Table 2. ***Surface soil organic matter (%) from long-term rotation/tillage experiment at the Tennessee Valley Substation, 1980-2010.***

Rotation/Tillage System	1987(2.5in)	1994(2.5in)	2001(2.5 in)	2010(2.0in)
Continuous Cotton[1]	1.34	1.48	1.41	1.53
Cotton/Soybean[2]	1.38	1.58	1.65	-
Cotton/Corn[2]	1.35	1.50	1.70	2.80
Cotton/Wheat-Soybean[2]	1.46	1.85	1.98	3.80
Cotton - No till stubble[3]	-	1.75	2.23	2.80
Cotton - No till wheat[3]	-	1.68	2.26	4.42
Pasture (>20 years)[4]	-	-	-	7.43

[1]continuous conventional tillage cotton since 1979.
[2]rotations established in 1979, converted from conventional to no-tillage in 1994.
[3]no-tillage into wheat cover crop or previous cotton stubble established in 1988.
[4]continuous pasture for more than 20 years.

Program 5C-2

Management Of Cotton Insect Pest In The Mid-South

Presented by Dr. Angus Catchot
Extension Entomologist, Mississippi State University

2011 started off rough for cotton producers in the state of Mississippi. Greater than 50% of the crop was planted more than two weeks later than normal due to inclement weather and flooding from the Mississippi River. Also, sandblasting in the north Delta required replanting of more than 20% of the acres in that region. This year was also above average for many of the insect pests that attack cotton, particularly in the Delta.

Tarnished plant bug has ranked as the states number one insect pest of cotton for the past decade. It is not uncommon in the Delta region of the state for some producers to have more than 10 insecticide applications for this pest alone. Many of the problems associated with tarnished plant bug are a result of widespread insecticide resistance to multiple classes of chemistry. Currently to obtain acceptable control of this pest growers have to mix several classes of chemistry together which is ultimately more costly. To some extent, this pest alone, has contributed to the slow rebound of cotton acres in the Delta despite record high prices of cotton.

Spider mites typically rank as the second or third most damaging pest of cotton over the last five years. Spider mites traditionally have been called a late season or “cutout” type pest of cotton in Mississippi. Spider mites are no stranger to cotton in Mississippi but only in recent years has their status been elevated to a season long pest. Spider mites are somewhat of an “induced” pest of cotton meaning that they can easily exploit changes in the production system to their advantage. The high number of insecticide applications being made for tarnished plant bugs essentially “flares” spider mites by eliminating beneficial insects. Also, the widespread adoption of insecticide seed treatments to control thrips early in the season has no activity on spider mites allowing them to build earlier in the growing season. In 2011, producers treated approximately 38% of the cotton acres for spider mites.

Tarnished plant bugs and spider mites alone have contributed to greater than 50% of total losses from pest of cotton over the last few years. The good news is growers and consultants have recognized the threat from these pests and have begun to take an integrated approach to managing them. For instance, many growers recognize that cotton/corn interfaces are hot spots for plant bugs to develop and are beginning to try and block their corn away from their cotton fields. Also, research conducted over the last several years at Mississippi State University has shown that planting cotton early can reduce the total numbers of applications needed to control tarnished plant bugs by avoiding late season build ups. Recognizing that certain types of insecticides will flare spider mites, producers are beginning to utilize other chemistries less likely to flare mites when they are present in the system.

This paper will address ways producers can minimize their losses from some of the most damaging insect pests of cotton in the mid-south.

Program 6C-2

▸ Practical Irrigation Scheduling In Cotton

Presented by Dr. Leo Espinoza
Associate Professor and Extension Soil Scientist, University of Arkansas

Irrigation management is of paramount importance to maximize yield potential in cotton. Lint quality and quantity are affected by water management. A 2008 irrigation survey conducted by the Cotton Advisory Committee indicated that irrigation water pumping represents 49% of the energy consumption in cotton production. The survey results revealed needed improvements in scheduling cotton irrigation. More than half of the growers responding to the survey stated that visual assessment was the preferred method to schedule irrigation, which normally results in excessive irrigation. For the last 5 years, a demonstration project using atmometers or ET gages, to schedule irrigation, has been underway in Arkansas. Results show the atmometers provide reproducible estimates of potential evapotranspiration and can be placed 3 miles apart. Evapotranspiration readings were collected every 3 days, with soil moisture deficit to trigger irrigation set at 2 inches for silt loams and 3 inches for clayey soils. Significant water savings have been achieved using this approach. During the 2010 season, more than 10,000 acres were irrigated following this approach, but this figure may increase as collaborators plan on increasing the number of acres. The objective of this talk is to present results of such project, including experiences implementing such approach at a whole farm scale.

Program 6C-2

▸ Using Wireless Soil Moisture Sensors For Increased Yields

Presented by Dr. Joe Henggeler
State Irrigation Extension Specialist, University of Missouri

Wireless soil moisture sensor technology combines two things:
(A) traditional soil moisture monitoring (e.g., with gypsum blocks, tensiometers, etc.).
(B) wireless communication.

The end result is that the soil moisture status of one's crop can be monitored 24-7 from a computer or smart phone. A farmer can see how much rain the field got, how deep it soaked, and the water being slowly extracted from the soil at different depths. The sensor technology has been available for about 100 years, but coupling it with wireless technology has imbued it with new synergism. Ordinarily, sensors were read periodically, in the order of once a week. This provided a SNAPSHOT of the root/soil/moisture complex for the farmer to make management decisions about irrigation. After sensors were tied to data-loggers the farmer was given a HOME VIDEO of the root/soil/moisture complex for making these decisions. Tying the data-logger to wireless technology quickly followed, and now an irrigator (once the sensors are installed) only needs to turn on his computer to see the current soil moisture situation in his fields.

Farmers seem ready to embrace this new technology. Three Wireless Irrigation Sensor workshops were scheduled a year ago in Missouri with over 100 attendees, most of them farmers, signed up for the workshops. Wireless sensor companies present were Decagon,