Easing irrigation management

By Scott Angle, jangle@ufl.edu, @IFAS_VP

There's a word Sandra Guzmán uses over and over again: easy. She knows if it's not easy, it's not useful.

Getting to "easy" takes years of hard work. Guzmán doesn't have years in yet, but in 20 months as a University of Florida/Institute of Food and Agricultural Sciences (UF/IFAS) irrigation scientist at the Indian River Research and Education Center, she has tackled plenty of the hard challenges. She's taking separate streams of data, such as soil moisture readings, environmental measurements and weather forecasts, and blending them to answer the question of when and for how long you should turn on your irrigation system.

That simple question of whether to turn on the irrigation is bedevilingly difficult for a human brain, even Guzmán's, to answer. She's in the early stages of putting artificial intelligence (AI) to work on it.

Guzmán

AI ASSISTANCE

My job as the new leader of UF/IFAS is to give Guzmán and her citrus research colleagues the support they need to deliver easy answers to you. In the next five to 10 years, one of the biggest ways UF/IFAS can support her so she can support you is to give her access to AI tools.

Help is on the way. The University of Florida's recently announced $70 million artificial intelligence initiative establishes food and agriculture as one of its chief fields of focus. UF/IFAS hopes to tap into this so that Guzmán and others can help you farm smarter than ever. It could accelerate citrus breeding, scout for psyllids or for HLB far more widely and accurately than existing technologies, prescribe just the right nutrients for a single tree, or, in Guzmán's case, make your citrus irrigation management easier.

Soil-plant sensors and weather stations give you all sorts of information. But Guzmán wants them to impart recommendations. What she hopes to do with AI is to be one step ahead, help you visualize conditions in real time and predict outcomes of irrigation timing.

You don't have time to go through a complicated calculation every time you want an answer to your irrigation question. So, Guzmán's goal is not just interpreting the data for you, it's translating that data into output, like a map or a message on your smartphone screen in real time about steps you should take when you're standing next to a tree.

The idea is to get beyond a soil moisture sensor that tells you to irrigate now when the weather station is saying it's about to rain.

ANALYSIS AND IMPLICATIONS

Did you just fertilize at a moment when rain could wash away your investment? What are the pest control implications of watering the grove now versus tomorrow? How high is the groundwater level or well water level, and is it where it needs to be to avoid salinity problems? AI applications can layer these factors into the analysis.

AI can have huge implications for your operation. After all, irrigation is costly. If Guzmán can shave a little bit of that cost off and increase your yield, it's a boost to your bottom line. She has a prototype system that she's already testing on a commercial farm.

Sometimes the answer to the irrigation question isn't a straight yes or no. A lot of times it's going to be not yet, but check back in a few hours.

IMPACTS AHEAD

We don't yet know what UF's AI initiative will mean for citrus. But we are excited about how the AI initiative will help us transform agriculture, from entire industries down to individual groves.

Check in with me whenever you want an update. I'll tell you what I know. In the meantime, let your citrus association know AI needs to be on its research agenda. That helps scientists like Guzmán determine their research agenda, because we serve you. AI might be the most impactful way we can do that in the decade ahead.

Scott Angle is the University of Florida's vice president for agriculture and natural resources and leader of UF/IFAS.