Horticulture Research Station Summary

RFR-A1527

Farm Staff

Superintendent ..... Nick Howell
Agricultural Specialist ..... Brandon Carpenter
Field Lab Technician ..... Lynn Schroeder
Equipment Operator ..... Jeff Braland
Turfgrass Research Associate ..... Dan Strey

Research Farms Coordinator ..... Mark Honeyman
Farms Manager ..... Tim Goode
103 Curtiss Hall, ISU

Horticulture Research Station
55519 170th Street
Ames, IA 50010
515-232-4786 office and Fax
nhowell@iastate.edu

Location: Three miles north of Ames on Highway 69,
turn east on 170th Street about 1½ miles.

Farm and Weather Summary

Nick Howell, farm superintendent

Farm Comments

Staffing. There were significant changes in staffing at the Horticulture Station in 2015. The operations manager, Jim Kubik, retired after nine years of service to the Horticulture Research Station and 23 years total with the ISU Research Farms. Jim played a key role at the station in a time when it was undergoing significant change and his hard work was greatly appreciated. The staff and researchers wish him well in Florida.

The station is recruiting two graduate assistants to begin their work in the fall of 2016. Students appointed in these assistantships work full-time as staff at the Horticulture Station during the late spring and summer months and attend classes during fall and spring semesters.

Continuing on staff are Brandon Carpenter, agricultural specialist; Dan Strey, research associate in turfgrass; Lynn Schroeder, field lab technician; and Jeff Braland, equipment operator.

Students. This season two students completed internships while working at the station. Lindsay Meylor, junior in horticulture, wrote a care guide for vineyards, and Lillian Pride, senior in horticulture, helped develop the Good Agriculture Practices Plan (GAP) for the station.

Research. The Horticulture Station's main function continues to be research. With more than 80 projects and 20 faculty members involved, the range of projects is diverse. Apples, strawberries, grapes, tomatoes, peppers, potatoes, sweet potatoes, and melons were grown for research. Ornamental crops, such as turfgrass, shade trees, and flowering crabs, also were used for research purposes. In addition to the horticultural crops, projects using prairie plants and soybeans were conducted. Projects involving turtles, bees, wasps, and tree swallows added more research diversity.

Several new construction projects for research were completed at the station in 2015. New faculty member in horticulture, Diana Cochran, was responsible for two of these projects. First was the development of a two-acre hops yard to look at varieties and cultural practices for hops production. The second was the construction of a new high tunnel to test the viability of high tunnel peach production in Iowa. Construction of this tunnel will be completed in the spring of 2016. Another construction project was completed for Jesse Randall, Department of Natural Resource Ecology and Management Department. A series of wooden raised planters called Missouri gravel beds were constructed. These raised planters are being used to look at systems of improving rooting on woody tree cuttings.

Landscape and infrastructure. Major changes were made to the landscape at the Horticulture Station in 2015. The restoration of 10 acres of native prairie was completed. The prairie is located southeast of Horticulture Lake and was funded by the Monarch habitat project. With its great plant diversity, the prairie will provide a food source for both adult feeding and reproduction of the endangered Monarch butterfly.

Major changes were made at the Turfgrass Research Facility in 2015. A sports turf research field was developed. The field, which is the equivalent of three football fields in size, was made possible by the hard work of Dan Strey, research associate in turfgrass, and the

generosity of many industry suppliers. With each field constructed using different substrates to mimic industry standards, it provides a unique opportunity for future sports field research.

In anticipation of the station's 50th anniversary in 2017, a garden featuring plant varieties developed by the ISU horticulture department is being planned. This garden will feature plants ranging from apples to roses and strawberries and will be a unique addition to the farm landscape. Construction will begin the fall of 2016.

Improvements to the farm irrigation system continued in 2015. A four-inch water line was added, connecting the water main on the north fence with the water main located in the central part of the farm. Ultimately creating an irrigation loop, this improvement increased the system's efficiency by 40 percent. In addition, three new laterals were added opening an additional 20 acres of land to overhead and trickle irrigation.

Additional improvements were made to increase energy efficiency at the station in 2015. These improvements were made by replacing the mechanical systems of the last two of the eight coolers located in the headquarters building. With these cooler improvements beginning in 2012, electricity use has decreased significantly and the coolers are more reliable and quieter.

Industry and the public. The public had a strong presence at the station again in 2015. The research station hosted nine field days for people interested in irrigation, vegetable and fruit production, turfgrass, forestry, and general home gardening. One notable field day was a visit from the Mid-American Collegiate Horticulture Society (MACHS). This group of horticulture students from all over the Midwest visited the station for tours and a cookout meal. In addition to the field days, the farm hosted 20 tours and six other events and meetings for the public. At the end of the season, over 1,300 people had visited the station.

Weather Comments

Winter 2014–2015. In December 2014 and February 2015, lower than normal temperatures caused a delay of pruning orchards and vineyards. Little bud damage occurred due to a slow warm up in early spring. Precipitation was below normal throughout the winter.

Spring 2015. Apple bud set was heavy due to low production in 2014. Bud set in the grapes was normal. Precipitation was below normal in May allowing timely planting of annual vegetable crops. Below normal high and low temperatures were experienced throughout the spring.

Summer 2015. Precipitation was above normal in June, July, and August with below normal high and low temperatures. A significant loss of the strawberry and melon crops was experienced due to the heavy rainfall.

