

2013

# Ag Engineering and Agronomy Farm and Central Iowa Research Farms Summary

Central Iowa Research and Demonstration Farm

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# Ag Engineering and Agronomy Farm and Central Iowa Research Farms Summary

RFR-A13124

## Farms Staff

### Ag Engineering/Agronomy Farm

Manager, Agronomy Farm..... Mike Fiscus  
Manager, Ag Engineering Farm ..... Richard VanDePol  
Manager, Operations..... Will Emley  
Ag Specialist, GPS technologies..... Nathan Meyers  
Ag Specialist, FARM program ..... Zachary Koopman

Farm Equipment Mechanic..... Jeff Erb  
Farm Equipment Operator ..... Dan Crosman  
Farm Equipment Operator ..... Dale Niedermann

### Central Iowa Farms

Superintendent and Isolation Plots Manager ..... Kent Berns  
Farm Equipment Operator ..... John Reinhart

### BioCentury Research Farm

Manager ..... Andrew Suby  
Ag Specialist ..... Nathan Meyers

Research Farms Coordinator..... Mark Honeyman  
Farms Manager ..... Tim Goode

103 Curtiss Hall  
Iowa State University

Ag Engineering/Agronomy Research Farm

1308 U Avenue

Boone, IA 50036

515-296-4081 Ag Engineering office phone

515-296-4082 Agronomy office phone

Location: West of Ames on Highway 30, across from the United Community School

Central Iowa Research Farms

in Story and Boone counties

ISU Curtiss Farm

2219 State Avenue

Iowa State University

Ames, IA 50014

515-290-1498

## Ag Engineering and Agronomy Farm Farm and Weather Summary

Mike Fiscus, ag specialist  
Richard VanDePol, ag specialist

### Farm Comments

*Field days and tours.* The Ag Engineering and Agronomy (AEA) Farm hosted a total of 335 visitors at the farm in 2013. In January, the farm hosted a Tractors 101 course for Practical Farmers of Iowa. The Ames Convention and Visitor's Bureau organized AEA farm tours with groups from France, Brazil, and Argentina. There also were visitors from China associated with an Ag Engineering tour. The Leopold Center also showed some of the crops and the facilities to a group of students from Washington University of St. Louis, Missouri. A field day was held on August 30, featuring cover crop research, corn rootworm resistance and resistance management, and an update on the state's corn production status for the 2013 growing season, with 145 in attendance. After lunch, a tour was provided of the ISU BioCentury Farm and its facilities, along with a demonstration of the Conservation Station by Iowa Learning Farms.

*Developments.* A new weather station was installed as part of a statewide system spearheaded by Elwynn Taylor. The new station records air temperature, rainfall, soil temperature depths from 4 to 50 inches deep, wind speed and direction, solar radiation, and soil moisture levels from 12 to 50 inches. Data from this station can be accessed via the ISU Mesonet Site.

*Facilities and Equipment.* New diesel and gasoline tanks were installed to meet State Fire Marshall and EPA regulations. Both tanks are double walled constructed to meet self-containment regulations.

Field entrance driveways at the Sorenson and Bruner Farms were regraded and widened to improve access with trailers and farm equipment.

A John Deere 9450 combine was purchased to convert into a plot harvest machine for the AEA and surrounding farms. This machine will replace the John Deere 9410 plot combine that was transferred to the Northern Research Farm, Kanawha, Iowa.

John Deere donated a round baler to the farm for research purposes. Weigh bars were added to the axles to record plot weights.

*New projects.* R. Hartzler began a study evaluating herbicide carryover injury to various cover crops. M. Salas-Fernandez expanded the sorghum breeding project. The USDA expanded its brassica research plots.

### Crop Season Comments

Oat seeding was completed April 8. The oats were harvested in July as oat hay for the ISU McNay Research Farm, Chariton, Iowa.

