Northeast Research Farm Summary

RFR-A1775

Northeast Iowa Agricultural Experimental Association
2017–2018

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103 Curtiss Hall, 513 Farm House Lane, ISU

Farm and Weather Summary

Ken Pecinovsky, farm superintendent

Farm Comments

Field days and tours. More than 600 people attended 11 field days/farm tours at the ISU Northeast Research Farm (NERF) in 2017. More than 3,000 people visited the Borlaug Learning Center (BLC) and NERF. The BLC hosted nearly 60 events ranging from meetings on water quality research to agronomy, horticulture, and livestock/crops extension trainings. The summer field day included information on current issues related to weed and nitrogen management. Cover crops, weather, and yield predictions also were discussed. The fall field day included topics such as grain drying recommendations, crop disease and fungicide use, dicamba weed control issues and crop price projections. Tours of field research were held including the home demonstration garden, water quality research plots, and herbicide, fungicide, and nitrogen rate evaluation studies. A soil drainage management workshop was held with a tile drainage installation demonstration on four acres of land.

New projects. Crop growth modeling, S. Archontoulis; Dicamba resistant soybean herbicide evaluation, M. Owen; and Evaluations of in-furrow products with corn planting dates, ISU NERF.

Crop Season Comments

On April 7 and 10, oat variety plots were seeded and early manure injection treatments were applied in water quality plots, respectively. Anhydrous ammonia-N was applied and urea N rates were hand spread the week of April 10. Corn and soybean research plot planting began April 11 and April 27, respectively. Corn planting was completed May 13 and soybeans May 30.

Corn harvest began October 9 and was completed November 2. Corn yields were above average, and possibly a record, due to adequate rainfall and below normal August temperatures, which provided a slow grain fill period, increasing test weights and yields. Corn yields on rotated acres ranged from 220 to 260 bushels/acre and averaged 230 bushels/acre. Continuous corn yields ranged from 220 to 250 bushels/acre and averaged 225 bushels/acre. Soybean yields were average to above average, except for some late May planted plots, that could have used more rainfall in late August. Minimal sudden death syndrome (SDS) and white mold disease occurred. Soybean aphids did not reach the economic thresholds for control with only 67 and 132/plant recorded September 1 and 14, respectivly. Yields ranged from 55 to 75 bushels/acre and averaged 65 bushels/acre.

Weather Comments

Winter 2016–2017. The first measurable snowfall occurred December 3, 2016, and the last snow for the season was March 12, 2017, with a total of 36.4 in. recorded, 11.4 in. less than the previous winter. The average 4-in. soil temperature remained below 50ºF after November 9, 2016. Below normal November and December precipitation and frozen top soils kept drainage tiles dry throughout the winter and early spring.

Spring 2017. The 4-in. average soil temperature remained above 50ºF on May 3. In April, 15 days were suitable for field work and 13 days had precipitation. The last killing frost was April 28 for sensitive vegetation. In May, 18 days were suitable for field work and 15 days had precipitation. A May 15 hailstorm with 1.26 in. precipitation caused some soil crusting issues and some soybean re-planting. Late May planted soybeans had delayed

emergence issues from 20 days of minimal precipitation.

Summer 2017. July rainfall was 3.57 in. above the 30-yr average, providing ample moisture during corn pollination, despite drought conditions in northwest and south central Iowa. August rainfall was 2.76 in. below the 30-yr average, but air temperatures were 2.8°F below the 30-yr average, which increased corn and soybean yields due to no heat stress during grain fill. September and October air temperatures were 4°F above normal, which helped reduce the amount of artificial drying of corn at harvest.

Corn pollination occurred primarily the week of July 16. Foliar crop diseases were minimal in corn and soybeans. Summer heat units were slightly above normal, which allowed corn to mature prior to frost. Fifteen days in the growing season had air temperatures at or above 90°F with none in August during corn grain fill, resulting in increased corn yields.

Fall 2017. The first killing freeze occurred October 29 (22°F), three weeks later than normal. A total of 2,669 heat units were recorded from May through September of 2017, about 185 less than the previous year. From April through November, 31.83 in. of rain was recorded, which was 1.56 in. above the 30-yr average.

Grain moisture during corn harvest started at 21.7 percent October 9 and was 18.0 percent November 1. Four days of above 90°F temperatures September 21–24 reduced soybean grain moisture levels from 20 percent to 9 percent in two days. The 4-in. soil temperature remained below 50°F after October 24, 2017, with later planted cover crops not able to germinate.

Acknowledgements

We thank the Northeast Iowa Agricultural Experimental Association, ISU researchers and extension staff, and agribusiness people for their support.

Table 1. Monthly rainfall and average temperatures during the 2017 growing season.