Fall 2015. Heavier than normal rain in August caused significant damage to the grape crop and above normal temperatures in September and October caused a delay in apple maturation and ultimately harvest. Above normal rainfall continued October through December.

Acknowledgements

I would like to thank the farm crew Brandon Carpenter, Jim Kubik, Lynn Schroeder, Jeff Braland, and Dan Strey. Also, thanks to Brett Cranston, non-student hourly; student interns Lindsay Meylor and Lillian Pride; and student workers Brad Bathey, Caleb Burke, Thabisa Mazur, Zach Torres, and all student workers for their hard work.

Table 1. Horticulture Research Station, Ames, monthly rainfall and average temperatures for 2015.

	Rainfall (in.)		Temperature (°F)				Days
Month	2015	Deviation from normal	High 2015	Deviation from normal	Low 2015	Deviation from normal	90° or above
March	.2	-1.8	51.9	+1.0	26.0	-2.5	0
April	3.3	-.6	63.8	-0.1	40.0	0.0	0
May	4.7	0.0	70.8	-4.0	52.0	-0.2	0
June	6.7	+2.1	80.5	-3.0	60.5	-1.8	0
July	5.9	+2.2	83.0	-3.5	62.5	-3.5	3
August	9.2	+4.5	80.0	-4.3	59.5	-4.1	0
September	3.2	0.0	80.6	+2.1	58.0	+3.5	4
October	1.3	-1.2	64.3	-0.9	42.2	-0.1	0
Total	34.5	+5.2					7

Research Station Projects

Project	Project Leader
N rainfall sensor	L. Biederman
Bat monitoring project	J. Blanchong
Orchard trellis construction	J. Braland
DFL Pickseed turf type tall fescue evaluation	N. Christians/D. Strey
ISU compost seeding trial	N. Christians/D. Strey
ISU sports turf research center construction project	N. Christians/D. Strey
Kalo fungicide efficacy evaluation trial	N. Christians/D. Strey
National fairway height bentgrass test	N. Christians/D. Strey
National greens height bentgrass test	N. Christians/D. Strey
National Kentucky bluegrass test	N. Christians/D. Strey
National perennial ryegrass test	N. Christians/D. Strey
National turf type tall fescue test	N. Christians/D. Strey
Hardy peach trial	D. Cochran
Hardy/disease resistance pear trial	D. Cochran
Herbicide study	D. Cochran
High tunnel peach establishment	D. Cochran
Hops yard establishment	D. Cochran
NC140 apple rootstock trial	D. Cochran
NE1020 wine grape trial	D. Cochran
Northern grape study	D. Cochran
Organic mulch study	D. Cochran
Student orchard	D. Cochran
SARE organic row cover study	M. Gleason
SARE trap crop study	M. Gleason
SBFS warning system evaluation	M. Gleason
SBFS wetness ecology project	M. Gleason
Alder hardiness study	W. Graves
Bioplastic study	W. Graves
Redbud breeding trial	W. Graves
Effects of biochar on ornamental and food crops	C. Haynes
Home Demonstration Garden	C. Haynes
Milkweed demonstration	R. Hellmich

Project (continued)	**Project Leader**
Certified organic land project	N. Howell
Milkweed establishment project	N. Howell
Milkweed plant production	N. Howell
Prairie establishment	N. Howell
Research strawberry field	N. Howell
Ash pollination study	J. Iles
Flowering crab trial	J. Iles
Shade tree trial	J. Iles
Environmental DNA in freshwater turtles	F. Janzen
Turtle nesting behavior and sex ratios	F. Janzen
Christmas bird count	R. Klaver
Tree swallow nesting	R. Klaver
Cover crop demo	A. Nair
Cover crops garlic study	A. Nair
High tunnel tomato grafting	A. Nair
Leopold summer cover crops	A. Nair
Melon listeria project	A. Nair
Mini-tunnel pak choi trial	A. Nair
Mini-tunnel pepper trial	A. Nair
Organic strip tillage broccoli study	A. Nair
Organic strip tillage pepper study	A. Nair
Potato study	A. Nair
Rye variety timing trial	A. Nair
Sweet potato colored mulch trial	A. Nair
Sweet potato paper mulch study	A. Nair
T-tape demonstration	A. Nair
Blackberry training study	G. Nonnecke
Grape nursery	G. Nonnecke
Pollinator project	M. O'Neal
Fine root study on woody ornamentals	J. Randall
Missouri gravel bed installation	J. Randall
Soybean breeding project	A. Singh
Soybean insect project	A. Singh
Student Organic Farm	Student leaders
Robotic weeder imaging study	L. Tang

Project (continued)	**Project Leader**
Apple sanitation water bath	Z. Torres/N. Howell
Impacts of landscape on bee pollinators	A. Toth
Native polistes parasite survey	A. Toth
Do viruses manipulate honey bee behavior?	A. Toth
Larval nutrition on honey bee disease	A. Toth
Honey bee pollination of soybeans	A. Toth
Interactions between honey bee nutrition and viral infection	A. Toth
Larval nutrition on honey bee responsiveness to queen	A. Toth
Maternal influences on larval development in paper wasps	A. Toth
Vibration signals across early-season paper wasp nests	A. Toth
Turtle trapping project	N. Valenzuela
Edible bean project	M. Westgate