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Crop Production Summary, Southeast Kansas – 2017

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Crop Production Summary, Southeast Kansas – 2017

Abstract

Crop production is dependent on many factors, most notably, environmental conditions during the growing season. Here, we summarize the environmental conditions during the 2017 growing season in comparison to previous years and the historical averages. Information on crop yields is taken from reported values and yields from variety trials in southeast and east central Kansas.

Keywords

crop production, corn, wheat, soybeans

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Crop Production Summary, Southeast Kansas – 2017

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Summary

Crop production in southeast Kansas in 2017.

Introduction

Crop production is dependent on many factors, most notably, environmental conditions during the growing season. Here, we summarize the environmental conditions during the 2017 growing season in comparison to previous years and the historical averages. Information on crop yields is taken from reported values and yields from variety trials in southeast and east central Kansas.

Experimental Procedures

The Kansas State University Crop Performance Tests were conducted in replicated research fields throughout the state. This report summarizes crop production for southeast and eastern Kansas, focusing on crops grown at Parsons, Columbus, and Erie. Please see individual variety results at the K-State Crop Performance Test webpage (<http://www.agronomy.k-state.edu/services/crop-performance-tests/>).

Weather information was collected from the Kansas Mesonet site (<http://mesonet.k-state.edu/weather/historical/>). Historical data from the Parsons and Columbus stations were used in preparing these reports.

Results and Discussion

Weather

Rainfall

Total rainfall for 2017 was the highest in the past seven years (Figure 1A), with more than 49 in. of rainfall for the year. A very wet spring from April to mid-June was followed by continuous showers throughout the summer. A strong storm system brought more than 4 in. of rain on August 16, to bring the summer growing season rainfall total to more than 38 in. of rain, much greater than the 7-year average of 24.14 in. (Figure 1B). Late fall and winter rainfalls were less, and closer to average.

Temperature

Temperatures in 2017 were below average. A two-week warm period in mid-July was the only significant high-temperature period in the growing season, with 16 days above 90°F (Figure 1A) and only one day above 95°F.

Wind

Kansas is known for its windy days. One measure of wind is “wind run”, which is the cumulative miles of wind received in a day. Early spring is our windiest period, with average wind run exceeding 5500 miles per day (Figure 3). Late summer is the least windy period. The 2017 spring was windier than average, with monthly wind run exceeding 6000 miles per day. Conversely, the late summer was less windy than normal, with average monthly wind run falling below 3000 miles per day.

Crop Production

Twenty hard red wheat cultivars were grown at Parsons in 2017. The hard red winter wheat yields (57.1 bu/a) were greater than the 7-year average yield of 43.8 bu/a in southeast Kansas, and ranged from 36.5 to 69.9 bu/a (Figure 4). Fourteen soft red wheat cultivars produced an average of 77.8 bu/a, which was greater than the 7-year average yield of 64.7 bu/a and ranged from 60.9 to 91.9 bu/a. Fungal pressure was greater in 2017, primarily because of the high rainfall during late spring and early summer (Figure 1B). Fungicide studies showed a yield increase in 2017 from 35 bu/a to 62 bu/a with fungicide use (Sassenrath, unpublished data).

Twenty eight cultivars of full season corn were tested at Erie, with average yield (159 bu/a) very near the 7-year average yield (152 bu/a), and a range from 127 to 188 bu/a (Figure 5A). This was greater than the 7-year county average yield of 100 bu/a. Twenty-seven short season corn varieties were tested at Parsons, with an average yield of 142 bu/a, and a range of 124 to 152 bu/a (Figure 5B). This is slightly greater than the county average yield for 2017 of 132 bu/a, and greater than the 7-year county average yield.

Twenty two cultivars of soybeans from maturity groups (MG) 3-4 were tested, with an average yield of 46.7 bu/a, and a range of 33 to 55 bu/a, which equaled the 7-year average, and was greater than the county average of 37 bu/a (Figure 6A). Forty-five cultivars of soybeans from MG 4-5 were tested, with an average yield equivalent to the earlier maturity and the 7-year average. The range was similar from 36 to 55 bu/a.

Grain sorghum yields were higher in 2017 for the 22 cultivars tested, with an average yield of 135 bu/a and a range from 51 to 186 bu/a (Figure 7). This is quite a bit higher than the average variety trial yield of 85 bu/a, and 7-year average yield from southeast Kansas of 63 bu/a. Note that many of the lowest-yielding sorghum cultivars had the highest percentage of lodging (Table 1). It is possible that lodging resulted from larger seed heads, as the average wind run was slightly below normal in 2017 (Figure 3).

