Average	4,086	73.0		17.7	53.1	33.8	2.3
CV (%)	12.6						
LSD (0.05)	336.9						

Table 7. Late maturity (≥70 DMB) sorghum hybrids at Chickasha, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight	Population	Head Count
	lbs/ac	bu/ac		%	lbs/bu	plants/ac (x1000)	heads/plant
M71GR91	5,938	106.0	119.2	13.4	53.4	34.1	2.5
M72GB71	5,438	97.1	109.2	15.4	53.0	36.7	2.7
GX22932	4,134	73.8	83.0	14.1	52.6	32.5	2.1
GX22934	4,054	72.4	81.4	12.4	51.9	30.8	2.2
GX21965	4,704	84.0	94.4	14.9	52.1	34.6	2.1
SP 74M21	4,479	80.0	89.9	20.0	50.7	35.2	2.0
5740	6,062	108.2	121.7	13.4	54.3	36.8	2.4
5727	4,461	79.7	89.5	17.1	49.6	35.3	2.3
54-07	5,570	99.5	111.8	15.2	51.8	34.8	2.6
Average	4,982	89.0		15.1	52.1	34.5	2.3
CV (%)	13.4						
LSD (0.05)	419.7						

Cooperator: Michael Pettijohn
Tillage Practice: Conventionally tilled
Soil Series: Canadian Fine Sandy Loam
Seeding rate: 37,600 seeds/ac
Herbicide: Burndown: 32oz glyphosate/ac
Preemergence: Charger Max ATZ 1.6pt/ac + 32oz glyphosate/ac
Fertilizer: N-120 lbs/ac, P-60, K-60
Planting Date: April 28/May 16
Harvest Date: September 9

Bixby

The Bixby location has continuously been used to demonstrate the potential of grain sorghum in typically corn-dominated portions of the state. However, even with supplemental irrigation, hot and dry conditions significantly decreased yield potential of this location. Furthermore, the lack of other potential food sources this year, bird damage was higher this year than some others. However, yield was fairly consistent throughout. Limited pest management was needed at this location with no insecticides being applied. Weeds were not a major issue this season, due to adequate moisture early and irrigation to incorporate preplant herbicide applications paired with dry conditions following. The trial only needed minor spot weed management, which was removed manually. Because this location is typically rotated with soybean for several years, N rates for this location were much lower than other locations.

Table 8. Early maturity (≤60 DMB) sorghum hybrids at Bixby, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight	Population	Head Count
	lbs/ac	bu/ac		%	lbs/bu	plants/ac (x1000)	heads/plant
M54GC24	2,768	49.4	107.1	14.7	55.1	58.4	1.9
M57GC29	2,593	46.3	100.3	13.5	53.8	50.2	2.6
M59GB57	2,115	37.8	81.8	12.8	55.5	49.7	3.1
M59GB94	2,597	46.4	100.5	16.9	58.3	53.4	2.6
ADV G1329	2,399	42.8	92.8	11.6	53.0	51.9	2.1
ADV XG272	2,719	48.6	105.2	20.3	56.3	57.3	2.4
ADV XG160	2,676	47.8	103.6	15.7	53.5	50.0	3.2
5482	2,971	53.0	115.0	14.6	54.6	52.6	2.4
GS101X	2,496	44.6	96.6	15.4	54.4	59.3	1.8
GS205X	2,510	44.8	97.1	12.6	55.0	48.7	2.7
Average	2,584	46.1		14.8	55.0	53.2	2.5
CV (%)	8.9						
LSD (0.05)	212.4						

Table 9. Medium maturity (60-70 DMB) sorghum hybrids at Bixby, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight	Population	Head Count
	lbs/ac	bu/ac		%	lbs/bu	plants/ac (x1000)	heads/plant
M60GB31	5,078	90.7	121.8	12.5	57.6	56.8	2.5
M60GB88	4,107	73.3	98.5	11.9	54.8	47.8	1.7
M63GB78	3,396	60.6	81.4	14.5	54.8	44.6	1.8
M67GB87	5,374	96.0	128.9	13.0	55.2	59.3	2.3
ADV G2165	4,084	72.9	97.9	14.7	55.6	53.2	2.0
AG1203	5,151	92.0	123.5	12.6	56.4	60.1	2.6
AG1301	3,384	60.4	81.1	12.9	56.5	50.6	2.0
ADV G2168IG	4,101	73.2	98.4	13.0	53.7	55.2	2.1
ADV G1120IG	3,896	69.6	93.4	13.5	55.8	53.9	1.8
ADV XG22209	5,421	96.8	130.0	12.2	55.3	60.2	2.4
ADV XG22213	4,251	75.9	102.0	13.4	53.8	57.1	2.1
SP 43M80	3,209	57.3	77.0	15.2	57.5	48.9	1.8
SP 68M57	4,304	76.9	103.2	14.7	57.8	59.7	1.9
SP 67B17	4,450	79.5	106.7	14.7	55.9	56.8	2.1
SPSD352	3,447	61.6	82.7	14.6	53.3	52.1	1.7
SPSD353	3,947	70.5	94.7	12.9	55.2	54.3	1.7
SPSD455	4,071	72.7	97.6	15.1	53.2	55.0	2.7
5710	4,947	88.3	118.6	12.1	52.4	58.2	2.8
5730	4,853	86.7	116.4	13.4	57.5	56.1	2.7
GS103X	3,879	69.3	93.0	13.0	55.6	51.7	2.1
GS102X	3,025	54.0	72.5	12.9	54.1	58.4	2.3
GS209XIG	3,638	65.0	87.2	12.4	57.3	56.1	1.8
33-07	3,322	59.3	79.7	12.8	55.6	49.8	2.0
36-07	3,297	58.9	79.1	13.9	58.7	47.2	2.3
44-07	4,913	87.7	117.8	12.5	57.5	61.3	2.9
50-07	4,887	87.3	117.2	12.9	57.7	58.7	3.0
Average	4,170.4	74.5		13.3	55.7	54.7	2.2
CV (%)	17.3						
LSD (0.05)	683.4						

Table 10. Late maturity (≥70 DMB) sorghum hybrids at Bixby, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight	Population	Head Count
	lbs/ac	bu/ac		%	lbs/bu	plants/ac (x1000)	heads/plant
M71GR91	5,619	100.3	105.4	13.4	58.2	54.5	2.7
M72GB71	5,716	102.1	107.3	13.4	57.3	58.1	2.1
GX22932	5,157	92.1	96.8	12.9	58.3	47.2	3.1
GX22934	4,706	84.0	88.3	14.7	57.6	41.2	4.2
GX21965	5,922	105.8	111.1	12.7	57.8	54.2	2.8
SP 74M21	4,453	79.5	83.6	21.1	55.0	50.8	2.4
5740	5,582	99.7	104.8	13.4	58.5	54.7	2.1
5727	5,243	93.6	98.4	16.8	56.3	46.2	2.6
54-07	5,559	99.3	104.3	15.9	58.6	48.3	2.0
Average	5,329	95.2		14.9	57.5	50.6	2.7
CV (%)	9.2						
LSD (0.05)	413.6						

Cooperator: Butch Havener
Tillage Practice: Conventionally tilled
Soil Series: Wynona Silty Clay Loam
Seeding rate: 64,000 seeds/ac
Herbicide: Preemergence: 1.6 qt/ac Charger Max ATZ + 32oz glyphosate/ac
Fertilizer: N-40 lbs N/ac, 60 lbs P/ac, 60 lbs K/ac
Planting Date: May 16
Harvest Date: September 22

Tipton

While most seasons the Tipton location is one of the earliest trials planted due to early soil warming, the lack of rainfall did not allow for planting during what is considered an optimal full-season time frame. At this location, planting was delayed until June. A significant rain event occurred the first week of June, which allowed the crop to be planted shortly after. This could be used to simulate a double-crop or after an attempted cotton crop. From planting through the first of August, the plot received very little rainfall. Sporadic rainfall during the month of August kept the potential of harvesting this location as a viable option. This meant that a majority of the early maturing cultivars to have already filled grain and matured prior to these rainfall events. The maturity group that was able to take advantage of this rainfall were the later maturing cultivars and yields reflected these differences in maturity. While later-maturing cultivars are not common for double-crop or late planting situations, the longer-than-normal season typically experienced in this portion of the state means this could still be a viable option. Maturity was delayed until after the first major freeze, and harvest occurred several weeks afterward. Variability is relatively high for this location, this is also reflected in statistical significance values.

Table 11. Early maturity (≤60 DMB) sorghum hybrids at Tipton, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight	Population
	lbs/ac	bu/ac		%	lbs/bu	plants/ac (x1000)
M54GC24	1,552	27.7	79.5	17.7	53.9	62.1
M57GC29	1,255	22.4	64.3	16.4	49.3	61.2
M59GB57	1,855	33.1	95.1	17.4	55.7	63.5
M59GB94	1,544	27.6	79.2	17.3	49.5	69.3
ADV G1329	1,695	30.3	86.9	16.2	53.8	63.9
ADV XG272	2,226	39.8	114.1	16.7	57.6	59.7
ADV XG160	2,766	49.4	141.8	18.8	58.3	58.1
5482	1,701	30.4	87.2	18.4	52.8	77.3
GS101X	2,659	47.5	136.3	16.3	56.7	62.1
GS205X	1,859	33.2	95.3	16.8	56.1	53.2
Average	1,951	34.1		17.2	54.4	63.0
CV (%)	20.5					
LSD (0.05)	354.9					

Table 12. Medium maturity (60-70 DMB) sorghum hybrids at Tipton, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight	Population
	lbs/ac	bu/ac		%	lbs/bu	plants/ac (x1000)
M60GB31	2,477	44.2	113.8	16.9	56.8	60.1
M60GB88	2,101	37.5	96.5	18.7	56.3	64.6
M63GB78	2,460	43.9	113.0	18.3	59.1	57.0
M67GB87	2,464	44.0	113.2	17.4	54.9	68.6
ADV G2165	2,216	39.6	101.8	17.9	57.0	61.5
AG1203	2,215	39.5	101.7	17.0	56.2	68.6
AG1301	1,705	30.4	78.3	17.8	54.2	65.5
ADV G2168IG	2,001	35.7	91.9	18.8	49.0	64.6
ADV G1120IG	2,024	36.1	93.0	18.0	53.7	73.9
ADV XG22209	2,115	37.8	97.1	17.5	57.4	62.8
ADV XG22213	1,786	31.9	82.1	17.9	56.5	65.9
SP 43M80	2,003	35.8	92.0	19.2	53.0	53.0
SP 68M57	1,555	27.8	71.4	17.2	49.0	51.7
SP 67B17	2,453	43.8	112.7	17.4	56.1	65.9
SPSD352	1,913	34.2	87.9	16.3	54.1	74.4
SPSD353	1,428	25.5	65.6	16.8	47.8	64.6
SPSD455	2,161	38.6	99.3	19.7	56.2	59.7
5710	2,083	37.2	95.7	17.0	54.2	47.6
5730	2,638	47.1	121.2	18.6	57.6	69.0
GS103X	2,606	46.5	119.7	17.7	58.5	58.3
GS102X	2,225	39.7	102.2	18.3	57.1	64.1
GS209XIG	1,933	34.5	88.8	18.7	56.6	70.8
33-07	2,430	43.4	111.6	17.8	53.5	69.9
36-07	2,188	39.1	100.5	17.8	54.8	66.3
44-07	1,968	35.1	90.4	18.7	57.4	62.3
50-07	3,461	61.8	159.0	17.5	59.6	62.8
Average	2,177	38.9		17.9	55.3	55.3
CV (%)	18.5					
LSD (0.05)	444.5					

Table 13. Late maturity (≥70 DMB) sorghum hybrids at Tipton, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight	Population
	lbs/ac	bu/ac		%	lbs/bu	plants/ac (x1000)
M71GR91	2,966	53.0	122.0	18.1	58.1	60.6
M72GB71	1,661	29.7	68.3	16.3	50.8	67.2
GX22932	2,112	37.7	86.9	20.9	57.1	62.8
GX22934	2,482	44.3	102.1	19.3	56.6	61.9
GX21965	1,514	27.0	62.3	16.3	57.3	57.9
SP 74M21	2,722	48.6	112.0	20.7	56.3	60.6
5740	1,943	34.7	79.9	11.3	50.3	56.6
5727	3,163	56.5	130.1	17.6	55.6	59.7
54-07	3,319	59.3	136.5	17.8	57.8	56.6
Average	2,431	43.4		17.6	55.5	60.4
CV (%)	27.1					
LSD (0.05)	567.8					

