K-STATE Research and Extension

2025 SEREC AGRICULTURAL RESEARCH

Hard Red and Soft Red Winter Wheat Variety Testing – 2024

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Summary

This is a summary of the winter wheat production conditions in Kansas, with particular emphasis on the variety trial results from southeast Kansas in 2024. The fall of 2023 was dry, slightly impacting wheat establishment, but overall yields were above average of previous variety trials. Overall yields in the variety tests were much higher than the state averages at Parsons for both hard and soft wheat varieties. Above average rainfall in the spring did not result in significant disease pressure.

Introduction

Crop production is dependent on many factors, including cultivar selection, environmental conditions, soil, and management practices. This report summarizes the environmental conditions during the 2023-2024 winter wheat growing season in comparison to previous years and the historical averages for the state of Kansas. Fifteen hard red and 13 soft red wheat varieties were tested at Parsons.

Experimental Procedures

The Kansas State University Crop Performance Tests were conducted in replicated research fields throughout the state. This report summarizes winter wheat production for Parsons, KS. Wheat varieties were tested in Parsons silt loam soil at the Southeast Research and Extension Center (SEREC) in Parsons. All crop variety trials are managed with conventional tillage. Individual variety results are available at the K-State Crop Performance Test webpage (*http://www.agronomy.k-state.edu/outreach-and-services/crop-performance-tests/*).

Wheat was drilled in 7-inch rows at 1.2 million seed/acre (approx. 90 lb/acre) in conventional tillage with an Almaco plot drill in Parsons on October 4, 2023, and harvested on June 7, 2024. Plots were 7-ft wide by 27.5-ft long. Fertilizer was applied before planting at a rate of 65-50-50 lb/acre N-P-K (dry), with an additional 60 lb N/acre (dry) applied in February for both hard red and soft red cultivars. No fungicide or herbicides were applied to the wheat crop.

State reported crop yield data were downloaded from the National Agricultural Statistics Service Crop database (*https://quickstats.nass.usda.gov/*). Weather data were collected from the Kansas Mesonet website (*http://mesonet.k-state.edu/agriculture/degreedays/*) for a weather station located at the SEREC in Parsons. Cumulative rainfall

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was calculated on a water year (WY) basis from October 1, 2023, through June 30, 2024.

Results and Discussion

Fall of 2023 was very dry until late October (Figure 1). Rainfall throughout the winter and early spring was near average. Significant rain was received from late April through the end of June. Fortunately, most heading occurred before the heavy rain, so disease pressure did not significantly reduce yields. Heading began on April 15, with all varieties heading by April 24, 2024.

Acreage planted to winter wheat in Kansas decreased slightly in 2024 to 7.6 million acres (Figure 2). This is below the 50-year average of 10.5 million acres. Percent harvested acres was much higher in 2024, with 94% of planted acres harvested, higher than the 50-year average of 91%, and much higher than the 71% of planted acres harvested in 2023. Average statewide wheat yield was 43 bu/acre, an increase from last year and above the 50-year average of 38 bu/acre.

Yields for hard and soft winter wheat varieties in Parsons were above those harvested from previous variety trials (Figure 3). The average hard red winter wheat yield in 2024 in Parsons was 95.1 bu/acre with a test weight of 59.3 lb/bu (Table 1). Soft red wheat yield was 101.9 bu/acre, with a test weight of 58.3 lb/bu. While the soft red wheat yielded better than the hard red wheat, the difference was not as great as measured in previous years. The yields exceeded the 17-year variety averages of 58 bu/acre for hard red and 72.7 bu/acre for soft red varieties. Multiple year performance metrics for individual cultivars are presented in Table 1 (Hard Red Varieties) and Table 2 (Soft Red Varieties) from the Parsons variety trials.

Conclusions

2024 was a reasonably good year for wheat. Statewide yields were above average. Wheat crop growth and establishment were good and were not hindered by disease with late spring rains.

Acknowledgments

These data are part of the SRP 1186 2024 Kansas Performance Tests with Winter Wheat Varieties and will be available online, contribution number 25-030-S.