Fourteen cultivars of oil-seed sunflowers were grown in 2017, with an average yield of 722 lb/a and a range from 553 to 947 lb/a (Figure 8). This is well below the state average. Note, however, that county-level data for sunflower production are not available as

the total acres of oil-seed sunflowers planted in southeast Kansas is low, so most of the yield data are from irrigated sunflower production in western Kansas counties.

Conclusions

2017 was a very average year for crop production, with near-average yields in most crops. The notable exception was sorghum that yielded significantly more than in previous years. In contrast, weather conditions were substantially different than normal, with rainfall 15 inches greater than average. Temperatures were also cooler than average during the summer growing season, which would be expected to increase corn and soybean yields.

Table 1. Sorghum yield data from the southeast Kansas Variety Trials 2017 Parsons, Kansas Grain Sorghum Performance Test, Labette County

Brand	Name	Yield	PAVG	MOIST	Test weight	Plant height	Days	Lodge	Plants per acre
		bu/a	----- % -----		lb/bu	in.	bloom	%	
Check	Early	91.2	67.3	13.5	60.3	46.8	48.5	0	70312
Check	Late	180.7	133.4	13.6	61.6	55.3	56.3	0	75599
Check	Medium	126.2	93.2	13.4	60.6	50.3	49.3	0	75046
Chromatin	CHR0029	167.0	123.3	13.7	61.1	60.5	60.3	0	73231
Chromatin	CHR0072	118.4	87.4	13.6	63.4	51.3	57.0	0	72758
Chromatin	CHR2042	143.9	106.2	13.7	61.6	62.5	56.8	1	73626
DEKALB	DKS28-05	94.0	69.4	13.3	60.3	44.5	47.3	0	75599
DEKALB	DKS37-07	146.1	107.9	13.5	61.8	51.0	53.3	0	68418
DEKALB	DKS38-16	167.3	123.6	13.5	63.6	51.5	53.5	0	72758
DEKALB	DKS45-23	171.6	126.7	13.6	62.9	59.8	57.0	0	74336
DEKALB	DKS51-01	172.2	127.1	13.6	61.5	61.8	57.5	0	75757
DEKALB	DKS53-53	186.2	137.5	13.8	61.5	60.5	59.5	0	70390
Dyna-Gro	GX15371	50.6	37.4	14.1	63.2	58.5	61.0	83	75993
Dyna-Gro	GX16367	169.7	125.3	13.5	61.1	62.5	56.3	0	65498
Dyna-Gro	GX16833	81.8	60.4	14.0	62.7	60.8	60.5	53	71811
Dyna-Gro	GX16855	79.6	58.7	13.8	62.1	64.3	59.0	71	57370
Dyna-Gro	GX17818	130.8	96.6	13.9	61.0	55.3	61.8	30	69996
Dyna-Gro	M60GB31	142.3	105.1	13.3	66.0	54.8	54.8	0	70943
Dyna-Gro	M73GR55	117.1	86.5	14.2	61.1	64.8	64.3	39	69917
Dyna-Gro	M74GB17	149.2	110.2	13.7	61.9	62.3	57.8	1	67234
Golden Acres	5556	129.5	95.6	13.4	61.7	50.0	51.5	0	72284
Golden Acres	3960B	164.4	121.4	13.5	61.8	53.0	54.0	0	70312
	Average	135.4	100.0	13.6	61.9	56.4	56.2	13	71327
	CV (%)	8.7	8.7	1.8	--	3.2	1.6	--	5
	LSD (0.05)	16.7	12.3	0.3	--	2.5	1.3	--	5022

*Yields in bold in the top LSD group. Yields must differ by more than the LSD value to be considered statistically different. Planted: 6/7/2017.

Harvested: 10/26/2017. 150-46-0 N, P, K.

Available online at <https://www.agronomy.k-state.edu/services/crop-performance-tests/documents/sorghum/17gs-LBD.pdf>.

