Ag Engineering and Agronomy Farm and Central Iowa Research Farms Summary

RFR-A17111

Farms Staff

Ag Engineering/Agronomy Farm, 1308 U Avenue, Boone, IA
  515-296-4081 Ag Engineering office/515-296-4082 Agronomy office

Superintendent ....Mike Fiscus
Manager, Ag Engineering...Nathan Meyers
Ag Specialist ....Zachary Koopman
Ag Specialist .... Ethan Thies
Ag Specialist .... Ryan Budnik
Farm Equipment Mechanic...Jeff Erb
Farm Equipment Operator ....Dale Niedermann (retired 2/28/18)

Central Iowa Farms, ISU Curtiss Farm, 2219 State Avenue, Ames, IA, 515-290-1498

Superintendent .... Kent Berns
Ag Specialist (1/2 time CIF, ½ time CAD) .... Karl Nicolaus
Farm Equipment Operator ....John Reinhart

College Shop, 52099 260th Street, Ames, IA, 641-751-0280

Farm Equipment Mechanic.. Dan Crosman

Compost Facility, 52271 260th Street, Ames, IA, 515-450-0581

Ag Specialist ....Steve Jonas
Research Associate .... Arlie Penner

BioCentury Research Farm, 1327 U Avenue, Boone, IA, 515-296-6300

Manager .... Andrew Suby
Assistant Manager...Jordan Funkhouser

Research Farms Coordinator.. Mark Honeyman
Farms Manager .... Tim Goode
103 Curtiss Hall, 513 Farm House Lane
Iowa State University

Ag Engineering and Agronomy Farm
Farm and Weather Summary

Mike Fiscus, superintendent
Nathan Meyers, ag specialist

Farm Comments

Field days and tours. The Ag Engineering and Agronomy (AEA) Farm hosted 372 visitors in 2017. Visitors included 80 students from the West Delaware School District to learn about plant breeding and other research at the farm. The farm also hosted five field days highlighting various research projects. The field days included groups visiting the sustainable ag cropping systems plots, a water quality week featuring water quality studies, a tour group viewing the new Enviratron facility, and an ISU field day featuring the forecast and assessment of cropping systems research plots (FACTS).

Developments. The AEA farm added two new staff members to replace recent retirements. Ryan Budnik joined the staff in fall 2016 as a cropping systems specialist to help with plot research at the farm. Ethan Thies joined the staff in 2016 to help with equipment maintenance and fabrication, water quality research projects, and maintenance of the ISU Mesonet Weather Station network.

Facilities and equipment. A new machine shed was constructed to replace storage space lost due to the development of the new soils lab building for the Ag and Biosystems Engineering Department (ABE).

Work continues on renovation of the former USDA Soils Lab Building to be used for the ABE department. Two linear soil bins were donated by Caterpillar Corporation in summer 2017, and will be installed in the renovated soils lab building for tillage and compaction studies. A circular soil bin also will be installed for similar studies. Mehari Tekesti and Stuart Birrell, ABE, are leading these projects. All three soil bins should be operational by summer 2018.

New projects. The Enviratron Facility was completed and opened for operation in fall 2017. The Enviratron houses eight growth chambers serviced by a robotic rover to obtain data from each chamber. More information can be found at https://www.news.iastate.edu/news/2014/10/10/envirtatron.

Work continues with a water quality study involving bioreactors under a project led by Michelle Soupir, ABE. Data was collected throughout the summer on water discharge from nine different bioreactors. More information can be found at http://www.cals.iastate.edu/news/releases/iowa-nutrient-research-center-iowa-state-university-funds-water-quality-projects.

Crop Season Comments

Oat seeding was completed March 23, 2017. The oats were harvested mid-July, with average yields of 93 bushels/acre.

Corn planting started April 24 and was completed June 1. Harvest began September 28 and was completed November 2. Yields were very good, with a whole farm average of 220 bushels/acre.

Soybean planting began May 6 and was completed June 7. Harvest began October 3 and was completed October 20. The whole farm average was 56 bushels/acre.

Weather Comments

Winter. Total snowfall for January, February, and March was 8.30 in. Rainfall equivalent and rainfall events totaled 6.16 in.

Spring. A rainfall total of 10.95 in. was recorded for the months of April, May, and June. A total of 6.16 in. fell in May. The last hard freeze was March 23 with a low temperature of 24ºF. Soil temperatures at the 4-in. depth began to average 50ºF April 9, but then cooled to the low 40s until May 6, when soil temperatures started to warm again. Another cool stretch of weather occurred May 19–25, inhibiting corn germination on untreated seed. Some organic corn plots had to be replanted.

