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## Field Station Weather Reports

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## Field Station Weather Reports

### Abstract

This report includes the annual summary of precipitation from 2019 at the research locations represented in the 2020 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, Kansas River Valley, Kansas State Experiment Field, 2019 growing season weather, Kansas weather

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## 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, non-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.

#### *2019 Weather Information*

Precipitation during 2019 was almost double the average, however, five months were below average. Rainfall in May, June, and August was greater than the average by a factor of 2 times or more (Table 1). Overall, the 2019 growing season was close to average. The summer of 2019 had 30 days exceeding 90°F but none exceeding 100°F, which compared to 29 and 33 days exceeding 90°F, in 2017 and 2018, respectively. There were 11 days with low temperatures in the single digits, compared to 8 and 13 days in 2017 and 2018, respectively. The last freezing temperature in the spring was April 1 (average, April 18), and the first killing frost in the fall was October 11 (average, October 21). There were 176 frost-free days, fewer than the long-term average of 185.

The excessive rainfall made planting and field work challenging in the spring. However, the abundance of moisture was very favorable to corn, grain sorghum and soybean production. The full season corn hybrid trials averaged 155 bu/a and the short season 153, both very good for the year. The grain sorghum variety trial averaged 130 bu/a. The early maturing soybean variety trial averaged 73 bu/a and the later maturing trial 75, both outstanding.

## **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.

### ***2019 Weather Information***

The year was generally slightly cooler in the summer than last year, with above average rainfall during most of the growing season. The frost-free season was 182 and 181 days, respectively at Rossville and Paramore at the both units (average = 173 days), with 19 and 18 days in the single digits or lower at Rossville and Paramore, respectively. This was similar to 2018 but significantly more compared to 9 days in single digits at both units in 2017. The last spring freeze was April 13 (average = April 21), and the first fall freeze was October 11 (average = October 11). There were 30 and 31 days above 90°F at Paramore and Rossville, respectively, and none above 100°F. Precipitation was well above normal at both fields for the year (Table 2), with 7 months over average, especially May and August, which were 3 to 4 times greater than average. Irrigation requirements averaged 4.8 inches for the corn and 1.5 inches for the soybeans. The corn performance trials averaged 229 bu/a for the irrigated and 220 for the dryland. The soybean performance trials averaged 63 bu/a for the irrigated and 82 bu/a for the dryland. The sudden death syndrome foliar symptoms were not visible until mid-August in most fields in 2019, however, severity increased quickly, 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	2019		Month	2019	
	35-year avg.			35-year avg.	
	----- in. -----			----- in. -----	
January	1.84	1.03	July	3.51	3.37
February	1.13	1.32	August	14.19	3.59
March	2.25	2.49	September	5.30	3.83
April	6.63	3.50	October	2.33	3.43
May	13.64	5.23	November	0.99	2.32
June	10.54	5.21	December	1.08	1.45
			Annual total	63.43	36.78

**Table 2. Precipitation at the Kansas River Valley Experiment Field**

Month	Rossville Unit		Paramore Unit	
	2019	30-year avg.	2019	30-year avg.
	----- in. -----		----- in. -----	
January	1.12	3.18	1.12	3.08
February	1.18	4.88	1.12	4.45
March	2.63	5.46	2.27	5.54
April	2.88	3.67	3.88	3.59
May	11.20	3.44	11.28	3.89
June	6.69	4.64	4.53	3.81
July	2.95	2.97	4.77	3.06
August	9.00	1.90	9.20	1.93
September	1.94	1.24	2.53	1.43
October	2.55	0.95	1.58	0.95
November	0.98	0.89	0.75	1.04
December	1.85	2.42	1.94	2.46
Total	44.97	35.64	44.97	35.23

