Northeast Research Farm Summary

RFR-A15102

Northeast Iowa Agricultural Experimental Association
2015–2016

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103 Curtiss Hall, ISU
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Farm and Weather Summary

Ken Pecinovsky, farm superintendent

Farm Comments

Field days and tours. More than 800 people attended 10 field days/farm tours at the ISU Northeast Research Farm (NERF) in 2015. More than 5,000 people visited the Borlaug Learning Center (BLC). The BLC hosted nearly 150 events ranging from farmland leasing/insurance meetings to agronomy, horticulture, and livestock/crops extension trainings. The summer field day included information on our water quality research, nitrogen management, advantages of diverse crop rotations, and meteorological weather predictions. The fall field day included information on corn rootworm research, long-term tillage comparisons, a crop development update, and yield/grain marketing predictions based on current supply and demand. A soil drainage management workshop was held with a tile drainage installation demonstration on three acres of land.

New projects. Corn rootworm trait/tent studies, A. Gassman; Hybrid/inbred corn variety testing grown in no nitrogen/normal nitrogen rate environments, T. Lubberstedt; Milkweed species/monarch butterfly study, R. Hellmich; Praire mix establishment study, L. Jackson (UNI); and many evaluations of in-furrow planter-applied products and seed treatments, various researchers.

Crop Season Comments

On March 22 and April 1, oat and alfalfa plots were planted. Nitrogen applications began April 1. On April 7, nitrogen rates were weighed and hand spread on N rate studies. Corn and soybean research plot planting began April 18. Corn planting was completed May 9 and soybeans May 18 due to below-normal May rainfall.

Corn harvest began October 8 and was completed October 21, the fastest on record, due to no rainfall from September 29 until October 23. Corn yields were above the long-term average, mostly as a result of frequent, moderate rains throughout the growing season, and a cooler July and August during the grain-fill stage. Despite a summer with minimal heat stress, the October 17 frost date allowed late-planted corn to mature. Corn yields on rotated acres ranged from 180 to 250 bushels/acre and averaged 215 bushels/acre. Continuous corn yields ranged from 180 to 230 bushels/acre and averaged 200 bushels/acre.

Soybean harvest began September 16 and was completed October 8. Soybean yields were slightly above average, except some fields with sclerotinia stem rot (white mold) disease. Soybean aphids did not reach the economic thresholds for control with only 25/plant recorded August 28, before populations dropped. Yields ranged from 55 to 85 bushels/acre and averaged 65 bushels/acre.

Weather Comments

Winter 2014–2015. The first measurable snowfall occurred November 12, 2014, and the last snow for the season was April 9, 2015, with a total of 42.7 in. recorded. The 4-in. soil temperature remained below 50^{o}F after October 28, 2014, and the topsoil froze November 13, thawed nine days later, and then froze again, stopping tillage.

Spring 2015. The frost was out of the top 2 ft of soil after March 26 and the 4-in. average soil temperature remained above 50^{o}F on April 26. In April, half of the days were suitable for field work and eight days had precipitation. This resulted in 4.33 in. of precipitation, which was 0.52 in. above the 30-yr average. The last killing frost was April

23 for sensitive vegetation. In May, 20 days were suitable for field work and 13 days had precipitation. However, all rains were light, which didn't cause any major planting delays.

Summer 2015. Measurable rain occurred on 11 days in June, allowing ample time for weed control and nitrogen side-dress applications. In July, rainfall was slightly below the 30-yr average and August was slightly above, although most August rainfall came toward the end of the month. July and August air temperatures were between 1 to 2°F below the 30-yr average, with only four days in August with considerable heat stress before late August rains arrived. This increased the corn yields from a slow grain-fill period with little stress.

Corn pollination occurred primarily the week of July 20. Northern Corn Leaf Blight ranged from mild to severe depending on corn hybrids, with infection starting prior to pollination. Corn yields increased with timely fungicide applications. September and October heat units were slightly above normal, which allowed corn to mature prior to frost, with many farmers not needing to dry their corn to 15 percent moisture. Only eight days in the growing season had air temperatures at or above 90°F.

Fall 2015. Physiological maturity of corn occurred during late September/early October, depending on variety and planting date. The first killing freeze occurred October 17 (22°F), allowing all crops to mature. A total of 2,747 heat units were recorded from May through September of 2015, about 100 more than the previous two years. From April through November, 30.01 in. of rain was recorded, which was 0.46 in. above the 30-yr average and matched the research farms 40-yr average.

September through October rainfall was 1.07 in. below normal with minimal harvest delays. We had a record 30 days with no rain during harvest. Grain moisture during corn harvest started at 21 percent October 9 and was 14 percent October 20. The 4-in. soil temperature remained below 50°F after November 19. November and December precipitation broke previous records, with 3.55 and 3.97 in., respectively. Some flooding occurred from a 3.38 in. rainfall in December. The topsoil didn't freeze until after December 25, with some tile drainage installations taking place before the start of 2016.

Acknowledgements

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Table 1. Monthly rainfall and average temperatures during the 2015 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	4.33	+0.52	8	50.5	+2.5	207	0
May	3.50	-0.91	13	60.4	+0.8	369	0
June	5.78	+0.45	11	69.1	+0.2	567	1
July	4.00	-0.65	8	70.8	-1.2	638	3
August	4.63	+0.28	8	67.9	-1.6	615	1
September	2.61	-0.18	7	68.1	+6.1	558	3
October	1.61	-0.89	3	51.9	+2.6	215	0
November	3.55	+1.84	9	41.1	+6.5		0
Total	30.01	+0.46	67	1st hard freeze: 22°F (10/17/15)			8

*177 frost-free days

Research Farm Projects

Research Project/Demonstration	Project Leader
Alfalfa nutrient and management studies	B. Lang
Asparagus variety trial	P. O'Malley
Bt trait/corn variety × fungicide study	ISU NERF
Corn planting date × relative maturity study	M. Licht
Cover crop × N fertilizer timing × tillage study	J. Sawyer
Cover crop mixture studies in corn and soybeans	E. Juchems
Crop N rate × crop rotation studies	J. Sawyer/A. Mallarino
Crop rotation × corn variety × tillage × planting population study	ISU NERF
Evaluation of corn rootworm insecticides and genetic seed traits	A. Gassmann
Evaluation of energy usage with field implements and corn dryers	M. Hanna
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 in-furrow, vegetative, and reproductive stage fungicide	ISU NERF/D. Mueller
Evaluation of prairie seed mixes and mowing on prairie strip establishment	L. Jackson/D. Williams
Evaluation of soybean aphid flight populations from a suction trap monitor	D. Voegtlin/ 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
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 × Bt rootworm isoline comparison study (2 studies)	A. Mallarino
Long-term P-K rate study	A. Mallarino
Long-term tillage × crop rotation studies	M. Al-Kaisi/M. Hanna
Milkweed species × Monarch butterfly evaluation	R. Hellmich
Nitrogen rates following fall injected swine manure	ISU NERF
Oat variety studies (Nashua and Kanawha)	ISU NERF
Pawpaw tree winter hardiness demonstration	P. O'Malley
Phosphorus and potassium placement and rate in different tillages	A. Mallarino
Phosphorus rate × P source study	A. Mallarino
Rate of lime study	ISU NERF
Soybean planting date × relative maturity study	M. Licht
Soybean seed treatment × disease control study	D. Mueller
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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Dennis Weibke
Gandy Company
George Cummins
ISU Entomology Department
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Stutzman's Incorporated
Sukup Manufacturing
Syngenta Crop Protection
Syngenta NK Brand Seeds
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Yetter Manufacturing

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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