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Horticulture Research Station Summary

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Abstract
Contains the Farm and Weather Summary for the Horticulture Research Station.

Keywords
Agronomy, Horticulture

Disciplines
Agricultural Science | Agriculture | Agronomy and Crop Sciences | Horticulture | Meteorology | Natural Resources and Conservation

Horticulture Research Station Summary

RFR-A1422

Farm Staff

Superintendent ..... Nick Howell
Operations Manager ..... Jim Kubik
Agriculture Specialist ..... Brandon Carpenter
Field Lab Technician ..... Lynn Schroeder
Equipment Operator ..... Jeff Braland
Turfgrass Assistant Scientist ..... 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 2014. A new agriculture specialist position was filled by Brandon Carpenter. He will facilitate fruit and vegetable research projects. Leah Riesselman completed her master's program and is now pursuing her PhD in Horticulture. As part of her duties she will continue to teach the Horticulture 465 course.

The station is recruiting two new grad assistants to begin fall 2015. 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 Dan Strey, research associate in turfgrass; Jim Kubik, operations manager; Lynn Schroeder, field lab tech; and Jeff Braland, equipment operator.

Students. This season two students completed internships while working at the station. Brad Bathey, senior in horticulture, managed the Horticulture 465 high tunnel, and Lindsay Meylor, sophomore in horticulture, monitored varroa mite populations in the research beehives at the station.

The Horticulture Station also provided experience for students in the Horticulture 465 class. In a collaborative effort by the station and the 465 class, a website called Horticulture Research Station and Top Shelf Farm Community Produce was developed. With its development, supported by the Leopold Center for Sustainable Agriculture, this site offered produce grown by the station and the class to the university community. Customers viewed weekly offerings, placed an order, and picked up their orders at a designated location on Fridays. In addition, the site offered recipes, information on the products offered, and information about the Horticulture Station and the Horticulture 465 class. We hope this marketing concept will become a useful model adapted by local growers.

Research. The Horticulture Station's main function continues to be research. With more than 88 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, flowering crabs, and hydrangeas also were used for research purposes. In addition to the horticultural crops, projects using prairie plants and soybeans were conducted. Projects involving turtles, tree swallows, and mosquitoes added more research diversity.

Plans are underway for new projects at the station in 2015. New faculty member in horticulture, Diana Cochran, is developing a hops yard to look at varieties and cultural practices. Ajay Nair, horticulture, is working with the station to certify five acres of land for organic research. This land, which is critical for organic fruit and vegetable production projects, will have irrigation installed in the spring. Jesse Randall, Natural Resource Ecology and Management,, will be developing gravel production beds to look at systems of improving rooting on woody tree cuttings.

Landscape and Infrastructure. Only minor changes were made to the landscape at the Horticulture Station in 2014, however, planning for future improvements are underway. With the impending infestation of emerald ash borer and several years of

removal of dead and damaged trees, replanting plans are underway. In anticipation of the station's 50th anniversary in 2017, a garden featuring plant varieties developed by the 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.

Improvements in the farm irrigation system continued in 2014. A 3-in. water main connection from the farm irrigation system to the Gibson golden delicious orchard and the high tunnels was added. This new system provides misting in the orchard for disease research and a more reliable water supply to the high tunnel for overhead and trickle irrigation.

Drain tile was installed around the "mini" tunnel field. These small tunnels used for research flood after periods of heavy rains. Tiled French drains were installed between the structures as well as a tile line at one end.

Improvements continue to increase energy efficiency at the station. These improvements were made by replacing the mechanical systems of two coolers. These coolers will have the capability of freezing to -10°F making them useful for more long-term food storage projects. By the beginning of 2014, six of the eight coolers have been renovated with new mechanical systems. Lighting in the headquarters building, pesticide and turf buildings, and shop were outfitted with new high-efficiency lighting. With 120 light fixtures either replaced or retrofitted, electricity use for lighting should be reduced by 25 percent.

Industry and the public. The public had a strong presence at the station again in 2014. The research station hosted seven field days with topics on cover crops, vegetable production, turfgrass, and general home gardening. For the third season, the Horticulture Station hosted the Ag Leadership Camp. This camp gave 250 high school freshmen from schools in central Iowa the opportunity to learn about landscape design, tree pruning, turf management, and fruit and vegetable production. Students interested in agronomy learned about crop and weed identification and soil judging. Students interested in biology learned about turtles and bees. In addition to the field days, the farm hosted 23 tours and nine other events and meetings for the public. By the end of the season, over 1,200 people had visited the station.

Weather Comments

Winter 2013–2014. In March, lower than normal temperatures caused late bud break in the orchards and vineyards allowing for little bud damage. Precipitation was normal throughout the winter.

Spring 2014. Apple bud set was low due to over production in 2013. 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 2014. Precipitation was above normal in June, July, and August with below normal high and low temperatures. A hailstorm in July lasting five minutes caused significant damage to the apple crop. Little damage occurred to the vegetable and grape crops.

Fall 2014. Cooler than normal high and low temperatures caused a delay in apple, grape, and soybean harvest. Vegetable and melon harvests were normal. Above normal precipitation throughout the season kept lake levels normal going into the winter.

