Application and Testing of an Irrigation Advance System Sensor Unit for Water Management

McFall, Darrin

With increasing irrigation and farming costs, new methods of remotely controlling and managing water use have to be created and applied. In 2012, a university began developing a collection of 36 sensor units to be placed in cotton and soybean fields. These units contain six to eight soil moisture sensors and a GPS unit to collectively record data at predetermined field sites. The units were never tested or used in field, so prior work had to be done to ensure the units would work efficiently. This project focuses on preparing and testing a single sensor unit in controlled conditions so the others can be prepared similarly and deployed for field data collection. Before the array of all 36 units could be used to detect water's progression during irrigation, a single unit had to be edited to work consistently. Several trials involving sensor placement and orientation on different soil types were conducted. Field conditions were simulated in a greenhouse while all soil samples used were representative of common, yet extreme soil types. Samples were composed of a lower yielding sand, potting soil, and two loam varieties used commonly in row crops. Based on the results of these tests, researchers could then adapt the sensor units to provide variable irrigation management.

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