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# Northeast Research Farm Summary

Kenneth Pecinovsky

*Iowa State University*, [kennethp@iastate.edu](mailto:kennethp@iastate.edu)

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**Abstract**

Contains the Farm and Weather Summary for the Northeast Research and Demonstration Farm.

**Keywords**

Agronomy

**Disciplines**

Agricultural Science | Agriculture | Agronomy and Crop Sciences | Meteorology | Natural Resources and Conservation

# Northeast Research Farm Summary

RFR-A14102

Northeast Iowa Agricultural Experimental Association  
2014–2015

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## Farm and Weather Summary

Ken Pecinovsky, farm superintendent

### Farm Comments

*Field days and tours.* More than 700 people attended eight field days/farm tours at the ISU Northeast Research Farm (NERF) in 2014. More than 5,000 people visited the Borlaug Learning Center (BLC). The BLC hosted nearly 100 events ranging from farmland leasing/insurance meetings to agronomy, horticulture, and livestock extension trainings. The summer field day included information on economic thresholds of crop insects, managing herbicide resistant weeds, fuel efficiency during field operations, and planting date trials conducted on the research farm. The fall field day included information on soil fertility recommendations, crop disease severity/management, a demonstration of unmanned aerial vehicles (UAV), and grain market projections. Soil drainage management was presented during a tile drainage installation demonstration on four acres of untilled ground.

*New projects.* Iowa Crop Improvement Association corn variety trials, Jim Rouse; Evaluation of in-furrow planter applied products and seed treatments, various researchers; Evaluation of bio-fungicides and seed treatments in soybeans, XB Yang; and Evaluation of a nematicide seed treatment for SCN management, ISU NERF.

### Crop Season Comments

Field work began April 10 (16 days earlier than in 2013). On April 11, oat and alfalfa plots were planted and some nitrogen fertilizer was applied. Only three more days in April were suitable for field work. The first planting window occurred May 6–8, followed by a nine-day rain delay. Planting resumed May 18, finishing corn and soybean plantings on May 22 and May 25, respectively.

Corn harvest began October 17 (same day as 2013 and one month later than in 2012) and was completed November 3. Corn yields varied according to planting date, but were slightly below the long term average, mostly as a result of a minor June 29 hailstorm and a wet latter half of June, followed by drier than normal July through August. Despite a summer with minimal heat, the October 11 frost date allowed late-planted corn to mature. Corn yields on rotated acres ranged from 150 to 230 bushels/acre and averaged 185 bushels/acre. Continuous corn yields ranged from 150 to 200 bushels/acre and averaged 170 bushels/acre.

Soybean harvest began September 28 and was completed October 17. Soybean yields also were slightly below average. Soybean aphids reached economic thresholds by August 22, but populations crashed by themselves soon after. Yields ranged from 50 to 75 bushels/acre and averaged 53 bushels/acre.

### Weather Comments

*Winter 2013–2014.* The first measurable snowfall occurred November 11, 2013, and the last snow for the season was on April 14, 2014, with a total of 44.7 in. recorded (10.5 in. more than the previous winter). The 4-in. soil temperature remained below 50°F after October 28, 2013, and the topsoil froze on November 23, stopping tillage.

*Spring 2014.* The frost was out of the top 2 ft of soil after March 29 (one month earlier than 2013), and the 4-in. average soil temperature remained above 50°F on May 3. In April, five days were suitable for field work and 18 days had precipitation. This resulted in 7.2 in. of rain and 2.0 in. of snow, which was 3.5 in. above the 30-year average. The last killing frost was April 22.

*Summer 2014.* Rain occurred on 16 days in June, but unlike 2013, farmers had the chance to get everything planted in May. The second half of June was extremely wet, 9.64 in. of rain delayed late fertilizer or weed control activities. In July, measurable rain fell on five days but due to excessive late June rain and below normal air temperatures for July, crops were not moisture stressed. Corn pollination was about two weeks later than normal due to some delayed planting and cooler July air temperatures. August and September heat units were just slightly above normal, which allowed corn to mature prior to frost. Because minimal days were above 85°F, yields were maintained, despite below normal rainfall for July through October. The soybean yields were slightly below average, partially due to late plantings in cold soils combined with excessive moisture in late June. Soybean branches/leaves usually cover the soil between 30 in. rows by August 1 and in 2014, it occurred a month later.

*Fall 2014.* Physiological maturity of corn occurred during late September/early October, depending on variety and planting date. The first killing freeze occurred October 11 (28°F), allowing late-May planted crops to mature. A total of 2,638 heat units were recorded from May through September of 2014, the same as 2013. From April through November, 31.81 in. of rain was recorded, which was 2.47 in. above the 30-year average.

September through October rainfall was 0.98 in. below normal with minimal harvest delays. This was helpful due to the late start of harvest. Corn harvested the third and fourth week of October averaged 25.8 and 22.1 percent grain moisture, respectively. Corn harvested the first week of November averaged 20.7 percent grain moisture with minimal dry down in the weeks following, due to November air temperatures 6.9°F below the 30-year average. The 4-in. soil temperature remained below 50°F after October 28. Topsoil froze on November 13, and briefly thawed out in late November and mid-December.

