

THE UNIVERSITY OF GEORGIA COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES

# Environmental Report

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## System prevents pests from leaving foreign ports

BY SHARON OMAHEN

For eight years, University of Georgia Cooperative Extension county agents have used digital images, computers and e-mails to quickly diagnose insect and disease problems. Now a UGA team has installed their system in Honduras to protect U.S. farmers and consumers.

### Two DDDI systems have been set up at the Port of Cortez to prevent plant diseases and insects from leaving Honduras.

Called Distance Diagnostics through Digital Imaging, the system is in most UGA Extension county offices statewide. UGA shared the technology with 12 other U.S. land-grant universities and then added Honduras as its first international partner.

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"This is one of only a handful of U.S. Customs offices set up in ports outside the U.S.," said Marco Fonseca, a UGA Extension horticulturist and native Honduran. "A U.S. inspector checks the shipments, so now agricultural products can go straight into our market."

Fonseca says the U.S. benefits are twofold: The nation is further protected from plant diseases and insects entering its borders, and Americans get fresher imported fruits and vegetables.

"The DDDI system at the port is very valuable in terms of biosecurity," he said. "And it expedites the process on valuable, perishable products. We need to I.D. pathogens and pests at that point, not on our shores."

Inspectors are trained to look for pathogens and pests common to the region. Fonseca says with insect pests, this includes training inspectors to recognize all stages of an insect's life, not just the adult stage.

"Barriers like this slow down the movement of pathogens and pests," he said. "It's a defense system to slow down movement. We aren't going to stop the movement of people, so we have to stop the movement of pathogens."

The DDDI systems at the Port of Cortez were two of five installed through a UGA partnership with the Zamorano Pan



UGA horticulturist Marco Fonseca, center, teaches Honduran farmers how to collect plant pest samples. Thanks to a new digital diagnostic system installed by UGA researchers, the farmers can now get quick answers to pest questions.

Courtesy of Marco Fonseca

American School of Agriculture in Honduras. The other three were set up at the university, on a rural ranch and in a farm village.

"The extension system doesn't exist there, so farmers don't have county agents to go to for help," Fonseca said. "Now there's a way for them to get help from the local agriculture university."

Jean Walter, a UGA Extension agent in Jasper County, Ga., knows how well DDDI works, pointing to a weed problem she checked in a farm pond. "I took pictures of the pond, close-up photos of the weeds and then used the dissecting scope to take magnified photos," she said. She e-mailed the photos to a UGA researcher, who quickly identified the problem and recommended how to control it.

Farmers and homeowners like the quick turnaround. "With the high price of gas now, we're seeing a huge increase in the system's usage," she said.

At an aquaculture conference in Panama and later during a church mission trip in Honduras, Walter got the idea of sharing the technology with other countries.

"In Panama, I heard farmers talking about the huge loss their country's shrimping industry suffered due to white spot virus," she said. "This system could have saved Panama and

other surrounding countries millions of dollars."

In Honduras, she saw many ways the DDDI system could be used. "I know 'rural poor' because I've seen it," said Walter, who also lived in the Philippines for five years. "I know what it's like to not have access to health care for people and animals."

Walter gained the support of Fonseca and Don Hamilton, director of the DDDI program at UGA. What she still needed was funding. That came from Robert Fowler of Covington, Ga. Fowler is a trustee with the Arnold Fund, a charitable trust fund created by the late Robert O. and Florence T. Arnold. The trust funds scientific and educational programs that strive to make life better for the citizens of Newton County, Ga., and beyond.

"Each system costs about \$5,000 to set up," Fonseca said. "This includes two microscopes, a camera that mounts on the microscope, a dissecting scope, a digital camera, a computer and a printer."

**For more information on Distance Diagnostics through Digital Imaging, visit <http://www.dddi.org/>.** Sharon Omahen is a news editor with the University of Georgia College of Agricultural and Environmental Sciences.

## Sustainable farming in Costa Rica

BY MARCY COBURN

It looks like an overgrown garbage bag heaped in the middle of a field with a pipe connected to its top. Small holes are patched with duct tape, keeping the biodigester from leaking its liquid contents.

Students from the University of Georgia and North Carolina State University were in Costa Rica on an agro-ecology tour when Ana Quirós, the woman whose farm they were visiting, showed how she takes care of her pig's waste.

"The waste from the pigs is filtered, and the solids are used as organic compost for the banana and medicinal plants," Quirós said. "The liquids go into a biodigester."

Quirós' farm is a few miles from Escuela de Agricultura de la Región Tropical Húmeda, or EARTH, an international agricultural college focused on education and sustainable development of the humid tropics. María José is part of a group of eight farms that offer tours of their sustainable farming systems with help from EARTH students and faculty.

### Ana Quirós farms organically. She uses no synthetic pesticides, herbicides, fungicides or fertilizers.



Wayne Parrott

Ana Quirós' biodigester converts her pigs' liquid waste to methane gas and, after many more steps, water. The gas is used for cooking, and after the excess liquid travels through a set of lagoons and water hyacinths, it's clean enough to give back to the pigs.

EARTH has also helped the eight farms devise biodigestors to reduce pollution and achieve energy independence with a water recycling system.

"I like the way biodigestors allow farmers to get fuel, feed, fertilizer and income from waste, as opposed to letting the waste run into nearby streams and pollute them," said Wayne Parrott, a UGA College of Agricultural and Environmental Sciences crop and soil science professor. He heads the annual UGA "Agro-ecology in Tropical America" study-abroad course.

A biodigester looks like an oblong plastic tube about the size and shape of a Volkswagen bus. The liquid waste is pumped into the plastic tube and semi-sealed, where it ferments. Methane gas forms, and the tube inflates. The methane gas is pumped through a set of plastic pipes up to the house to be used