

2010

Northeast Research Farm Summary

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Recommended Citation

Pecinovsky, Kenneth T., "Northeast Research Farm Summary" (2010). *Iowa State Research Farm Progress Reports*. 392.
http://lib.dr.iastate.edu/farms_reports/392

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Northeast Research Farm Summary

Abstract

Includes:

Farm and Weather Summary

Keywords

RFR A9127

Disciplines

Agricultural Science | Agriculture

Northeast Research Farm Summary

RFR-A9127

Northeast Iowa Agricultural Experimental Association
2009–2010

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Farm and Weather Summary

Ken Pecinovsky, farm superintendent

Farm Comments

Field days and tours. A total of 1,400 people attended 25 events at the research farm in 2009. These events included field days, tours, meetings, and the grand opening of the Borlaug Learning Center. Field days topics included plant growth issues related to the cool 2009 growing season, climate forecast for the remainder of the growing season, management of aphid insects, and a water quality research update. The grand opening of the Borlaug Learning Center involved a dedication ceremony and tours of the research projects conducted on the farm.

New projects. Evaluation of N requirements for crops grown with cover crops, J. Sawyer; Evaluation of phosphorus source/rates on low fertility soils, A. Mallarino; Evaluation of lime source/rates on low pH soils, A. Mallarino; Construction of a bioreactor for water quality studies, M. Helmers; and an asparagus variety trial; P. O'Malley. Expanded studies on fungicide use and aphid insects were also conducted.

Crop Season Comments

Field work began on April 1 with waterway construction and anhydrous nitrogen (N) applications. Seeding of oat/legume plots and the first planting dates of corn and soybeans occurred on April 2. A bioreactor of wood chips through a dissected tile drainage line was installed the week of April 6.

From April 15 through April 24, corn and soybean plot planting began, despite very cold, but dry conditions. The majority of the corn planting began April 15 and was finished May 18 due to numerous rain delays. Corn harvest began on October 26 and was completed December 6, (15 days later than 2008). Corn yields were above average due to

no drought or heat stress, despite two-week delays in pollination. Maximum corn yields in individual plots were 250 bushels/acre in both rotated and continuous corn studies, however, average yields were 195 and 175 bushels/acre on rotated and continuous corn acres, respectively. Corn grain moisture at harvest ranged from 18 to 35% (average 28%) due to differences in relative maturities of the varieties, below normal heat unit accumulation, killing frost prior to grain maturity in late-season varieties, and delayed emergence due to cool temperatures. Test weight of corn was reduced compared with previous years due to the October 10 killing frost that occurred prior to 70% of the corn reaching physiological maturity.

Soybean planting started on May 19 and was finished on May 25. Harvest began on September 29 and was completed November 8, (29 days later than 2008). Soybeans yielded up to 75 bushels/acre, with a farm average of 58 bushels/acre. The majority of soybeans were sprayed with an insecticide, the first week of August for control of aphids resulting in yield increases of 5 to 10 bushels/acre.

Weather Comments

Winter 2008–2009. The first measurable snowfall occurred October 26, 2008 and the last snow for the season was on April 5, 2009 with a total of 45.75 in. recorded (same as the previous winter). The 4-in. soil temperature remained below 50°F after November 7, 2008 and the topsoil froze on November 28, stopping any further tillage.

Spring 2009. The frost was out of the top 2 ft of soil after April 8 and the 4-in. average soil temperature remained above 50°F beginning May 3, the same as 2008 and two weeks later than 2007. There were 15 days in April when fertilizer injection, field cultivation, and planting/seeding were possible. The first

major planting delay occurred in the last week of April with 4.88 in. of rain. Severe erosion occurred in newly seeded and constructed waterways. Only four days of field work were possible in the first half of May due to persistent rainfall, followed by 10 days when field work was possible. The last 50% of planting occurred from May 18 through May 25.

Summer 2009. The crop season for 2009 was consistently below normal on heat units and below normal for rainfall. Since there was no heat stress, the below normal rainfall had no adverse affect on grain yields. Corn maturity was an issue in late September, since crop development was lagging behind the long-term average. In 2008, a warm September helped mature the crop followed by a late freeze date (October 21). In September 2009, air temperatures remained below average, followed by a cold and wet October. Our first plant-killing freeze occurred October 10, with a recording of 25°F (6 days later than average). Soybean aphid populations were high in 2009, but arrived later with populations similar to the past odd years of 2003, 2005, and 2007. Most soybean fields were sprayed in early August, contributing to the average to above average soybean yields.