Summer. A total of 6.13 in. of rain fell during the summer months of July through September, 5.13 in. below normal. Only 0.99 in. fell during the month of July. High humidity during July and a cool August helped relieve the crops from drought stress. Rainfall events totaling 0.94 in. September 16–19 helped with grain fill on the corn crop.

Fall. A total of 6.50 in. of rain was recorded for the months of October through December. A total of 6.07 in. fell in October. The first measurable snowfall of 0.8 in. occurred December 24. The first hard freeze was October 29 with a temperature of 24ºF.

A total of 29.74 in. of rain was recorded for 2017, 2.52 in. below normal (Table 2).

Table 1. Monthly rainfall and average temperatures during the 2017 growing season at the ISU Ag Engineering/Agronomy Research Farm, Boone, IA.

Month	Rainfall (in.) 2017	Deviation from normal	Avg. temperature (ºF) 2017	Deviation from normal	Days 90ºF or above
March	3.11	1.32	39	3	0
April	3.06	-0.19	53	3	0
May	6.16	1.73	61	0	0
June	1.73	-3.05	73	3	7
July	0.99	-2.69	76	2	12
August	3.34	-0.65	69	-3	0
September	1.80	-1.79	69	5	6
October	6.07	3.66	55	2	0
Totals	26.26	-1.66			25

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

Mo.	NR[1]	ANR[2]	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Jan	0.80	0.80	0.56	0.24	0.95	1.17	0.70	0.26	0.41	0.10	0.19	0.60	1.85
Feb	0.94	1.74	1.77	0.71	0.25	0.75	1.06	1.74	0.73	1.15	0.94	0.68	1.20
Mar	1.79	3.53	3.09	2.71	4.07	2.07	0.79	2.49	1.48	1.00	0.21	1.48	3.11
Apr	3.25	6.78	5.99	5.22	4.56	3.66	4.41	4.79	5.81	4.75	3.45	4.09	3.06
May	4.43	11.21	6.67	8.49	3.78	3.64	4.62	2.46	7.09	4.26	4.57	4.28	6.16
Jun	4.78	15.99	2.03	10.68	4.11	11.17	5.05	2.94	3.01	8.86	6.90	0.97	1.73
July	3.68	19.67	2.95	9.28	2.75	6.74	3.90	1.47	1.01	2.88	5.96	5.85	0.99
Aug	3.99	23.66	7.89	2.10	4.84	11.21	3.58	2.98	2.18	5.70	8.26	8.23	3.34
Sept	3.59	27.25	1.90	3.09	0.96	6.57	2.02	1.85	1.19	5.55	5.05	7.90	1.80
Oct	2.41	29.66	5.41	3.63	7.33	0.38	0.86	2.34	2.50	3.75	1.27	0.59	6.07
Nov	1.54	31.20	0.14	2.59	1.38	2.23	2.72	0.90	1.40	0.71	2.75	1.74	0.26
Dec	1.06	32.26	1.90	1.20	1.96	0.80	2.23	1.02	0.32	1.15	5.05	1.17	0.17
Tot.	32.26		40.30	49.94	36.94	50.39	31.94	25.24	27.13	39.86	44.60	37.58	29.74
Departure from Normal			8.04	17.68	4.68	18.13	-0.32	-7.02	-5.13	7.60	12.34	5.32	-2.52

