

2011

Ag Engineering/ Agronomy Farm and Central Iowa Farms Summary

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Ag Engineering/Agronomy Farm and Central Iowa Farms Summary

Abstract

Includes Ag Engineering and Agronomy Farm Farm and Weather Summary, Central Iowa Farms Farm and Weather Summary and Project List.

Keywords

RFRA10121

Disciplines

Agricultural Science | Agriculture

Ag Engineering/Agronomy Farm and Central Iowa Farms Summary

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Manager, Agronomy Farm.....Mike Fiscus
Manager, Ag Engineering Farm Richard VanDePol
Manager, Operations..... Will Emley

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

Central Iowa Farms

Superintendent and Isolation Plots Manager Kent Berns

BioCentury Research Farm

Manager Andrew Suby

Research Farms Coordinator..... Mark Honeyman
Farms Manager Dennis Shannon
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Iowa State University

Ag Engineering/Agronomy Research Farm
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Boone, IA 50036
515-432-5350 Ag Engineering office phone
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Location: West of Ames on Highway 30, across from the United Community School

Central Iowa Research Farms
in Story and Boone counties
32 Curtiss Hall
Iowa State University
Ames, IA 50011-1050
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Ag Engineering and Agronomy Farm Farm and Weather Summary

Mike Fiscus, ag specialist
Richard VanDePol, ag specialist

Farm Comments

Field days and tours. Four field day events and tours were held with 370 visitors. Topics included a cover crop field day hosted by Practical Farmers of Iowa in April, tours of biochar research plots associated with the BioChar Conference in June, Ag Engineering/Agronomy (AEA) Farm tours offered to Farm Progress Show attendees in late August, and another Practical Farmers of Iowa field day highlighting corn breeding and corn yield test plots in September.

Developments. The 2009 opening of the BioCentury Research Farm (BCRF) facilitated AEA Farm cooperative efforts in biomass plot and field research activities.

Facilities. A new rock crossing was installed in the main waterway running through the Bass and Marsden farms to provide better traffic flow to Marsden and Burkey farms.

New projects. A corn cob residue study was started to measure soil fertility effects of varying cob density residues in no-till and conventional tilling methods. Mahdi Al-Kaisi is the principal investigator.

A canola evaluation study led by Mary Wiedenhoft was started to determine its potential in Iowa crop rotations. Winter wheat and red clover are the cover crops included in this study.

Some long-term projects ended in 2010. A weed science project and a long-term tillage project ended, which allowed some smaller areas to be combined into larger fields that will accommodate larger farm equipment. The

larger fields will be made available to researchers in the future.

This was the first time that harvest labs were not taught at the Ag Engineering farm in the field with an actual combine.

The AEA Farm continued to assist the BCRF, with the use of machinery and equipment, and providing shop support.

Some of the manure/water quality plots have been converted to a Bio-Economy plot area. These are under the direction of Matt Helmers.

Other biomass related research plots continue expanding to study the effects of biomass removal on soil fertility and potential soil erosion.

Crop Season Comments

Oat seeding started March 31 and was completed April 5. Harvest began in mid-July, with yields of 60 to 80 bushels/acre.

Corn planting started April 13 and was completed May 19. Harvest began September 28 and was completed November 5. Yields were average with a range of 130–200 bushels/acre.

Soybean planting began May 4 and was completed May 29. Harvest began September 30 and was completed November 1. Average yields were 45–65 bushels/acre.

Weather Comments

Winter. A total snowfall of 41.3 in. was recorded with a total moisture equivalent of 5.18 in. February recorded the highest monthly snowfall total of 17.4 in.

Spring. A total of 13.83 in. of rainfall was recorded. Measurable precipitation was recorded 13 of the first 20 days of June. Total rainfall for June was 11.17 in. (Table 1). The last frost date was April 3. Soil temperatures at the 4-in. depth began to average 50°F on April 2, cooled somewhat for ten days, then maintained 50°F starting on April 12.

Summer. A total of 26.7 in. of rain fell during the summer months with 11.21 in. during August.