Cooperator: Mike Schultz and Gary Strickland
Tillage Practice: Conventionally tilled
Soil Series: Tipton Loam
Seeding rate: 64,000 seeds/ac
Herbicide: Preemergence: 1.6 qt/ac Charger Max ATZ + 32oz glyphosate/ac
Fertilizer: 40 lbs N/ac
Planting Date: June 9
Harvest Date: November 17

Panhandle Trials

McCaull (Irrigated)

The McCaull site was the best location in 2022. This was not only because of the ability to irrigate the trial but it also experienced several timely rainfall events during the course of the season. As a result, temperature was the only factor limiting growth in-season. This is one of the primary reasons the variability of these trials were lower. This location is managed a little differently than some other locations. The field is strip-tilled a month prior to planting, with N fertilizer and initial application of herbicide being applied. Very little pest pressure was noted during the course of the season, so no insecticide was applied. Additionally, weed management was not an issue until later into the season where it was controlled through manual removal. Irrigation was applied continuously throughout the season, with the last application being made through soft dough.

Table 14. Early maturity (≤60 DMB) sorghum hybrids at the McCaull Research Farm, Eva, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight	Population	Head Count
	lbs/ac	bu/ac		%	lbs/bu	plants/ac (x1000)	heads/plant
M54GC24	7,186	128.3	86.1	11.4	56.3	57.6	2.4
M57GC29	7,268	129.8	87.1	11.5	55.8	56.2	2.8
M59GB57	6,988	124.8	83.8	11.0	55.2	60.1	2.3
M59GB94	10,001	178.6	119.9	11.9	56.4	62.8	2.9
ADV G1329	7,871	140.6	94.4	10.8	52.9	60.9	2.6
ADV XG272	9,512	169.9	114.0	12.4	56.5	63.3	2.7
ADV XG160	9,623	171.8	115.4	12.4	56.9	63.5	2.8
SP 31A15	7,754	138.5	93.0	10.7	52.9	62.1	2.2
5482	9,954	177.8	119.3	11.8	56.6	64.5	2.7
GS101X	7,706	137.6	92.4	11.3	55.2	61.4	2.4
GS205X	7,887	140.8	94.6	11.2	55.6	60.8	2.3
Average	8,341	148.9		11.5	55.5	61.2	2.6
CV (%)	14.1						
LSD (0.05)	1012.1						

Table 15. Medium maturity (60-70 DMB) sorghum hybrids at the McCaull Research Farm, Eva, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight	Population	Head Count
	lbs/ac	bu/ac		%	lbs/bu	plants/ac (x1000)	heads/plant
M60GB31	10,421	186.1	106.5	11.2	57.8	62.5	2.6
M60GB88	8,357	149.2	85.4	10.7	55.3	61.5	2.4
M63GB78	8,964	160.1	91.6	11.1	56.1	60.8	2.1
M67GB87	10,770	192.3	110.0	11.2	55.6	64.7	2.7
ADV G2165	10,056	179.6	102.7	11.2	56.3	63.9	2.6
AG1203	10,116	180.6	103.3	11.1	55.8	64.1	2.8
AG1301	9,428	168.4	96.3	11.1	54.4	62.8	2.4
ADV G2168IG	8,709	155.5	89.0	10.7	54.9	60.9	2.2
ADV G1120IG	9,549	170.5	97.6	11.0	53.9	64.7	2.7
ADV XG22209	10,033	179.2	102.5	11.1	56.3	62.8	2.5
ADV XG22213	9,764	174.4	99.8	10.8	54.2	60.2	2.4
SP 43M80	8,244	147.2	84.2	11.3	56.3	62.9	2.7
SP 68M57	9,457	168.9	96.6	11.3	57.0	64.5	2.4
SP 66M16	9,127	163.0	93.3	10.9	54.5	63.9	2.1
SPSD352	9,526	170.1	97.3	11.4	55.8	62.1	2.6
SPSD353	10,249	183.0	104.7	11.0	56.6	64.6	3.1
5710	10,267	183.3	104.9	10.4	54.0	64.9	2.7
5730	10,549	188.4	107.8	11.3	57.4	60.8	2.4
GS103X	9,898	176.7	101.1	11.1	57.6	63.5	2.2
GS102X	9,603	171.5	98.1	11.0	55.7	62.1	2.4
GS209XIG	10,979	196.1	112.2	10.6	54.5	63.5	2.6
33-07	9,566	170.8	97.7	11.6	55.9	61.7	2.1
36-07	9,800	175.0	100.1	11.0	57.1	60.4	2.5
44-07	10,874	194.2	111.1	11.5	58.3	63.9	2.9
50-07	10,397	185.7	106.2	11.4	58.8	65.4	2.2
Average	9,788	174.8		11.1	56.0	62.9	2.5
CV (%)	7.5						
LSD (0.05)	844.7						

