

Simplify Data Collection and Correction

The new web-based GroZone Tracker app makes it easier for growers to monitor fertilizer and water practices and to resolve issues related to alkalinity, pH and electrical conductivity.

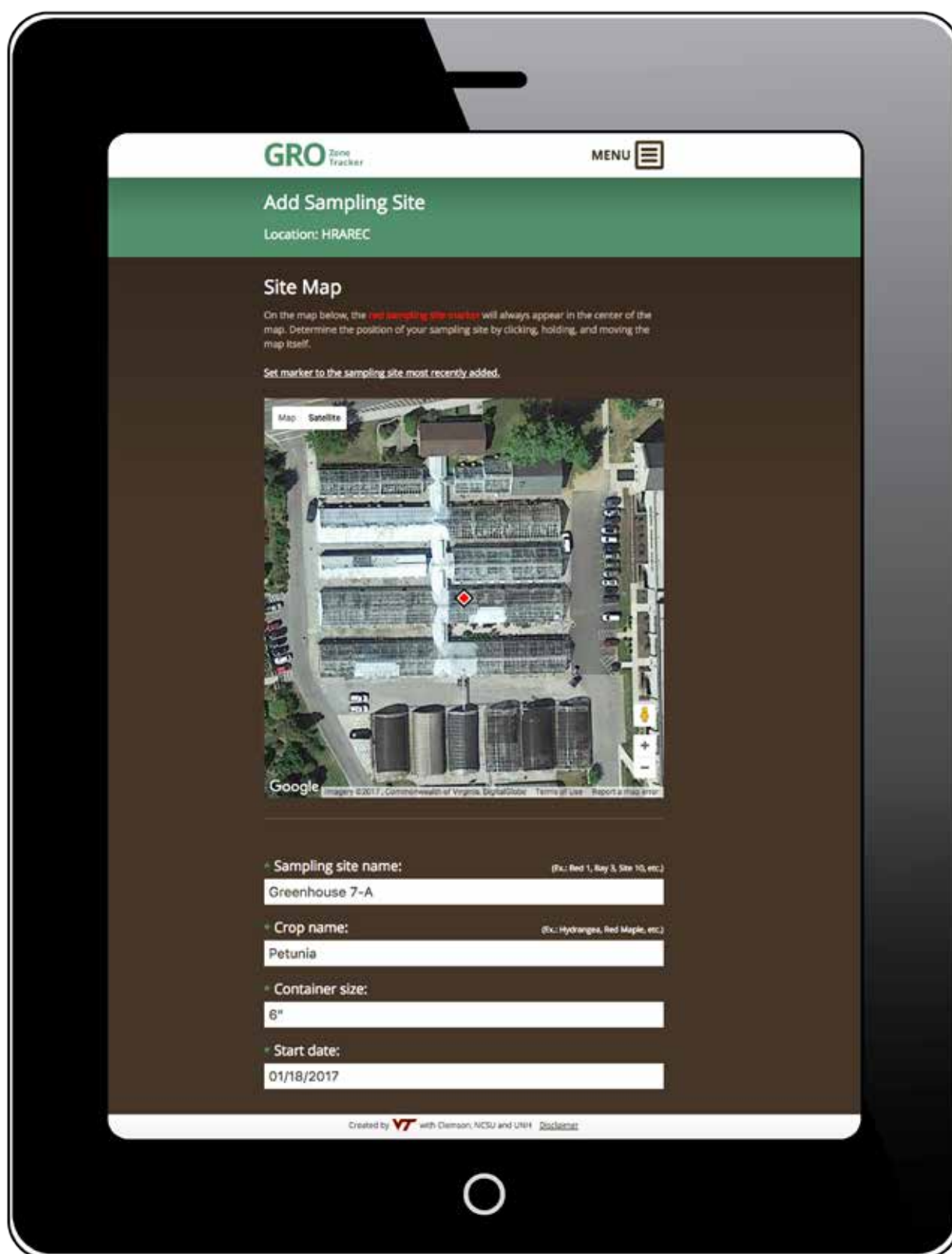
BY DAVID KUACK

Collecting, recording and reviewing substrate pH and electrical conductivity (EC) and water quality (alkalinity) data can be a time-consuming process for greenhouse and nursery growers. Some growers collect this information in notebooks and then transfer the data to their computers. GroZone Tracker (<https://grozonetracker.com>), a free mobile website developed by horticulture professors Jim Owen at Virginia Tech, Brian Whipker at North Carolina State University, Sarah White at Clemson University and Brian Krug at Pioneer Hybrids, should make it easier for growers to collect, record and review this data.

The app also provides feedback in regards to whether these parameters are within desired ranges for a given crop, should be monitored for potential problems or require immediate attention to ensure a crop is not damaged. Having faster access to this data and its analyses can assist growers in heading off any potential crop problems before they occur.

“What caused this app to be created is that we would go to ornamental plant growers asking them if they had been monitoring substrate pH and EC,” Owen says. “They would have checked them a few times, but they may have lost their notes. They would have the most recent test results and it would show them there were problems, but they wouldn’t know where these parameters were before that test.”

According to Owen, the goal for the mobile website was to be able to create an in-house performance record that could be shared with everyone in the company. “Secured data they could share internally and/or with their consultants or Extension agents if they wanted. Rather than recording the data on post-it notes or in notebooks, they could have a data record that was easy to record in the field on a mobile electronic device or from their desktop computer.”



GroZone Tracker app allows greenhouse and nursery growers to geotag or record the locations of where nutrition and water samples are taken. (Photo: Jim Owen)



GroZone Tracker app is based on the PourThru technique used to measure the electrical conductivity (EC) and pH of traditional container substrates. (Photo: Brian Whipker)