Acknowledgements

I would like to thank the farm crew Brandon Carpenter, Jim Kubik, Lynn Schroeder, Jeff Braland, and Dan Strey. Also, thanks to Kyle Tester, non-student hourly, for his help. Thanks to grad student Leah Riesselman, student interns Lindsay Meylor and Brad Bathey, and student workers Laura Irish, Megan Cannon, Mark Rippke, and Jacob Graber, and all of the other student workers for their hard work.

Table 1. Horticulture Research Station, Ames, monthly rainfall and average temperatures for 2014.

	Rainfall (in.)		Temperature (°F)				Days
Month	2014	Deviation from normal	High 2014	Deviation from normal	Low 2014	Deviation from normal	90° or above
March	.8	-1.3	39.9	-7.6	20.4	-8.4	0
April	7.9	+4.1	58.5	-9.7	36.3	-3.8	0
May	3.0	-1.7	73.4	+1.0	49.6	-2.5	0
June	11.0	+6.6	80.8	-0.2	60.4	-1.2	0
July	4.2	+0.5	80.0	-4.0	58.8	-7.4	0
August	6.7	+2.0	81.8	+.04	63.4	-0.3	2
September	3.7	+0.6	73.9	-2.1	51.8	-2.7	1
October	3.6	+1.0	63.1	+.10	40.0	-2.4	0
Total	40.9	+11.8					3

Research Station Projects

Project	Project Leader
Soil temperatures of overwintering nesting sites	R. Ackerman
Nematode trial	R. Adams/D. Strey
Spring seeding trial	R. Adams/D. Strey
Tree misting system installation and evaluation	J. Batzer/D. Strey
Bat monitoring project	J. Blanchong
BASF post crabgrass	N. Christians/D. Strey
Bayer pre-emerge trial	N. Christians/D. Strey
Evaluation of macro-sorb amino acid complex	N. Christians/D. Strey
Evaluation of no-net tall fescue	N. Christians/D. Strey
Increasing shoot density with green Ncrease	N. Christians/D. Strey
ISU compost greenhouse 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
Poa annual reduction using Poa Cure	N. Christians/D. Strey
Quackgrass control trial	N. Christians/D. Strey
Quali-pro calibration report	N. Christians/D. Strey
Syngenta blue/rye (confidential)	N. Christians/D. Strey
Syngenta calibration report	N. Christians/D. Strey
Hops yard installation	D. Cochran
NC140 apple rootstock trial	D. Cochran
Student orchard	D. Cochran
Erosion blanket trial	D. Strey
Soy based fertilizer trial	D. Strey
Grape off-gassing study	M. Dharmadhikari
Mosquito-borne encephalitis surveillance	B. Dunphy
Early warning systems in apples	M. Gleason
Leaf wetness study in apples	M. Gleason
Leopold pollinator study	M. Gleason
National elm tree trial	M. Gleason
SARE anthracnose study	M. Gleason
SARE organic row cover study	M. Gleason
SARE trap crop study	M. Gleason
Sooty blotch flyspeck nursery establishment	M. Gleason
Sooty blotch flyspeck study	M. Gleason
Strawberry anthracnose study	M. Gleason
Surfactant study in apples	M. Gleason

Project (continued)	Project Leader
Bioplastic study	W. Graves
Garden plant study	W. Graves
Redbud breeding trial	W. Graves
Effects of biochar on ornamental and food crops	C. Haynes
Home Demonstration Garden	C. Haynes
Certified organic land project	N. Howell
EarthKind hydrangea trial	N. Howell
Research strawberry field	N. Howell
Ash pollination study	J. Iles
Bald cypress trial	J. Iles
Flowering crab trial	J. Iles
Shade tree trial	J. Iles
Common garden painted turtle nesting experiment	F. Janzen
Temperature-dependent sex determination of painted turtle	F. Janzen
Christmas bird count	R. Klaver
Tree swallow nesting	R. Klaver
Biochar and onion production study	A. Nair
Cover crop garlic production	A. Nair
Cover crops and potato production	A. Nair
Cover crops in high tunnel production	A. Nair
Leopold cover crop study	A. Nair
Leopold summer cover crop study	A. Nair
Strip tillage/cover crop organic vegetable production study	A. Nair
Summer cover crop fall production study	A. Nair
Sweet potato production study	A. Nair
Tunnel production of ginger	A. Nair
USDA cover crop demonstration	A. Nair
Blackberry training study	G. Nonnecke
NE1020 wine grape trial	G. Nonnecke
Small fruit teaching planting	G. Nonnecke
Hardy/disease resistance pear trial	B. Carpenter
Hardy peach trial	B. Carpenter
Missouri gravel bed installation	J. Randall
Grape growing system vineyard	L. Riesselman
Horticulture 465 Field Management	L. Riesselman
Horticulture 465 Tunnel Production	L. Riesselman
Mini tunnel raspberry study	L. Riesselman
Orchard replacement	L. Schroeder

Project (continued)	**Project Leader**
Safe food handling study strawberry field installation	A. Shaw
Soybean disease project	A. Singh
Student Organic Farm	Student leaders
Robotic weeder imaging study	L. Tang
Bee hive demonstration	A. Toth
Epigenetic, transcriptomic, and behavioral impacts of a maternal signal during wasp caste development	A. Toth
Individual personalities in an insect colony: from molecules to societies	A. Toth
Interactions between honey bee nutrition and viral infection	A. Toth
Turtle nesting project	N. Valenzuela
Edible bean project	M. Westgate
Prairie cover crops	B. Wilsey