Fall. A total of 5.44 in. of rain was recorded with the first snowfall on December 11. October recorded 0.38 in. of rain, which led to outstanding harvest weather. The first frost

date was October 31, and the first killing frost was November 1. Total precipitation for the calendar year was 50.39 in., which was 18.44 in. above normal.

Long-term precipitation. Table 2 shows precipitation at the research farm for the last 11 years. The last nine years have been wetter than normal with 2 years (2008 and 2010) about 18 in. of precipitation above normal or more than 50 percent greater than normal. Also 24 months had more than 5 inches of precipitation. Based on the data in Table 2, the farm is experiencing increasingly wetter years with more extreme rainfall amounts.

Table 1. Monthly rainfall and average temperatures during the 2010 growing season at the Ag Engineering/Agronomy Research Farm, Boone, IA.

Month	Rainfall (in.)		Temperature (°F)		Days 90°F or above
	2010	Deviation from normal	2010	Deviation from normal	
March	2.07	0.27	38	2	0
April	3.66	0.48	56	6	0
May	3.64	-0.76	62	1	0
June	11.17	6.35	72	2	0
July	6.74	3.05	75	1	5
August	11.21	7.24	74	2	4
September	6.57	2.99	64	0	0
October	0.38	-2.03	54	2	0
Totals	45.44	17.59			9

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

Month	NR ¹	ANR ²	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Jan	0.81	0.88	0.37	1.11	0.26	0.25	0.71	0.50	0.62	0.56	0.24	0.95	1.17
Feb	0.92	1.74	1.63	1.28	1.00	0.47	1.41	1.83	0.41	1.77	0.71	0.25	0.75
Mar	1.80	3.81	0.44	1.10	0.36	1.11	3.52	1.38	2.63	3.09	2.71	4.07	2.07
Apr	3.18	6.97	0.82	3.78	3.71	4.42	2.40	3.29	4.30	5.99	5.22	4.56	3.66
May	4.40	11.46	4.74	7.49	5.13	4.81	8.18	4.38	2.15	6.67	8.49	3.78	3.64
Jun	4.76	17.23	4.08	1.96	3.17	5.90	3.59	4.89	0.81	2.03	10.68	4.11	11.17
Jul	3.68	20.66	2.84	1.90	5.90	6.60	1.96	4.10	5.56	2.95	9.28	2.75	6.74
Aug	3.87	24.29	1.33	2.91	8.21	1.00	5.19	6.76	6.16	7.89	2.10	4.84	11.21
Sep	3.57	27.57	1.01	5.87	1.48	3.93	1.34	4.36	7.51	1.90	3.09	0.96	6.57
Oct	2.42	29.76	1.97	2.56	3.14	0.94	1.79	0.35	2.53	5.41	3.63	7.33	0.38
Nov	1.53	30.90	2.38	1.43	0.18	4.31	3.01	1.89	1.56	0.14	2.59	1.38	2.23
Dec	1.01	31.85	1.59	0.38	0.00	1.05	0.46	0.94	2.67	1.90	1.20	1.96	0.80
Total	31.95		23.20	31.77	32.54	34.79	33.56	34.67	36.91	40.30	49.94	36.94	50.39
Dept from Normal			-8.75	-0.18	0.59	2.84	1.61	2.72	4.96	8.35	17.99	4.99	18.44

¹NR = normal rainfall.

²ANR = accumulated normal rainfall

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 2,262 crop acres under Central Farms management with 370 acres devoted to intensive small plot research. The additional acres are 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 is hired to perform custom farm work on a portion of the Central Iowa Farm acres.

Highlights. The Agronomy Farm Mobile Plot Unit and the Central IA Farms were merged into one operation in 2010 due to a retirement.

Numerous tile repairs and improvements were made on the Curtiss, Johnson, Dairy, Accola, and Bennett Farms. A pair of wild trumpeter swans returned and successfully nested on a restored wetland at the Kelley farm.

Projects. A Roundup Ready corn vs. multiple trait corn study was conducted at the Bennett Farm. A rodent population dispersion study was conducted at the Anderson/Dyas Prairie, the South State Farm, and the South Woodruff farm. A 20-acre switchgrass study was conducted at the South Woodruff Farm. A large biomass harvesting systems study was conducted on 290 acres. Other Ag Engineering harvest studies were conducted on 300 additional acres. A remote sensing

project continues on 177 acres south of Ames. Both Ag Engineering projects will continue in 2011.

