

Northwest Research Farm Summary

RFR-A1705

Northwest Iowa Experimental Association

2017–2018

Executive Board

President..... Brian Waldstein, Buena Vista County
 Vice President William Foell, Sac County
 Secretary Joel DeJong, ISU Field Agronomist
 Treasurer Chad Schwartz, O’Brien County
 Executive Committee Rodney Mogler, Lyon County
 Executive Committee Don Belson, Ida County
 Executive Committee Jerry Crew, Clay County

Directors

Buena Vista..... Brian Waldstein, Jim Hultgren
 Cherokee Kent Jurgensen, Tom Bindner
 Clay Jerry Crew, Bob McCarty
 Ida Don Belson, Dale Friedrichsen
 Lyon Rodney Mogler, Bob Ladd
 O’Brien Kirk Struve, Chad Schwartz
 Osceola..... Dave Rossman, Gary Trei
 Plymouth..... Jeff Jonas, Luke Homan
 Sac William Foell, Holly Sandhoff
 Sioux Marvin Van’t Hul, Mike Schouten

Research and Demonstration Farms

Superintendent, Northwest..... Terry Tuttle
 Agricultural Specialist, Northwest..... Andrew Weaver
 Agricultural Specialist, Northwest..... Landon Lenhart

Superintendent, Allee..... Lyle Rossiter

Associate Dean, Research Farms Mark Honeyman
 Manager, Research Farms Tim Goode

103 Curtiss
 Iowa State University
 Ames, IA 50011

Farm and Weather Summary

Terry Tuttle, farm superintendent
Northwest Research Farm

Farm Comments

Developments. Andrew Weaver, ag specialist, started January 17, 2017, to carry out on-farm cooperator trials and day-to-day operations at the research farm. Chad Huffman, interim superintendent, resigned at the end of February 2017, for a position in the private sector. Landon Lenhart, ag specialist, was hired June 8, 2017, to assist with water quality studies and day-to-day operations. Terry Tuttle was named farm superintendent.

In addition to field duties, staff have been working on the interior finishing and furnishings for the new 60 ft x 80 ft addition to the shop erected in 2016. The heating and cooling systems have been installed, bathrooms completed, and benches and pallet racking have been ordered.

A new Bad Boy mower was purchased for the farm in April. The mower is equipped with a 33 hp 824cc EFI Yamaha engine, 72 in. deck, electric deck lift, front and rear EZ-Ride system, and a Grammar Suspension seat. A John Deere 4455 tractor was traded for a 8930 Case IH tractor with front wheel assist. This gave the farm a tractor capable of handling the 8-row strip till bar, eliminating the need to rent a tractor each fall to complete the strip till operation as part of the long-term tillage study.

A total of 35 research projects were conducted in 2017. Also, 32 farmer cooperator trials were conducted on cooperating farmer's fields.

The ISU Demonstration Garden in Rock Rapids, supported by ISU Lyon County Extension and Outreach, ISU Northwest

Research Farm, and the Northwest Iowa Experimental Association continues to be an attraction at the Lyon County fairgrounds. The garden was used as a pantry garden for the second year in a row. All produce harvested from the garden went to help fight hunger in Northwest Iowa with the produce donated to food pantries in Lyon, Sioux, O'Brien, and Osceola counties. The garden also showcased the local "Growing in the Garden" camp youth's baseball-themed garden.

Field days and tours. There were 16 field days held by the Northwest Research Farm. A total of 1,236 visitors attended field days or other events at the research farm in 2017.

New projects. Aphid resistant soybean RIB trial, J. Hohenstein and M. O'Neal; Corn fungicide efficacy x application, 360 undercover vs. traditional over-the-top spray, A. Penney and J. Viggers.

Crop Season Comments

Corn planting began April 10 and was completed May 13. Corn harvest began October 17 and ended October 27. Corn yields averaged 205 bushels/acre and continuous corn yielded 195 bushels/acre.

Soybean planting began April 24 and was completed June 1. Soybean harvest began October 16 and ended October 20. Soybean yields averaged 64 bushels/acre.

Weather Comments

Spring 2017. The soil moisture profile started nearly full (10.3 in. of available water of 11 in. possible). There were good planting conditions in early April. The weather then cooled and intermittent cold precipitation slowed planting progress and crop emergence with the first planted corn requiring 28 days to emerge.

