How technology aids farmers, gardeners

From commercial farms to local community gardens, innovative technologies in farming are revolutionizing the way food is grown.

By Norman Rozenberg - Tech Page One Aug 01 2014

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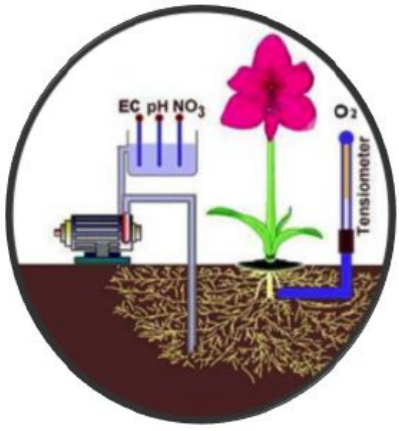

Here's how AutoAgronom's system works. Credit: AutoAgronom

Groundwater and freshwater from rivers are used to produce food and other agricultural products, and most of that water goes to waste because of evaporation and runoff, according to comprehensive study conducted by the International Water Management Institute.

"Without further improvements in water productivity or major shifts in production patterns, the amount of water consumed by evapotranspiration in agriculture will increase by 70 to 90 percent by 2050," the study concluded.

Two startups, AutoAgronom and Hydros, are tackling this problem by revamping the way irrigation and sprinkler systems are used for farming and gardening.

Water usage and irrigation systems are an integral part of farming and food production not only in the United States but also across the globe. Better water management and closer attention to plant needs can improve food output.

Agriculture-related industries contributed $775.8 billion to the U.S. gross domestic product (GDP) in 2012, according to the U.S. Department of Agriculture. America's sizable agricultural output requires millions of tons of water yearly to sustain food production.

Startup revolutionizing large-scale farming

AutoAgronom, which makes a high-tech irrigation and fertilization system, is an Israeli startup founded in 2008 that relocated to Boston this year to expand its market.

"We're looking to solve the constant debate that a farmer has — when to water your plants, how much to water, when to fertilize and how much to fertilize," Osher Perry, vice president of international marketing for AutoAgronom, told Tech Page One.

Unlike other agriculture systems, AutoAgronom's product "communicates with the plant" by focusing on its roots and measuring the oxygen, pH and nitrate levels to promote growth, Perry said.

Other irrigation systems on the market do center pivot irrigation, in which equipment rotates around a pivot and crops are watered with sprinklers. These devices do not take the roots into account, which makes it difficult to provide plants with the right amount of water.

The high-tech approach of Perry's startup has helped farmers conserve resources. In the United Kingdom, for example, farmers who used AutoAgronom saw a 30 percent yield increase with their strawberries.

"We've helped produce more food for the global market," said Perry, whose startup was a finalist of MassChallenge, a series of events in Boston that provides mentorship and networking opportunities for entrepreneurs.

Technological improvements in irrigation and fertilization devices have assisted home gardeners as well as large-scale farmers.

Community gardening gets a tech nudge

Like AutoAgronom, Hydros approaches agriculture with technology, arming hoses and sprinklers with smart sensors.

Hydros' smart sensors function like normal sprinkler systems but also monitor and account for individual soil and plant needs. Like other Internet of Things devices, the Hydros equipment communicates with the brand's other equipment to ensure all crops get the right amount of water.

"The most important benefit to Hydros is knowing and analyzing in real time the conditions of the soil/grass/garden and not guessing," Manuel Masri, CEO of Hydros, told Tech Page One.

Masri explained where the idea for Hydros products came from.

"The idea for Hydros was born in 2012, in hopes of reducing our water bill after having to pay $300 one hot summer month," he said. "We couldn't determine if we were irrigating too much or too little and always forgot to turn the system off if it was scheduled to water just before or after a big rain."

AutoAgronom and Hydros help growers of any size minimize waste using technology, whether they're at-home gardeners or farmers with hundreds of crops.