

Northeast Research Farm Summary

RFR-A1688

Northeast Iowa Agricultural Experimental Association
2016–2017

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Farm and Weather Summary

Ken Pecinovsky, farm superintendent

Farm Comments

Field days and tours. More than 675 people attended 10 field days/farm tours at the ISU Northeast Research Farm (NERF) in 2016. More than 3,000 people visited the Borlaug Learning Center (BLC). The BLC hosted nearly 60 events ranging from legislative tours of water quality research to agronomy, horticulture, and livestock/crops extension trainings. The summer field day included information on our water quality research, cover crops, soil health, and ag law issues. The fall field day was a 40th anniversary celebration of the research farm and the Northeast Iowa Agricultural Experimental Association (NEIAEA), which owns the farm. Tours of field research, horticulture, windbreak, and historical corn inbred/hybrid demonstrations were conducted after a grain market outlook meeting and meal by the Chickasaw County Pork Producers. A soil drainage management workshop also was held with a tile drainage installation demonstration on four acres of land.

New projects. Gypsum rates on corn and soybean, A. Mallarino; Dicamba resistant soybean herbicide evaluation, NERF; Pollinator species/Monarch butterfly study, R. Hellmich; and two evaluations of in-furrow planter applied products, T. Basol/NERF.

Crop Season Comments

On March 22 and April 4, early manure injection treatments and oat variety plots were seeded, 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 16. Corn planting was completed May 12 and soybeans May 19 due to below normal April and May rainfall.

Corn harvest began October 3 and was completed October 25. Corn yields were above average, but not a record, due to excessive rainfall starting mid-June. Corn yields on rotated acres ranged from 185 to 235 bushels/acre and averaged 210 bushels/acre. Continuous corn yields ranged from 180 to 230 bushels/acre and averaged 205 bushels/acre. Soybean yields were slightly above average, except some field areas with sudden death syndrome (SDS) disease that varied mainly by variety. Soybean aphids did not reach the economic thresholds for control with only 179/plant recorded August 25, before populations dropped rapidly. Yields ranged from 55 to 85 bushels/acre and averaged 65 bushels/acre.

Weather Comments

Winter 2015–2016. The first measurable snowfall occurred November 20, 2015, and the last snow for the season was April 8, 2016, with a total of 47.8 in. recorded. The average 4-in. soil temperature remained below 50°F after November 6, 2015. Above normal November and December precipitation and non-frozen top soils kept drainage tiles running throughout the winter and early spring.

Spring 2016. The 4-in. average soil temperature remained above 50°F on April 15. In April, 14 days were suitable for field work and 13 days had precipitation. The last killing frost was May 15 for sensitive vegetation such as garden transplants. Most crops were just starting to emerge, with minimal damage to corn seedlings. In May, 19 days were suitable for field work and 14 days had precipitation, however, all rains were light and did not cause any major planting delays.

Summer 2016. In July, rainfall was 6.22 in. above the 30-yr average providing ample

moisture during corn pollination and soybean seed fill. In September, rainfall was 12.27 in. above the 30-yr average causing flooding and soil erosion. Summer temperatures were above normal.

Corn pollination occurred primarily the week of July 16. Foliar crop diseases were minimal with corn diseases arriving late in the season and SDS in soybeans starting in early August for susceptible varieties. Summer heat units were slightly above normal, which allowed corn to mature prior to frost, with minimal corn drying required. Only nine days in the growing season had air temperatures at or above 90°F.

Fall 2016. The first killing freeze occurred October 13 (27°F), allowing all crops to mature. A total of 2,854 heat units were recorded from May through September of 2016, about 100 more than the previous year.

From April through November, 48.92 in. of rain was recorded, which was 19.22 in. above the 30-yr average.

The majority of grain harvest occurred after the September 21-23 flooding event (9.47 in.), with only 1.13 in. of rainfall in the 30 days during harvest. Grain moisture during corn harvest started at 20.3 percent October 3 and was 15.5 percent October 25. Relative humidity was high in early October, delaying soybean harvest due to soybean moistures in the 15–17 percent range. The 4-in. soil temperature remained below 50°F after November 18, 2016.

Acknowledgements

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Table 1. Monthly rainfall and average temperatures during the 2016 growing season.

Month	Rainfall (in.)			Temperature (°F)*			
	NERF	Departure from normal	No. days of rain	NERF	Departure from normal	Growing degree days	Days 90°F+
April	2.34	-1.54	9	49.9	+2.2	194	0
May	3.04	-1.40	12	60.3	+0.9	396	1
June	11.62	+6.22	12	71.5	+2.4	631	3
July	6.05	+1.30	9	72.3	+0.3	685	3
August	7.32	+2.95	9	71.3	+1.7	655	1
September	14.91	+12.27	9	65.9	+3.7	487	1
October	2.32	-0.15	8	54.8	+5.5	269	0
November	1.32	-0.43	5	44.1	+9.0		0
Total	48.92	+19.22	73	1st hard freeze: 27°F (10/13/16)			9