Summer 2017. In 2017, the farm received no major rainfall event (> 5.0 in.) in any month. June was moderately warm and dry (83°F avg. daily high and 2.23 in. rain). July was hot and dry including seven days with temperatures over 90°F, and only one day with a high temperature less than 80°F. Total rainfall was 1.36 in. This combination stressed crops during their critical reproductive stages. Soybean aphids were present but struggled to reach threshold. Some plots were sprayed later in the season. Disease pressure was low this year with no major problems noted. Moderate rainfall in the second half of August plus moderate temperatures allowed for longer grain fill in corn and some new growth and pod fill in soybeans.

Fall 2017. There was no killing frost until October 10. At that point, the soybeans and most of the corn were past physiological maturity. Once soybean harvest began October 16, the research farm received only .07 in. of precipitation during the harvest season. It also was very windy. A dry November allowed staff to finish soil sampling, fertilization, and fieldwork.

Due to a slightly lower-than-normal rainfall total for 2017, the drainage in the water quality study stopped flowing June 20 and had

not resumed flow prior to being shut down for the season on December 1.

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 success. Appreciation also is extended to the following entities for their support of research projects or ideas at the research farm.

AMVAC

DuPont

DuPont Pioneer

Monsanto

Security State Bank

Farm Bureau, Sioux County

Farm Bureau, Lyon County

Bayer Crop Science

Ag Partners

Farm Nutrients

Farmers Coop Society

Legend Seeds

CS Agrow

Concrete Guys

Sickelka Ag

Titan Machinery

GSI

Calcium Products

Table 1. Northwest Research and Demonstration Farm, Sutherland, monthly rainfall and average temperatures for 2017.

Month	Rainfall (in.)		Temperature (°F)		Days 90° or above
	2017	Deviation from normal*	2017	Deviation from normal	
April	3.75	1.08	48.4	1.3	0
May	3.21	-0.74	57.8	-1.3	0
June	2.23	-2.43	70.4	1.4	5
July	1.36	-2.13	73.7	1.7	7
August	5.15	1.18	65.4	-4.4	0
September	2.60	-0.66	64.5	2.6	1
October	<u>3.96</u>	<u>1.84</u>	50.8	1.6	<u>0</u>
Totals	22.26	-1.86			13

*Rainfall averages recalculated based on data from 1957-2016.

**Temperature averages recalculated based on data from 1988-2016.

Research Projects at Sutherland

Project

Asparagus variety trial
 Corn fungicide efficacy trial
 Corn fungicide efficacy x timing
 Corn fungicide efficacy x application/360 Undercover
 Corn fungicide standability/lodging efficacy
 Corn planting date comparison
 Corn rootworm trap crop
 Corn row spacing x population trial
 Corn yield forecasting trial
 Corn tillage system x nitrogen rate project
 Demonstration garden, Rock Rapids
 Demonstration windbreak
 Herbicide comparison demonstration
 Iowa Crop soybean variety test
 Long-term nitrogen rate study
 Long-term tillage and carbon sequestration
 Miscanthus establishment evaluation
 Monarch project/milkweed demonstration
 Moth trapping–Black cutworm (BCW)
 Moth trapping–European corn borer (ECB)
 Moth trapping–True armyworm (TAW)
 Planting variability demonstration
 Soybean aphid efficacy trial
 Soybean aphid resistant RIB trial
 Soybean aphid suction trap
 Soybean fungicide comparison
 Soybean row spacing x population trial
 Soybean seed treatment trial
 Soybean yield forecasting trial
 Surface runoff study
 Tile water quality study
 Tillage x fertilizer placement study
 Water table monitoring
 Weather station
 Weed/dicamba herbicide demonstration

Project Leader

NWRF Staff
 A. Robertson
 A. Robertson
 A. Penney/J. Viggers
 A. Robertson
 M. Licht
 A. Gassmann
 NWRF staff/M. Licht
 M. Licht/S. Archontoulis
 J. Sawyer
 C. Haynes
 J. Randall
 NWRF staff
 J. Rouse
 J. Sawyer
 M. Al-Kaisi
 E. Heaton
 S. Appelgate/R. Hellmich
 A. Sisson
 A. Sisson
 A. Sisson
 NWRF Staff
 E. Hodgson
 M. O’Neal/J. Hohenstein
 E. Hodgson
 D. Mueller
 NWRF staff/M. Licht
 E. Hodgson
 M. Licht/S. Archontoulis
 A. Mallarino/M. Helmers
 M. Helmers/J. Sawyer
 A. Mallarino
 NRCS
 NWRF staff
 P. Kassel

Farm and Weather Summary

Lyle Rossiter, farm superintendent
Allee Demonstration Farm

Farm Comments

Developments. The Dakota Access Pipe Line was covered with topsoil the end of June. A cover crop mix of tiller radishes, cereal rye, and soybean was planted in July to loosen soil compaction and increase soil rhizobia nodulation for future soybean crops.

Nitrogen management is a high priority on the ISU Allee Research Farm. Fall strip trials of cover crops with cereal rye and oats have been implemented without yield losses. Spreading cattle manure with a vertical spreader provides even distribution of nutrients and allows cover crops to grow through the residue. Side dressing liquid nitrogen in June on corn has decreased total nitrogen fertilizer 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. Extension crop specialist Paul Kassel and Allee Farm superintendent Lyle Rossiter assisted five farmers with seven field projects.

Events. Cover crop field day was April 11. Erica Lundy and Rebecca Vittetoe presented data with rye growth and cattle weight gain response for the first year. Paul Kassel and Joel DeJong walked the rye field with visitors talking about cover crops and livestock improving soil tilth. Also discussed were the following topics: live green plants growing 365 days a year, increased soil microbial activity, earth worms, and holding nitrates in the soil profile for corn and soybean growth later in the summer. Local NRCS advisors and

farmers talked about their experiences of cover crop diversity to biologically sequester carbon in the soil.

A manure management field day was held by Kris Kohl, extension. Jamesway and Houle liquid manure spreaders were filled with water to demonstrate how to calibrate animal fertilizer output. Paul Kassel, extension, presented information and details on the Iowa Nutrient Reduction Strategy.

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 400 fourth-grade students from across Buena Vista County.

Safety day for 175 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 39 4-H youth participating in an educational day and showing live market pigs before the fair. The Allee Farm staff assisted with the ISU Northwest Research Farm 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 870 guests visited the farm, and the Allee Historical Mansion hosted 1,050 visitors in 2017.

Projects. The third year of the long-term assessment of miscanthus productivity and sustainability (LAMPS) was planted in the

spring on three ISU farms. The biomass plant will be researched to learn how to grow and maintain miscanthus at a farm scale.

The second year of the cereal rye cover crop grazing study was completed, grazing 42 calves on fall-established rye. Data collection on soil health, compaction, and cattle weight gains will be finalized on the third year in 2018.

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 backgrounded 75 head of cattle and grazed them on cereal rye cover crops in the spring. The farm custom-fed 87 head of cattle in the fall and collected research data for the purebred Angus cowherd at the ISU McNay Research Farm, Chariton, Iowa.

Crop Season Comments

Seven acres of corn were planted around the Miscanthus plots May 15. Harvest was completed November 16, with average yields of 147 bushels/acre.

Soybean planting was finished June 3. Harvest was completed October 19 with average yields of 57 bushels/acre.

Weather Comments

Winter. January was cold with 15 days above 32°F and February temperatures were mild with six days above 60°F. March temperatures were above normal with 13 days above 50°F

and two days of 74°F. In March, soil frost was out of the ground the second week and snowfall for the winter accumulation was 11 in.

Spring. April was warm, allowing field work to start and corn planting started April 11 with 4-in. soil temperature of 51°F. The first three weeks of April were warm; the last week was cold with three nights below 32°F and only 2.92 in. of rain for the month. May was cool the second and third week with eight rain days and monthly accumulation of 4.47 total in. June was dryer with nine days above 90°F temperatures with a total of 614 GGD (Table 1).

Summer. July temperatures were cool with only seven days above 90°F and accumulation of 730 total GGD. July was a dry month with only 1.46 in. of rain. August was cool with no days above 90°F and only 535 GGD. Fifteen rain events totaled 4.91 in. (Table 1).

Fall. September was dry with a total of 1.97 in. of rainfall, cool temperatures, and only 496 GGDs. The crop year total moisture accumulation was 24.18 in. from April through September (Table 1). October 26 and 27 were the killing frost dates. November and December were dry and cool for harvest and fall tillage 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, Iowa Corn Growers Association, NRCS, and PFI for their assistance with field days and events.

Table 1. Allee Demonstration Farm, Newell, monthly rainfall and degree days above 90°F for 2017.

<u>Month</u>	<u>Rain (in.)</u>	<u>Days >90°F</u>
April	2.92	0
May	4.47	0
June	2.17	9
July	1.46	7
August	4.91	0
September	1.97	5
October	<u>6.28</u>	<u>0</u>
Total	24.18	21

Research Projects at Newell

Research Project

Automated weather station
 Beef cattle feeding
 Monarch project/milkweed demonstration
 Cooperator on-farm trials
 Cover crop grazing
 Cover crop grazing (soils)
 Farmer cover crop study
 Miscanthus

Project Leader

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