### 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 2014 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	7.21	+3.50	16	44.7	-3.1	134	0
May	2.87	-1.57	12	60.2	+0.8	390	1
June	10.35	+5.24	15	70.5	+1.6	611	1
July	1.41	-3.28	5	68.6	-3.4	576	1
August	3.82	-0.44	10	71.2	+1.6	652	1
September	2.78	-0.01	9	62.0	+0.1	409	0
October	2.53	-0.08	10	49.2	-0.2	173	0
November	0.84	-0.89	8	27.9	-6.9		0
Total	31.81	+2.47	85	1 <sup>st</sup> hard freeze: 28°F (10/11/14)			4

\*172 frost-free days

## Research Farm Projects

### Research Project/Demonstration

Alfalfa nutrient and management studies  
 Asparagus variety trial  
 Bt trait/corn variety × fungicide study  
 Corn planting date × relative maturity study  
 Cover crop × N fertilizer timing × tillage study  
 Cover crop mixture studies in corn and soybeans  
 Crop N rate × crop rotation studies  
 Crop rotation × corn variety × tillage × 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 foliar products on corn yields  
 Evaluation of in-furrow, vegetative, and reproductive stage fungicide  
 Evaluation of nematicidal seed treatment on soybean yield  
 Evaluation of planter applied in-furrow liquid treatment strategies  
 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  
 Insecticide and fungicide interactions in soybeans  
 Iowa Crop Improvement Association corn and soybean variety trials  
 K rate × Bt rootworm isoline comparison study (2 studies)  
 Long-term P-K rate study  
 Long-term tillage × crop rotation studies  
 Nitrogen rates applied on reproductive stage soybean  
 Nitrogen rates following fall injected swine manure  
 Oat variety study  
 Pawpaw tree winter hardiness demonstration  
 Phosphorus and potassium placement and rate in different tillages  
 Phosphorus rate × P source study  
 Rate of lime study  
 Soybean planting date × relative maturity study  
 Strip cropping effects on individual corn row yields  
 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

### Project Leader

B. Lang  
 P. O'Malley  
 ISU NERF  
 M. Licht  
 J. Sawyer  
 E. Juchems  
 J. Sawyer/A. Mallarino  
 ISU NERF  
 A. Gassmann  
 M. Hanna  
 A. Robertson/D. Mueller/  
 XB Yang/S. Navi  
 T. Basol  
 ISU NERF  
  
 ISU NERF  
 B. Lang  
 D. Voegtlin/  
 D. Lagos-Kutz  
 E. Hodgson  
 ISU NERF  
 M. Owen  
 C. Haynes  
 B. Simpkins  
 D. Mueller  
 J. Rouse  
 A. Mallarino  
 A. Mallarino  
 M. Al-Kaisi/M. Hanna  
 ISU NERF  
 ISU NERF  
 ISU NERF  
 P. O'Malley  
 A. Mallarino  
 A. Mallarino  
 ISU NERF  
 M. Licht  
 ISU NERF  
 M. Helmers/A. Mallarino  
  
 M. Soupir/T. Moorman  
 M. Helmers

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BASF Corporation	Midwest Plastic Products Inc.
Brian Lang	Monsanto Company
C <sup>8</sup> MP Crop Consulting	Mycogen Seed Company
CDS-John Blue Company	National Lab for Ag & Environment
Dekalb Genetics	PCS Fertilizer
Demco-Dethmers Mfg. Company	Pioneer Hi-Bred International
Dennis Weibke	Plainfield Welding and Repair
Don Vetter	Raven Industries
Gandy Company	Smidt Crop Management, Inc.
George Cummins	Spraying Systems Company
ISU Entomology Department	Stutzman's Incorporated
ISU Weed Science Department	Sukup Manufacturing
Jim Johnson	Syngenta Crop Protection
Johnson Drainage Plows	Syngenta NK Brand Seeds
Kinze Manufacturing	Winfield Solutions, LLC
Kruger Seed Company	Yetter Manufacturing

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

Northeast Research and Demonstration Farm  
3321 290<sup>th</sup> 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 290<sup>th</sup> Street. To schedule a tour, call 641-435-4864.

### Experiments in Previous Annual Reports

Corn and Soybean Production with a Winter Rye Cover Crop RFR-A13118 .....	ISRF13-13
Effect of Plant Population and Row Spacing on Soybean Yield RFR-A13117 .....	ISRF13-13
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
Hydraulic Performance of the Denitrification RFR-A11116 .....	ISRF11-13
Effect of Sulfur and Boron Fertilization on Alfalfa RFR-A11113 .....	ISRF11-13
Corn Population Research RFR-A10112 .....	ISRF10-13
The Suction Trap Network Documents Soybean Aphid Migrations RFR-A10105 .....	ISRF10-13
Phosphorus and Potassium Placement Methods and Tillage Effects on Yield of Corn and Soybean RFR-A10110 .....	ISRF10-13
Crop and Soil Responses to Rates of Lime RFR-A9096 .....	ISRF09-13
Role of Directly Connected Macropores on Pathogen Transport to Subsurface Drainage Water RFR-A9116 .....	ISRF09-13
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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
Soybean Yield Influenced by Planting Date and Plant Population .....	ISRF05-13
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 <sub>3</sub> -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
Row Width and Variety Effects on Soybean Yield .....	ISRF99-13
Transport of Chemicals through Fractures in Pre-Illinoian Till .....	ISRF99-13
Conversion of CRP to Corn and Soybeans .....	ISRF96-13