	Rainfall (in.)			Temperature (°F)*			
Month	NERF	Departure from normal	No. days of rain	NERF	Departure from normal	Growing degree days	Days 90°F+
April	4.31	+0.52	11	50.8	+3.2	176	0
May	4.79	+0.39	12	58.4	-1.1	331	0
June	5.15	-0.48	13	70.9	+1.8	606	7
July	8.35	+3.57	7	72.8	+0.9	698	2
August	1.75	-2.76	8	67.0	-2.8	531	0
September	2.25	-0.75	6	66.4	+4.1	503	6
October	4.86	+2.46	10	53.4	+3.9	250	0
November	0.37	-1.39	6	44.4	+8.8		0
Total	31.83	+1.56	73	1st hard freeze: 22°F (10/29/17)			15

*183 frost-free days

Research Farm Projects

Research Project/Demonstration	Project Leader
Automated weather station (ISU Mesonet)	E. Taylor
Alfalfa nutrient and management studies	B. Lang
Asparagus variety trial	P. O'Malley
Bt trait/corn variety x fungicide study	ISU NERF
Corn drying energy usage study	M. Hanna
Corn planting date x relative maturity study	M. Licht
Corn nitrogen rates and tillage in a corn-soybean crop rotation	J. Sawyer
Corn head comparison of knife rolls vs. OEM stalk rolls	ISU NERF
Cover crop mixture studies in corn and soybeans	E. Juchems
Crop N rate x crop rotation studies	J. Sawyer/A. Mallarino
Crop rotation x corn variety x tillage x planting population study	ISU NERF
Crop growth modeling	S. Archontoulis
Corn and soybean planting date x nitrogen rate on corn study	M. Castellano
Evaluation of corn rootworm insecticides and genetic seed traits	A. Gassmann
Evaluation of foliar fungicides, application timings, and seed treatments on corn and soybean diseases	A. Robertson/D. Mueller/ XB Yang/S. Navi
Evaluation of gypsum rates on corn and soybean yields	A. Mallarino
Evaluation of fungicide application timings & placement	D. Mueller
Evaluation of in-furrow products and corn planting dates	ISU NERF
Evaluation of seed mixes/mowing on prairie establishment	L. Jackson/J. Meissen
Evaluation of soybean aphid flight population monitoring	D. Lagos-Kutz
Evaluation of soybean aphid foliar and seed treatment insecticides	E. Hodgson
Evaluation of water tables, tiling methods, and tile spacing distances	ISU NERF
Evaluation of weed management strategies in corn and soybeans	M. Owen
Gypsym rate study in corn and soybeans	A. Mallarino
Home demonstration garden	C. Haynes
Hydrogeology water quality studies in the Devonian Aquifer	B. Simpkins
Iowa Crop Improvement Association corn and soybean variety trials	J. Rouse
K rate x residual soil K studies on corn and soybeans	A. Mallarino
Long-term P-K rate study	A. Mallarino
Long-term tillage x crop rotation studies	M. Al-Kaisi/M. Hanna
Milkweed and pollinator species x Monarch butterfly evaluation	R. Hellmich
Nitrogen rates following fall injected swine manure	ISU NERF
Oat variety studies	PFI
Pawpaw tree winter hardiness demonstration	P. O'Malley
Phosphorus and potassium placement and rate in different tillages	A. Mallarino
Phosphorus rate x P source study	A. Mallarino
Rate of lime study	ISU NERF
Soybean planting date x relative maturity study	M. Licht
Soybean seed treatment x disease control studies	ISU NERF
Water quality study (cover crops, crop rotation, fertilizer source/application timing)	M. Helmers/A. Mallarino
Water quality tracing of antibiotics in soils with manure applications	M. Soupir/T. Moorman
Water quality with use of bioreactor	M. Helmers

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Calmer Corn Heads
Case IH Corporation
CDS-John Blue Company
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Dennis Weibke
Gandy Company
Glen Zubrod
ISU Weed Science Program
Johnson Drainage Plows
John Fox
Kruger Seed Company
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MBS Farms / Farmers Feed & Grain
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Mitas North America, Inc.
Potash Corp
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Syngenta Crop Protection
Syngenta NK Brand Seeds
Timewell Drainage Products
USDA National Lab for Ag & Environment
Winfield Solutions, LLC
Yetter Manufacturing Company

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Northeast Research and Demonstration Farm
3321 290th Street
Nashua, IA 50658

Take the Nashua exit off Highway 27 (218), go 1.2 miles west on Highway B60, then one mile south on gravel (Windfall Ave.), and 0.2 mile east on 290th Street. To schedule a tour, call 641-435-4864.

Experiments in Previous Annual Reports