

Public Comments: Climatologically Based Controllers 8th Draft Testing Protocol

Comment Period: September 26, 2008 through October 27, 2008

9-27-2008

First name: Darren
Last name: Kovacs
Job Title: President and COO
Organization: ExactET Systems Inc.
Email: dkovacs@exactet.ca
Telephone: 403-242-6660
Fax: 403-255-6299

DOCKET	
09-AAER-1A	
DATE	_____
RECD.	April 10 2009

Comments:

The testing protocol looks thorough and well thought out except for one very important aspect - time. The long term success of Smart Controllers and the industry's ability to create positive change is directly related to how these controllers will perform over time. The weak link with all of the Smart Control Systems is the quality of the weather sensors and their relatively short life span. Even the highest quality weather stations require frequent recalibration and and sensor replacement. Initial results are important to judge how well individual systems perform, but these control systems are in jeopardy if there is not a strategy in place to ensure they will continue to save water 6 months, 1 year, or even 5 years into the future. If the data from the sensors is corrupt, the systems will fail (garbage in - garbage out). This very important piece of the puzzle must be addressed to ensure all of our success.

Kind Regards,

Darren Kovacs
ExactET Systems Inc.

10-3-2008

First name: Chris
Last name: Le Conte
Job Title: President
Organization: SMART Watering Systems
Email: cleconte@smartwateringsystems.ca
Telephone: 905-208-2030
Fax: 888-296-9091

Comments:

I am very concerned that there appears to be no focus on LONG TERM quality of ET information used by the SMART Controllers. Many manufacturers have submitted low cost weather sensors that we have no idea if their life span is 1 year, 5 years or 90 days. I have personally witnessed ET controllers and weather systems become faulty or corrupted after 30 days. I am hoping that the SWAT recommendations looks at the long term reliability and viability of the controllers they test. If a low cost unit fails and causes overwatering or landscape damage, SMART irrigation gets painted with a bad brush. Let's make sure that quality products are making it into the consumers hands. If we do, the industry as a whole wins.

thank you,

Chris Le Conte

10-17-2008

First name: Steven
Last name: Moore
Job Title: President
Organization: Irrisoft, Inc.
Email: smoore@irrisoft.net
Telephone: 435-755-0400
Fax: 435-755-0415

Comments:

The protocol states: "The quality of the input data must be verified by a certified professional."
What input data is being verified? What is the verification process? And what certifications are required?

10-17-2008

First name: Steven
Last name: Moore
Job Title: President
Organization: Irrisoft, Inc.
Email: smoore@irrisoft.net
Telephone: 435-755-0400
Fax: 435-755-0415

Comments:

The protocol states: "The attempt in developing this protocol is to use only generally recognized theory." The Irrigation Association Turf and Landscape Irrigation Best Management Practices April 2005 states: ".determine the irrigation interval (when to irrigate) from soil type, average root zone depth, management allowable depletion (MAD) and reference evapotranspiration." As a supplement to the Best Management Practices the Landscape Irrigation Scheduling and Water Management - March 2005 devotes section 2.4 to irrigation intervals and details the importance of allowing depletion of soil moisture before watering. The protocol ignores the watering interval as a necessary component in effective water management. The principle of Managed Allowed Depletion is not an "individualized water management strategy", but a well accepted principle. The protocol evaluation process should not ignore this well established principle.

10-17-2008

First name: Steven
Last name: Moore
Job Title: President
Organization: Irrisoft, Inc.
Email: smoore@irrisoft.net
Telephone: 435-755-0400
Fax: 435-755-0415

Comments:

The protocol states: "The individual zones within the landscape will represent a range of exposure, soil types and agronomic conditions." The Average Root Zone Depth is 16.7" with a range from 8.1" to 28." This would be true in agricultural environments but not even close in typical landscapes. It is not uncommon to see annual flowers with a 3" root depth. In many landscapes there is only 3 to 4" of topsoil in the turf areas and most ground cover root zones are 6 to 8".

10-17-2008

First name: Steven
Last name: Moore
Job Title: President
Organization: Irrisoft, Inc.
Email: smoore@irrisoft.net
Telephone: 435-755-0400
Fax: 435-755-0415

Comments:

The protocol states: "Develop a moisture balance calculation assuming the calculation starts with a one-half full root zone." Zone 5 has a RZWS of 2.25". The protocol further states: "Accumulate surplus and deficit values during the evaluation period and express as system adequacy and efficiency." Given the formula, measured applied irrigation can be off by plus or minus 1.25" over 30 days with only 2.5" of evaporation. In the case of zone 5, irrigation could be off by +/- 50% and still get a perfect score. Even in zone 2 and zone 5 with a 0.55" RZWS the irrigation could be off +/-11% and still get a perfect score. This weakness can be reduced by changing the root depth, which will change the RZWS value. Please consider: changing the rooting depth zone 1 from 10" to 6", zone 2 from 8.1" to 4", zone 3 from 20" to 6", Zone 4 from 28" to 18" Zone 5 from 25" to 8" (when a zone has a mix of trees and ground cover watering schedules must meet the needs of the most restrictive crop, in this case the ground cover), and zone 6 from 9.2" to 4", this will reduce the RZWS value to more realistic conditions.

10-17-2008

First name: Steven
Last name: Moore
Job Title: President
Organization: Irrisoft, Inc.
Email: smoore@irrisoft.net
Telephone: 435-755-0400
Fax: 435-755-0415

Comments:

There is not enough time in the test process to verify that a controller responds to changes in the Kc value shown on table 2.