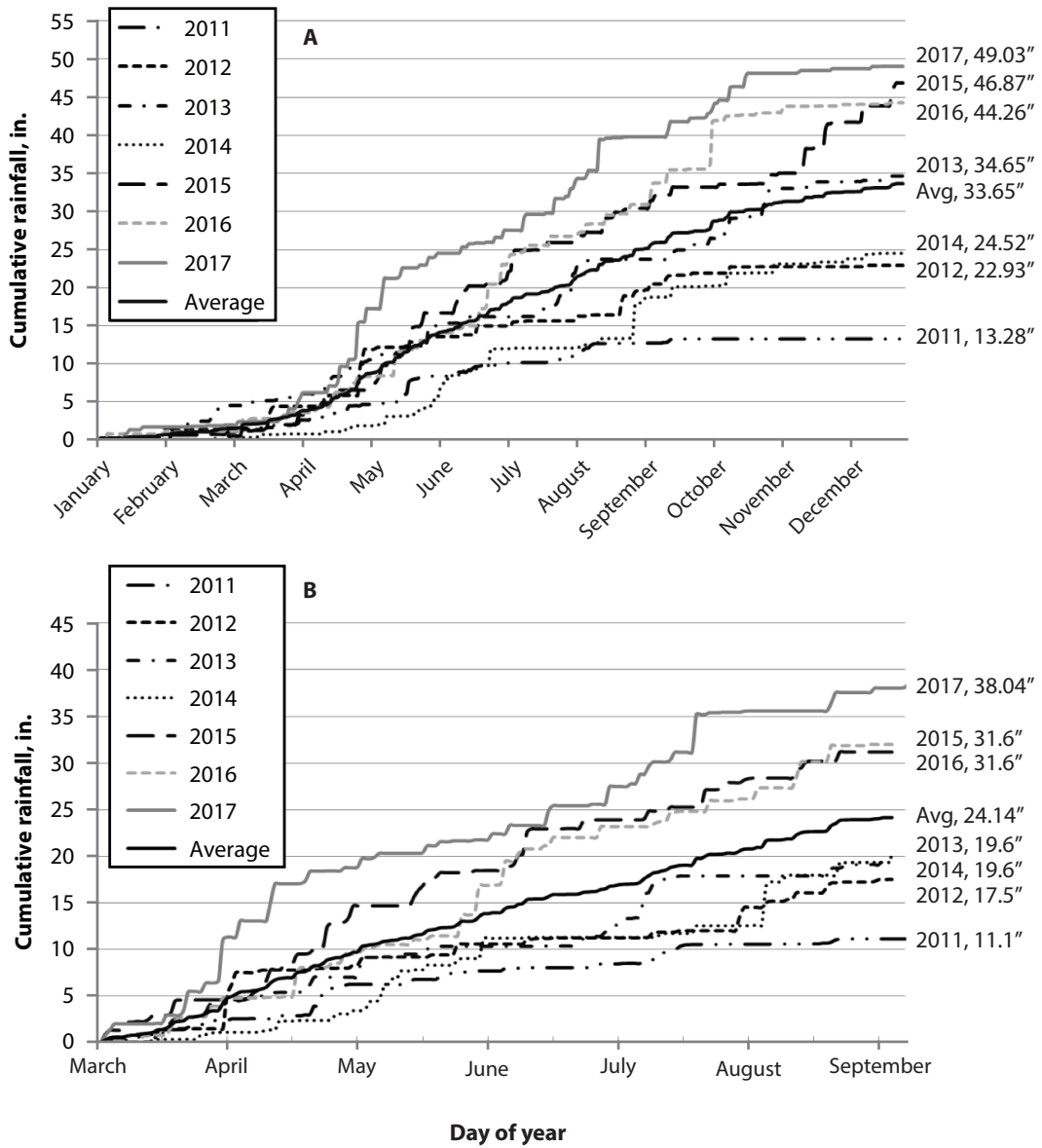


Figure 1. Cumulative rainfall at Parsons during the calendar year (A) and the summer crop production season (B). Seven-year average included for comparison. Rainfall total in inches given after each year.

