

Kansas Agricultural Experiment Station Research Reports

Volume 7
Issue 5 *Kansas Field Research*

Article 15

2021

Field Station Weather Reports

M. Knapp

Kansas State University, Manhattan, mknapp@ksu.edu

E. A. Adee

Kansas State University, eadee@ksu.edu

Follow this and additional works at: <https://newprairiepress.org/kaesrr>



Part of the [Agronomy and Crop Sciences Commons](#), and the [Meteorology Commons](#)

Recommended Citation

Knapp, M. and Adee, E. A. (2021) "Field Station Weather Reports," *Kansas Agricultural Experiment Station Research Reports*: Vol. 7: Iss. 5. <https://doi.org/10.4148/2378-5977.8085>

This report is brought to you for free and open access by New Prairie Press. It has been accepted for inclusion in Kansas Agricultural Experiment Station Research Reports by an authorized administrator of New Prairie Press. Copyright 2021 Kansas State University Agricultural Experiment Station and Cooperative Extension Service. Contents of this publication may be freely reproduced for educational purposes. All other rights reserved. Brand names appearing in this publication are for product identification purposes only. No endorsement is intended, nor is criticism implied of similar products not mentioned. K-State Research and Extension is an equal opportunity provider and employer.



Field Station Weather Reports

Abstract

This report includes the annual summary of precipitation from 2020 at the research locations represented in the 2021 field report and further details about the Kansas River Valley locations and the east central Kansas locations.

Keywords

East Central Kansas, Kansas State experiment field, Kaw River Valley, Kansas State Experiment Field, 2020 growing season weather, Kansas weather

Creative Commons License



This work is licensed under a [Creative Commons Attribution 4.0 License](https://creativecommons.org/licenses/by/4.0/).

Field Station Weather Reports

East Central Kansas Experiment Field

Introduction

The research program at the Kansas State University East Central Kansas Experiment Field is designed to keep area crop producers abreast of technological advances in agronomic agriculture. Specific objectives are to (1) identify top performing varieties and hybrids of wheat, corn, soybean, and grain sorghum; (2) establish the amount of tillage and crop residue cover needed for optimum crop production; (3) evaluate weed and disease control practices using chemical, no chemical, and combination methods; and (4) test fertilizer rates, timing, and application methods for agronomic proficiency and environmental stewardship.

Soil Description

Soils on the field's 160 acres are Woodson. The terrain is upland and level to gently rolling. The surface soil is a dark gray-brown, somewhat poorly drained silt loam to silty clay loam over slowly permeable clay subsoil. The soil is derived from old alluvium. Water intake is slow, averaging less than 0.1 in./hour when saturated. This makes the soil susceptible to water runoff and sheet erosion.

2020 Weather Information

Precipitation during 2020 was almost 30% lower than average, with nine months below average (Table 1). Overall, the 2020 growing season was warmer than average, especially starting in June. The summer of 2020 had 46 days exceeding 90°F but none exceeding 100°F, which compares to an average of 30 days exceeding 90°F, in the last 3 years. There were 5 days with low temperatures in the single digits, compared to an average of 11 days in the previous 3 years. The last freezing temperature in the spring was April 18 (average, April 18), and the first killing frost in the fall was October 15 (average, October 21). There were 180 frost-free days, less than the long-term average of 185.

Rainfall from the last week of April through May made planting and field work challenging in the spring. There was adequate moisture to get corn and grain sorghum through a hot and dry June. The corn and grain sorghum hybrid trials averaged 174 and 138 bu/a, respectively. However, the lack of moisture in August lowered soybean production. The early maturing soybean variety trial averaged 48 bu/a and the later maturing trial 48.6, both well below the averages of the last several years.

Kansas River Valley Experiment Field

Introduction

The Kansas River Valley Experiment Field was established to study management and effective use of irrigation resources for crop production in the Kansas River Valley (KRV). The Paramore Unit consists of 80 acres located 3.5 miles east of Silver Lake on U.S. Highway 24, then 1 mile south of Kiro, and 1.5 miles east on 17th Street. The Rossville Unit consists of 80 acres located 1 mile east of Rossville or 4 miles west of Silver Lake on U.S. Highway 24.