Vegetative petunia showing symptoms of a substrate with low EC as determined by the PourThru technique. (Photo: Brian Whipker)

TERRA NOVA NURSERIES, INC.



ECHINACEA KISMET™ SERIES

- Interspecific breeding for higher crown count
- More first year blooms
- Extended color display on retail benches
- Enhanced overwintering survivability



www.terravanurseries.com

The researchers worked with Torx Media (www.torxmedia.com) in Richmond, Virginia, to develop the app.

"We came to them with how we wanted the website to be organized and how users should navigate it," Owen says. "They have simplified the program to as few clicks as possible to input meaningful data and to get a decision aid out of the system."

TRADITIONAL SUBSTRATES, ORNAMENTAL CROPS

GroZone Tracker works for growers who are using traditional substrates.

"The program is for containerized floriculture and nursery crops grown in typical substrates with components such as peat, bark, coir and perlite," explains Owen. "Rockwool is not typically used with containerized crops. It is usually available in slabs and used with crops that are grown hydroponically."

The app currently has preset parameter ranges for annuals, perennials and woody ornamentals.

"The containerized plants in the program are a robust list for the parameters that we put in to provide instant feedback for the users to choose between," Owen says. "Growers of other crops such as greenhouse vegetables or hydroponically grown crops could input meaningful data into the program. However, the preset criteria for substrate pH and EC and water quality would not provide inference for vegetable and hydroponic crops. Once users select a preset range, grozonetracker.com provides feedback regarding if action is needed, is on the verge of needing action or the crop is good to go. This would not work for hydroponic crops. One of the things that we would like to know from growers is if there is a need to include other crops."

Owen says the program was designed for data collected using primarily the PourThru (www.ces.ncsu.edu/depts/hort/floriculture/crop/crop_PTS.htm) sampling method.

"Once users select a preset range, grozonetracker.com provides feedback regarding if action is needed, is on the verge of needing action or the crop is good to go."