*150 frost-free days

Research Farm Projects

Research Project/Demonstration

Automated weather station (ISU Mesonet)
 Alfalfa nutrient and management studies
 Asparagus variety trial
 Bt trait/corn variety x fungicide study
 Corn planting date x relative maturity study
 Cover crop x N fertilizer timing x tillage study
 Cover crop mixture studies in corn and soybeans
 Crop N rate x crop rotation studies
 Crop rotation x corn variety x tillage x planting population study
 Evaluation of corn rootworm insecticides and genetic seed traits
 Evaluation of energy usage with field implements and corn dryers
 Evaluation of foliar fungicides, application timings, and seed treatments on corn and soybean diseases
 Evaluation of gypsum rates on corn and soybean yields
 Evaluation of in-furrow, vegetative, and reproductive stage fungicide
 Evaluation of prairie seed mixes and mowing on prairie strip establishment
 Evaluation of soybean aphid flight populations from a suction trap monitor
 Evaluation of soybean aphid foliar and seed treatment insecticides
 Evaluation of water tables, tiling methods, and tile spacing distances
 Evaluation of weed management strategies in corn and soybeans
 Home demonstration garden
 Hydrogeology water quality studies in the Devonian Aquifer
 Iowa Crop Improvement Association corn and soybean variety trials
 K rate x residual soil K studies on corn and soybeans
 Long-term P-K rate study
 Long-term tillage x crop rotation studies
 Milkweed and pollinator species x Monarch butterfly evaluation
 Nitrogen rates following fall injected swine manure
 Oat variety studies (Nashua and Kanawha)
 Pawpaw tree winter hardiness demonstration
 Phosphorus and potassium placement and rate in different tillages
 Phosphorus rate x P source study
 Rate of lime study
 Soybean planting date x relative maturity study
 Soybean seed treatment x disease control studies
 Water quality study (cover crops, crop rotation, fertilizer source/application timing)
 Water quality tracing of antibiotics in soils with manure applications
 Water quality with use of bioreactor

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Calcium Products, Inc.	Raven Industries
Calmer Corn Heads	Smidt Crop Management, Inc.
Case IH Corporation	Sukup Manufacturing
CDS-John Blue Company	Swartzrock Implement
Dekalb Genetics	Syngenta Crop Protection
Dennis Weibke	Syngenta NK Brand Seeds
ISU Weed Science Team	USDA National Lab for Ag & Environment
Johnson Drainage Plows	Winfield Solutions, LLC
Kruger Seed Company	
MBS Farms / Farmers Feed & Grain	

The mention of firm names or trade products does not imply they are endorsed over other firms or similar products not mentioned.

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

Demonstrating Cover Crop Mixtures on Iowa Farmland: Management, Soil Health, and water quality benefits RFR-A1590	ISRF15-13
Best Management Production Input Approach to High Yield Alfalfa RFR-A1583	ISRF15-13
Enhancing Corn Yield in a Winter Cereal Rye Cover Cropping System RFR-A1545 ...	ISRF15-13
Corn and Soybean Yield Responses to Micronutrients in NE Iowa RFR-A14106	ISRF14-13
In-season N Fertilization Strategies using Active Sensors RFR-A1467	ISRF14-13
Midwest Suction Trap Network RFR-A1492	ISRF14-13
Crop and Soil Responses to Rates of Lime RFR-A14101	ISRF14-13
Long-term Phosphorus and Potassium Fertilization Effects on Yields of Corn and Soybean Grown in Rotation RFR-A14104	ISRF14-13
Evaluation of Soybean Aphid-resistant Soybean Lines RFR-A13111	ISRF13-13
Corn and Soybean Potassium Uptake, Removal with Harvest and Recycling to the Soil RFR-A12109	ISRF12-13
Effects of Seed Treatments and a Soil-applied Nematicide on Corn Yields and Nematode Population Densities RFR-A12114	ISRF12-13
Regional Corn Re-plant Recommendations RFR-A11120	ISRF11-13
Soybean Planting Dates in Northeast Iowa RFR-A11127	ISRF11-13
Fertilizer and Swine Manure Management Systems Impact Phosphorus in Soil and Subsurface Tile Drainage RFR-A11115	ISRF11-13
Corn Population Research RFR-A10112	ISRF10-13
Phosphorus and Potassium Placement Methods and Tillage Effects on Yield of Corn and Soybean RFR-A10110	ISRF10-13
Role of Directly Connected Macropores on Pathogen Transport to Subsurface Drainage Water RFR-A9116	ISRF09-13
Corn Breeding	ISRF08-13
Organic vs. Conventional Farming Systems	ISRF08-13
Development of Methodologies to Reduce the DCAD of Hay for Transition Dairy Cows	ISRF07-13
Sulfur Deficiency in Northeast Iowa Alfalfa Production	ISRF06-13
Effect of Four Tillage Systems and Two Crop Rotations on Placement of P and K	ISRF05-13
Evaluation of Hybrid Vigor between Different Alfalfa Varieties	ISRF05-13
NO ₃ -N Concentrations in Shallow and Deep Groundwater Wells from 1991–2003	ISRF04-13
Runoff Phosphorus Loss as Affected by Tillage, Fertilizer, and Swine Manure Phosphorus Management in Corn-Soybean Production Systems	ISRF04-13
Legume Identity and Timing of Incorporation Effect on Soil Responses to Green Manure	ISRF03-13
Corn Row Spacing, Plant Density, and Maturity Effects	ISRF02-13
Excerpts from Keynote Address: ISU NE Research Farm Silver Anniversary Field Day	ISRF01-13
Emergence Characteristics of Several Annual Weeds	ISRF00-13
Stalk and Ear Diseases in Bt and Non-Bt Corn Hybrids in Northeast Iowa	ISRF00-13
Stand Reduction Effects on Corn Grown at High Population Densities	ISRF99-13
Transport of Chemicals through Fractures in Pre-Illinoian Till	ISRF99-13
Conversion of CRP to Corn and Soybeans	ISRF96-13
Hydrogeology and Water Quality Studies in the Devonian Aquifer	ISRF94-13