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

Project List

Project-Agronomy Farm	Department	Project Leader
BCRF plant zoo	BCRF	A. Suby
Butterfly habitat/milkweed trial	Entomology	R. Hellmich
Canola interseeding and variety trials	Agronomy	M. Wiedenhoeft
Corn and soybean climate monitoring	Agronomy	A. VanLoocke
Corn and soybean date of planting studies	Agronomy	M. Licht
Corn and soybean hail study	Plant Pathology	D. Mueller
Corn and soybean yield trials	ICIA	J. Rouse
Corn breeding	Agronomy	J. Edwards
Corn breeding	Agronomy	P. Scott
Corn breeding	Agronomy	T. Lubberstedt
Corn breeding	Entomology/USDA	C. Abel
Corn growth evaluation/camera trial	Agronomy	P. Schnable
Corn gypsum fertility trial	Agronomy	A. Mallarino
Corn nitrogen utilization research	Agronomy	M. Castellano
Corn rootworm research	Entomology/USDA	A. Gassmann
Corn rootworm/plant pathology trials	Plant Pathology	N. Lauter
Corn seedling disease research	Seed Science	G. Munkvold
Corn standability fungicide trial	Plant Pathology	A. Robertson
Corn/planting date/population trial	Agronomy	M. Licht
Corn/sorghum breeding	Agronomy	J. Yu
Cover crop production research	Agronomy	A. Lenssen
Enviratron Facility project	GDCB	S. Howell
FEEL research plots	Plant Pathology	D. Mueller
Forage and biomass production systems	Agronomy	K. Moore
Forecast and assessment of cropping systems trial (FACTS plots)	Agronomy	S. Archontoulis
Honeybee soybean pollination trial	Entomology	M. O'Neal
Humic acid study	NLAE	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 research	Agronomy	E. Heaton
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
Plant pathology corn-soybean tillage trial	Plant Pathology	D. Mueller
Plant pathology soybean disease trials	Plant Pathology	D. Mueller
Prairie forbs establishment trial	Entomology/USDA	R. Hellmich
Rainfall simulation trials	Agronomy	A. Mallarino
Soil fertility research	Agronomy	A. Mallarino

Project-Agronomy Farm (continued)	**Department**	**Project Leader**
Sorghum breeding	Agronomy	M. Salas
Soybean and corn disease trials	Plant Pathology	A. Robertson
Soybean aphid suction trap	Entomology	E. Hodgson
Soybean aphid/honeybee trial	Entomology	M. O'Neal
Soybean breeding	Agronomy	D. Singh
Soybean chlorosis/disease trial	Plant Pathology	L. Leandro
Soybean cover crop evaluation trial	Plant Pathology	L. Leandro
Soybean cyst nematode trials	Plant Pathology	G. Tylka/S. Cianzio
Soybean defoliation trial	Agronomy	M. Licht
Soybean disease research	Plant Pathology	L. Leandro
Soybean nitrogen study	Agronomy	M. Castellano
Soybean SCN trials and research	Plant Pathology	C. Marett/G. Tylka
Soybean variety evaluation	Agronomy	S. Cannon
Sulfur utilization in corn and soybeans	Agronomy	J. Sawyer
Sustainable ag cropping systems	Agronomy	M. Liebman
Weed science glyphosate resistance	Agronomy	M. Owen
Winter rye nitrogen evaluation trial	Agronomy	J. Sawyer
Winter wheat interseeding trial	Agronomy	M. Liebman
Winter wheat/soybean interseeding trial	Agronomy	M. Licht

Project-Ag Engineering	**Department**	**Project Leader**
Bioreactor evaluation trial	ABE	M. Soupir
COBS project-South Reynoldson Farm	ABE/Agronomy	M. Helmers/M. Thompson/ M. Liebman
Farm equipment evaluation trials	ABE	M. Darr
Firestone compaction trial	ABE	M. Tekeste
Grain harvest lab	ABE	M. Tekeste
Hermann Farm soil nutrient runoff/cover crop trial	Agronomy/ABE	A. Mallarino/M. Helmers
LEBRC Lab Facility	ABE	H. Xin/S. Hoff/D. Andersen
Manure/water quality plots	ABE	M. Soupir
Organic cropping systems trial	NLAE	C Camberdella
Soils bin project	ABE	M. Tekesti/Stuart Birrell
Tillage equipment draft trial	ABE	S. Birrell
Tunnel hoop cover trial	ABE	M. Hanna
USDA organic/water quality plots	NLAE	C. Cambardella
USDA/plant physiology	NKAE	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 2,397 crop acres under Central Farms management, with 385 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 185 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.

The Dakota Access Pipeline was installed across 3 miles of ISU and ISU affiliate-owned land in 2016. These areas were farmed again in 2017 and Ag Engineering initiated a 5-year study in the pipeline pathway on North Woodruff. Tile and waterway repairs and improvements inside the right-of-way will continue. A 25-ft soil finisher and two small sprayers were purchased for plot use. Winter peas were planted into the bean stubble as a cover crop. Radish and oats were used as a cover crop on acres harvested for corn silage. The linear irrigator at the Curtiss Farm was operated in June/July due to dry conditions.