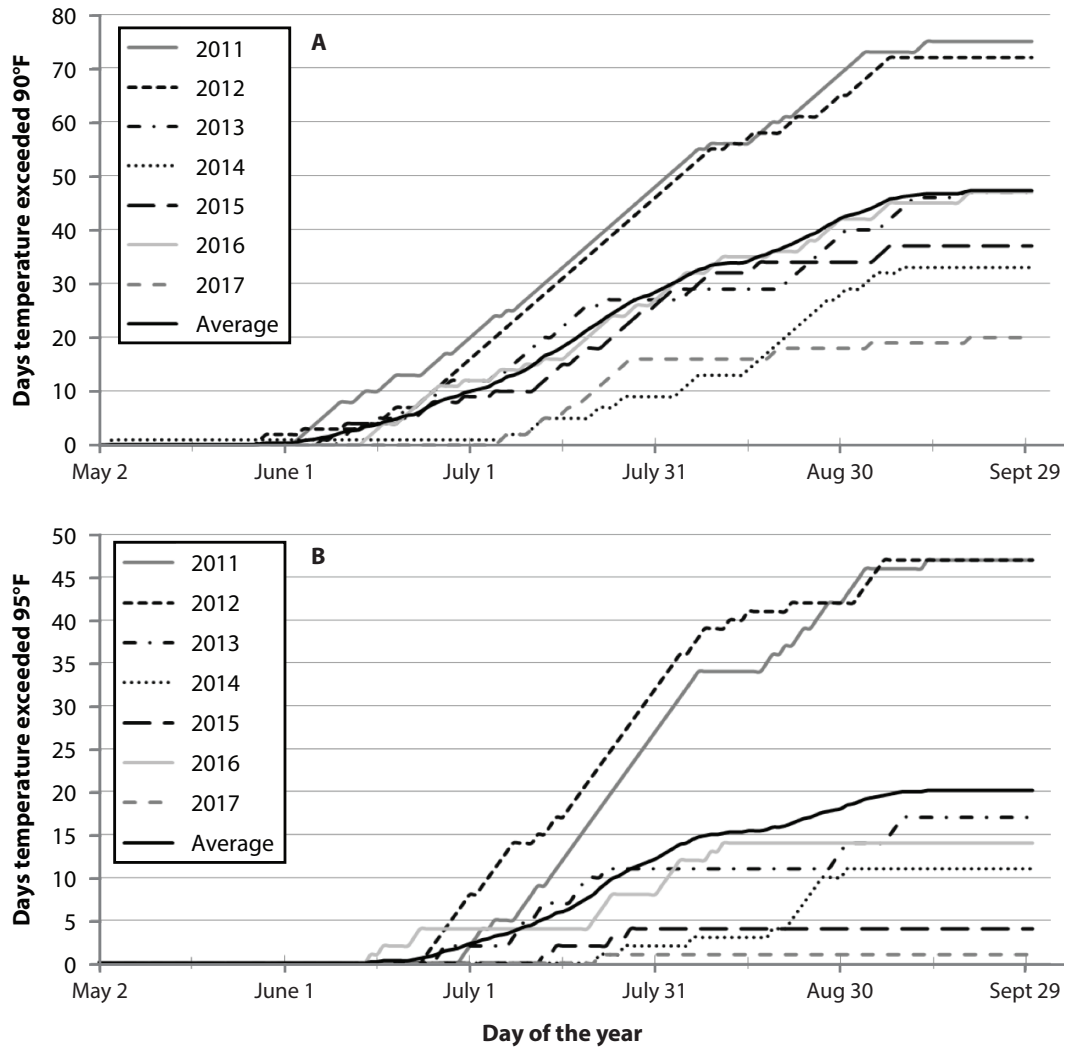


Figure 2. Temperature patterns and extremes at Parsons during 2017 and preceding years during the year (A) and the summer growing season (B).

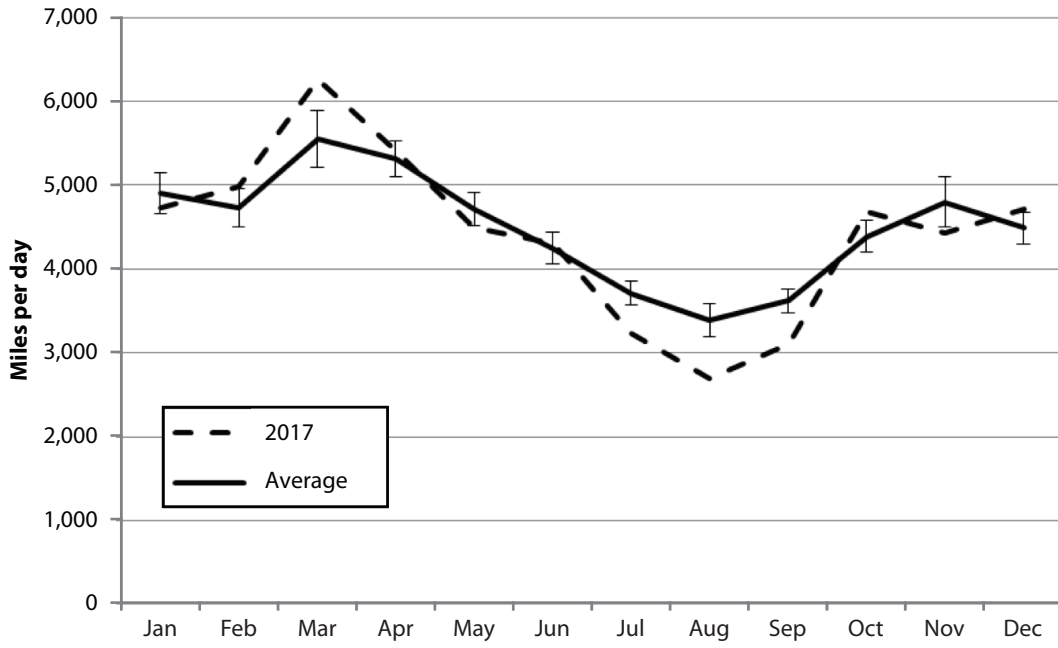


Figure 3. Average monthly wind run in southeast Kansas.

