Ag Engineering and Agronomy Farm and Central Iowa Research Farms Summary

RFR-A15109

Farms Staff

Ag Engineering/Agronomy Farm

Manager, Agronomy Farm...Mike Fiscus
Manager, Ag Engineering Farm .... Richard VanDePol
Manager, Operations.. Will Emley (retired February 2015)
Ag Specialist, GPS Technologies ....Nathan Meyers
Ag Specialist, On-Farm Cooperator Trials ....Zachary Koopman

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

Central Iowa Farms

Superintendent .... 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 397 visitors at the farm in 2015. A field day was held August 27, hosting 125 visitors on the topic of UAV (Unmanned Aerial Vehicle) uses. Presentations were given by the university community and private industry on crop scouting capabilities and laws regulating the UAV industry. Seventy agronomists and farmers from Brazil toured the farm August 28. We hosted the 2015 State of Iowa Soil Judging Contest for the high school division, with 125 high school students judging in three different soil pits dug at the farm. The farm also was used as a site for a Commercial Driver's License course for 50 students. The driving portion of the course was held on the farm grounds and surrounding county roads.

Developments. The gravel road in front of the farm, U Avenue, was paved with concrete in July. The pavement runs south from Highway 30 to the scale driveway at the BioCentury Research Farm (BCRF). This was a great improvement for access to both BCRF and the AEA Farm.

Facilities and equipment. A new 8-row planter was built at the farm utilizing a stack-fold toolbar purchased from Orthmann Manufacturing, using Case-IH row units for seed placement. The three-point mounted planter is carried by a tractor with GPS capability to auto-steer the tractor through the field and to lay out plots for research, eliminating the need to stake out each plot. The planter also was equipped with electric row shut-offs to help prevent overlapping of planted rows into end rows and plot headlands.

New projects. Antonio Mallarino and Matt Helmers completed the first full year of a water quality/cover crop study at the Hermann Farm south of Ames. The study involves measuring rainfall runoff from slopes that have different tillage treatments (no-till vs. conservation tillage) and cover crop treatments (with and without rye cover crop).

Crop Season Comments

Oat seeding was from March 23 to April 1. The oats were harvested in mid-July, with average yields of 104 bushels/acre. The average test weight was 39 lb/bushel, surpassing previous test weight averages by 4–5 lb/bushel.

Corn planting started April 29 and was completed June 4. Harvest began September 25 and was completed October 27. Yields were variable with a range of 115–240 bushels/acre. Low yields were due to the effects of northern corn leaf blight on susceptible hybrids.

Soybean planting began May 1 and was completed June 4. Harvest began October 8 and was completed October 20. Yields ranged from 35–65 bushels/acre.

Weather Comments

Winter. Total snowfall of 18.2 in. was recorded with a total moisture equivalent of 1.13 in., including rainfall and snowfall events.

Spring. A rainfall total of 8.23 in. was recorded for the months of March, April, and May (Table 1). The last frost date was April

22, with the last hard freeze March 27. Soil temperatures at the 4-in. depth began to average 50°F on April 29.

Summer. A total of 21.12 in. of rain fell during the summer months of June through August. Rainfall for August was 8.26 in., with a total of 11.2 in. of rain from August 1 through September 7.

Fall. A total of 9.07 in. of rain was recorded for September through November with the first measurable snowfall of 1 in. falling November 20. The first hard freeze occurred November 8 with a temperature of 29°F. There was a 5.05 in. rainfall in December, 4 in. over normal for the month.

A total of 44.60 in. of rain was recorded for 2015, 12.37 in. above normal (Table 2).

Table 1. Monthly rainfall and average temperatures during the 2015 growing season at the ISU Ag Engineering/Agronomy Research Farm, Boone, IA.