Soil Description

Soils on the two fields are predominately in the Eudora series. Small areas of soils in the Sarpy, Kimo, and Wabash series also occur. Except for small areas of Kimo and Wabash soils in low areas, the soils are well drained. Soil texture varies from silt loam to sandy loam, and the soils are subject to wind erosion. Most soils are deep, but texture and surface drainage vary widely.

2020 Weather Information

The year was generally warmer than last year, with below average rainfall during most of the growing season. The frost-free season was 183 days at both Rossville and Paramore units (average = 173 days), with 4 and 5 days in the single digits or lower at Rossville and Paramore, respectively, which was much fewer than the average of 18 single digit days in the previous 2 years. The last spring freeze was April 15 (average = April 21), and the first fall freeze was October 15 (average = October 11). There were 38 and 41 days above 90°F at Paramore and Rossville, respectively, and none above 100°F. Precipitation was below normal at both fields for the year (Table 2), with 8 months below average. May and especially July were significantly above normal, with July rainfall 3 times greater than average. Most of the irrigation for corn was in June, much earlier than normal, with a total 4.2 inches for the corn. Soybeans were irrigated an average of 1.6 inches in August. The corn performance trials averaged 214 bu/a for the irrigated and 210 for the dryland. The soybean performance trials averaged 58.7 bu/a for the irrigated and 71 bu/a for the dryland. The sudden death syndrome foliar symptoms were first seen in early August in most fields in 2020, causing significant yield loss in soybeans in the irrigated trial due to the disease.

Table 1. Precipitation at the East Central Kansas Experiment Field, Ottawa

Month	2020		35-year avg.		Month	2020		35-year avg.	
	----- in. -----					----- in. -----			
January	1.71		1.03		July	4.19		3.37	
February	1.27		1.32		August	1.19		3.59	
March	2.75		2.49		September	1.47		3.83	
April	1.81		3.50		October	1.35		3.43	
May	4.22		5.23		November	1.36		2.32	
June	2.92		5.21		December	1.39		1.45	
					Annual total	26.63		36.78	

Table 2. Precipitation at the Kansas River Valley Experiment Field

Month	Rossville Unit		Paramore Unit	
	2020	30-year avg.	2020	30-year avg.
	----- in. -----			
January	1.39	3.18	1.35	3.08
February	0.95	4.88	0.89	4.45
March	2.55	5.46	2.53	5.54
April	2.93	3.67	3.47	3.59
May	4.19	3.44	4.42	3.89
June	4.35	4.64	2.96	3.81
July	8.61	2.97	10.25	3.06
August	0.98	1.90	1.03	1.93
September	2.67	1.24	1.95	1.43
October	0.49	0.95	0.54	0.95
November	1.71	0.89	1.73	1.04
December	0.76	2.42	1.02	2.46
Total	28.65	35.64	32.14	35.23

Table 3. Precipitation at Ashland Bottoms, Belleville, and Beloit

Month	Ashland Bottoms		Belleville		Beloit	
	2020	30-year average	2020	30-year average	2020	30-year average
	----- in. -----					
January	1.82	0.65	1.19	0.61	1.14	0.62
February	0.78	1.07	0.07	0.87	0.09	0.76
March	2.32	2.20	1.07	2.12	0.51	1.91
April	2.40	2.80	0.45	2.87	1.12	2.47
May	7.45	4.48	2.50	4.35	3.36	4.16
June	5.04	5.09	2.50	4.37	6.85	3.81
July	10.13	3.97	6.16	3.97	11.13	4.36
August	1.76	4.28	0.37	3.68	1.62	3.09
September	2.60	3.17	1.60	3.25	1.12	2.64
October	0.33	2.22	0.02	2.37	0.04	1.99
November	2.57	1.60	0.87	1.19	1.92	1.21
December	1.05	1.02	0.22	0.95	0.46	0.90
Annual	38.25	32.55	17.02	30.6	29.36	27.92
Last freeze	17-Apr-20		18-Apr-20		17-Apr-20	
First freeze	15-Oct-20		2-Oct-20		24-Oct-20	
Frost free days	181		167		190	
Days above 90°F	44		37		39	
Days above 100°F	1		2		0	
Days below 10°F	6		10		9	

30-year average = 1981–2010.

