

Northeast Research Farm Summary

RFR-A9127

Northeast Iowa Agricultural Experimental Association
2010–2011

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Farm and Weather Summary

Ken Pecinovsky, farm superintendent

Farm Comments

Field days and tours. A total of 850 people attended eight field days at the ISU Northeast Research Farm (NERF) in 2010. Over 1,800 people visited the Borlaug Learning Center (BLC). The BLC hosted over 40 events ranging from a 3-day Iowa ag drainage school, a 4-evening wine and grape growers training, 'Garden Gala' and 'Food to Fitness' horticulture trainings, 'Ag in the Classroom' training for grade school teachers, farm land leasing, and K-12 school visits. The summer field day included information on management of foliar diseases; herbicide weed resistance issues; management of nutrients, insects, and crop diseases; and preliminary results of a bioreactor to reduce nitrates in tile water. The fall field day included information on grain market predictions based on global climate effects on yields and usage. Participants were also sent to the research plots to gather corn yield predictions to compare to USDA and private firm estimates and how the rapid grain fill following pollination might affect yields. Tillage issues and combine settings to lower crop losses were also discussed.

New projects. Evaluation of corn relative maturities in delayed plantings, R. Elmore; and Iowa Crop Improvement Association soybean variety testing, Jim Rouse. A comparison of twin rows versus 30 in. rows with multiple hybrids and populations and an oat variety study was 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 26, with seeding of oat and alfalfa plots. A new oat variety plot was also planted in April. The first planting dates of corn and soybeans occurred on April 1. The majority of the corn planting occurred from April 17 though April 22. Corn planting resumed from April 27 through April 30 after a rain delay. The majority of the soybeans were planted in the first week of May followed by six days of light rains. Soybean planting was completed on May 24.

Corn harvest began on September 18 and was completed October 17, (38 and 50 days earlier than 2009, respectively). Corn yields, in general, were above average due to no drought or heat stress. Corn yields on rotated acres ranged from 180 to 243 bushels/acre and averaged 205 bushels/acre. Continuous corn yields ranged from 175 to 215 bushels/acre and averaged 195 bushels/acre. Strong winds (50+ mph) on July 24 caused some lodging in select hybrids and higher plant population plots, but did not interfere with harvest. Soybean harvest began on September 14 and was completed October 5, (15 and 34 days earlier than 2009, respectively). Soybean yields were above average, with yields ranging from 50 to 77 bushels/acre and averaged 62 bushels/acre. The high yields were attributed to below economic thresholds of soybean aphids and ample, but not excessive rainfall.

Weather Comments

Winter 2009–2010. The first measurable snowfall occurred December 3, 2009 and the last snow for the season was on March 20, 2010 with a total of 33.95 in. recorded (11.8 in. less than the previous winter). The 4-in. soil temperature remained below 50°F after October 31, 2009 and the topsoil froze on December 6, stopping any further tillage.

Spring 2010. The frost was out of the top 2 ft of soil after March 25 and the 4-in. average soil temperature remained above 50°F on April 11, except for one day after a May 9, 26°F freeze that caused some frost injury to emerged corn and soybeans. The last 10 days of May had an average high temperature of 87.6°F, which caused rapid crop growth.

Summer 2010. Just a trace of rain occurred in the last half of May, which was ideal for crop development and field operations, but weed control was reduced in preemergent herbicide applications to soybeans. June had 16 days with rain and 11 days suitable for field work. However the heavier rains came in the last half of the month, allowing crops to develop a good root system. July recorded 8.59 in. of rainfall at Nashua (Table 1). July rainfall was 2.44 in. above our 30-yr average, but was equally distributed throughout the month, with no flooding or soil erosion events occurring. Corn pollination in 2010 occurred two weeks earlier than 2009 due to early planting and above normal heat unit accumulation. Only two significant rainfall events (>1 in.) occurred in August, but because of above normal June and July rainfall, no moisture stress occurred. September rainfall was below normal, but there were 13 days with light rain,

which helped grain yields. Corn silage was harvested in late August and physiological maturity of corn occurred in the first two weeks of September, depending on variety maturity. A total of 2,698 heat units were recorded from May through September of 2010 compared with 2,306 in 2009.