**Table 3. Precipitation at Ashland Bottoms, Belleville, and Colby**

Month	Ashland Bottoms		Belleville		Colby	
	2019	30-year average	2019	30-year average	2019	30-year average
	----- in. -----					
January	1.23	0.65	0.23	0.61	0.16	0.41
February	1.29	1.07	0.26	0.87	0.27	0.48
March	2.44	2.20	1.72	2.12	2.39	1.12
April	2.20	2.80	1.18	2.87	0.16	2.03
May	12.10	4.48	7.60	4.35	6.84	3.29
June	5.71	5.09	6.62	4.37	2.70	2.54
July	2.30	3.97	3.12	3.97	1.00	3.77
August	8.60	4.28	6.09	3.68	8.79	2.78
September	2.35	3.17	1.80	3.25	0.55	1.45
October	2.73	2.22	2.46	2.37	0.78	1.58
November	0.61	1.60	0.43	1.19	0.49	0.72
December	1.06	1.02	1.85	0.95	0.56	0.48
Annual	42.62	32.55	33.36	30.6	24.69	20.65
Last freeze	10/11/19		10/11/19		5/1/19	
First freeze	4/13/19		4/13/19		10/10/19	
Frost free days	181		181		162	
Days above 90°F	28		26		40	
Days above 100°F	0		0		5	
Days below 10°F	18		32		22	

**Table 4. Precipitation at Great Bend, Hays, and Hutchinson**

Month	Great Bend		Hays		Hutchinson	
	2019	30-year average	2019	30-year average	2019	30-year average
	----- in. -----					
January	0.16	0.61	0.53	0.50	0.70	0.50
February	0.27	0.83	0.33	0.71	0.87	0.71
March	2.39	1.94	0.69	1.81	1.74	1.81
April	0.16	2.36	0.90	2.14	2.06	2.14
May	6.84	4.38	7.76	3.26	12.23	3.26
June	2.70	3.97	1.59	2.83	4.49	2.83
July	1.00	3.41	0.96	3.92	0.42	3.92
August	8.79	3.33	12.51	3.04	6.02	3.04
September	0.55	1.96	1.57	2.05	0.29	2.05
October	0.78	2.05	1.51	1.58	0.93	1.58
November	0.49	0.97	0.38	0.89	0.45	0.89
December	0.56	0.85	2.34	0.72	1.29	0.72
Annual	24.69	26.66	31.07	23.45	31.49	23.45
Last freeze	4/19/19		4/28/19		4/14/19	
First freeze	10/11/19		10/10/19		10/11/19	
Frost free days	175		165		180	
Days above 90°F	58		65		60	
Days above 100°F	6		10		6	
Days below 10°F	17		16		9	

**Table 5. Precipitation at Leoti, Manhattan, and Ottawa**

Month	Leoti		Manhattan North Farm		Ottawa	
	2019	30-year average	2019	30-year average	2019	30-year average
	----- in. -----					
January	0.06	0.42	1.36	0.63	1.84	0.63
February	0.37	0.53	1.38	1.08	1.13	1.08
March	1.49	1.38	2.21	2.49	2.25	2.49
April	0.12	2.00	2.74	3.17	6.63	3.17
May	4.13	2.57	10.56	5.09	13.64	5.09
June	1.30	2.58	6.17	5.70	10.54	5.70
July	3.24	2.90	5.54	4.42	3.51	4.42
August	2.36	2.79	9.91	4.12	14.19	4.12
September	1.84	1.57	2.75	3.43	5.30	3.43
October	0.63	1.47	2.40	2.69	2.33	2.69
November	0.06	0.65	0.29	1.73	0.99	1.73
December	0.42	0.57	0.70	1.07	1.08	1.07
Annual	16.02	19.43	46.01	35.62	63.43	35.62
Last freeze	4/19/19		4/13/19		4/13/19	
First freeze	10/10/19		10/12/19		10/11/19	
Frost free days	174		182		181	
Days above 90°F	61		39		33	
Days above 100°F	7		1		0	
Days below 10°F	20		15		12	



**Table 6. Precipitation at Silver Lake (Paramore), Rossville, and Scandia**

Month	Silver Lake		Rossville		Scandia	
	2019	30-year average	2019	30-year average	2019	30-year average
	----- in. -----					
January	1.12	3.18	1.12	3.18	0.27	0.45
February	1.12	4.88	1.18	4.88	0.37	0.74
March	2.27	5.46	2.63	5.46	2.22	2.12
April	3.88	3.67	2.88	3.67	0.60	2.96
May	11.28	3.44	11.20	3.44	7.06	4.21
June	4.53	4.64	6.69	4.64	5.63	3.81
July	4.77	2.97	2.95	2.97	3.11	4.24
August	9.20	1.90	9.00	1.90	4.67	3.26
September	2.53	1.24	1.94	1.24	1.76	2.84
October	1.58	0.95	2.55	0.95	2.67	2.14
November	0.75	0.89	0.98	0.89	0.25	1.26
December	1.94	2.42	1.85	2.42	2.25	0.79
Annual	44.97	35.64	44.97	35.64	30.86	28.82
Last freeze	4/13/19		4/13/19		4/14/19	
First freeze	10/11/19		10/11/19		10/11/19	
Frost free days	181		181		180	
Days above 90°F	30		25		21	
Days above 100°F	0		0		0	
Days below 10°F	17		18		33	

