

Georgia Peanut Commission Year End Report. 2016

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Period : 01/01/2016 to 12/31/2016

One Page Summary

The UGA Georgia weather network provides weather information to growers in the State of Georgia from a network of (now) 83 automated weather stations. Weather data gathered and disseminated by the Georgia Weather network, as well as information derived from that data, such as drought severity, provide a critically needed resource to peanut producers in the state of Georgia. The weather information generated by the weather network provides the data underlying tools and calculators that have been developed to assist peanut producers in Georgia.

The UGA weather network continues to be maintained at a high level of functionality and overall the weather network continues to provide high quality weather information in a timely manner.

The improvements to the network initiated in 2015 were almost completed in 2016. These include: addition of a second raingauge at sites where only a single gauge was present, upgrades to the communication hardware, upgrades to the solar power generation and power storage capacity, and a more modern type of datalogger. Additionally, in 2015 the code which produces the website pages, at www.weather.uga.edu, was rewritten. In 2016 the weather.uga.edu website was redesigned to provide a more contemporary look and functionality.

Technical Report

Conversion of stations to Cellular Modem

Connectivity to the individual weather stations remains the largest impediment to delivering information to growers. To reduce down time, “hard line” telephone connections to stations are being replaced with cellular modem devices. These devices are proving more robust and less vulnerable to being disconnected as, unlike “hard lines”, there is no physical cable that might be inadvertently cut. The telephone connection upgrade is always accompanied by an upgrade to a newer version of datalogger for the station when needed. In 2016, 37 stations were changed over to a cellular modem method of communication. See table 1.

Addition of a Second Raingauge

Rainfall is the most difficult measurement to accurately monitor owing to the scattered nature of precipitation and the tendency of raingauges to malfunction. To improve rainfall measurement accuracy a second raingauge is being added to stations which have only one raingauge. A second raingauge acts as a valuable check on the primary gauge and may act as a stand-in if the primary gauge malfunctions. The added raingauge is a more accurate syphoning type gauge and where it is available it is designated as the primary rainfall measurement (for use at www.weather.uga.edu). In 2016, 22 sites received an additional raingauge (table 1).

Improved Power Supply

Every station uses solar power and a 12 volt battery to power the electronics. Stations do occasionally suffer from lack of power, particularly during cloudy periods in the winter months. There is also a plan to change over to a 5 minute-averaging period for the data each station collects. By the end of 2017 the UGA weather network is aiming for each station to be capable of collecting and disseminating data on a five-minute schedule. To manage the increased power demand that this will entail, and to help with power outages, the network has embarked on a program to upgrade the solar panel from a 10 watt panel to a 30 watt panel. A larger battery is also installed to complement the increase in charging capacity. In 2016, 49 stations received a new and larger solar panel and 55 stations received bigger batteries (some sites already had a larger battery installed). See table 1.

Updated datalogger

The UGA network uses Campbell Scientific data loggers. The most current logger is the CR1000 model but many stations are using CR10X loggers or the even more outdated CR10 data logger. When a second raingauge is added to a station the datalogger must also be changed to a CR1000 logger (if it has not already been done) in order to accommodate the extra wiring. The network is trying to change out all the older CR10X and CR10 loggers by early 2017. Thirty four CR1000 loggers were installed in 2016 (table 1).

Software Rewrite

In 2015 the software that takes the raw data from each weather station and creates the information that can be viewed at www.weather.uga.edu was completely rewritten. In 2016 the organization and look of the website has been overhauled to make navigation simpler and to present a more contemporary feel to each webpage.

List of Station Improvements

See table 1 below. The table provides a list of which stations received new hardware in 2015 (black boxes) and 2016 (red boxes).

Solar panel: Change from a 10 watt to 30 watt panel

Battery: swapping from a marine battery to a larger capacity gel type battery

Raingauge: addition of a second, syphoning type raingauge

CR1000: swapping a CR10 or CR10X datalogger for a CR1000 datalogger

Cell modem: swapping a land-line telephone link to a cellular modem unit.

The total cost of station upgrades to date is \$132,340. The number of remaining upgrades are as follows (Note that blank spaces in table 1 do not necessarily indicate that upgrades have not been performed, as the station may have already been upgraded in a prior year).

- Power supply upgrade - 4
- Addition of a second raingauge - 0
- Upgrade to a CR1000 logger – 3
- Conversion to a cell modem - 6

Table 1. Station Improvements in 2015 and 2016

Station	solar panel	battery	raingauge	CR1000	cell modem
Alapaha					
Alpharetta					
Arabi					
Attapulgas					
Baxley					
Blairsville					
Blue Ridge					
Bowen (Tifton)					
Butler					
Brunswick					
Byron					
Byronville					
Cairo					
Calhoun					
Camilla					
Cordele					
Dahlonega					
Dallas					
Dawson					
Dawson-HHERC					
Dearing					
Dixie					
Donalsonville					
Douglas					
Dublin					
Ducker					
Dunwoody					
Eatonton					

Ellijay					
Fort Valley					
Gainesville					
Georgetown					
Griffin					
Hatley					
Homerville					
station	solar panel	battery	raingauge	Cr1000	Cell modem
Jeffersonville					
Jonesboro					
John's Creek					
LaFayette					
McRae					
Midville					
Moultrie					
Nahunta					
Newman					
Newton					
Oakwood					
Odum					
Ossabaw Island					
Pine Mountain					
Plains					
Rome					
Roopville					
Sasser					
Savannah					
Seminole					
Shellman					
Skidaway					
Sparta					
Statesboro					
Tennille					
Tifton					
Tiger					
TyTy					
Unadilla					
Valdosta					
Vidalia					
Vienna					
Watt-Hort					

Watkinsville- UGA					
Watt-USDA					
Williamson					
Woodbine					
Totals (2015)	17	13	4	3	10
Totals (2016)	49	55	22	34	37
Total	66	68	26	37	47
@ \$/each	\$160	\$185	\$800	\$1500	\$700
(\$132,340)	\$10,560	\$12,580	\$20,800	\$55,500	\$32,900