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Northeast Research Farm Summary

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Northeast Research Farm Summary

Abstract

Includes Farm and Weather Summary, Research Farm Projects and Experiments in Previous Animal Reports.

Keywords

RFRA11125

Disciplines

Agricultural Science | Agriculture

Northeast Research Farm Summary

RFR-A11125

Northeast Iowa Agricultural Experimental Association
2011–2012

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Farm and Weather Summary

Ken Pecinovsky, farm superintendent

Farm Comments

Field days and tours. A total of 1,025 people attended eight field days at the ISU Northeast Research Farm (NERF) in 2011. More than 2,900 people visited the Borlaug Learning Center (BLC). The BLC hosted over 40 events ranging from a 3-day Iowa ag drainage school, to farm land leasing/insurance meetings, livestock extension trainings, and World Food Prize award celebration banquet. The summer field day included information on management of foliar diseases; corn nematodes, water quality, and weather/yield predictions. The fall field day included information on grain drying/storage management, corn hybrid rootworm resistance issues, micronutrients, and weed management.

New projects. Evaluation of humic acid on corn, Dan Olk; Alfalfa management studies, Brian Lang; Corn nematode management, Greg Tylka; and Soybean seed treatments, ISU NERF. An organic soybean aphid control comparison and organic corn variety study were also conducted. Numerous studies looking at tillage, plant populations, and fungicide use (foliar, seed treatment, application timings) in corn and soybeans, were also conducted by Alison Robertson, X.B. Yang, Daren Mueller, and ISU NERF.

Crop Season Comments

Field work began on March 31, with seeding of oat and alfalfa plots. The first planting dates of corn and soybeans occurred on April 2. Nitrogen fertilizer was injected the first week of April, followed by below normal temperatures and 3 in. of rain and 3.4 in. of snow. The majority of the corn planting occurred from May 2 through May 11. The majority of the soybean planting occurred from May 17 through May 24.

Corn harvest began on October 9 and was completed November 2. Corn yields, in general, were above average due to no drought or heat stress. Rain, just prior to (1.67 in.) and during pollination (1.4 in.), reduced crop stress during pollination, when daily high temperatures averaged 89.7°F for the 20 days following the start of corn pollination. Corn yields on rotated acres ranged from 200 to 240 bushels/acre and averaged 220 bushels/acre. Continuous corn yields ranged from 200 to 220 bushels/acre and averaged 205 bushels/acre. Some corn lodging issues were evident at harvest from reduced stalk quality. Soybean harvest began on September 30 and was completed October 19. Soybean harvest was delayed due to slow plant emergence and to the cold soil/air temperatures in early May. Soybean yields were above average, with yields ranging from 55 to 80 bushels/acre and averaged 63 bushels/acre. The high yields were attributed to below economic thresholds of soybean aphids and ample, but not excessive, rainfall and low disease pressure.

Weather Comments

Winter 2010–2011. The first measurable snowfall occurred December 3, 2010 and the last snow for the season was on April 19, 2011 with a total of 52.2 in. recorded (18.25 in. more than the previous winter, mostly from 25.8 inches that fell in December 2010). The 4-in. soil temperature remained below 50°F after October 27, 2010 and the topsoil froze on December 6, stopping any further tillage.

Spring 2011. The frost was out of the top 2 ft of soil after March 20 and the 4-in. average soil temperature remained above 50°F on April 30. Corn and soybeans planted from April 2 through May 2, emerged May 11 through May 13, due to cold soil temperatures from April 14 through May 3.