Table 4. Precipitation at Buhler (Hutchinson), Colby, and Conway Springs (Viola)

Month	Buhler (Hutchinson)		Colby		Conway Springs (Viola)	
	2020	30-year average	2020	30-year average	2020	30-year average
	----- in. -----					
January	1.27	0.69	0.28	0.41	1.99	0.83
February	2.90	1.08	0.38	0.48	1.87	1.18
March	2.28	2.56	1.70	1.12	2.57	2.75
April	1.07	2.72	0.26	2.03	0.99	3.06
May	6.28	4.44	1.97	3.29	4.66	4.42
June	3.50	4.86	1.45	2.54	1.18	5.04
July	6.83	3.76	4.21	3.77	4.33	3.08
August	0.35	3.14	1.82	2.78	2.21	3.36
September	2.18	2.67	0.82	1.45	2.44	2.61
October	1.17	2.34	0.21	1.58	3.55	2.94
November	2.56	1.33	0.00	0.72	0.68	1.58
December	0.85	1.02	0.64	0.48	1.81	1.08
Annual	31.24	30.61	13.74	20.65	28.28	31.93
Last freeze	16-Apr-20		21-Apr-20		18-Apr-20	
First freeze	26-Oct-20		12-Oct-20		25-Oct-20	
Frost free days	193		174		190	
Days above 90°F	68		68		67	
Days above 100°F	0		0		2	
Days below 10°F	2		2		1	

30-year average = 1981–2010.

Table 5. Precipitation at Garden City, Goodland, and Greensburg

Month	Garden City		Goodland		Greensburg	
	2020	30-year average	2020	30-year average	2020	30-year average
	----- in. -----					
January	0.82	0.47	0.40	0.38	3.67	0.56
February	0.80	0.52	0.40	0.49	1.20	0.74
March	0.46	1.23	1.01	1.07	1.43	2.10
April	0.13	1.74	0.30	1.59	1.19	1.98
May	0.72	3.00	2.89	2.95	3.62	3.26
June	1.88	3.10	1.77	3.25	2.86	4.21
July	5.18	2.80	4.93	3.47	6.28	3.15
August	1.86	2.51	2.81	2.70	1.60	3.16
September	1.57	1.42	0.66	1.22	1.49	2.10
October	0.16	1.22	0.23	1.37	2.34	2.18
November	0.55	0.54	0.01	0.71	1.57	0.95
December	0.34	0.60	0.77	0.46	1.59	0.84
Annual	14.47	19.15	16.18	19.66	28.84	25.23
Last freeze	25-Apr-20		9-May-20		18-Apr-20	
First freeze	23-Oct-20		16-Oct-20		25-Oct-20	
Frost free days	181		160		190	
Days above 90°F	74		64		65	
Days above 100°F	9		2		3	
Days below 10°F	7		13		5	

30-year average = 1981–2010.

Table 6. Precipitation at Hays, Hutchinson 10SW, and Keats (Ashland Bottoms)

Month	Hays		Hutchinson 10Sw		Keats (Ashland Bottoms)	
	2020	30-year average	2020	30-year average	2020	30-year average
	----- in. -----					
January	0.97	0.50	0.99	0.50	1.82	0.63
February	1.56	0.71	2.04	0.71	0.78	1.08
March	0.45	1.81	1.77	1.81	2.32	2.49
April	0.46	2.14	1.72	2.14	2.40	3.17
May	3.18	3.26	3.90	3.26	7.45	5.09
June	2.39	2.83	3.67	2.83	5.04	5.7
July	7.02	3.92	4.07	3.92	10.13	4.42
August	2.43	3.04	0.75	3.04	1.76	4.12
September	0.96	2.05	1.84	2.05	2.60	3.43
October	0.08	1.58	0.63	1.58	0.33	2.69
November	0.94	0.89	1.95	0.89	2.57	1.73
December	0.32	0.72	1.11	0.72	1.05	1.07
Annual	20.76	23.45	24.44	23.45	38.25	35.62
Last freeze	18-Apr-20		17-Apr-20		17-Apr-20	
First freeze	24-Oct-20		25-Oct-20		16-Oct-20	
Frost free days	189		191		182	
Days above 90°F	61		60		44	
Days above 100°F	3		1		1	
Days below 10°F	5		2		6	

30-year average = 1981–2010.