Crop Season Comments

The 2010 season was again very challenging. Corn and bean planting dates were mostly ideal. Heavier precipitation occurred during spraying season. Extremely heavy rains occurred in late summer. The growing season was wet and cold in 2010. Nearly every cornfield exhibited signs of premature nitrogen loss. Plots and crops were lost at the Applied Science and Hinds Farms due to flooding.

Corn planting began on April 19 and was completed on May 3. Corn silage yields were poor at 19.6 tons/acre with 62 percent moisture. Corn silage was harvested on 360 acres. Corn grain yields averaged 143 bushels/acre and ranged from 114 to 190 bushels/acre.

Soybean planting began on May 1 and was completed on May 18. Soybean aphid levels remained low during the growing season. Yields ranged from 38 to 63 bushels/acre with an average of 52 bushels/acre. Fall harvesting of corn and soybeans began on September 22 and was completed on November 15.

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-Agronomy Farm, Mobile Unit</u>	<u>Farm Location</u>	<u>Project Leader</u>
Corn isolation plot	AnS Teaching	E. Vollbrecht
Corn isolation plot	AnS Teaching	K. Lamkey
Corn isolation plot	Beach Bottom	M. Blanco
Corn isolation plot	Beef Nutrition	K. Lamkey
Corn isolation plot	Bennett	T. Peterson
Corn isolation plot	Bennett	L. Pollak
Corn and soybean herbicide research	Curtiss	M. Owen
Corn foliar diseases	Curtiss	A. Robertson
Corn isolation plot	Curtiss	T. Peterson
Genetics corn nursery	Curtiss	P. Becraft
Genetics corn nursery	Curtiss	M. James
Genetics corn nursery	Curtiss	R. Wise
Genetics corn nursery	Curtiss	T. Peterson
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 aphid study	Curtiss	M. O'Neal
Soybean breeding	Curtiss	S. Cianzio
Soybean disease study	Curtiss	X.B. Yang
Soybean foliar diseases	Curtiss	A. Robertson
Soybean growout	Curtiss	Iowa Crop Improvement
Corn breeding nursery	Hinds	L. Pollak
Corn diseases studies	Hinds	A. Robertson
Miscanthus nursery	Hinds	E. Heaton
Soybean breeding	Hinds	S. Cianzio
Soybean disease microplots	Hinds	G. Munkvold
Soybean diseases	Hinds	L. Leandro
Soybean diseases	Hinds	X.B. Yang
Soybean production	Hinds	R. Mullen
Soybean SCN study	Hinds	G. Tylka
Bean leaf beetle studies	Johnson	E. Hodgson
Corn borer studies	Johnson	R. Hellmich
Corn diseases	Johnson	G. Munkvold
Corn foliar diseases	Johnson	A. Robertson
Corn growout	Johnson	Iowa Crop Improvement
Corn isolation plot	Johnson	K. Lamkey
Corn root degradation	Johnson	P. Schnable
Rootworm and seed corn maggot studies	Johnson	A. Gassman
Soybean aphid studies	Johnson	M. O'Neal
Soybean production	Johnson	P. Pedersen
Wheat foliar disease studies	Johnson	F. Nutter
Corn isolation plot	Old Dairy	P. Schnable
Corn isolation plot	Old Dairy	E. Vollbrecht