Table 16. Late maturity (≥70 DMB) sorghum hybrids at the McCaull Research Farm, Eva, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight	Population	Head Count
	lbs/ac	bu/ac		%	lbs/bu	plants/ac (x1000)	heads/plant
M71GR91	9,664	172.6	94.6	11.3	56.6	66.2	1.7
M72GB71	10,987	196.2	107.5	10.9	56.2	63.7	2.8
GX22932	10,018	178.9	98.0	11.2	56.3	59.1	2.6
GX22934	10,328	184.4	101.1	11.0	54.1	62.5	1.9
GX21965	10,412	185.9	101.9	11.2	57.0	64.0	2.9
5740	9,533	170.2	93.3	10.9	55.8	60.2	3.0
54-07	10,599	189.3	103.7	10.8	55.7	64.9	2.4
Average	10,220	182.5		11.0	56.0	62.9	2.5
CV (%)	5.1						
LSD (0.05)	656.0						

Cooperator: Cameron Murley
Tillage Practice: Strip-till into corn residue
Soil Series: Gruver Clay Loam
Seeding rate: 66,000 seeds/ac
Herbicide: Preemergence: 1.6 qt/ac Charger Max ATZ + 32oz glyphosate/ac
Fertilizer: N-150 lbs N/ac
Planting Date: June 2
Harvest Date: November 1

Goodwell (Irrigated)

The Goodwell location is located at the Oklahoma Panhandle Research and Extension Center. The trial is managed under drip irrigation. However, this location did not get the more consistent rainfall events and the yields were lower than those achieved at the McCaull location. Additionally, this location had higher weed pressure and had to be hand weeded several times during the course of the year but was maintained weed-free otherwise. Similar to the McCaull location, the trial location was strip tilled with N applications and the initial preplant herbicide application was applied at the same time.

Table 17. Early maturity (≤60 DMB) sorghum hybrids at Goodwell, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight
	lbs/ac	bu/ac		%	lbs/bu
M54GC24	5,944	106.1	104.6	12.1	53.6
M57GC29	5,609	100.2	98.8	12.4	56.1
M59GB57	4,717	84.2	83.0	11.6	55.1
M59GB94	6,033	107.7	106.2	12.4	52.3
ADV G1329	5,368	95.9	94.5	11.7	52.7
ADV XG272	7,903	141.1	139.1	13.9	55.8
ADV XG160	6,324	112.9	111.3	15.3	53.3
SP 31A15	4,501	80.4	79.2	11.5	53.4
5482	5,741	102.5	101.1	12.2	53.4
GS101X	4,608	82.3	81.1	11.8	51.7
GS205X	5,726	102.3	100.8	11.8	56.0
Average	5,680	101.4		12.4	53.9
CV (%)	16.8				
LSD (0.05)	745.9				