— Jim Owen, Virginia Tech

"PourThru is the dominant testing method used for actively growing plants in woody nurseries," he says. "Growers may not use the PourThru method as much with smaller size containers. Plug growers may be using a 1:2 extract or the squeeze method. The saturated media extract method may be used to test the substrate before planting. GroZone Tracker provides a conversion factor for these other types of testing methods."

IDENTIFYING PROBLEM PLANTS, WATER SOURCES

Another benefit to GroZone Tracker is that it allows growers to designate locations related to plant production and water sources.

"The app can be set up with locations and within those locations the grower sets up sites," Owen says. "A location would be a greenhouse range or a nursery operation. A site would be a greenhouse bench or a nursery bed that is being monitored throughout the season or the site can be a water source, such as a pond, that is being monitored for water quality samples."

"For water samples, a grower can track the water quality at multiple sites including the water source, the pump station and irrigation nozzle. This can help to track overall water quality in relation to substrate pH and EC. The program geotags the location and time stamps the data entry automatically."

Owen says when growers set up the program it offers suggestions for substrate pH and EC for various ornamental crops.

"The growers select the ranges for the EC and pH from the program's preset ranges," he adds. "For woody ornamentals there are four categories for EC and pH. The woody crops are not as sensitive as annuals and perennials. Annuals have more options for different pH and EC ranges than woodies. Floriculture crops are grown intensely for weeks where woodies are grown for months providing a more forgiving production system. There are also tight or broad ranges for annuals and perennials."

"The program tells growers if the pH or EC are outside of the

initially selected ranges for growing their crops. It's up to the growers if they need to take action or if the selected criteria work for them and their operations."

Currently the app does not provide any information on how to bring the substrate pH and EC

or water alkalinity back into the designated preset ranges.

"We would expect the growers to call their Extension agents or consultants to find out how to resolve these issues," Owen says. "This is one of the things that growers have said they

thought would be good to add to the app."

The program makes it much easier for growers to monitor the crops and record when they are done. The data can then be downloaded to Excel when crops are finished.

What happens to the chemical that you spill between plants?



The **CD2-Chemdose**
puts the chemical right in the pot.



Accurate Doses



Easy to Program



Portable

Perfect for precise PGR and systemic insecticide applications.

Call to learn how the CD2 can accurately dispense your chemicals.



Scan to see the CD-2 in action



Integrated Plant Health
information@dramm.com
www.dramm.com
920.684.0227



Vinca showing iron deficiency symptoms as a result of a high substrate pH. (Photo: Brian Whipker)

"The program has the functionality so that when a crop is finished it can be closed out and the data is available to be looked at later," he says. "We are interested in feedback as to what other tools should be incorporated into the program or what other specialty crops, other than ornamentals, could use this program. Enhancing app functionality could involve adding crops, an irrigation management tool so growers can review irrigation uniformity, or an irrigation scheduling tool that could determine how much water to apply using methods such as leaching fraction or planted container weight. We should be able to input this data using the same platform to help with those parameters as well."

For more information: Contact Jim Owen at jsowen@vt.edu or go to <https://pubs.ext.vt.edu/HORT/HORT-227/HORT-227-PDF.pdf>. Funding for the development of GroZone Tracker was provided by the Horticultural Research Institute (www.hriresearch.org), American Floral Endowment (<http://endowment.org>) and Clean Water3 (<http://cleanwater3.org>). *gpn*

David Kuack is a freelance technical writer in Fort Worth, Texas. He can be reached at dkuack@gmail.com.



FREE WEBINAR: DISEASE MANAGEMENT

**HELPING GROWERS IDENTIFY, CORRECT & PREVENT
COMMON DISEASE PROBLEMS IN ORNAMENTALS**

September 26 | 2:00 - 3:00pm EDT

Diseases caused by fungi, bacteria, or viruses can keep any grower awake at night. Not knowing what disease you may have on a particular crop may cause big losses before you know it.

Register at
www.gpnmag.com/edwebinar/



Presented
by Roger C.
Styer, Styer's
Horticultural
Consulting, Inc.

Sponsored by:

