



Agricultural Engineering and Agronomy Farm Summary

Mike Fiscus—farm superintendent

Nathan Meyers—manager

Field days and tours. The farm hosted 345 visitors during the year. Three field days were held, including a strip till field day September 8 featuring Matt Darr with comments on strip tillage methods and equipment, along with Chad Hart discussing carbon sequestration payments for farmers. There were 150 people in attendance, including farmers and agribusiness personnel. Strip till rigs were provided by five different vendors for field demonstrations held during the afternoon of the event.

Developments. The farm continued essential field research projects under COVID-19 guidelines. Social distancing rules were required and followed among all farm staff and research projects when conducting field research. Research efforts at the farm were at field capacity again, with many continuing long-term projects, along with regular research activities related to breeding programs and weed, disease, and insect research.

A new water quality study was installed for Michelle Soupier of the ag engineering department to study the benefits of poultry litter application, cover crops, and reduced tillage on crop yields, water quality, and soil health. Water samples will be taken from tile lines installed in each plot to evaluate water quality impacts on reduced tillage practices. The trial will be identified as the LAiYERS project.

Facilities and equipment. The Soil Warrior Company donated a 12-row strip till rig for use by the farm for research and bulk acres. The pull-type bar includes a dual bin tank to apply fertilizer products in the strip till zone during operation.

Crop Season Comments

Oat seeding started April 2 and was completed April 6. Oats were harvested in mid-July, with average yields of 105 bushels/acre.

Corn planting started April 23 and was completed by May 13. Harvest began October 7 and was completed by November 4. Yields averaged 210 bushels/acre. Timely rains during the growing season contributed to the high yields relative to the dry weather conditions.

Soybean planting began April 28 and was completed by June 7. Harvest began October 4 and completed by October 18. The whole farm average was 60 bushels/acre. Timely rains again helped with high yields during dry weather conditions.

Weather Comments

Winter. Total snowfall for January, February, and March was 24.3 in., with a rainfall equivalent of 3.31 in.

Spring. A rainfall total of 5.61 in. was recorded for the months of April, May, and June (Table 1). The last killing frost occurred April 22, with a low temperature of 26°F. June was a very warm month, averaging 4.85° F above normal. There were seven days of 90°F or above in June.

Table 1. Growing season monthly rainfall and average temperatures.

Month	Rainfall (in.)	Deviation from normal	Temperature (°F)	Deviation from normal	Days 90°F or above
March	2.53	0.73	42	6.08	0
April	0.48	-2.71	48	-1.67	0
May	3.35	-1.09	60	-0.87	0
June	1.78	-3.00	75	4.85	7
July	2.98	-0.70	76	1.65	7
August	3.12	-0.85	73	0.99	7
September	1.64	-1.97	64	-0.37	2
October	6.38	3.91	48	-4.49	0
Totals	22.26	-5.68			23

Summer. A total of 7.74 in. of rain fell during the summer months from July through September. That was 3.52 in. below normal. Corn and soybean yields responded well, though, due to good root development in June, along with timely rains during the summer to support pollination and grain fill. Warm temperatures in July and August also contributed to some stress on the crops. Both months recorded seven days of 90°F or above temperatures.

Fall. A total of 8.01 in. of rain was recorded for the months of October through December. The first killing frost of 26°F occurred November 18. October rainfall was 3.91 in. above normal with 6.38 in. falling for the month. There were no significant measurable snowfall events for the last three months of 2021.

A total of 24.67 in. of rain was recorded for 2021. The total moisture accumulation for the year was 7.57 in. below normal.

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Case-IH

Gandy Corporation

Bayer CropScience

AMVAC Chemical

Dupont/Pioneer Seed

J & M Manufacturing

Dupont/Pioneer Seed

Calcium Products

Nutrien Ag Solutions

John Deere

Heartland Ag Supply

Soil Warrior Company

Table 2. 11-year summary of monthly precipitation.

Month	NR1	ANR2	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Jan	0.79	0.79	1.17	0.70	0.26	0.41	0.10	0.19	0.60	1.85	1.31	0.54	0.76
Feb	0.94	1.73	0.75	1.06	1.74	0.73	1.15	0.94	0.68	1.20	1.16	1.70	.050
Mar	1.79	3.52	2.07	0.79	2.49	1.48	1.00	0.21	1.48	3.11	2.49	1.50	2.65
Apr	3.23	6.75	3.66	4.41	4.79	5.81	4.75	3.45	4.09	3.06	1.27	1.94	1.49
May	4.41	11.16	3.64	4.62	2.46	7.09	4.26	4.57	4.28	6.16	3.98	8.32	5.28
Jun	4.83	15.99	11.17	5.05	2.94	3.01	8.86	6.90	0.97	1.73	11.10	3.97	1.57
July	3.68	19.67	6.74	3.90	1.47	1.01	2.88	5.96	5.85	0.99	4.21	4.61	2.79
Aug	4.02	23.69	11.21	3.58	2.98	2.18	5.70	8.26	8.23	3.34	8.41	1.30	1.02
Sept	3.62	27.31	6.57	2.02	1.85	1.19	5.55	5.05	7.90	1.80	6.75	4.56	3.19
Oct	2.43	29.74	0.38	0.86	2.34	2.50	3.75	1.27	0.59	6.07	4.85	5.24	1.07
Nov	1.53	31.27	2.23	2.72	0.90	1.40	0.71	2.75	1.74	0.26	1.62	1.33	1.95
Dec	1.05	32.32	0.80	2.23	1.02	0.32	1.15	5.05	1.17	0.17	2.62	1.08	0.79
Total	32.32		50.39	31.94	25.24	27.13	39.86	44.60	37.58	29.74	49.77	36.09	23.06
Departure from Normal			18.07	-0.38	-7.08	-5.19	7.54	12.28	5.26	-2.58	17.45	3.71	-9.27