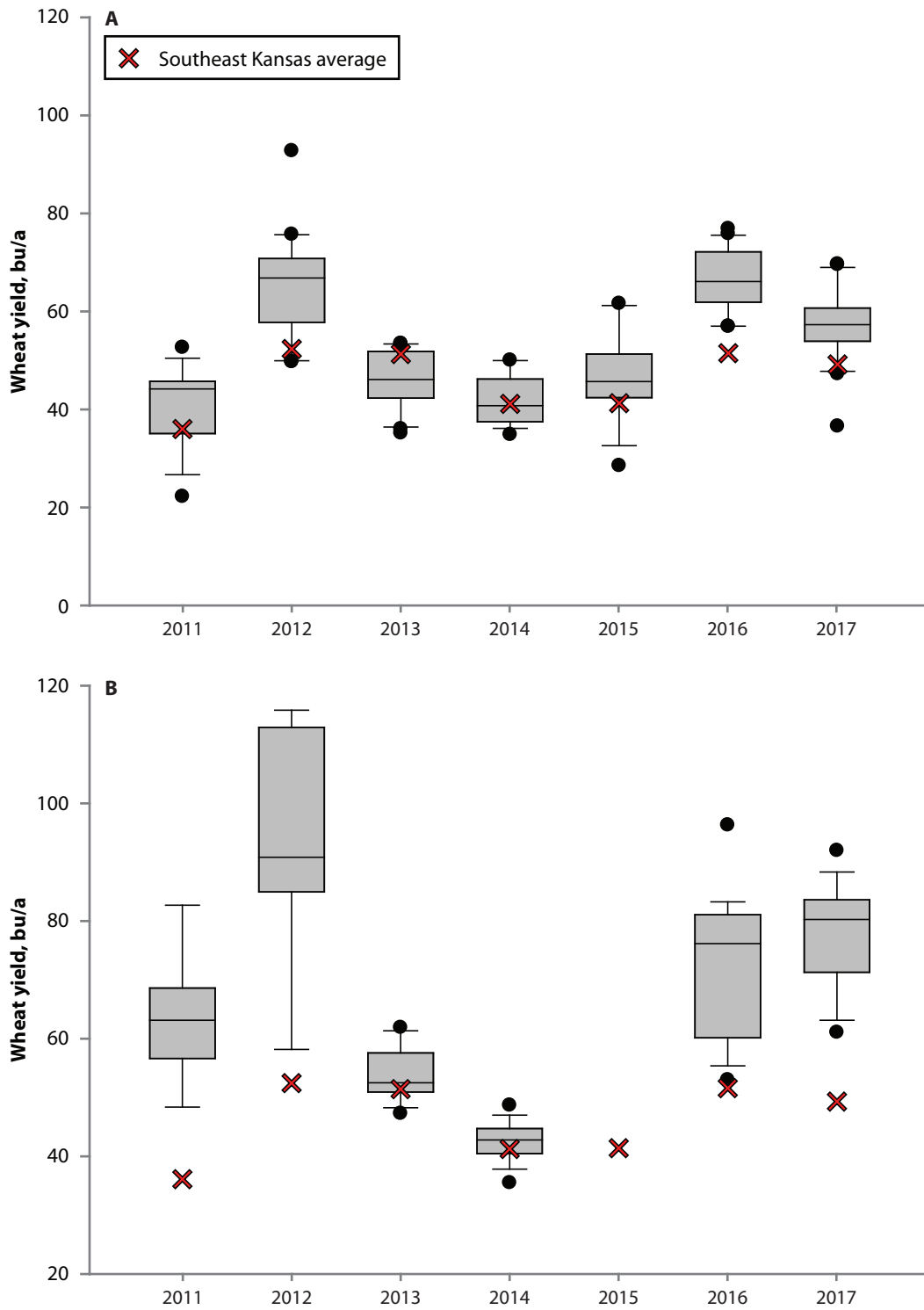


Figure 4. Winter wheat yield for (A) hard red wheat and (B) soft wheat from variety trials in southeast Kansas from 2011 through 2017. The line in the middle of the box plots is the median yield of all varieties. The upper and lower quartiles are given by the upper and lower edges of the boxes. The maximum and minimum values are given by the upper and lower “whiskers” extending from the box. Outliers are given as solid circles. For comparison, average reported yields from southeast Kansas are highlighted as a red X.