**Table 7. Precipitation at Brownell (HB Ranch), Caldwell (Wellington), and Harper**

Month	Brownell (Ness City)		Caldwell (Wellington)		Harper	
	2019	30-year average	2019	30-year average	2019	30-year average
	----- in. -----					
January	0.37	0.53	1.14	1.00	1.21	1.00
February	0.30	0.67	0.84	1.36	0.53	1.19
March	0.68	1.74	2.32	2.93	1.81	2.99
April	0.89	1.94	3.46	2.96	3.79	3.18
May	7.43	3.08	21.8	4.74	12.05	4.71
June	2.97	3.06	2.52	5.53	8.40	5.20
July	0.59	3.52	0.78	3.56	1.05	3.27
August	3.21	2.80	8.85	3.72	3.40	2.95
September	0.38	1.84	5.86	2.58	2.71	2.79
October	1.61	1.46	5.35	3.16	4.75	2.74
November	0.29	0.88	0.71	1.92	0.75	1.88
December	1.94	0.74	1.89	1.24	0.99	1.25
Annual	20.66	22.26	55.52	34.70	41.44	33.15
Last freeze	4/19/19		4/13/19		4/14/19	
First freeze	10/10/19		10/29/19		10/11/19	
Frost free days	174		199		180	
Days above 90°F	60		58		65	
Days above 100°F	8		6		4	
Days below 10°F	18		17		5	

**Table 8. Precipitation at Lakin, La Crosse, and Garden City**

Month	Lakin		La Crosse		Garden City	
	2019	30-year average	2019	30-year average	2019	30-year average
	----- in. -----					
January	0.36	0.34	0.38	0.58	0.34	0.47
February	0.59	0.44	0.24	0.84	0.75	0.52
March	1.89	0.98	0.25	1.85	2.08	1.23
April	0.04	1.55	1.39	2.33	0.09	1.74
May	5.48	2.54	9.43	4.08	5.87	3.00
June	2.30	3.19	2.24	3.90	1.11	3.10
July	1.11	2.88	2.05	3.69	2.07	2.80
August	2.58	2.65	7.19	3.00	1.54	2.51
September	0.13	1.57	0.09	2.17	0.14	1.42
October	0.20	1.44	0.30	1.57	0.37	1.22
November	0.10	0.60	0.00	0.99	0.23	0.54
December	0.90	0.60	0.00	0.86	1.23	0.60
Annual	15.68	18.78	23.56	25.86	15.82	19.15
Last freeze	5/22/19		4/14/19		4/19/19	
First freeze	10/8/19		10/10/19		10/10/19	
Frost free days	139		179		174	
Days above 90°F	68		55		70	
Days above 100°F	7		6		11	
Days below 10°F	21		18		20	

**Table 9. Precipitation at Goodland, Concordia, and Beloit**

Month	Goodland		Concordia		Beloit	
	2019	30-year average	2019	30-year average	2019	30-year average
January	0.33	0.38	1.11	0.38	1.03	0.62
February	0.40	0.49	1.61	0.49	1.35	0.76
March	1.17	1.07	2.31	1.07	1.89	1.91
April	0.38	1.59	1.44	1.59	1.07	2.47
May	5.10	2.95	9.55	2.95	8.41	4.16
June	2.26	3.25	5.08	3.25	3.98	3.81
July	1.71	3.47	2.38	3.47	1.94	4.36
August	9.47	2.70	6.46	2.70	8.65	3.09
September	0.65	1.22	1.80	1.22	1.17	2.64
October	0.26	1.37	1.74	1.37	2.32	1.99
November	0.75	0.71	0.41	0.71	0.27	1.21
December	0.30	0.46	1.77	0.46	2.31	0.90
Annual	22.78	19.66	35.66	19.66	34.39	27.92
Last freeze	5/2/19		4/15/19			
First freeze	10/10/19		10/11/19			
Frost free days	161		179			
Days above 90°F	44		21		36	
Days above 100°F	4		0		3	
Days below 10°F	23		25		23	