Table 1. Multiyear comparison of hard red winter wheat yields from variety trials at Parsons, KS

		2020		2021		2022		2023		2024	
Company	Variety	Yield, bu/a	Test weight, lb/bu	Yield, bu/a	Test weight, lb/bu	Yield, bu/a	Test weight, lb/bu	Yield, bu/a	Test weight, lb/bu	Yield, bu/a	Test weight, lb/bu
Syngenta AgriPro	Prolific					**82.2**	57.6	69.6	61	95.9	59.5
AGSECO	AG Radical	76.1	56.6	28	50	**75.2**	56	**86.9**	60.7	**103.7**	58.8
KWA Wildcat Gen	Everest	78.9	60.8	49.8	54.1	64	57.8	65.5	61	81.1	60.3
KWA Wildcat Gen	Providence					66.5	56.5	77.2	61.4	**98.6**	59.1
KWA Wildcat Gen	Zenda	**86.1**	60.8	**66.1**	55.2	**75.3**	58.2	58	61.5	85.1	60
Limagrain	LCS Atomic AX									95.7	59.2
Limagrain	LCS Runner									91.8	58.9
OGI	High Cotton									87.9	60.2
Polansky	Golden Hawk									**98.4**	58.8
Polansky	High Country							64.7	60.4	84.7	59.4
Polansky	Rock Star			**67.5**	54.6	**78.2**	55.6	71.4	60.9	96.1	58.3
WestBred	WB4269	**86.8**	60.3	**61.8**	54.3	67.1	55.7	**75.3**	60.4		
WestBred	WB4401	**108.8**	61.5	**92**	57.8	73	53.8	**84.4**	60.4	**100.7**	58.7
WestBred	WB4422					**85**	58	**80.2**	61.7	**102.3**	60.6
WestBred	WB4523					72.3	54.1	**80.7**	61	**103.5**	58.9
WESTBRED	WB4632							61.5	60.5		
WestBred	WB4699	**94.5**	58.7	39.5	50.7	**82.6**	56	**76.4**	60	**100.3**	58.8
Yearly average, hard red winter wheat		81.1	59.2	55.5	55.1	74.6	56.3	72.5	60.8	95.1	59.3

Yields above average are highlighted in bold.

Table 2. Multiyear comparison of soft red winter wheat yields from variety trials at Parsons, KS

		2020		2021		2022		2023		2024	
Company	Variety	Yield, bu/a	Test weight, lb/bu	Yield, bu/a	Test weight, lb/bu	Yield, bu/a	Test weight, lb/bu	Yield, bu/a	Test weight, lb/bu	Yield, bu/a	Test weight, lb/bu
AgriMAXX	492			**99.9**	56.3	81	57.5			102.1	60
AgriMAXX	503	**113.9**	60.1	**102.5**	56.2	80.6	55.7	77	58.8	105.0	59.5
AgriMAXX	505	**112.2**	60.7	**100.3**	57.2	**88.9**	57.7	**85.7**	60.2	103.2	59.1
AgriMAXX	513			**99.3**	55	**86.9**	56.7	81.4	59.5	101.2	58.6
AgriMAXX	514			**93.3**	54.4	**87.5**	55.3	**84.6**	58.8	104.8	57.4
AgriMAXX	535							84.2	60.2	104.1	58
AgriMAXX	545									101.4	56.7
AgriMAXX	EXP 2105					**87.1**	55.1				
AgriMAXX	EXP 2405									**110.5**	57.3
Beachner	GB0206			**96.4**	53.7	**86.2**	55.8	**90.7**	58.4		
Beachner	GB0208			89.9	55.1	**88.7**	56.2	83.4	59.6		
Beachner	Roane			71.7	56.4						
DuPont Pioneer	25R50	97.5	59.3			81.8	54.6				
DuPont Pioneer	25R65									104.8	57
DuPont Pioneer	25R74	**110.4**	61.6			**92.6**	54.8			104.1	58.3
DuPont Pioneer	25R76					79.1	55.8			91.3	58.8
Dupont Pioneer	25R77	103	61.6								
WestBred	WB24545									97.4	59.3
WestBred	WB2606					82.8	56.3	72.8	58.8	95	58.6
Yearly average, soft red winter wheat		102.4	59.5	90.4	54.9	85.2	56	83.8	59.3	101.9	58.3

Yields above average are highlighted in bold.