Project List

<u>Project-Agron Farm, Mobile Unit (cont'd)</u>	<u>Farm Location</u>	<u>Project Leader</u>
Corn isolation plot	Packer	T. Peterson
Corn isolation plot	Packer	P. Schnable
Corn fertility study	Sorenson	J. Sawyer
Forages/biomass research	Sorenson	K. Moore
Relay cropping	Sorenson	M. Wiedenhoeft
Corn isolation plot	Vet Med	T. Peterson
Corn isolation plots	Vet Med	J. Edwards
Soil fertility	West Curtiss	R. Killorn
Weed research	West Curtiss	R. Hartzler
Weed research	West Curtiss	M. Owen
Corn diseases	Woodruff	G. Munkvold
Corn foliar diseases	Woodruff	A. Robertson
Corn isolation plot	Woodruff	M. Blanco
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	M. James
Transgenic corn isolation nursery	Woodruff	P. Scott
<u>Project-Central Iowa</u>	<u>Farm Location</u>	<u>Project Leader</u>
Biomass-corn stover	Dairy/Johnson	M. Darr
Biomass-switchgrass	S. Woodruff	E. Heaton
Corn borer moth trapping	Dairy	R. Ritland
Corn yield trial	Bennett	J. Edwards
Herbicide evaluation	Rhodes	Dow Agrosiences
IDC soybean screening	S. Woodruff	G. Gebhart/G. Tylka
Poplar trials/forestry breeding	Moore Bottom	R. Hall
Remote sensing	Been	B. Hornbuckle
Riparian grazing	Rhodes	J. Russell
Rodent survey	Anderson/Dyas	B. Danielson
	Prairie	
SCN resistant soybean breeding	S. Woodruff	G. Gebhart/G. Tylka
Soybean yield trial	Bennett	P. Pedersen
Strip tillage	Finch	M. Wuebker
Tile water study, nitrogen stabilizer study	Kelley	R. Hartwig
<u>Project-Agronomy Farm</u>	<u>Department</u>	<u>Project Leader</u>
Alternative biomass cropping systems	Ag Engr/Agronomy	K. Moore/L. Schulte
Biomass research-corn production	Ag/Biosystems Engr	S. Birrell
Biomass/Miscanthus Research	Agronomy	E. Heaton
Comparison of biofuel systems (COBS)	Ag Engr/Agronomy	M. Liebman/M. Helmers

<u>Project-Agronomy Farm (cont'd)</u>	<u>Department</u>	<u>Project Leader</u>
Corn breeding	Agronomy	K. Lamkey
Corn breeding	Agronomy	L. Pollak
Corn breeding	Agronomy	M. Lee
Corn breeding	Agronomy	J. Edwards
Corn breeding	Agronomy	P. Scott
Corn rootworm research	USDA	L. Lewis
Corn/soybean cover crop research	Agronomy	J. Sawyer
Corn stover residue removal study	Agronomy	M. Al-Kaisi/J. Sawyer
ISU Extension corn management research	Agronomy	R. Elmore
Long term nitrogen trials	Agronomy	J. Sawyer
Long-term continuous corn tillage study	Agronomy	M. Al-Kaisi
Long-term tillage study	Agronomy	M. Al-Kaisi
Maize genetics breeding	Agronomy	P. Peterson
Organic corn breeding	Agronomy	L. Pollak
Organic cover crop research	Agronomy	K. Delate
Small grains research	Agronomy	G. Patrick
Soil fertility	Agronomy	A. Mallarino
Sorghum breeding	Agronomy	M. Salas-Fernandez
Soybean and corn emergence trials	Seed Science	S. Goggi
Soybean breeding	USDA	R. Palmer
Soybean breeding	Agronomy	W. Fehr
Soybean cyst nematode trials	Plant Pathology	G. Tylka/S. Cianzio
Soybean disease research	Plant Pathology	L. Leandro
Soybean extension research	Agronomy	P. Pedersen
Soybean iron chlorosis plots	ICIA	J. Rouse
Soybean/corn disease research	Plant Pathology	G. Munkvold
Sustainable ag cropping systems	Agronomy	M. Liebman
Sustainable biomass crop production	Agronomy	M. Liebman

<u>Projects on site, Ag Engineering</u>	<u>Project Leader</u>
Ag drainage well	M. Helmers
Bio composting	T. Glanville
Biomass harvesting	S. Birrell/John Deere
COBS project-Reynoldson Farm	M. Helmers/M. Thompson/M. Liebman
Manure/water quality	M. Helmers/R. Kanwar
Random tillages	M. Hanna
Soil nutrient/biomass harvest	S. Birrell/D. Karlin/USDA
Teaching	R. Kanwar
Till hydrology	R. Kanwar
USDA projects	M. Burkart
USDA/plant physiology	T. Kaspar
Weed science/Roundup resistance	M. Owen
Wetlands/water quality	M. Helmers/R. Kanwar