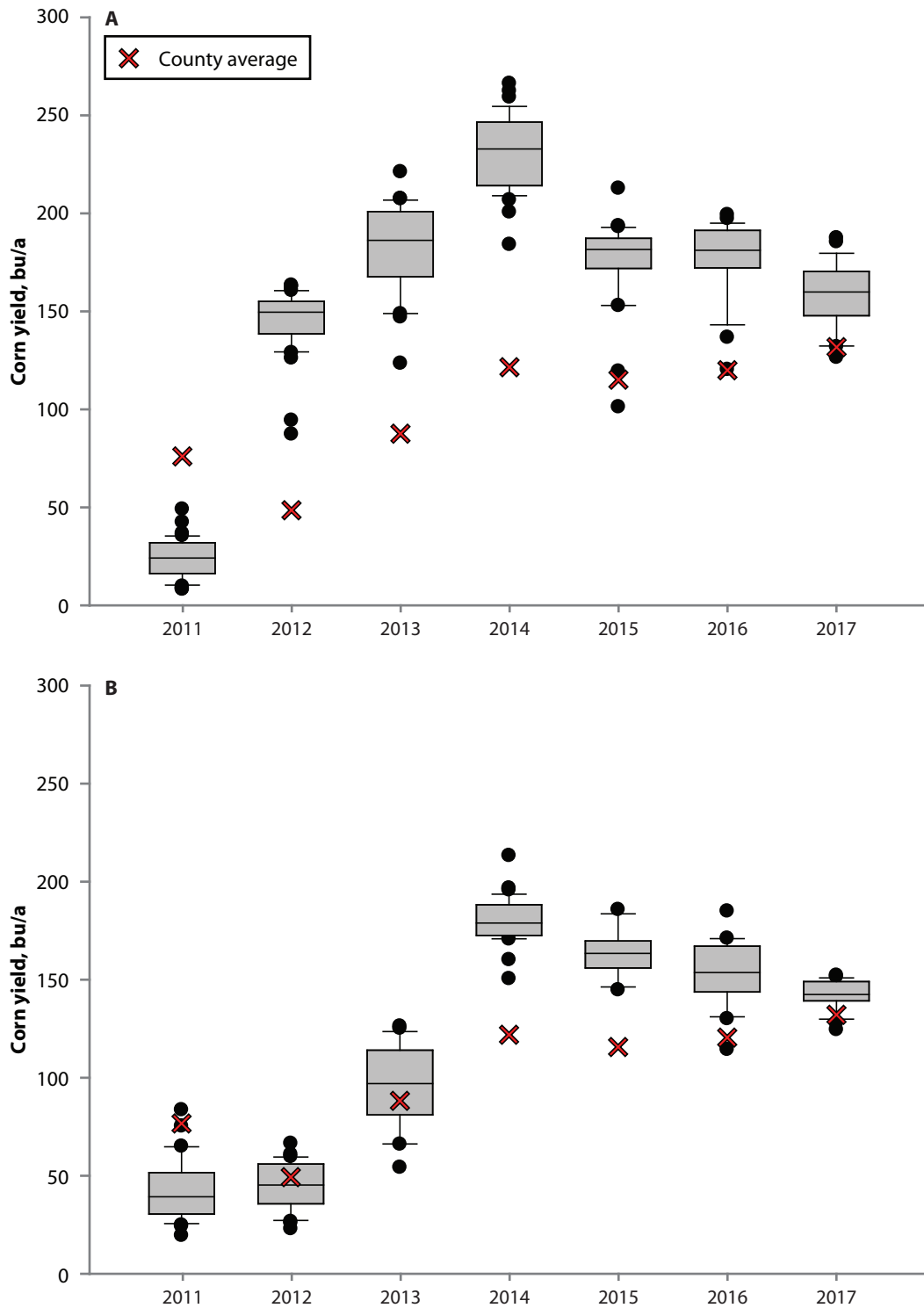


Figure 5. Full season corn at Erie (A) and short season corn at Parsons (B) from variety trials grown from 2011 through 2017. For comparison, average reported county yields from southeast Kansas are highlighted as a red X. 2016 corn variety trial data from Franklin County was used, as variety trial data from southeast Kansas was not available.