Corn planting started April 13 and was completed by June 28. Harvest began September 30 and was completed by November 7. Yields were variable with a range of 128–187 bushels/acre.

Soybean planting began May 10 and was completed May 30. Harvest began October 9 and was completed October 29. Yields ranged from 23–37 bushels/acre.

A hail and wind storm on July 23 reduced yields of both corn and soybeans on the Burkey, Marsden, and Agronomy Farms. Corn and soybean research plots also were damaged

and some research efforts lost because of the storm.

### Weather Comments

*Winter.* Total snowfall of 22.7 in. was recorded with a total moisture equivalent of 2.5 in., including rainfall and snowfall events.

*Spring.* A record rainfall total of 14.38 in. for March, April, and May was recorded (Table 1). The last frost date was May 3, with the last hard freeze on April 24. Soil temperatures at the 4-in. depth began to average 50°F on April 8, and then cooled into the 40s again until April 27, when they returned to the 50s. We also received 4 in. of snow on May 2. Some corn was germinated and emerged at that time, but no major damage occurred.

*Summer.* A total of 6.20 in. of rain fell during the summer months of June thru August. Rainfall for July was 1.01 in. After the record rainfall of the spring, the weather turned hot and dry, until July 23, when we received 0.83 in. during a hail and windstorm. We recorded 27 days at 85°F or above from June 17 until July 23.

*Fall.* A total of 5.09 in. of rain was recorded for September through November with the first measurable snowfall of 1 in. falling on November 22.

A total of 27.13 in. of rain was recorded for 2013, 4.98 in. below normal (Table 2). As mentioned earlier, the spring (March through May) total of 14.98 in. was a record for that time period for this area.

**Table 1. Monthly rainfall and average temperatures during the 2013 growing season at the Ag Engineering/Agronomy Research Farm, Boone, IA.**

Month	Rainfall (in.)		Temperature (°F)		Days 90°F or above
	2013	Deviation from normal	2013	Deviation from normal	
March	1.48	-0.33	30	-6	0
April	5.81	2.60	46	-4	0
May	7.09	2.70	60	-1	2
June	3.01	-1.79	70	0	2
July	1.01	-2.69	73	-1	9
August	2.18	-1.74	72	0	7
September	1.19	-2.38	67	+3	3
October	<u>2.50</u>	<u>0.11</u>	51	-1	<u>0</u>
Totals	24.27	-3.52			23

**Table 2. Ag Engineering/Agronomy Research Farm 11-yr summary of monthly precipitation.**

Mo.	NR <sup>1</sup>	ANR <sup>2</sup>	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Jan	0.81	0.81	0.25	0.71	0.50	0.62	0.56	0.24	0.95	1.17	0.70	0.26	0.41
Feb	0.93	1.74	0.47	1.41	1.83	0.41	1.77	0.71	0.25	0.75	1.06	1.74	0.73
Mar	1.81	3.55	1.11	3.52	1.38	2.63	3.09	2.71	4.07	2.07	0.79	2.49	1.48
Apr	3.21	6.76	4.42	2.40	3.29	4.30	5.99	5.22	4.56	3.66	4.41	4.79	5.81
May	4.39	11.15	4.81	8.18	4.38	2.15	6.67	8.49	3.78	3.64	4.62	2.46	7.09
Jun	4.80	15.95	5.90	3.59	4.89	0.81	2.03	10.68	4.11	11.17	5.05	2.94	3.01
July	3.70	19.65	6.60	1.96	4.10	5.56	2.95	9.28	2.75	6.74	3.90	1.47	1.01
Aug	3.92	23.57	1.00	5.19	6.76	6.16	7.89	2.10	4.84	11.21	3.58	2.98	2.18
Sept	3.57	27.14	3.93	1.34	4.36	7.51	1.90	3.09	0.96	6.57	2.02	1.85	1.19
Oct	2.39	29.53	0.94	1.79	0.35	2.53	5.41	3.63	7.33	0.38	0.86	2.34	2.50
Nov	1.55	31.08	4.31	3.01	1.89	1.56	0.14	2.59	1.38	2.23	2.72	0.90	1.40
Dec	1.03	32.11	1.05	0.46	0.94	2.67	1.90	1.20	1.96	0.80	2.23	1.02	0.32
Tot.	32.11		34.79	33.56	34.67	36.91	40.30	49.94	36.94	50.39	31.94	25.24	27.13
Departure from Normal			2.68	1.45	2.56	4.80	8.19	17.83	4.83	18.28	-0.17	-6.84	-4.98