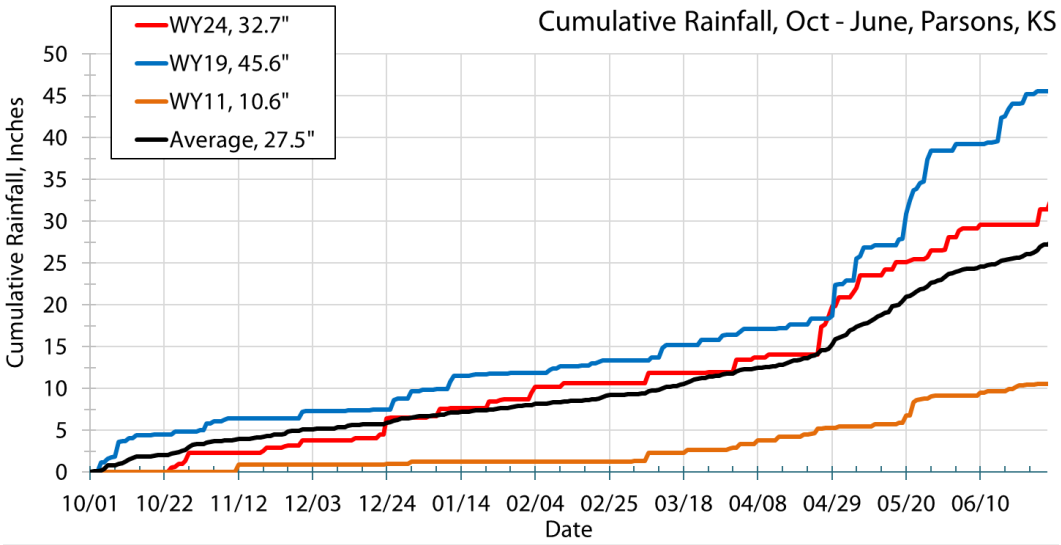

Figure 1. Cumulative rainfall during the winter wheat growing season (October 1 - June 30) for 14-year average, and previous wet (WY19) and dry (WY11) extreme years in comparison to most recent year (WY24). Rainfall totals during this period are given for each year.

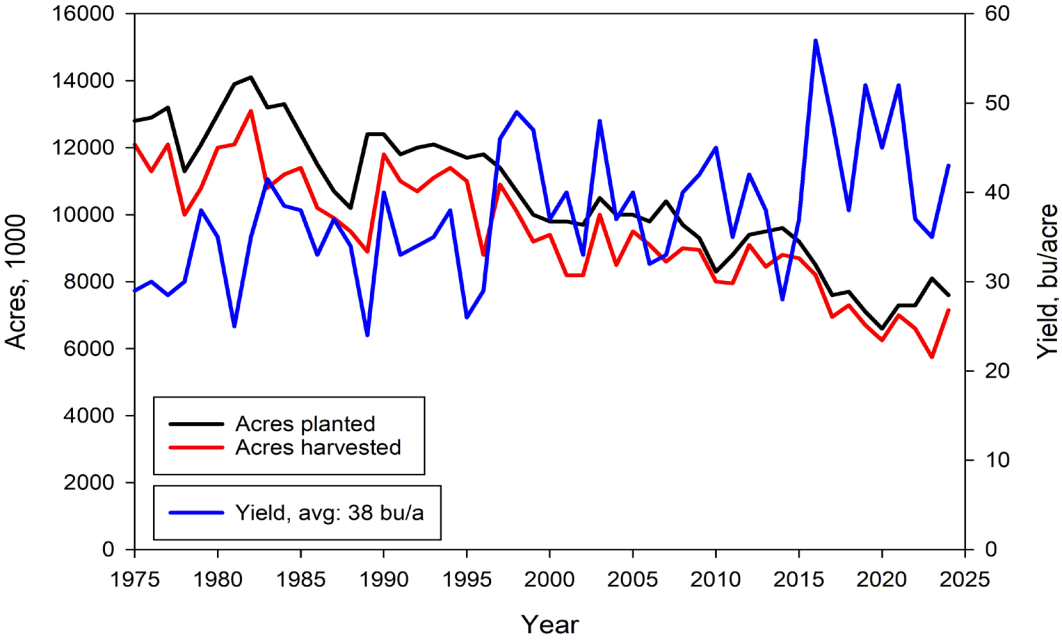

Figure 2. Statewide historical wheat production, (left axis) acres planted (black 1,000), acres harvested (red, 1,000), and (right axis, blue) average statewide winter wheat yield bu/acre for Kansas.

