

“Connectivity” The New Buzz Word In Irrigation To Be Featured At Area Workshops

PORTAGEVILLE, MO.

The annual International Consumer Electronics Show in Las Vegas just opened its millions of square feet of dazzling displays this week. The Apples, the Microsofts, the Sonys of the world all use this event each year to showcase their newest innovations to the world. This year's Show spokespeople are claiming 2011 to be the year of “connectivity,” and demonstrate how cell phones talk to TVs, cars to brake shops, and so on in today's world.

Connectivity has become important in irrigation, also. Wireless technology allows soil moisture sensors to link to your computer to show graphs of the soil moisture profile under your crops. From there a farmer can be text-messaged that it's time to start the irrigation pumps. In Nebraska irrigators are saving \$25 per acre on pump costs. In Missouri irrigators who are using sensors are found to have top yields. These farmers have reaped these benefits from old fashioned sensors like Watermarks, gypsum blocks, and tensiometers. However, the key to real success is when the instruments no longer have to be visited weekly to take readings, but instead allow the important data to be sent to you wirelessly. Data is gathered 24-7 regarding the crop's moisture conditions and is displayed on the computer as graphs, or sent as a text message to an irrigator when a crop needs water.

Local Wireless Sensor Workshops

Three breakfast workshops on wireless sensors will be held in Kennett, Sikeston, and Columbia, MO on Jan. 18, 19 and 20, 2011, respectively. The purpose of the workshops is to give farmers and company reps a chance to get together to discuss the possibility of installing some of these wireless systems for the 2011 crop. Computers will be available to look at aerial views of individual farms so that distances, equipment needs, etc. can be seen. Approximately six companies will be at the workshops. Dealers have indicated that they will be willing to make on-farm visits later that day and may be able to offer special workshop discounts on equipment. Workshops start at 7:00 a.m. with breakfast and a brief background, then each company will speak briefly about their products followed with time to interact one-on-one with dealers. The workshops will end at 10:00 a.m.

The companies to be represented at the workshops are Campbell Scientific, Decagon Devices, Irrrometer Company, John Deere Water, Onset Computer Corporation, and Smartfield. Smartfield manufactures an infrared canopy temperature sensor that can sense when a crop needs to be watered.

Dr. Joe Henggeler, workshops organizer, said he was pleased with the companies that will be attending the workshops and with the level of personnel they will be sending. “Companies are not just sending regular sales staff, but their vice-presidents, product managers, and other higher echelon staff. They are eager to meet Midwestern irrigators because they feel they have products that will help them and they want to start partnerships here.” He hopes that this type of equipment can get on to cost-shared programs like EQIP.

“The cost for wireless sensor systems has decreased a lot in the past few years,” said Henggeler who has studied wireless soil moisture sensors for three years at the MU Delta Research Center, “and can now be as little as three dollars per acre annually. It doesn't take much of a yield increase to recover your investment costs.” Costs vary depending on the number of moisture monitoring sites per field and whether the data is sent by radio signal to your home pc or by cell phone to the Internet.

Protect Against Copper Wire Theft

Sensors to monitor soil moisture conditions is only one type of many hundreds of wireless sensors that these companies make. Information from the annual Bootheel Irrigation Survey (BIS)

say that automatic rain gages also ranks up high on farmers' wireless sensor “wish list.” Companies also manufacture sensors that can detect if wire on a pivot is being stripped off and will send off alarms. The BIS data showed that area farmers varied in the type of sensors that would be important for them individually. Some favorites sensors were ones that told when water in rice levies got low, when a pivot or engine/motor was off, or one that could turn off a device.

A sensor that thwarts a whole pivot being stripped of its wire would pay for itself. Anyone interested in other uses for sensors could prob-



The key to the success of wireless soil moisture sensing systems is to ensure that good communication links are established between the sensors in the field and the farmer's computer. Two MU Delta Center technicians are seen hoisting up a PVC pipe with telemetry equipment so that sheds, farm equipment and other crops won't interfere with signal. The equipment on the pole includes (starting from the bottom) a solar panel, a power pack connecting solar panel to equipment, a transceiver that receives soil moisture data from buried sensors, and a transmitter that sends data to a PC.

ably get his answered from one of the manufacturer's reps who will be at the workshops. The workshops are free, but interested parties are asked to preregister

Good Wireless Signal

Although the sensor data has been shown over and over to help irrigators, it will be no better than the communication connections from the sensor to the farmer's computer or cell phone. University of Missouri Delta Center studies have shown that this is the Achilles' heel of wireless soil moisture monitoring. To ensure that signal attenuation (the loss of signal) doesn't occur and keep data from reaching where it needs to go, the farmer and dealer should go over the installation plans beforehand. Sometimes all it means is putting up the transmitter high enough to clear local obstacles, or investing in low-cost repeaters or high-gain antennas, or using cell phone rather than radio signal.

Henggeler said the key is to making sure that the communication will be flawless during the planning stages, not after glitches have occurred. To ensure that communication links will be adequate, the workshops will have several computer work stations in the meeting room that will be linked to GoogleEarth. Farmers and company reps will be able to zoom to current aerial views of their farms to see where to place sensors, measure the distances involved, and observe if there are any obstructions that may block signals.

For additional information and contact Dr. Henggeler at (573) 225-7986 and henggelerj@missouri.edu. Pre-registration is possible at: <http://agebb.missouri.edu/irrigate/bh-conf/2011/prereg.htm>. △



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