<sup>1</sup>NR = normal rainfall.<sup>2</sup>ANR = accumulated normal rainfall

## Project List

### Project-Agronomy Farm

Alternative biomass cropping research  
 BCRF plant zoo  
 Canola date of planting study  
 Canola sustainable cropping rotation  
 Comparison of biofuel systems (COBS)  
 Corn breeding  
 Corn breeding  
 Corn breeding  
 Corn breeding  
 Corn breeding  
 Corn nitrogen use/manure trial  
 Corn nitrogen volatilization trial  
 Corn plant population study  
 Corn residue removal study  
 Corn rootworm research  
 Corn rootworm/plant pathology trials  
 Corn stover/biomass research trials  
 Corn/soybean cover crop research  
 Cover crop herbicide injury trial  
 FEEL research plots  
 Forage and biomass production systems  
 Forage species study (Independent Co.)  
 Global maize production study  
 Long term continuous corn tillage study

### Department

Agronomy/Ag Eng  
 BCRF  
 Agronomy  
 Agronomy  
 Agronomy/Ag Eng  
 Agronomy  
 Agronomy  
 Agronomy  
 Agronomy  
 Entomology/USDA  
 Agronomy  
 Agronomy  
 Agronomy/Extension  
 Agronomy  
 USDA  
 Plant Pathology  
 Ag/Biosystems Eng  
 Agronomy  
 Agronomy  
 Agronomy  
 Agronomy

### Project Leader

E. Heaton/L. Schulte-Moore  
 A. Suby  
 M. Wiedenhoeft  
 M. Wiedenhoeft  
 M. Liebman/M. Helmers  
 J. Yu  
 J. Edwards  
 P. Scott  
 T. Lubberstedt  
 C. Abel  
 J. Sawyer  
 J. Sawyer  
 M. Licht  
 M. Al-Kaisi  
 A. Gassmann  
 N. Lauter  
 S. Birrell  
 J. Sawyer  
 R. Hartzler  
 D. Mueller  
 K. Moore  
 K. Moore/Dow Chem.  
 J. Sawyer/R. Elmore  
 M. Al-Kaisi

**Project-Agronomy Farm (continued)**

Long term nitrogen trial  
 Long term tillage study  
 Oat variety/growout trials  
 Organic corn breeding  
 Organic cover crop research  
 Plant Pathology corn-soybean tillage trial  
 Soil fertility research  
 Sorghum breeding  
 Soybean and corn emergence trials  
 Soybean and corn Plant Pathology trials  
 Soybean breeding  
 Soybean breeding  
 Soybean cyst nematode trials  
 Soybean disease research  
 Soybean iron chlorosis plots  
 Soybean production research  
 Soybean research trials  
 Soybean yield trials  
 Soybean/corn disease research  
 Sustainable ag cropping systems  
 Switchgrass/miscanthus research

**Department**

Agronomy  
 Agronomy  
 ICIA  
 Agronomy  
 Agronomy  
 Plant Pathology  
 Agronomy  
 Agronomy  
 Seed Science  
 Plant Pathology  
 Agronomy  
 USDA  
 Plant Pathology  
 Plant Pathology  
 ICIA  
 Agronomy  
 Agronomy  
 ICIA  
 Seed Science  
 Agronomy  
 Agronomy

