

Northwest Research Farm Summary

RFR-A1609

Northwest Iowa Experimental Association

2016–2017

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Research and Demonstration Farms

Superintendent, Northwest..... Josh Sievers (resigned September 2016)
 Interim Superintendent (Agricultural Specialist), Northwest Chad Huffman
 Agricultural Specialist, Northwest..... Terry Tuttle
 Superintendent, Allee..... Lyle Rossiter
 Manager, Research Farms..... Tim Goode
 103 Curtiss
 Coordinator, Research Farms..... Mark Honeyman
 103 Curtiss
 Iowa State University
 Ames, IA 50011

Northwest Farm and Weather Summary

Chad Huffman, interim farm superintendent

Farm Comments

Developments. Josh Sievers, superintendent, resigned September 2016 for a position in the private sector. Andrew Weaver was hired as agricultural specialist to carry out on-farm cooperator trials and day-to-day operations at the research farm beginning January 2017.

A new 60 ft x 80 ft addition to the shop has been erected and interior finishing is underway. The shop will be heated and cooled for field day opportunities year-round.

A 12-row 20-in. planter was built using new Kinze Evolution series planter units. The planter units were provided at cost by Sorensen Equipment of Harlan, Iowa, and Kinze Manufacturing. A Rawson hydraulic drive powers the planter, allowing population changes on the go. A 6-row 20-in. corn head was built from an International 863 corn head. Row units were slid together and the head cut down to size. New poly covers the corn head. A side-dress fertilizer applicator was outfitted with a scale for more precise calibration and application to research plots. A 6-row 30-in. row crop head was purchased to harvest soybean research plots. Also, a Case IH 2366 combine was purchased to replace an aging 1660 model. An Ag Leader yield monitor was installed for collecting data.

A total of 44 research projects were conducted at the farm in 2016. Two projects were new to the farm. Also, 32 farmer cooperator trials were conducted on cooperating farmer's fields.

The ISU Demonstration Garden, in Rock Rapids, rebuilt with funds from the Lyon County Riverboat Foundation, ISU Lyon County Extension, and the Northwest Iowa

Experimental Association has continued to be an attraction at the Lyon County fairgrounds. The garden this year was dedicated to raising vegetables for local food pantries. Named "the pantry garden," it featured a local event for "growing in the garden camp" participants.

Field days and tours. There were 22 field days held by the Northwest Research Farm. A total of 2,004 visitors attended field days or other events at the research farm.

New projects. Nitrogen rate x timing, J. Sawyer and D. Barker; Corn fungicide standability/lodging efficacy, A. Robertson.

Crop Season Comments

Corn planting began April 15 and was completed May 22. Harvest began October 13 and ended November 2. Corn yields averaged 238 bushels/acre and continuous corn yielded 226 bushels/acre.

Soybean planting began May 22 and was completed June 1. Harvest began September 28 and ended October 24. Soybean yields averaged 70 bushels/acre.

Weather Comments

Spring 2016. Soil conditions offered good planting conditions in mid-April. The weather then cooled and precipitation kept us out of the fields until mid-May.

Summer 2016. Again this year, no major rainfall (> 5.0 in.) occurred in May or June at the research farm. June was very warm with temperatures reaching over 90°F on eight days. Soybean aphids were sprayed in late July, as some plots had reached threshold. Disease pressure was low this year with no major problems noted. Moderate rainfall in July and August, along with moderate

temperatures, allowed for longer grain fill in corn and pod fill in soybeans.

Fall 2016. There was no killing frost until October 12. At that point, both the corn and soybeans were past physiological maturity. October was unusually wet with many overcast, foggy days. This made soybean harvest challenging. However, things finally dried out, and cold temperatures held off long enough for us to finish fieldwork. Drainage tiles continued to flow into the second week of December before finally freezing.

Acknowledgements

The Northwest Iowa Experimental Association and ISU Extension and Outreach are commended for their support of the Northwest Research Farm. Support of field days, speakers, and new ideas are vital to the research farm's successes. Appreciation also is extended to the following entities for their support of research projects or ideas at the research farm.

AMVAC
 Syngenta
 DuPont
 DuPont Pioneer
 Monsanto
 Valent
 Security State Bank
 Farm Bureau, Sioux County
 Farm Bureau, Lyon County
 Bayer Crop Science
 Ag Partners
 Farm Nutrients
 Farmers Coop Society
 Legend Seeds
 Winfield
 CS Agrow
 Bayer Crop Science
 Concrete Guys
 Sorensen Equipment/Kinze Mfg.
 Stine Seed

Table 1. Northwest Research and Demonstration Farm, Sutherland, monthly rainfall and average temperatures for 2016.

