

Water WARRIORS

By Kristen Manieri

HOW AGRICULTURAL TECHNOLOGY PIONEERED IN CENTRAL FLORIDA IS "GREENING UP" THE WORLD.



MREC in Apopka is at the forefront of the agricultural technology industry, leading the way when it comes to water conservation and protection.

»» If there's one thing Florida has a lot of, it's fresh water. With more than 51,000 miles of rivers and streams, and 7,700 lakes, the Sunshine State is incredibly rich in the world's most valuable resource. And while supply might seem abundant, the issue of water conservation and protection in Florida definitely gets top billing on the state's environmental agenda.

At more than 2,500 million gallons per day, according to U.S. Geological Survey (USGS), agricultural irrigation uses the largest amount of freshwater in the state. Finding a way to use this water efficiently, and with little to no waste, has become the focus of a select group of researchers at Apopka's Mid-Florida Research and Education Center (MREC), a branch of the University of Florida's Institute of Food and Agricultural Sciences (IFAS). Besides a



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myriad of innovative research endeavors that make MREC a beacon in the world of agricultural technology, water conservation and protection remain the cornerstones of at least two major research initiatives at this cutting-edge facility.

"My work is focused on maximizing water efficiency and minimizing water waste," says Dr. Richard C. Beeson Jr., Associate Professor of Environmental Horticulture at MREC, whose research has focused chiefly on the water use of plants grown in nurseries. Dr. Beeson has developed a system that measures how much water plants use on an hourly basis, taking into account everything from temperature and solar radiation to cloud coverage and rainfall. The results give growers the ability to determine exactly how much water a plant has used and how much water it will need to replenish. Plants get exactly what they need, nothing more and nothing less.

The outcome is an optimal growing process and irrigation algorithm with little water waste. "By fully understanding the micro-climate's affect on water use, the grower can manage their irrigation so that it's more responsive to the plant's use," explains Beeson.

Dr. Beeson's work not only impacts nurseries, but also the field of landscape ornamentals, where optimum water programs allow trees and plants to flourish after replanting. Establishing trees and shrubs into new soil tends to call for more water than growing, so optimum water usage and maximum efficiency are critical.

More research into water protection is being done by MREC faculty member and researcher, Brian Pearson. Pearson studies storm water nutrient runoff, particularly in residential areas, which impacts local waterways by introducing

chemicals from fertilizers. "There is a very serious need to protect the quality and quantity of our water resources," Pearson explains. His research aims to understand how nutrient runoff occurs, as well as to minimize its impact on surrounding bodies of water. In Florida, where the building of residential subdivisions around natural waters such as lakes and rivers is commonplace, finding a way to preserve water quality is crucial.

What makes MREC such a treasure in Metro Orlando is that the studies conducted at this multi-million dollar research and education facility have immediate applications in the community. Established in 2000 after combining research centers in Apopka, Leesburg and San-



Finding alternatives to insecticides is just one of the goals at MREC.

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ford, MREC spans over 239 acres and boasts state-of-the-art administrative, office, and laboratory buildings, as well as classrooms, teaching labs, a library, and a multi-purpose auditorium. This ideal setting blends real-time research with ongoing education, resulting in solutions for timely issues facing the surrounding community and beyond.

Besides focusing on water conservation, MREC leads a number of often

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significant research endeavors with a global impact, both environmentally and economically. Within its laboratories and working greenhouses, researchers are finding alternatives to insecticide use; such as the utilization of predatory bugs in place of insecticides, which translates into increased economic vigor in the agricultural industry, as well as a decreased impact on the planet.

As the home of the Grapevine Genetics and Plant Pathology Research Laboratories, MREC is on the forefront of research into Pierce's Disease, caused by a harmful grape bacterium that has threatened grape crops around the world. Two on-site grape vineyards provide researchers with specimens. Also on-site is the Termite Management School, where students learn to understand and predict termite behavior, as well as methods of thwarting and treating structural infestations.

You'd be hard pressed to find a bigger supporter of MREC than Orange County Commissioner Fred Brummer, who's quick to point out how important MREC is to Central Florida. "What's unique here is

that researchers interface with local growers, finding solutions to their challenges in real-time," says Brummer.

While MREC may sprawl across acres of pastoral Apopka, there's lots of room for neighbors. The facility is a gateway to IFAS and the University of Florida in general, with great potential for synergies with a number of technology partners. "We welcome the arrival of irrigation technology firms, IPM technology firms, bioen-

ergy research firms, or pharmaceutical and nutraceutical firms," says Wayne Mackay, Center Director at MREC. "The sky's the limit when thinking about partnerships."

In an age when inventive environmental solutions are more sought-after than ever before, MREC rises to the forefront in the agricultural technology industry.