Table 18. Medium maturity (60-70 DMB) sorghum hybrids at Goodwell, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight
	lbs/ac	bu/ac		%	lbs/bu
M60GB31	7,070	126.3	105.5	13.4	54.4
M60GB88	5,808	103.7	86.6	12.0	54.4
M63GB78	6,645	118.7	99.1	12.8	54.9
M67GB87	6,773	120.9	101.0	12.1	53.5
ADV G2165	6,316	112.8	94.2	14.0	54.6
AG1203	7,495	133.8	111.8	12.4	55.6
AG1301	5,428	96.9	81.0	12.2	54.0
ADV G2168IG	6,899	123.2	102.9	12.5	54.7
ADV G1120IG	7,890	140.9	117.7	12.7	55.5
ADV XG22209	7,675	137.1	114.5	12.1	55.7
ADV XG22213	6,777	121.0	101.1	12.0	54.5
SP 43M80	4,776	85.3	71.3	12.7	49.6
SP 68M57	5,593	99.9	83.4	14.8	55.5
SP 66M16	8,390	149.8	125.2	12.5	54.3
SPSD352	6,463	115.4	96.4	12.5	56.8
SPSD353	5,064	90.4	75.5	14.5	54.7
5710	8,526	152.3	127.2	11.9	52.4
5730	6,170	110.2	92.1	13.2	56.5
GS103X	7,530	134.5	112.3	12.3	55.4
GS102X	6,202	110.8	92.5	11.7	52.9
GS209XIG	4,791	85.6	71.5	9.4	39.9
33-07	7,710	137.7	115.0	12.6	56.1
36-07	7,249	129.4	108.1	12.2	55.1
44-07	8,210	146.6	122.5	12.5	57.4
50-07	6,113	109.2	91.2	14.0	57.0
Average	6,703	119.7		12.6	54.2
CV (%)	16.2				
LSD (0.05)	852.1				

Table 19. Late maturity (≥70 DMB) sorghum hybrids at Goodwell, OK.

Cultivar	Yield		Percent of Trial Average	Harvest Moisture	Test Weight
	lbs/ac	bu/ac		%	lbs/bu
M71GR91	6,524	116.5	93.8	13.6	56.7
M72GB71	6,395	114.2	92.0	13.1	56.3
GX22932	7,209	128.7	103.7	12.3	57.4
GX22934	7,715	137.8	110.9	13.1	57.8
GX21965	5,830	104.1	83.8	12.0	54.4
5740	6,575	117.4	94.5	12.8	58.1
54-07	8,428	150.5	121.2	13.2	57.2
Average	6,954	124.2		12.9	56.9
CV (%)	12.7				
LSD (0.05)	720.6				

Cooperator: Cameron Murley
Tillage Practice: Strip-tilled
Soil Series: Gruver Clay Loam
Seeding rate: 66,000 seeds/ac
Herbicide: Preemergence: 1.6 qt/ac Charger Max ATZ + 32oz glyphosate/ac
Fertilizer: N-100 lbs N/ac applied through the strip-till unit
Planting Date: June 2
Harvest Date: October 25

The Oklahoma Cooperative Extension Service
Education Everywhere for Everyone

The Cooperative Extension Service is the largest, most successful informal educational organization in the world. It is a nationwide system funded and guided by a partnership of federal, state and local governments that delivers information to help people help themselves through the land-grant university system.

Extension carries out programs in the broad categories of agriculture, natural resources and environment; family and consumer sciences; 4-H and other youth; and community resource development. Extension staff members live and work among the people they serve to help stimulate and educate Americans to plan ahead and cope with their problems.

Some characteristics of the Cooperative Extension system are:

- The federal, state and local governments cooperatively share in its financial support and program direction.
- It is administered by the land-grant university as designated by the state legislature through an Extension director.
- Extension programs are nonpolitical, objective and research-based information.
- It provides practical, problem-oriented education for people of all ages. It is designated to take the knowledge of the university to those persons who do not or cannot participate in the formal classroom instruction of the university.
- It utilizes research from university, government and other sources to help people make their own decisions.
- More than a million volunteers help multiply the impact of the Extension professional staff.
- It dispenses no funds to the public.
- It is not a regulatory agency, but it does inform people of regulations and of their options in meeting them.
- Local programs are developed and carried out in full recognition of national problems and goals.
- The Extension staff educates people through personal contacts, meetings, demonstrations and the mass media.
- Extension has the built-in flexibility to adjust its programs and subject matter to meet new needs. Activities shift from year to year as citizen groups and Extension workers close to the problems advise changes.

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Director of Oklahoma Cooperative Extension Service, Oklahoma State University, Stillwater, Oklahoma. This publication is printed and issued by Oklahoma State University as authorized by the Vice President for Agricultural Programs and has been prepared and distributed at a cost of 40 cents per copy. Revised April 2023 KG.

CR-2162.26