**Project Leader**

J. Sawyer  
 M. Al-Kaisi  
 K. Iverson  
 J. Edwards  
 K. Delate  
 D. Mueller  
 A. Mallarino  
 M. Salas-Fernandez  
 S. Goggi  
 A. Robertson  
 W. Fehr  
 R. Palmer  
 G. Tylka/S. Cianzio  
 L. Leandro  
 J. Rouse  
 A. Lenssen  
 W. Beavis  
 J. Rouse  
 G. Munkvold  
 M. Liebman  
 E. Heaton

**Projects on site, Ag Engineering**

Ag drainage well  
 Biomass harvest systems  
 Biomass harvesting  
 COBS project-South Reynoldson Farm  
 Manure/water quality plots  
 Teaching (GPS technology)  
 Soil nutrient/biomass harvest  
 Wetlands  
 L.E.B.R.C. Lab  
  
 USDA plots  
 USDA/plant physiology

**Project Leader**

M. Helmers  
 M. Darr  
 S. Birrell/John Deere  
 M. Helmers/M. Thompson/M. Liebman  
 M. Soupir  
 M. Darr  
 S. Birrell/D. Karlin/USDA  
 M. Helmers  
 Ag Engineering and Biosystems Engineering/  
 R. VanDePol  
 USDA researchers and Syngenta  
 T. Kaspar

## Central Iowa Farms Farm and Weather Summary

Kent Berns, superintendent

### Farm Comments

The ISU Central Iowa Farms consist of farmland in Story and Boone counties. There were 2,339 crop acres under Central Farms management with 370 acres devoted to intensive small plot research. The additional acres were used for large-scale research, equipment testing, silage production, and manure application. The student-managed Ag 450 Farm rented 285 acres, of which 103 acres were 50/50 sharecropped. The Ag 450 Farm also was hired to perform custom farm work on a portion of the Central Iowa Farm acres.

We continued to make numerous tile and waterway repairs and improvements at many farms. A 115 horsepower tractor was purchased for use by the corn breeding project on their planter.

*Projects.* A project list is available in this report.

### Crop Season Comments

The 2013 season was again extremely challenging. Very little corn was planted prior to May 1 due to cold conditions. Measurable

snowfall occurred two days in a row during the first week of May. Few days in May were fit for fieldwork. The first bulk soybeans were planted on June 8. The weather switched to hot and dry at corn pollination time. Japanese beetle populations were high on several farms.

Corn planting began on May 1 and was completed on June 19. Corn silage yields averaged 20 tons/acre with 68 percent moisture. Corn silage was harvested from 335 acres. Corn grain yields averaged 176 bushels/acre on the bulk acres.

Soybean planting began on June 8 and was completed on June 24. Soybean aphid levels remained low during the growing season. Yields averaged 48 bushels/acre. Fall harvesting of corn and soybeans began on October 3 and was completed on November 11.

### Weather Comments

The Ag Engineering/Agronomy Farm weather summary (Table 1, page 3) represents the weather data for all of the farms in central Iowa covered by this report.

## Project List

<b><u>Project-Central Iowa Farms</u></b>	<b><u>Farm Location</u></b>	<b><u>Project Leader</u></b>
Corn isolation plot (3)	AnS Teaching	K. Lamkey
Corn isolation plot	Beach Bottom	M. Blanco/F. Engstrom
Remote sensing	Been	B. Hornbuckle
Corn isolation plot	Bennett	T. Peterson
Corn isolation plot	Bennett	K. Wang/K. Warnberg
Isolation plots (4)	Bennett	J. Edwards
Manganese × glyphosate study	Bennett	M. Licht
Non-SCN prep area	Bennett	G. Gebhart
Bean leaf beetle study	Curtiss	F. Nutter
Corn and soybean herbicide research	Curtiss	M. Owen
Corn isolation plot	Curtiss	T. Peterson
Genetics corn nursery	Curtiss	R. Wise
Genetics corn nursery	Curtiss	Plant Trans. Facility
Genetics corn nursery	Curtiss	P. Schnable
Genetics corn nursery	Curtiss	E. Vollbrecht
Iowa corn yield test	Curtiss	J. Rouse
Soybean × traffic (high loss)	Curtiss	S. Wiggs/D. Mueller
Soybean × wheel traffic	Curtiss	S. Wiggs/D. Mueller
Soybean diseases – SDS	Curtiss	L. Leandro
Soybean growout	Curtiss	ICIA
Soybean insect study	Curtiss	E. Hodgson/G. Vannostrand
Soybean seed treatment study	Curtiss	G. Munkvold
Biomass-corn stover	Dairy	M. Darr
Harvest guidance systems	Dairy	M. Darr
Isolation plot	Dairy	P. Weber/A. Gassman
Rodent survey	Dairy	B. Danielson
Weather station	Dairy	F. Goodman
Weed science plot	Dairy	J. Lux/M. Owen
Corn isolation plot	Equine	P. Schnable
Corn isolation plot	Equine	K. Warnberg
Isolation plot	Equine	P. Weber
Corn breeding	Finch	P. Schnable
Mesocosms	Hinds	W. Crumpton
Miscanthus nursery	Hinds	E. Heaton
Soybean diseases	Hinds	S. Navi
Soybean diseases	Hinds	X.B. Yang
Soybean diseases	Hinds	L. Leandro
Soybean pathology	Hinds	A. Robertson
Soybean pathology	Hinds	D. Mueller
Soybean pathology	Hinds	G. Tylka
Bean leaf beetle studies	Johnson	E. Hodgson
Corn borer moth trapping	Johnson	R. Ritland
Corn breeding	Johnson	P. Schnable
Corn diseases	Johnson	G. Munkvold
Corn insect studies	Johnson	R. Hellmich



<b><u>Project-Central Iowa Farms (continued)</u></b>	<b><u>Farm Location</u></b>	<b><u>Project Leader</u></b>
Corn insect studies	Johnson	E. Hodgson
Corn insect studies	Johnson	A. Gassmann
Corn pathology studies	Johnson	G. Munkvold
Corn/corn tillage	Johnson	M. Licht
Double haploid corn nursery	Johnson	U. Frei/T. Lubberstadt
Nitrogen study	Johnson	M. Licht
No-till seed treatment	Johnson	G. Munkvold
SCN soybean plot	Johnson	G. Gebhart/G. Tylka
Seed treatment/corn nematode	Johnson	M. Licht
Study area and trap crop	Johnson	P. Weber/A. Gassmann
Waterhemp growout	Johnson	R. Hartzler
Continuous corn no-till	Kelley	R. Hellmich/K. Bidne
Tile water study, nitrogen stabilizer study	Kelley	R. Hartwig
Poplar trials/forestry breeding	Moore Bottom	R. Hall
Corn isolation plot	Packer	T. Peterson
Corn isolation plot	Packer	J. Edwards
Biomass-switchgrass	South Woodruff	E. Heaton
Corn observation	South Woodruff	ICIA
Corn yield trial	South Woodruff	J. Edwards
SCN soybean study	South Woodruff	C. Maret
Corn isolation plot	Vet Med	E. Vollbrecht
Corn isolation plot	Vet Med	P. Becraft
Regulatory soybeans	West Curtiss	L. Li
Weed research	West Curtiss	M. Owen
Corn diseases	Woodruff	A. Robertson
Corn isolation plot	Woodruff	M. Blanco/F. Engstrom
Cyst nematode control studies	Woodruff	G. Tylka
Transgenic corn isolation nursery	Woodruff	P. Becraft
Transgenic corn isolation nursery	Woodruff	T. Peterson
Transgenic corn isolation nursery	Woodruff	E. Vollbrecht
Transgenic corn isolation nursery	Woodruff	A. Myers
Isolation plot	Zumwalt	P. Schnable