Field Station Weather Reports

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East Central Kansas Experiment Field: 2022 Growing Season

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.

2022 Weather Information

The 2022 weather was a year of extremes with a cooler winter and warmer summer. Precipitation during 2022 was 8 inches under the average, and only 4 months had rainfall over the average (Table 1). The summer of 2022 had 56 days exceeding 90°F but none exceeding 100°F, which is above the average of 35 days exceeding 90°F the last 4 years. There were 20 days with low temperatures in the single digits, compared to an average of 10 days in the previous 4 years. The last freezing temperature in the spring was April 26 (average, April 18), and the first killing frost in the fall was October 17 (average, October 21). There were 174 frost-free days, fewer than the long-term average of 185.

Rainfall and cooler temperatures from May through early June made planting and field work challenging in the spring. Replanting was required for several soybean studies. There was adequate moisture to grow corn and grain sorghum through a hot and dry June. The corn and grain sorghum hybrid trials averaged 183 and 109 bu/a, respectively. The early maturing soybean variety trial averaged 46.8 bu/a and the later maturing trial averaged 50.8 bu/a, both below well below the averages of the last year.

Kansas River Valley Experiment Field: 2022 Growing Season

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.

2022 Weather Information

The year was generally cooler in the winter and warmer in the summer than last year, with rainfall 5–6 inches lower for the year and below average for 5 of the 6 months of the growing season. The frost-free season was 180 and 178 days at both Rossville and Paramore units, respectively (average = 173 days), with 23 and 24 days of temperatures in the single digits (°F) or lower at Rossville and Paramore, respectively, which were more days of severe cold than in the last 4 years. The last spring freeze was April 18 and 19 for Rossville and Paramore, respectively (average = April 21), and the first fall freeze was October 15 and 14, respectively (average = October 11). There were 49 and 59 days above 90°F at Paramore and Rossville, respectively, and 2 above 100°F at Paramore. Precipitation was below normal at both fields for the year (Table 2), with 9 months below average. May rainfall was about twice of the normal received for that month. Irrigation for corn started in June, much earlier than normal, with an average total of 5.3 inches for the corn. Soybeans were irrigated an average of 5.3 inches from mid-July through early September. The corn performance trials averaged 237 bu/a for the irrigated and 151 bu/a for the dryland. The soybean performance trials averaged 63.0 bu/a for the irrigated and 65.8 bu/a for the dryland. The sudden death syndrome foliar symptoms were first seen in mid-August in most soybean fields in 2022, causing significant yield loss in susceptible soybeans in the irrigated trial due to the disease.

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

Month	2022	30-year avg. 1991–2022	Month	2022	30-year avg. 1991–2022
	---------------- in. ----------------			---------------- in. ----------------	
January	0.05	1.22	July	5.36	3.75
February	0.29	1.57	August	1.76	4.63
March	3.00	2.29	September	1.29	4.05
April	1.59	3.79	October	0.91	3.08
May	8.28	5.82	November	4.31	2.39
June	2.76	5.55	December	1.42	1.17
			Annual total	31.02	39.85

Table 2. Precipitation at the Kansas River Valley Experiment Field

Month	Rossville Unit		Paramore Unit	
	2022	30-year avg. 1991–2020	2022	30-year avg. 1991–2020
	-------------------------------------- in. --------------------------------------			
January	0.14	0.74	0.09	0.89
February	0.08	1.18	0.07	1.31
March	3.59	2.08	3.61	2.25
April	1.45	3.48	1.35	3.81
May	10.05	5.06	10.61	5.17
June	3.64	5.11	3.23	4.92
July	3.07	4.32	2.99	3.99
August	1.79	4.60	1.75	4.55
September	1.54	3.75	1.31	3.52
October	1.42	2.71	1.19	2.85
November	3.44	1.67	3.02	1.78
December	0.70	1.37	0.55	1.49
Total	30.86	36.07	29.77	36.53

Table 3. Precipitation at Ashland Bottoms, Belleville, and Garden City

	Ashland Bottoms		Belleville		Garden City	
	Actual	Normal	Actual	Normal	Actual	Normal
January	0.11	0.64	0.10	0.61	0.47	0.30
February	0.04	1.14	0.00	0.97	0.01	0.40
March	2.40	2.17	1.57	1.49	0.29	1.07
April	0.95	3.38	1.88	2.75	0.39	1.46
May	8.15	5.23	4.80	4.57	2.15	2.52
June	6.21	5.47	2.44	4.34	1.25	3.51
July	5.91	4.62	3.96	4.46	2.13	3.43
August	1.55	4.40	1.61	3.72	0.40	2.49
September	1.72	3.41	3.72	3.12	0.58	1.37
October	1.25	2.50	1.09	2.50	0.02	1.42
November	3.28	1.62	0.40	1.15	0.10	0.42
December	1.05	1.19	0.85	0.92	0.03	0.56
Annual	32.62	35.77	22.42	30.60	7.82	18.95
Last spring freeze	4/26/2022		4/26/2022		4/25/2022	
First fall freeze	10/18/2022		10/17/2022		10/17/2022	
Frost free days	174		173		174	
Number of days >= 90°F	61		56		97	
Number of days >= 100°F	3		2		29	
Number of days < 10°F	24		35		32	

Normal = 30-year average, 1991-2020.

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

	Great Bend		Hays		Hutchinson	
	Actual	Normal	Actual	Normal	Actual	Normal
January	0.21	0.71	0.20	0.56	0.07	0.72
February	0.01	0.89	0.00	0.81	0.07	1.12
March	1.88	1.56	1.21	1.32	1.60	2.21
April	0.39	2.15	0.42	2.13	0.81	2.51
May	4.57	4.83	3.40	3.60	6.88	4.67
June	2.62	3.66	1.41	3.03	2.68	4.58
July	1.05	3.86	1.77	3.95	1.70	3.65
August	1.45	3.69	1.39	3.47	0.27	3.56
September	1.29	1.98	2.12	2.13	1.44	2.48
October	0.21	1.96	0.17	1.68	0.44	2.38
November	1.74	1.00	0.22	0.90	1.49	1.28
December	0.53	1.01	0.66	0.86	0.98	1.13
Annual	15.95	27.30	12.97	24.44	18.43	30.29
Last spring freeze	4/26/2022		4/26/2022		4/26/2022	
First fall freeze	10/17/2022		10/17/2022		10/17/2022	
Frost free days	173		173		173	
Number of days >= 90°F	96		87		91	
Number of days >= 100°F	19		26		19	
Number of days < 10°F	21		31		19	

Table 5. Precipitation at Kiro, Leoti, and Manhattan

	Kiro		Leoti		Manhattan	
	Actual	Normal	Actual	Normal	Actual	Normal
January	0.09	0.89	0.20	0.38	0.27	0.64
February	0.07	1.31	0.00	0.51	0.08	1.14
March	3.61	2.25	0.22	1.27	2.23	2.17
April	1.35	3.81	0.59	1.95	1.01	3.38
May	10.61	5.17	2.31	2.31	9.08	5.23
June	3.23	4.92	1.34	2.58	6.08	5.47
July	2.99	3.99	4.08	2.87	5.04	4.62
August	1.75	4.55	1.89	3.11	1.31	4.40
September	1.31	3.52	0.58	1.40	2.29	3.41
October	1.19	2.85	0.02	1.66	1.18	2.50
November	3.02	1.78	0.00	0.64	3.57	1.62
December	0.55	1.49	0.02	0.60	1.17	1.19
Annual	29.77	36.53	11.25	19.28	33.31	35.77
Last spring freeze	4/26/2022		4/25/2022		4/26/2022	
First fall freeze	10/14/2022		10/17/2022		10/18/2022	
Frost free days	170		174		174	
Number of days >= 90°F	59		84		60	
Number of days >= 100°F	2		19		4	
Number of days < 10°F	24		28		23	

Table 6. Precipitation at Ottawa, Rossville, and Scandia

	Ottawa, ECK		Rossville, KRV		Scandia	
	Actual	**Normal**	**Actual**	**Normal**	**Actual**	**Normal**
January	0.05	1.22	0.14	0.89	0.05	0.61
February	0.33	1.57	0.08	1.31	0.00	0.97
March	3.00	2.29	3.59	2.25	1.78	1.49
April	1.59	3.79	1.45	3.81	1.37	2.75
May	8.28	5.82	10.05	5.17	3.99	4.57
June	2.76	5.55	3.64	4.92	2.65	4.34
July	5.36	3.75	3.07	3.99	4.35	4.46
August	1.76	4.63	1.79	4.55	1.43	3.72
September	1.29	4.05	1.54	3.52	1.52	3.12
October	0.91	3.08	1.42	2.85	0.85	2.50
November	4.31	2.39	3.44	1.78	0.66	1.15
December	1.42	1.71	0.65	1.49	0.72	0.92
Annual	31.06	39.85	30.86	36.53	19.37	30.60
Last spring freeze	4/26/2022		4/26/2022		5/22/2022	
First fall freeze	10/17/2022		10/15/2022		10/17/2022	
Frost free days	173		171		147	
Number of days >= 90°F	57		49		51	
Number of days >= 100°F	0		0		1	
Number of days < 10°F	20		26		40	

Table 7. Precipitation at Solomon, Topeka, and Wamego

	Solomon		Topeka, KRV		Wamego	
	Actual	Normal	Actual	Normal	Actual	Normal
January	0.15	0.86	0.09	0.89	0.28	0.69
February	0.03	1.43	0.07	1.31	0.00	1.16
March	1.70	2.23	3.61	2.25	2.11	2.09
April	0.64	3.26	1.35	3.81	1.13	3.50
May	7.85	5.20	10.61	5.17	9.57	5.11
June	3.14	4.18	3.23	4.92	6.89	5.19
July	3.55	4.75	2.99	3.99	5.01	4.66
August	1.47	4.27	1.75	4.55	1.08	4.11
September	2.79	2.54	1.31	3.52	1.82	2.86
October	0.60	2.47	1.19	2.85	0.94	2.41
November	2.23	1.59	3.02	1.78	3.12	1.67
December	0.68	1.50	0.55	1.49	0.97	1.28
Annual	24.83	34.28	29.77	36.53	32.92	34.73
Last spring freeze	5/1/2022		4/26/2022		4/26/2022	
First fall freeze	10/17/2022		10/14/2022		10/18/2022	
Frost free days	168		170		174	
Number of days >= 90°F	78		59		53	
Number of days >= 100°F	18		2		1	
Number of days < 10°F	25		24		27	

Table 8. Location references per field locations

Field location	Mesonet site	Normals site
Ashland Bottoms	Ashland Bottoms	Manhattan (MHTK1)
Belleville	Belleville 2W	Belleville (BLVK1)
Garden City	Garden City	Garden City Rgnl. Apt. (GCK)
Great Bend	St. John 1NW	Great Bend 3W (GRBK1)
Hays	Hays	Hays 1S (HASK1)
Hutchinson	Hutchinson 10SW	Hutchinson 10SW (HINK1)
Kiro	Silver Lake 4E	Topeka ASOS (TOP)
Leoti	Leoti	Leoti (LEOK1)
Manhattan	Manhattan	Manhattan (MHTK1)
Ottawa, ECK	Ottawa 2SE	Ottawa (OTTK1)
Rossville, KRV	Rossville 2SE	Topeka ASOS (TOP)
Scandia	Scandia	Belleville (BLVK1)
Solomon	Gypsum	Abilene (ABLK1)
Topeka, KRV	Silver Lake 4E	Topeka ASOS (TOP)
Wamego	Rocky Ford	Wamego 4W (WAMK1)