A total of 2,307 heat units were recorded from May through September (289 heat units less than 2008 and 309 less than the past 15-year average).

Fall 2009. Soybean harvest started in late September, but with 15 days of rain in October and little sunshine, we did not finish soybeans until November 8. The majority of the soybeans were harvested at more than 15% moisture and were natural air dried in a bin on the farm. Soybeans delivered to cooperatives were docked for excessive moisture (greater than 13%). Corn harvest was delayed because of high grain moisture due to the late maturity from below normal heat unit accumulation. Delays in grain drying also slowed harvest because of harvesting wetter corn than in the previous 10+ years. Because harvest was delayed, a small amount of fall N applications were made in mid-November with the ground freezing on December 6, stopping most tillage/fertilizing operations. Many acres of corn remain standing in fields this winter.

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 2009 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	5.27	+1.78	9	46.40	-0.90	127	0
May	5.22	+0.69	10	59.10	-0.67	325	0
June	3.63	-1.45	13	67.78	-0.72	525	3
July	3.70	-1.05	11	66.21	-5.83	511	0
August	3.75	-1.21	12	66.59	-3.18	531	1
September	2.07	-1.06	5	61.68	-0.33	415	0
October	6.37	+3.77	15	42.63	-6.74	60	0
November	0.62	-1.23	6	41.39	+6.86		0
Total	30.63	+0.23	81	1 st hard freeze-25°F (10/10/09)			4

*179 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 breeding research	K. Lamkey
Corn hybrid evaluation in continuous corn environment (2 studies)	R. Elmore
Corn planting date × corn maturities × foliar fungicide in different crop rotations	R. Elmore
Corn planting population × variety × foliar fungicide study	ISU NERF
Crop N rate × crop rotation study (0, 40, 80, 120, 160, 200, 240 lb N/acre)	J. Sawyer
Crop N rate × crop rotation study (0, 80, 160, 240 lb N/acre)	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/M. O'Neal
Evaluation of soybean aphid tolerance on soybean variety study	E. Hodgson/M. O'Neal
Evaluation of soybean aphids and insecticide application timing in 2-row spacings	E. Hodgson/M. O'Neal
Evaluation of water tables, tiling methods, and tile spacing distances	ISU NERF
Evaluation of weed management strategies in corn and soybeans	M. Owen
Grape cultivar evaluation study	P. Domoto
Home demonstration garden/Strawberry variety trial	C. Haynes/P. O'Malley
Hydrogeology water quality studies in the Devonian Aquifer and near tile drainage	B. Simpkins
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. Hanna/M. Al-Kaisi
Pawpaw tree winter hardiness demonstration	P. O'Malley
Phosphorus rate × P source study	A. Mallarino
Rate of lime study	S. Henning
Soil/plant root/soil water observation pit	ISU NERF
Soybean insect and grape insect (grape berry moth and leaf roller) monitoring	ISU NERF
Soybean planting date × growth stage monitoring study	P. Pedersen

<u>Research Project/Demonstration (continued)</u>	<u>Project Leader</u>
Soybean planting date × variety maturity × insecticide/fungicide study	ISU NERF
Soybean sentinel plot weekly monitoring for rust and other leaf diseases	D. Mueller
Transport of pathogens through macropores to subsurface drainage water	Ag and Biosys Eng/OSU R. Kanwar
Triticale/winter wheat/ rye variety trial	E. Heaton
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	Glen Zubrod
Agriliance, LLC	Golden Harvest Seeds
Asgrow Seed Company	Great Plains Mfg.
BASF Corporation	John Fox
Bayer Crop Science	LG Seed Company
C ⁸ MP Crop Consulting	MBS Farms
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Crows Hybrids	National Soil Tilth Lab
Dekalb Genetics	NK Brand Syngenta Seeds
Demco-Dethmers Mfg. Company	PCS Fertilizer
Dennis Weibke	Pioneer Hi-Bred International
Don Vetter	Plainfield Welding and Repair
Duane Lines	Schneider Milling Inc.
Floyd County ISU Extension	Spraying Systems Company
Floyd County SWCD	Stine Seed Company
FMC Corporation	Syngenta Crop Protection
Gandy Company	Syngenta NK Brand Seeds

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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.

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