Month	Rainfall (in.)		Avg. temperature (^{o}F)		Days 90°F or above
	2015	Deviation from normal	2015	Deviation from normal	
March	0.21	-1.57	40	4	0
April	3.45	0.21	53	3	0
May	4.57	0.16	62	2	0
June	6.90	2.06	71	1	0
July	5.96	2.28	73	-1	5
August	8.26	4.30	70	-2	0
September	5.05	1.48	70	5	1
October	1.27	1.13	53	1	0
Totals	35.67	10.05			6

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

Mo.	NR[1]	ANR[2]	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Jan	0.80	0.80	0.50	0.62	0.56	0.24	0.95	1.17	0.70	0.26	0.41	0.10	0.19
Feb	0.93	1.73	1.83	0.41	1.77	0.71	0.25	0.75	1.06	1.74	0.73	1.15	0.94
Mar	1.78	3.51	1.38	2.63	3.09	2.71	4.07	2.07	0.79	2.49	1.48	1.00	0.21
Apr	3.24	6.75	3.29	4.30	5.99	5.22	4.56	3.66	4.41	4.79	5.81	4.75	3.45
May	4.41	11.16	4.38	2.15	6.67	8.49	3.78	3.64	4.62	2.46	7.09	4.26	4.57
Jun	4.82	15.98	4.89	0.81	2.03	10.68	4.11	11.17	5.05	2.94	3.01	8.86	6.90
July	3.66	19.64	4.10	5.56	2.95	9.28	2.75	6.74	3.90	1.47	1.01	2.88	5.96
Aug	3.92	23.56	6.76	6.16	7.89	2.10	4.84	11.21	3.58	2.98	2.18	5.70	8.26
Sept	3.56	27.12	4.36	7.51	1.90	3.09	0.96	6.57	2.02	1.85	1.19	5.55	5.05
Oct	2.41	29.53	0.35	2.53	5.41	3.63	7.33	0.38	0.86	2.34	2.50	3.75	1.27
Nov	1.54	31.07	1.89	1.56	0.14	2.59	1.38	2.23	2.72	0.90	1.40	0.71	2.75
Dec	1.02	32.09	0.94	2.67	1.90	1.20	1.96	0.80	2.23	1.02	0.32	1.15	5.05
Tot.	32.23		34.67	36.91	40.30	49.94	36.94	50.39	31.94	25.24	27.13	39.86	44.60
Departure from Normal			2.56	4.80	8.19	17.83	4.83	18.28	-0.17	-6.84	-4.98	7.77	12.37

[1]NR = normal rainfall.
[2]ANR = accumulated normal rainfall.

Project List

Project–Agronomy Farm	Department	Project Leader
BCRF plant zoo	BCRF	A. Suby
Biochar research trials	Agronomy	D. Laird
CAD soybean grow-out	CAD	L. Henn
Corn and sorghum water use trial	Agronomy	A. VanLoocke
Corn and soybean date of planting studies	Agronomy	M. Licht
Corn and soybean yield trials and observation plots	ICIA	J. Rouse
Corn breeding	Agronomy	J. Yu
Corn breeding	Agronomy	J. Edwards
Corn breeding	Agronomy	P. Scott
Corn breeding	Agronomy	T. Lubberstedt
Corn breeding	Entomology/USDA	C. Abel
Corn nitrogen stabilization trial	Agronomy	J. Sawyer
Corn residue removal study	Agronomy	M. Al-Kaisi
Corn rootworm research	USDA	A. Gassmann
Corn rootworm/plant pathology trials	Plant Pathology	N. Lauter
Corn starter fertilizer trial	Agronomy	M. Licht
Corn stover biomass removal trial	ABE/USDA	S. Birrell/D. Karlen
Corn stover/biomass research trials	ABE	S. Birrell
Corn/soybean cover crop research	Agronomy	J. Sawyer
Cover crop production research	Agronomy	A. Lenssen
Crop modeling study	Agronomy	S. Archontoulis
FEEL research plots	Agronomy/Plant Pathology	D. Mueller
Forage and biomass production systems	Agronomy	K. Moore
Forage species study (Independent Co.)	Agronomy	K. Moore/Dow Chemical
Global maize production study	Agronomy	J. Sawyer
Hail study	Plant Pathology	D. Mueller
Humic acid study	USDA	D. Dinnes
Kernza observation trial	Agronomy	M. Wiedenhoeft
Long-term continuous corn tillage study	Agronomy	M. Al-Kaisi
Long-term nitrogen trial	Agronomy	J. Sawyer
Long-term tillage study	Agronomy	M. Al-Kaisi
Miscanthus/corn nitrogen trial	Agronomy	E. Heaton
Monarch habitat/milkweed trial	Entomology/USDA	R. Hellmich
Organic corn breeding	Agronomy	J. Edwards
Organic cover crop research	Agronomy	K. Delate
Organic oat/alfalfa trial	Agronomy	M. Wiedenhoeft
Plant pathology corn-soybean tillage trial	Plant Pathology	D. Mueller
Plant pathology soybean disease trials	Plant Pathology	D. Mueller
Poplar tree observation trial	Horticulture	R. Hall
Prairie forbs establishment trial	Entomology/USDA	R. Hellmich
Soil fertility research	Agronomy	A. Mallarino