Month	Rainfall (in.)		Temperature (°F)		Days 90° or above
	2016	Deviation from normal*	2016	Deviation from normal	
April	5.83	3.24	48.4	1.5	0
May	4.09	0.27	59.2	0.1	0
June	3.57	-1.08	72.8	4.0	8
July	4.78	1.22	71.9	-0.1	3
August	3.70	-0.24	70.2	0.3	1
September	9.30	6.05	65.2	3.6	0
October	<u>3.58</u>	<u>1.49</u>	52.4	3.4	<u>0</u>
Totals	34.85	10.95			12

*Rainfall averages recalculated based on data from 1957-2015.

**Temperature averages recalculated based on data from 1988-2015.

Research Projects at Sutherland

Asparagus variety trial	NWRF Staff
Corn aphid threshold study	E. Hodgson
Corn burner as primary shop heat	NWRF Staff
Corn fungicide carrier rate trial	A. Robertson/NWRF Staff
Corn fungicide efficacy trial	A. Robertson
Corn fungicide efficacy × timing	A. Robertson
Corn fungicide standability/lodging efficacy	A. Robertson
Corn planting date comparison	M. Licht
Corn rootworm trap crop	A. Gassmann
Corn yield forecasting trial	M. Licht/S. Archontoulis
Cover crop seeding trial, corn and soybean	Iowa Learning Farms
Cover crop × nitrogen rate	J. Sawyer
Demonstration garden, Rock Rapids	C. Haynes
Demonstration windbreak	J. Randall
Herbicide comparison demonstration	NWRF Staff
Host plant resistance trial-soybean aphid	E. Hodgson
Iowa Crop soybean variety test	J. Rouse
Late season herbicide application demonstration	J. Rouse
Lime source × application rate	A. Mallarino
Long-term nitrogen rate study	J. Sawyer
Long-term tillage and carbon sequestration	M. Al-Kaisi
Miscanthus establishment evaluation	E. Heaton
Nitrogen rate x timing	J. Sawyer/D. Barker
Soybean aphid efficacy trial	E. Hodgson
Soybean aphid suction trap	E. Hodgson
Soybean fungicide carrier rate trial	NWRF Staff
Soybean fungicide comparison	D. Mueller
Soybean planting date comparison	M. Licht
Soybean seed treatment trial	E. Hodgson
Soybean thrips monitoring project	M. Irizarry
Soybean yield forecasting trial	M. Licht/S. Archontoulis
Surface runoff study	A. Mallarino/M. Helmers
Tile water quality study	M. Helmers/J. Sawyer
Tillage × fertilizer placement study	A. Mallarino
Water table monitoring	NRCS
Weather station	NWRF Staff
Weed herbicide demonstration	P. Kassel/J. DeJong

Allee Farm and Weather Summary

Lyle Rossiter, farm superintendent

Farm Comments

Developments. Dakota Access Pipe Line, LLC, was granted access through the northwest corner of the Allee Farm, March 17, 2016. The pipeline will be used to transport crude oil from the Bakken Shale region of North Dakota to Illinois. At the Allee Farm, topsoil will be leveled over the pipeline in spring 2017.

A high priority on the ISU Allee Research Farm is nitrogen fertilizer management. Fall strip trials of cover crops with cereal rye and oats have been implemented without yield losses. Sidedressing liquid nitrogen fertilizer on corn in June has decreased total nitrogen fertilizer applied on corn by 50 percent, without reducing yield.

The implementation of cooperator on-farm trials continues in Buena Vista, Sac, Pocahontas, Carroll, Calhoun, Ida, Cherokee, and Clay counties. ISU staff assisted individual farmers in setting up field-length strip trials and collecting data for statistical analysis. Paul Kassel, Extension crops specialist, and Lyle Rossiter, Allee Farm superintendent, assisted five farmers with seven field projects.

Events. Cover crop field day was held August 24 at the farm. Jackie Comito with Iowa Learning Farms cited a seven-year study with winter cereal rye as a cover crop where corn showed no yield effect and soybean showed a yield increase of five bushels. Paul Kassel discussed herbicide control and safe livestock grazing practices with cover crops. FSA staff explained crop insurance compliance of cover crops. Local farmers and custom cover crop operators talked about their experiences. The Allee Farm hosted Ag-Citing Days with topics of soil science, amazing corn, Monarch

butterflies, corn ethanol, and Buzzing with Bees. Also, 4-H youth presented talks on their live beef, goat, rabbit, and swine projects to 430 fourth-grade students from across Buena Vista County.