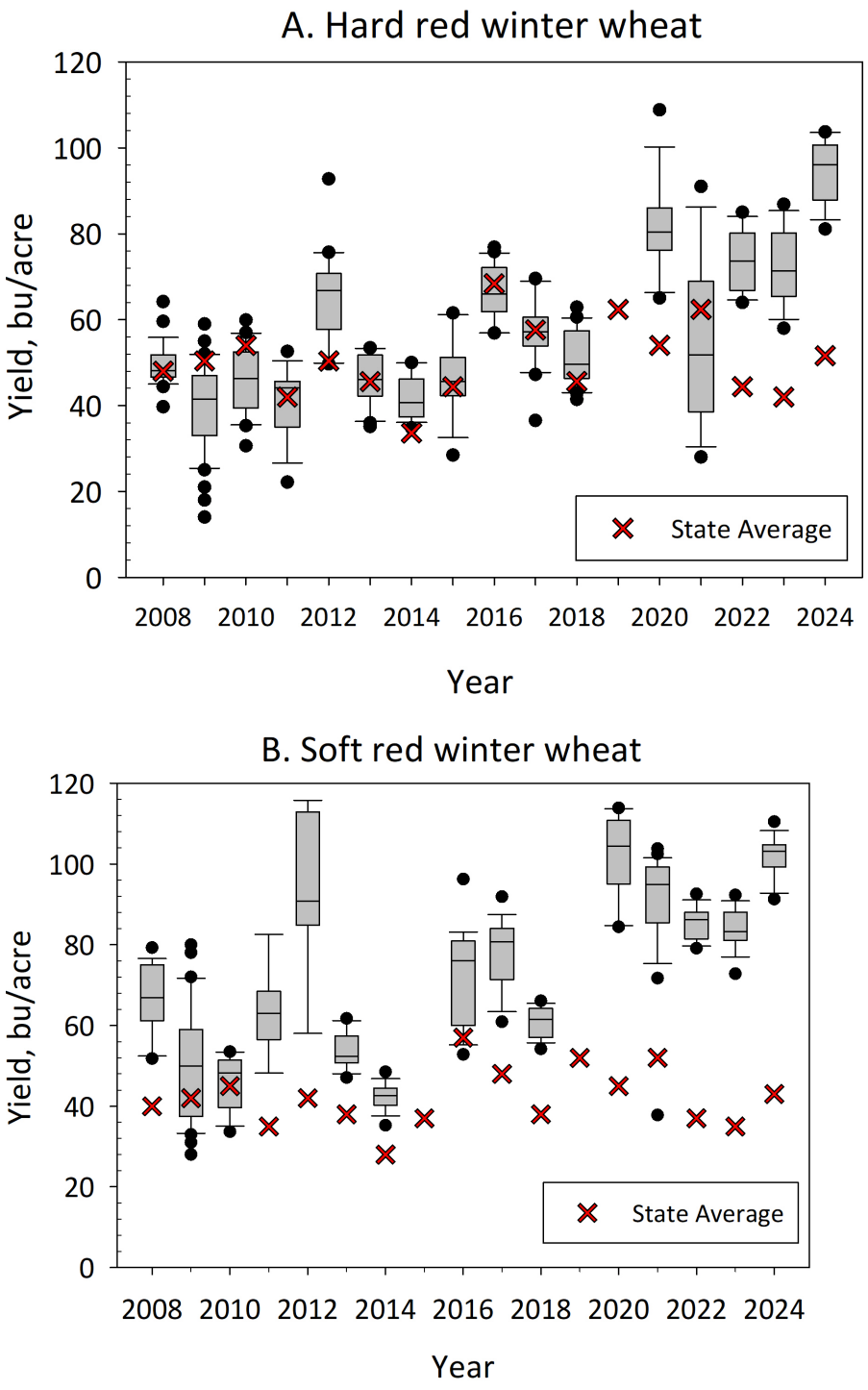

Figure 3. Winter wheat yield for (A) hard red wheat and (B) soft red wheat from variety trials in southeast Kansas from 2008 through 2024. In 2019, variety testing was abandoned due to flooding and poor stands. The line in the middle of the box plots is the median yield of all varieties. The upper and 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 state yields for hard red winter wheat from Kansas are highlighted as a red X. Statewide average hard red wheat yield is the red X.