Project-Agronomy Farm (continued)	**Department**	**Project Leader**
Sorghum breeding	Agronomy	M. Salas-Fernandez
Soybean and corn emergence trials	Seed Science	S. Goggi
Soybean and corn plant pathology trials	Plant Pathology	A. Robertson
Soybean aphid suction trap	Entomology	E. Hodgson
Soybean breeding	Agronomy	D. Singh
Soybean cover crop evaluation trial	Plant Pathology	L. Leandro
Soybean cyst nematode trials	Plant Pathology	G. Tylka/S. Cianzio
Soybean disease research	Plant Pathology	L. Leandro
Soybean disease trials and research	Plant Pathology	C. Marett/G. Tylka
Soybean nitrogen study	Agronomy	M. Licht
Sustainable ag cropping systems	Agronomy	M. Liebman
Switchgrass/miscanthus research	Agronomy	E. Heaton
Weed science roundup resistance experiment	Agronomy	M. Owen
Winfield plot accuracy trial	Agronomy	K. Moore
Winter wheat cover crop trial	Agronomy	M. Licht

Projects on site, Ag Engineering	**Department**	**Project Leader**
Ag drainage well	ABE	M. Helmers
Biomass harvest systems	ABE	M. Darr
Biomass harvesting	ABE	S. Birrell/John Deere
Bioreactors	ABE	M. Soupir
COBS project-South Reynoldson Farm	ABE/Agronomy	M. Helmers/M. Thompson/ M. Liebman
Cover crop/tillage systems and nutrient runoff trial	ABE/Agronomy	M. Helmers/A. Mallarino
Kinze planter trial	ABE	S. Birrell
LEBRC Lab	ABE	AEA Farm/R. VanDePol
Manure/water quality plots	ABE	M. Soupir
Soil nutrient/biomass harvest	ABE/USDA	S. Birrell/D. Karlen
Teaching (GPS technology)	ABE	M. Darr
USDA organic/water quality plots	USDA	C. Cambardella
USDA plots	USDA	USDA researchers and Syngenta
USDA/plant physiology	USDA	T. Kaspar
Weather instrument trial	ABE	M. Hanna
Wetlands	ABE	M. Helmers

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 2,397 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 approximately 150 acres and sharecropped another 52 acres. The Ag 450 Farm also was hired to perform custom farm work on a portion of the Central Iowa Farms.

We continued to make numerous tile and waterway repairs and improvements at many farms. A new main and numerous lateral drainage tiles replaced old and ineffective tiles at the Been Farm ahead of planting. A new main and numerous lateral drainage tiles replaced old and ineffective tiles at the Bennett Farm after harvest. A 150-horsepower tractor was purchased to replace a tractor that was transferred to the Northern Research Farm. A 16-row electric drive planter was replaced with a 16-row ground-driven planter. A 6-row pull planter was replaced by an 8-row stack-fold planter. Calmer BT Chopper stalk rolls replaced the original stalk rolls on the corn head. Numerous areas were grid soil sampled in the fall, and pelletized lime was used to correct soil pH in a few areas of plot farms. Sunn Hemp, a tropical legume, was planted into the wheat stubble as a cover crop.

Radish seed was aerially applied as a cover crop over cornfield endrows in late August. A cover crop was seeded to all corn silage acres after chopping.

Projects. A project list is available in this article.

Crop Season Comments

The 2015 season was wet with many large rain events. Aphid populations approached threshold in a few plot fields. Bulk field populations remained under threshold and spraying was withheld. Northern corn leaf blight was evident in many hybrids and an airplane was hired to spray approximately 60 percent of the bulk acres.

Bulk corn planting began April 29 and was completed May 15. Corn silage yields averaged 31 tons/acre at an 8-in. cut height with 67 percent moisture. A total of 191 corn acres were harvested for silage. Bulk corn grain yields averaged 190 bushels/acre.

Soybean planting began May 13 and was completed May 22. Yields averaged 56 bushels/acre. Fall harvesting of corn and soybeans began October 3 and was completed November 16.