{

10-17-2008

First name: Steven
Last name: Moore
Job Title: President
Organization: Irrisoft, Inc.
Email: smoore@irrisoft.net
Telephone: 435-755-0400
Fax: 435-755-0415

Comments:

The irrigation industry has well defined test procedures to test the uniformity of the distribution of water from a sprinkler head. Yet all published test results demonstrate that all controllers get at or near perfect scores. There is a difference in these products, they are not all perfect. The protocol states: "This protocol provides a procedure for characterizing the efficacy of irrigation system controllers that utilize climatological data as a basis for scheduling irrigations." Some smart controllers use a single climate sensor to calculate ET, while others use all 4 sensors (solar radiation, temperature, wind and humidity - all factors that affect ET). Some measure rainfall while others simply sense rain. There is a difference in the effectiveness of these products; they are not all the same, the test results should expose the difference, and then let the consumer make the final decision.

10-18-2008

First name: Tom
Last name: Reynolds
Job Title: Plant Ecology Coach
Organization: www.waterbalance.net
Email: tomrinaz@cox.net
Telephone: 602-463-5072
Fax:

Comments:

Fellow Conservationists

I have discovered a few enhancements that pragmatically address some earlier concerns regarding the drip irrigated test-design. "A more studied analysis" MUST be conducted for the many \$50,000 to \$300,000 drip irrigated landscapes in arid regions across the globe. Canopy areas of only 40% to 50% better fitting historical densities, but spoon-watered and fed by drip irrigation systems perhaps only wetting 30% - 50% of individual plant canopy areas, be not fit this test protocol.

The only way I can think to demonstrate this contention is to let ET manufacturer's do their best to mode! this more realistic landscape design scenerio (40% wetted of 40% canopy-covered), then use soil moisture sensors or neutron guages to serve an an umpire, under common statistical sampling tests of confidence.

For now, many millions of gallons of water can be conserved if full cover landscapes receive full-cover irrigation, and certified, experienced individuals commission these ET-based controllers, and monitor them regularly. Some ET-based controllers will handle drip irrigated zones more sagaciously. Yet, ground truthing adjustments using a soil probe will likely be necessary every month or two to re-set the current soil water balances for a significant percentage of the valves.

10-22-2008

First name: Vuong
Last name: Hong
Job Title: Engineer
Organization: VtechWater
Email: vuong@vtechwater.com
Telephone: 714-662-3884
Fax:

Comments:

The formulas to calculate how much water needed to compensate to the ET are very well thought; however, there is very little mention about the Relative Humidity (RH) which has a great effect on the ET rate. I hope that the formulas somehow reflects the RH before and during the irrigation time.

In addition, in table 5.2, does the formula for DA at the bottom need to divide by 100 because E is in percent?

First name: Vuong
Last name: Hong
Job Title: Engineer
Organization: VtechWater
Email: vuong@vtechwater.com
Telephone: 714-662-3884
Fax:

Comments:

Hello,

I just find out that my email "vuong@vtechwater.com" has some problem. Please send correspondents to my email "vuongbh@yahoo.com". Sorry for the inconvenience. Thanks.

10-25-2008

First name: Denis
Last name: Gourdeau
Job Title: Water Management Coordinator
Organization: The City of Calgary
Email: denis.gourdeau@calgary.ca
Telephone: (403) 268-4531
Fax: (403) 537-3098

Comments:

In the Introduction the following is noted:

? The quality of the input data must be verified by a certified professional

Certified Professional must be defined for the statement to have any value and meaning.

10-25-2008

First name: Denis
Last name: Gourdeau
Job Title: Water Management Coordinator
Organization: The City of Calgary
Email: denis.gourdeau@calgary.ca
Telephone: (403)268-4531
Fax: (403)537-3098

Comments:

Item 5 "Root Zone Depth in." in the Root Zone Working Water Storage (RZWWS) calculations table are too deep and do not represent realistic root depths for turf in a residential or parks landscape. It is often more difficult for controllers to accurately apply water with precise control in situations of shallow soil because of sprinkler rotational speed and only completing partial rotations. This should be captured as part of the test by using some zones with less root depths in the 4 to 6 inch range.

10-26-2008

First name: Nick
Last name: Strehle
Job Title: GM
Organization: Sunburst Landscaping Inc.
Email: sunburstlandscaping@gmail.com
Telephone: 8437682434
Fax:

Comments:

A clay soil on a slope of 13 %< has an ASA of .1 in. What test protocol is in place to measure the reliability and accuracy of the controller's instruments or the information that is received?

Weather Data Source: The testing center shall only have one source that is used. There are currently several variables introduced into the test. There needs to be as many constants as possible in the test in order to compare different manufactures. Also if the testing site will go through the trouble to randomly select one out of ten controllers to use for the testing, why receive their input on the where the data is received. The testing protocol should not be changed to meet the needs of different manufactures.

We know that there are many levels of performance and reliability that our money can purchase. For an example, every one knows that there is a big difference a Kia and a BMW. In my opinion the whole purpose of establishing a testing protocol is to evaluate a product without being biased. As the test is now, there are too many imperfect controllers receiving perfect scores. Is the best way to present ourselves to the public? Does this help us to brand ourselves as professionals that are creditable?

The manufactures that make and market their product are striving to be the best product in that price category. We should not change our test protocol to ensure that they receive a perfect score. It would make me very happy to see a protocol established that actually made manufactures strive to receive a perfect score. At this point none of the controllers should receive a perfect score. The technology is too new and could still be pushed further.

10-27-2008

First name: Steven
Last name: Moore
Job Title: President
Organization: Irrisoft, Inc.
Email: smoore@irrisoft.net
Telephone: 435-755-0400
Fax: 435-755-0415

Comments:

The implementation of "Efficiency" (E) is not consistent with the Irrigation Association Landscape Irrigation Scheduling and Water Management March 2005. See section 1.12