Fall 2010. October rainfall was 2.25 in. below normal with only one rainfall event delaying field operations for one day. There were 279 heat units in October of 2010, compared with 67 in 2009, which allowed most farmers to not have to dry their corn with liquid propane, which is a rarity. We only needed to dry corn harvested in September, and the October harvested corn averaged 15 percent grain moisture. Our first plant-killing freeze occurred October 3, with a recording of 27°F, which is the typical frost date for northeast Iowa. The 4-in. soil temperature remained below 50°F on October 27. Tillage operations were stopped on November 23 due to frozen soils.

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 2010 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	3.85	+0.28	10	53.5	+6.0	256	0
May	3.14	-1.38	11	59.7	+0.5	377	3
June	8.59	+3.53	16	68.7	+0.2	558	1
July	7.06	+2.44	11	72.5	+0.6	684	3
August	3.02	-1.65	8	72.8	+3.1	681	5
September	1.70	-1.47	13	61.1	-0.8	398	0
October	0.43	-2.25	3	52.0	+2.9	279	0
November	2.15	+0.34	9	35.7	+0.9		0
Total	29.94	-0.16	81	1 st hard freeze -27°F (10/3/10)			12

*149 frost-free days

Research Farm Projects

<u>Research Project/Demonstration</u>	<u>Project Leader</u>
Alfalfa secondary and micronutrient 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 in corn	A. Gassman
Evaluation of cover crops and nitrogen rates on corn	J. Sawyer
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 RR [®] soybean varieties and soybean fungicide disease control	ISU NERF
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 water tables, tiling methods, and tile spacing distances	E. Hodgson/D. Voegtlin
Evaluation of weed management strategies in corn and soybeans	ISU NERF
Grape cultivar evaluation study	M. Owen
Home demonstration garden/Strawberry variety trial	P. Domoto
Hydrogeology water quality studies in the Devonian Aquifer and near tile drainage	C. Haynes/P. O'Malley
Insecticide and fungicide interactions in soybeans	B. Simpkins
Iowa Crop Improvement Association soybean variety trials	A. Robertson/D. Mueller
K rate × Bt Rootworm isoline 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
Pawpaw tree winter hardiness demonstration	B. Lang
Phosphorus rate × P source study	P. O'Malley
Rate of lime study	A. Mallarino
Soil/plant root/soil water observation pit	S. Henning
Soybean population × fungicide study	ISU NERF
	D. Mueller

<u>Research Project/Demonstration (continued)</u>	<u>Project Leader</u>
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
Water quality tracing of antibiotics in soils with manure applications	T. Moorman
Water quality from newly constructed bioreactor	M. Helmers
Water quality study (cover crops, crop rotation, fertilizer source/application timing)	M. Helmers

Acknowledgements

The following companies and individuals contributed to research or field day activities at the ISU Northeast Research and Demonstration Farm. Their support is greatly appreciated.

Agrigold Hybrids	ISU Weed Science
Agriliance, LLC	John Fox
Asgrow Seed Company	Krause Corporation
BASF Corporation	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 Soil Tilth Lab
Demco-Dethmers Mfg. Company	PCS Fertilizer
Dennis Weibke	Pioneer Hi-Bred International
Don Vetter	Plainfield Welding and Repair
Floyd County ISU Extension	SeedLink LLC
Floyd County SWCD	Spraying Systems Company
FMC Corporation	Steve Anderson
Gandy Company	Sukup Manufacturing
Glen Zubrod	Swartzrock Implement
Golden Harvest Seeds	Syngenta Crop Protection
Great Plains Manufacturing Co.	Syngenta NK Brand Seeds
ISU Entomology Department	Valent Corporation

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 of 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

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
Phosphorus and Potassium Placement Methods for Corn and Soybeans in Different Tillages	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
Impact of Swine Manure Application on Water Quality	ISRF06-13
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
Influence of Polymer-coated Seed and Planting Dates on Corn	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
Fertilizer and Swine Manure Management Systems	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
Alternative Management Systems for Crop Production, Soil Quality, and Environmental Protection	ISRF95-13