Safety Day for 310 third-grade students included topics of chemical liquids, ambulance tour, first aid, sheriff car tour, home alone, sun exposure, bicycles, electrical, and farm equipment safety.

The Buena Vista special swine class was held in June, with 31 4-H youth participating in an educational day and showing live market pigs before the fair. The Allee Farm staff assisted with the NWRP fall educational day providing swine for one of their guest speakers.

The Allee Farm appreciates the community support and the opportunity to be an educational site for all ages and families. A total of 761 guests visited the farm. In addition, the Allee Historical Mansion hosted 892 guests in 2016.

Projects. The second year of the long-term assessment of miscanthus productivity and sustainability (LAMPS) was planted this spring. The biomass plant will be researched to learn how to grow and maintain miscanthus at farm scale.

A 40-acre field was fenced in April for the cover crop grazing study. Grazing started April 18 with 42 heifer calves and ended May 6 on cereal rye cover crop. The study will look at soil health, compaction, and grazing rye as an additional forage source.

The automated weather station was installed in the northwest corner of the farm in fall 2014. The above-ground data collection began on wind speed, wind direction, high and low temperature, humidity, and solar radiation. Below-ground soil probes monitor soil

moisture and temperature at 4, 12, 24, and 50-in. depths. Data collected is available as part of the ISU Mesonet at mesonet.agron.iastate.edu under Iowa Ag Climate Network.

Livestock. The Allee Farm custom-fed 147 head of cattle and collected research data for the purebred Angus cowherd at the ISU McNay Research Farm, Chariton, Iowa.

Crop Season Comments

Corn was planted May 5–18. Harvest was completed November 4, with average yields of 204 bushels/acre.

Soybean planting was finished May 26. Harvest was completed October 14 with average yields of 64 bushels/acre.

Weather Comments

Winter. January and February temperatures were mild with only eight days below zero and six days with snow. March temperatures were above normal with 18 days above 50°F. March was dry the first two weeks. March 24 was the largest snowfall of the winter with an accumulation of eight inches.

Spring. April started out warm, allowing fieldwork to start and corn planting began April 14 with 4-in. soil temperature of 50°F. The first three weeks of April were 20°F above normal. The last week of April was 20°F below normal with 5.01 in. of rain. May was a planting challenge with 13 rain days—3.16 in. total rainfall. June was the warmest and driest month of the year. Nine days above 90°F temperatures caused drought-like conditions the second week. Rain on June 14

provided relief for the corn crop. June had a total of about 1.1 in. of rain.

Summer. July temperatures were cool, with nine rain days providing moisture of 5.72 in. July's cool night temperatures and only three days above 90°F aided corn yields. August only had one day above 90°F and 11 rain days with a total accumulation of 3.48 in.

Fall. September was wet with a total of 7.10 in. of rain, slowing crop maturity and delaying soybean harvest. The crop year total moisture accumulation was 27.88 in. from April to October. October 12 and 13 were the killing frost dates. November was dry and warmer than normal, which aided harvest completion.

Acknowledgements

The farm would like to thank the Newell-Fonda Community School, ISU Extension, Farm Bureau, Buena Vista Public Health, Storm Lake Police Department, Buena Vista County Sheriff Department, Iowa Lakes Electric Coop, and Iowa Corn Growers Association for their assistance with field days and events.

Table 1. Allee Demonstration Farm, Newell, monthly rainfall and degree days above 90°F for 2016.

<u>Month</u>	<u>Rain (in.)</u>	<u>Days >90°F</u>
April	5.01	0
May	3.16	0
June	1.05	9
July	5.72	3
Aug.	3.48	1
Sept.	7.10	1
Oct.	<u>2.36</u>	<u>0</u>
Total	27.88	14

Research Projects at Newell

Research Project

Automated weather station
Beef cattle feeding
Butterfly habitat/milkweed demonstration
Cover crop grazing
Cover crop grazing (soils)
Farmer cover crop study
Miscanthus

Project Leader

E. Taylor
J. Reecy
R. Hellmich
D. Loy/E. Lundy
M. Al-Kaisi
P. Kassel
E. Heaton