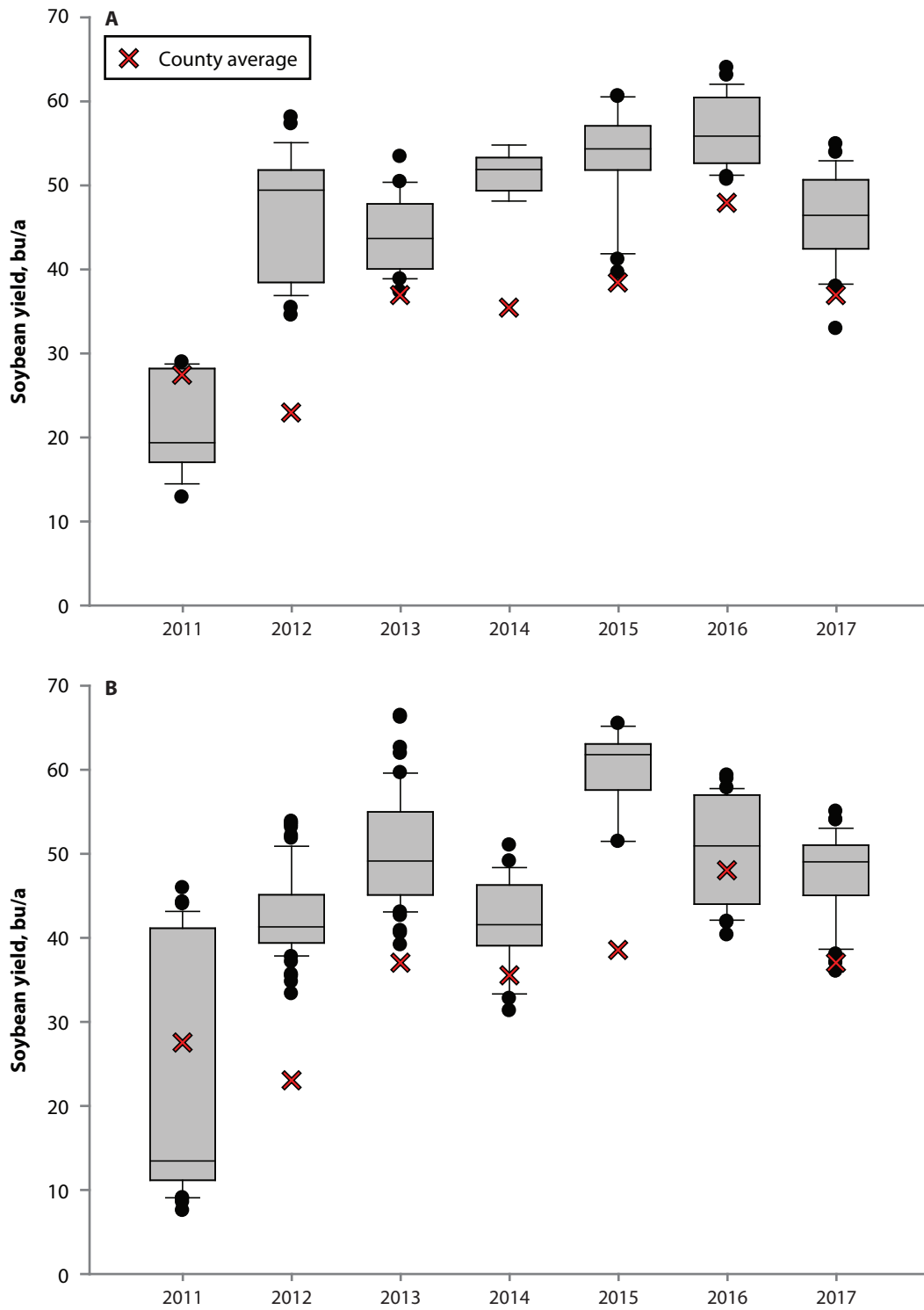


Figure 6. Soybeans from (A) MG3-4 and (B) MG4-5 from variety trials grown from 2011 through 2017. For comparison, average reported county yields from southeast Kansas are highlighted as a red X.