Karl Nicolaus, ag specialist, transferred from the ISU Northern Farm, Kanawha, and is on a 50 percent split appointment with the Central Iowa Farms (March-August) and the Committee for Agricultural Development (September-February).

Projects. A project list is available in this article.

Crop Season Comments

The 2017 season was cool in late April, typical for May, and dry for June and July. Normal and above normal precipitation resumed in July, August, and September. Disease and insect pressures were minor.

Bulk corn planting started April 23, however the majority of the acres were planted in May and completed May 12. Corn silage yields averaged 27 tons/acre at an 8-in. cut height with 68 percent moisture. A total of 200 corn acres were harvested for silage. Bulk corn grain yields averaged 210 bushels/acre.

Soybean planting began May 15 and was completed June 4. Earlier planted soybean fields had stand issues due to a heavy rainfall event. Later planted fields had stand issues caused by hot, dry conditions. Yields averaged 57 bushels/acre. Fall harvesting of corn and soybeans began late September and was completed November 1.

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 IA Farms	Farm Location	Project Leader
Strip tillage	Accola	M. Darr
Corn isolation	Applied Science	U. Frei
Corn isolation	Applied Science	N. Lauter
Corn isolation	Applied Science	F. Engstrom
Forestry breeding	Applied Science	R. Hall
Prairie x rodent	Applied Science	B. Mortensen
Corn isolation	Beach Bottom	U. Frei
Corn isolation 3x	Beef Teaching	P. White
Precision/machinery trial	Been	M. Darr
Soils and water quality	Been	A. Kalieta
Machinery/nutrient placement	Bennett	M. Darr
Bee hive	Century Corn Plot	G. Morgal
Corn isolation	Cross Country Track	T. Paque
Acoustic bat monitoring	Curtiss	J. Blanchong
Corn breeding imagery	Curtiss	L. Coffey
Corn breeding, irrigated	Curtiss	P. Becraft
Corn breeding, irrigated	Curtiss	L. Coffey
Corn breeding, irrigated	Curtiss	M. Hufford
Corn breeding, irrigated	Curtiss	A. Myers
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
Soybean breeding	Curtiss	L. Li
Teaching plots	Curtiss	E. Christian
Weed science	Curtiss	D. Franzenburg
Milkweed	Dairy Filter Strip	R. Hellmich
IDC screen	Dairy	G. Gebhart
Corn isolation	Dog Track	L. Coffey
Corn growth regulator	East Curtiss	M Johnson
Milkweed	East Curtiss	R. Hellmich
Corn isolation	Equine	P. Becraft
Teaching plots	Equine	E. Christian
Mesocosm	Hinds	A. Van Der Valk
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

Project-Central IA Farms (continued)	Farm Location	Project Leader
Austrian winter pea	Johnson	M. Johnson
Corn entomology trial	Johnson	G. Vannostrand
Milkweed x Monarch	Johnson	R. Hartzler
No-till soybeans	Johnson	G. Munkvold
Plant pathology trials	Johnson	G. Munkvold
Planter compaction	Johnson	M. Johnson
Rice breeding	Johnson	L. Li
Rice breeding	Johnson	Y. Bing
Rootworm product evaluation	Johnson	P. Weber
Seedcorn maggot	Johnson	P. Weber
Soybean entomology trial	Johnson	G. Vannostrand
Soybean herbicide	Johnson	D. Franzenberg
Volunteer corn control	Johnson	D. Franzenberg
Corn isoline feed value	Kelley	P. Gunn
Corn isoline yield	Kelley	M. Licht
Milkweed establishment	Kelley	R. Hartzler
USDA water quality	Kelley	B. Knutson
Gypsum	Packer	M. Johnson
Harvest performance	Numerous	M. Darr
Precision/modeling	Numerous	M. Darr
Corn isolation	Pony Track	L. Coffey
Corn isolation	South Woodruff	E. Vollbrecht
Corn nursery	South Woodruff	L. Li
SCN	South Woodruff	C. Maret
Soybean future SCN	South Woodruff	G. Gebhart
Switchgrass x N	South Woodruff	E. Heaton
Seed treatment	West Curtiss	C. Arnold
Soybean pathology	West Curtiss	S. Navi
Corn nursery	Woodruff	T. Bierwagen
Corn nursery	Woodruff	N. Lauter
Corn nursery	Woodruff	L. Li
Corn nursery	Woodruff	T. Peterson
Corn nursery	Woodruff	E. Vollbrecht
Corn nursery	Woodruff	P. Becraft