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

Project-Central Iowa Farms	Farm Location	Project Leader
Corn isolation	Applied Science	F. Engstrom
Forestry breeding	Applied Science	R. Hall
Prairie × rodent	Applied Science	B. Mortensen
Vegetable fabric test	Applied Science	M. Hanna
Corn isolation	Beach Bottom	G. Fuente
Isolation	Beach Bottom	J. Edwards
Corn isolation 3x	Beef Teaching	P. White
Corn remote sensing	Been	B. Hornbuckle
Encirca trial	Been	M. Darr
Inbred growout	Bennett	J. Edwards
Soybean SCN yield trial	Bennett	G. Gebhart
Bee hive	Century Corn Plot	G. Morgal
Corn isolation	Cross Country Track	L. Coffey
Acoustic bat monitoring	Curtiss	J. Blanchong
Captiva study	Curtiss	M. Johnson
Corn breeding, irrigated	Curtiss	P. Becraft
Corn breeding, irrigated	Curtiss	L. Coffey
Corn breeding, irrigated	Curtiss	T. Peterson
Corn breeding, irrigated	Curtiss	E. Vollbrecht
Corn breeding, irrigated	Curtiss	D. Little
Corn breeding, non-irrigated	Curtiss	E. Vollbrecht
Corn nursery	Curtiss	M. Hufford
Corn nursery	Curtiss	M. Muszynski
Corn nursery	Curtiss	A. Myers
Growout	Curtiss	B. Yang
Soybean breeding	Curtiss	L. Li
Soybean disease	Curtiss	S. Wiggs
Weed science	Curtiss	D. Franzenburg
Weed science	Curtiss	D. Franzenburg
Milkweed	Dairy Filter Strip	R. Hellmich
Corn isolation	Dog Track	L. Coffey
Corn isolation	East Curtiss	T. Peterson
Milkweed	East Curtiss	R. Hellmich
Corn breeding, non-irrigated	East Kelley	L. Coffey
Corn isolation	Equine	L. Coffey
Teaching plots	Equine	E. Christian
IDC screen	Finch	G. Gebhart
Mesocosm	Hinds	A. Van Der Valk

Project-Central Iowa Farms	Farm Location	Project Leader
Miscanthus nursery	Hinds	E. Heaton
SDS	Hinds	L. Leandro
Soybean breeding	Hinds	M. Bhattacharyya
Soybean breeding	Hinds	B. Scott
Soybean charcoal rot	Hinds	S. Navi
Soybean pathology	Hinds	S. Navi
Soybean pathology	Hinds	S. Wiggs
Soybean pathology	Hinds	G. Gebhart
Soybean white mold	Hinds	S. Navi
Bayer trial	Johnson	G. Vannostrand
Black cutworm	Johnson	P. Weber
Dupont trial	Johnson	G. Vannostrand
Foliar products, corn	Johnson	M. Johnson
Fungicide trial	Johnson	J. Shriver
Herbicide × fungicide evaluation	Johnson	D. Franzenburg
Japanese beetle	Johnson	G. Vannostrand
No-till soybeans	Johnson	G. Munkvold
Plant Path	Johnson	G. Munkvold
Rice breeding	Johnson	L. Li
Rootworm trials	Johnson	P. Weber
Seedcorn maggot	Johnson	P. Weber
Syngenta	Johnson	G. Vannostrand
Syngenta	Johnson	G. Vannostrand
Sorghum breeding	Kelley	M. Salas-Fernandez
USDA water quality	Kelley	B. Knutson
Corn isolation	North Packer	L. Coffey
Harvest performance	Numerous	M. Darr
Precision/modeling	Numerous	M. Darr
Isolation	Packer	J. Edwards
Corn isolation	Pony Track	L. Coffey
Corn nursery	South Woodruff	L. Li
SCN	South Woodruff	C. Maret
SCN yield trials	South Woodruff	G. Gebhart
Soybean future SCN	South Woodruff	G. Gebhart
Switchgrass × N	South Woodruff	E. Heaton
Milkweed establishment	Swine Nutrition	R. Hartzler
Seed treatment	West Curtiss	C. Arnold

Project-Central Iowa Farms	Farm Location	Project Leader
Wasp research	West Dairy	A. Geffre
Corn nursery	Woodruff	T. Bierwagen
Corn nursery	Woodruff	T. Peterson
Corn nursery	Woodruff	E. Vollbrecht
Corn nursery	Woodruff	P. Becraft
Corn Isolation	Zumwalt	F. Engstrom