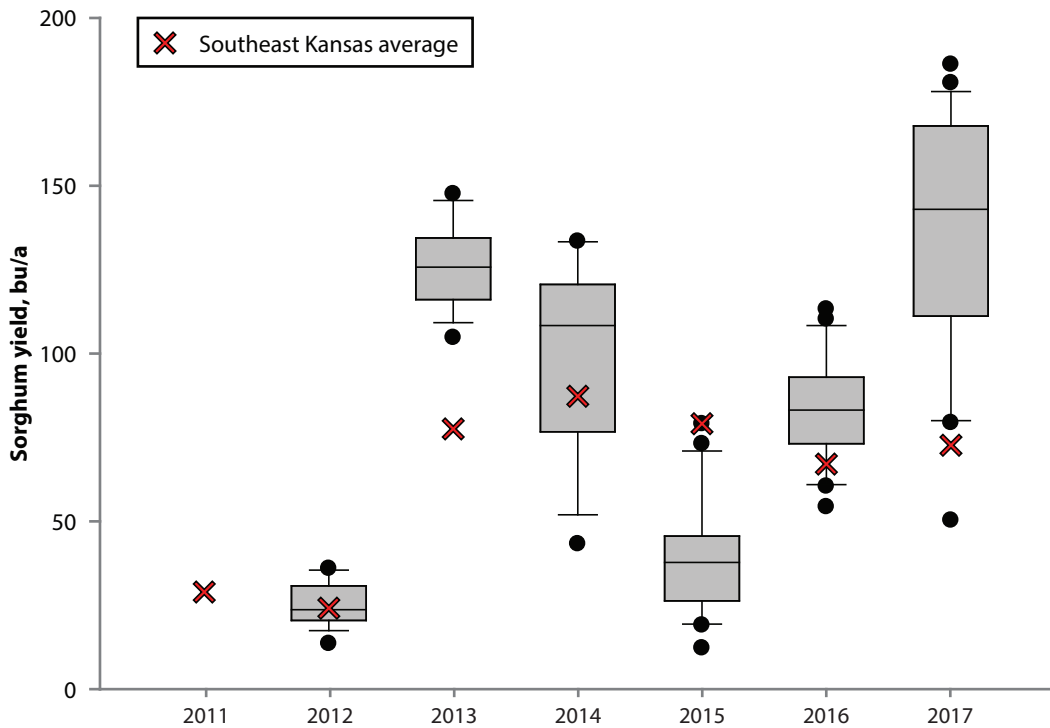


Figure 7. Grain sorghum from variety trials grown from 2011 through 2017. For comparison, average reported yields from southeast Kansas are highlighted as a red X.

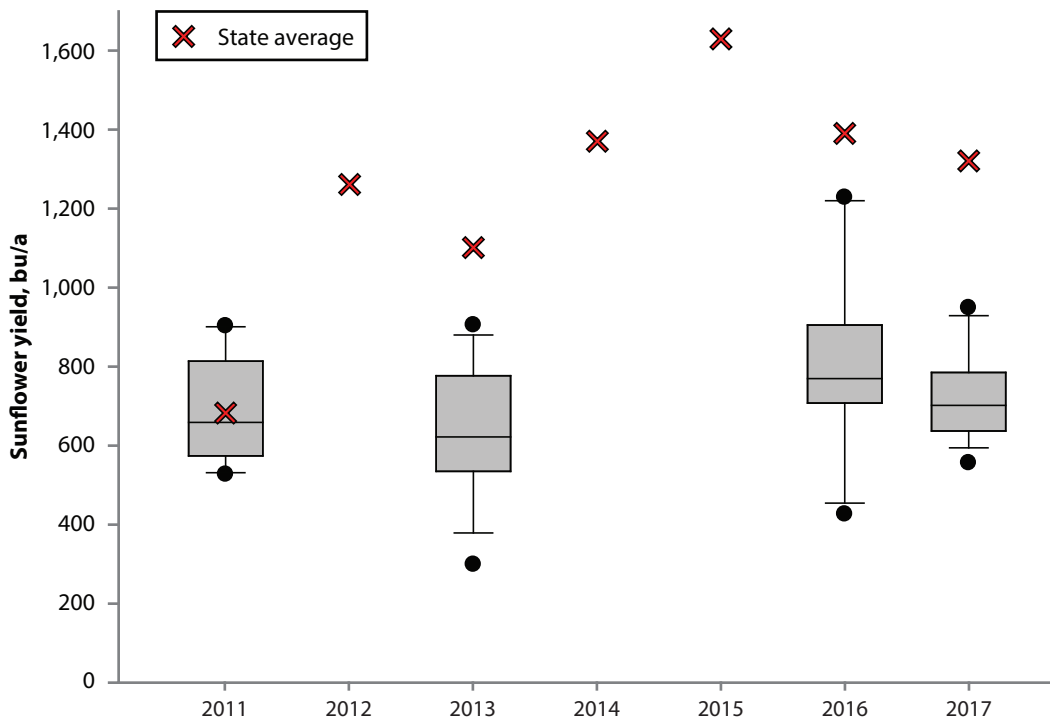


Figure 8. Oil-seed sunflowers from variety trials grown from 2011 through 2017. For comparison, average reported Kansas state yields are highlighted as a red X.