Table 7. Precipitation at Leoti, Manhattan (North Farm), and Marquette (Kanopolis Lake)

Month	Leoti		Manhattan (North Farm)		Marquette (Kanopolis Lake)	
	2020	30-year average	2020	30-year average	2020	30-year average
	----- in. -----					
January	0.23	0.42	0.67	0.63	1.47	0.64
February	1.04	0.53	0.79	1.08	2.17	0.95
March	0.60	1.38	2.53	2.49	0.89	2.13
April	0.07	2.00	1.94	3.17	1.32	2.49
May	0.64	2.57	5.56	5.09	3.53	4.03
June	3.01	2.58	3.50	5.70	3.55	4.16
July	3.23	2.90	6.63	4.42	7.48	3.72
August	2.68	2.79	1.79	4.12	1.02	3.62
September	0.35	1.57	2.15	3.43	2.04	2.48
October	0.02	1.47	0.66	2.69	0.10	2.13
November	0.00	0.65	2.37	1.73	2.21	1.09
December	0.11	0.57	0.96	1.07	0.89	0.78
Annual	11.98	19.43	29.55	35.62	26.67	28.22
Last freeze	17-Apr-20		17-Apr-20		18-Apr-20	
First freeze	19-Oct-20		16-Oct-20		24-Oct-20	
Frost free days	185		182		189	
Days above 90°F	75		47		54	
Days above 100°F	7		0		0	
Days below 10°F	7		6		3	

30-year average = 1981–2010.

Table 8. Precipitation at Mound Ridge (Newton), Ottawa, and Rock Springs

Month	Moundridge (Newton)		Ottawa		Rock Springs	
	2020	30-year average	2020	30-year average	2020	30-year average
	----- in. -----					
January	1.30	0.78	1.71	0.63	1.31	0.80
February	2.77	1.12	1.27	1.08	1.18	1.11
March	3.47	2.71	2.75	2.49	1.89	2.51
April	1.85	2.84	1.81	3.17	2.12	3.32
May	7.00	4.45	4.22	5.09	4.46	4.98
June	1.94	4.95	2.93	5.70	1.89	5.04
July	5.65	3.63	4.18	4.42	7.57	4.01
August	0.62	3.45	1.19	4.12	3.16	4.05
September	2.20	3.07	1.47	3.43	2.33	3.16
October	1.07	2.60	1.35	2.69	0.72	2.48
November	1.14	1.81	1.36	1.73	1.71	1.74
December	1.44	1.04	1.39	1.07	0.82	1.14
Annual	30.45	32.45	25.63	35.62	29.16	34.34
Last freeze	16-Apr-20		18-Apr-20		17-Apr-20	
First freeze	26-Oct-20		15-Oct-20		2-Oct-20	
Frost free days	193		180		168	
Days above 90°F	75		45		59	
Days above 100°F	1		0		0	
Days below 10°F	3		4		6	

30-year average = 1981–2010.

Table 9. Precipitation at Rossville, Scandia, Silver Lake

Month	Rossville		Scandia		Silver Lake	
	2020	30-year average	2020	30-year average	2020	30-year average
	----- in. -----					
January	1.39	1.06	1.11	0.45	1.35	3.18
February	0.95	1.25	0.04	0.74	0.89	4.88
March	2.55	2.60	0.99	2.12	2.53	5.46
April	2.93	3.47	0.38	2.96	3.47	3.67
May	4.19	5.56	2.81	4.21	4.42	3.44
June	4.35	5.53	4.02	3.81	2.97	4.64
July	8.61	4.36	7.84	4.24	10.24	2.97
August	0.98	4.21	0.64	3.26	1.03	1.90
September	2.67	4.19	1.39	2.84	1.95	1.24
October	0.49	3.11	0.06	2.14	0.54	0.95
November	1.71	2.09	1.52	1.26	1.73	0.89
December	0.76	1.60	0.29	0.79	1.02	2.42
Annual	31.58	39.03	21.09	28.82	32.14	35.64
Last freeze	15-Apr-20		10-May-20		15-Apr-20	
First freeze	15-Oct-20		29-Sep-20		15-Oct-20	
Frost free days	183		142		183	
Days above 90°F	37		28		42	
Days above 100°F	0		0		0	
Days below 10°F	6		13		5	

30-year average = 1981–2010.