

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 ¹	ANR ²	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

¹NR = normal rainfall.²ANR = 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. Wiedenhoft
 M. Wiedenhoft
 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

<u>Project-Central Iowa Farms</u>	<u>Farm Location</u>	<u>Project Leader</u>
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

<u>Project-Central Iowa Farms (continued)</u>	<u>Farm Location</u>	<u>Project Leader</u>
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