Summer 2011. Rainfall following planting was ideal, with no major heavy rains, which was ideal for crop development and field operations. Pollination occurred during high heat stress, but 1.67 in. of rain, just prior to pollination, reduced any plant stress. From April through November, 26.04 in. of rainfall was recorded, which was 4.0 in. below the 30-yr average. All rain events were less than 2.0 in., which prevented soil erosion from occurring. September rainfall was below normal, but with August rainfall slightly above average, crop yields were maintained. Corn may have had some plant stress from high temperatures in July, but below normal heat unit accumulation in August and September may have helped grain fill. Corn silage was harvested in early September and physiological maturity of corn occurred in the last week of September, depending on variety maturity. A total of 2,584 heat units were recorded from May through September of 2011 compared with 2,698 in 2010.

Fall 2011. October rainfall was 1.11 in. below normal with only one rainfall event delaying field operations for one day (similar to 2010). There were 268 and 279 heat units in October

of 2011 and 2010, respectively, compared with 67 in 2009, which allowed most farmers to use minimal or no liquid propane to dry corn for safe grain storage the past two years. The first plant-killing freeze occurred September 15, with a recording of 27°F, which is about 20 days earlier than the typical frost date for northeast Iowa. The research farm was not affected by this frost, however some localized fields had frost damage, along with northern locations. There was some yield loss in longer maturity soybean varieties or late plantings. Another frost (32°F) on September 24, froze corn and soybean leaf tissue at the research farm. The 4-in. soil temperature remained below 50°F beginning on October 28. Tillage operations were stopped during the first week of December due to rain and frozen soils, however a field drainage tile installer worked through several inches of frost throughout 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 2011 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	3.86	+0.21	12	46.3	-1.4	134	0
May	3.84	-0.65	14	58.6	-0.6	354	2
June	4.75	-0.42	11	69.1	+0.5	549	6
July	3.48	-1.33	10	75.8	+3.9	750	10
August	4.60	+0.29	6	69.3	-0.4	601	2
September	2.32	-0.79	6	58.2	-3.6	330	1
October	1.52	-1.11	4	51.9	+2.6	268	0
November	1.67	-0.20	5	38.0	+3.3		0
Total	26.04	-4.0	68	1 st hard freeze: 27°F (9/15/11)			21

*133 frost-free days

Research Farm Projects

<u>Research Project/Demonstration</u>	<u>Project Leader</u>
Alfalfa secondary and micronutrient study	B. Lang
Alfalfa nutrient and disease management study	B. Lang
Asparagus variety trial	P. O'Malley
Bt/non-bt corn variety × fungicide study	ISU NERF
Corn “replant” planting date × variety maturity study	R. Elmore
Corn planting date × corn maturities × foliar fungicide study	ISU NERF
Corn planting population × variety study	ISU NERF
Crop N rate × crop rotation study	J. Sawyer
Crop N rate × crop rotation study	A. Mallarino
Crop rotation × fungicide × tillage × planting population study	ISU NERF
Evaluation of corn rootworm insecticides and genetic seed traits	A. Gassman
Evaluation of cover crops and nitrogen rates on corn	J. Sawyer
Evaluation of corn nematode control strategies	G. Tylka
Evaluation of foliar fungicides, application timings, and seed treatments on corn and soybean diseases	A. Robertson
Evaluation of herbicides for equisetum weed control in road ditches	X.B Yang
Evaluation of humic acid and N rates on corn	ISU NERF
Evaluation of soybean varieties and soybean fungicide disease control	D. Olk
Evaluation of soybean aphid and bean leaf beetle insecticides and seed treatments	ISU NERF
Evaluation of soybean aphid flight populations from a suction trap monitor	E. Hodgson
Evaluation of multiple resistances to soybean aphids	E. Hodgson/D. Voegtlin
Evaluation of water tables, tiling methods, and tile spacing distances	E. Hodgson
Evaluation of weed management strategies in corn and soybeans	ISU NERF
Home demonstration garden	M. Owen
Hydrogeology water quality studies in the Devonian Aquifer and near tile drainage	C. Haynes
Insecticide and fungicide interactions in soybeans	B. Simpkins
Iowa Crop Improvement Association soybean variety trials	A. Robertson/D. Mueller
K rate × Bt rootworm isolate comparison study (2 studies)	J. Rouse
Long-term P-K rate study	A. Mallarino
Long-term tillage × crop rotation studies	A. Mallarino
Oat variety study	M. Hanna/M. Al-Kaisi
Organic product evaluation for soybean insect control and yield	ISU NERF
Organic corn variety study	B. Lang
Pawpaw tree winter hardiness demonstration	B. Lang
Phosphorus rate × P source study	P. O'Malley
Phosphorus and potassium placement and rate in different tillages	A. Mallarino
Rate of lime study	A. Mallarino
Soil/plant root/soil water observation pit	S. Henning
Soybean population × fungicide study	ISU NERF
	D. Mueller

Research Project/Demonstration (continued)**Project Leader**

Soybean fungicide and aphid resistant soybean evaluation	D. Mueller
Soybean planting date × variety maturity × insecticide/fungicide study	ISU NERF
Twin Row vs. 30-in. corn variety and population demonstration	ISU NERF
Vertical vs. horizontal tillage study comparison	ISU NERF
Water quality tracing of antibiotics in soils with manure applications	M. Soupier
Water quality from newly constructed bioreactor	M. Helmers
Water quality study (cover crops, crop rotation, fertilizer source/application timing)	M. Helmers

Acknowledgements

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Agrigold Hybrids	Indiana Berry and Plant Company
Agriliance, LLC	ISU Entomology Department
Amvac Corporation	ISU Weed Science Department
Asgrow Seed Company	John Fox
BASF Corporation	Krause Corporation
Balzer Inc.	Kruger Seed Company
Bayer Crop Science	LG Seed Company
C ⁸ MP Crop Consulting	MBS Farms
CDS-John Blue Company	Monsanto Company
Dekalb Genetics	National Lab for Ag & Environment
Demco-Dethmers Mfg. Company	PCS Fertilizer
Dennis Weibke	Pioneer Hi-Bred International
Don Vetter	Plainfield Welding and Repair
Duane Lines	Spraying Systems Company
Floyd County ISU Extension	Sukup Manufacturing
Floyd County SWCD	Swartzrock Implement
Gandy Company	Syngenta Crop Protection
Glen Zubrod	Syngenta NK Brand Seeds
Great Plains Manufacturing Co.	Winterhaven Vineyard

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 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

Corn Population Research RFR-A10112.....	ISRF10-13
Denitrification Bioreactor in Northeast Iowa RFR-A1099.....	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
Regional Corn Planting Date Recommendations for Iowa RFR-A9127	ISRF09-13
Soybean Planting Dates in Northeast Iowa RFR-A9124.....	ISRF09-13
Seasonal and Rotational Influences on Corn Nitrogen Requirements RFR-A9119	ISRF09-13
Crop and Soil Responses to Rates of Lime RFR-A9096.....	ISRF09-13
Phosphorus and Potassium Fertilization for Corn and Soybean Grown in Rotation for 30 years RFR-A9122.....	ISRF09-13
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
Corn Breakage (greensnap) in 2006 Related to Cropping System and Inputs	ISRF07-13
Corn and Soil Test Responses to By-Product Nitrogen Sources	ISRF07-13
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 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
Seed-Applied Fungicides for Very Early-Planted Soybeans.....	ISRF02-13
Excerpts from Keynote Address: ISU NE Research Farm Silver Anniversary Field Day	ISRF01-13
Twenty-Six Years of Soybean Planting Date Studies.....	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
Adjusting Planting Dates to Manage Interactions between Transgenic Bt and NonBt Corn with Emphasis on the European Corn Borer and Natural Enemies	ISRF98-13
Effect of Row Spacing and Tillage on Soybean Yield	ISRF97-13
Management of White Mold by Tillage, Row Spacing, and Varieties.....	ISRF97-13
Conversion of CRP to Corn and Soybeans.....	ISRF96-13