Distance Diagnostics

County agents now can deliver speedier answers to farmers' questions in the field.

BY CECIL H. YANCY JR.

Ben Hill County, Ga., Extension agent Tim Hall used to wait up to a week to give a farmer a diagnosis of a problem in the field. In the past if he had a question he couldn't readily answer about a disease, pest or weed, he'd either get on the phone and describe the problem, hand deliver the symptoms or mail the plant to Athens for diagnosis.

Today, he takes a picture of the problem and sends it via e-mail to a cadre of University of Georgia experts who can get him an answer in a matter of minutes. "It's very important to the farmer that a problem gets identified in a timely manner," Hall says. "The longer you delay control, the more yield you can lose."

Digital technology has come to the field full-force. Only in its third year of operation, the University of Georgia's Distance Diagnostics is already changing the way county agents go about the business of helping farmers and other residents.

Don Hamilton, coordinator of UGA's College of Agriculture and Environmental Sciences Office of Information Technology, says the system has already cut expenses and decreased response time to questions. Hamilton and Ed Brown, plant pathology Extension coordinator, became interested in the agricultural applications of digital diagnostics based on Brown's exposure to telemedicine in the early 1990s. In several cases, the agricultural application of Distance Diagnostics has meant the difference between life and death.

Agents in the loop

Digital diagnostics puts technology within fingertip reach of agents like Hall.

He takes a digital camera and a microscope to the field with him, shoots as many as five photos of the problem and sends the images over the Internet. On the other end of the line sit 250 of UGA's faculty, trained in disciplines ranging from plant pathology to horticulture to entomology. The agent has only to fill out a form and attach the images, and the information is routed to the appropriate plant pathologist, entomologist, weed scientist or other expert, Hamilton says. "The system is very user-friendly," Hall says. "Actually, the longest part about it

ONLINE

Distance Diagnostics
www.ces.uga.edu/distance_diagnostics/index.html

now is filling out the form."

In agriculture, the system helps Hall get a handle on weeds that have come on the stage only recently. For example, when he has had problems identifying morningglories, eclipta or wild poinsettia, he's been able to send the photo to specialists for diagnosis. "If the person knows the image is coming, the diagnosis could be that fast," Hall says, snapping his fingers.

But the applications go beyond weed identification. Hall sees disease identification as one of the major benefits of this digital technology for farmers.

"When you think about how fast diseases can rob yields, this kind of tool could help farmers stay on top of the situation," Hall says.

Outside of the agricultural realm, Hall has already experienced the impact of digital technology. Last year, an urgent call came to his office regarding a child who had eaten a poisonous plant. The Poison Control Center in Atlanta had referred the parents of this child to the Ben Hill County Extension office. Using his camera and microscope, Hall sent a photo of the plant to the experts at UGA. He alerted the experts that the image was coming over the Internet and in a matter of six to seven minutes the plant was identified as American nightshade, a poisonous plant. The young child had eaten the berries of the plant. That's an instance of technology saving a life.

Don Hamilton, of UGA's Office of Information Technology, takes digital photos in the field.

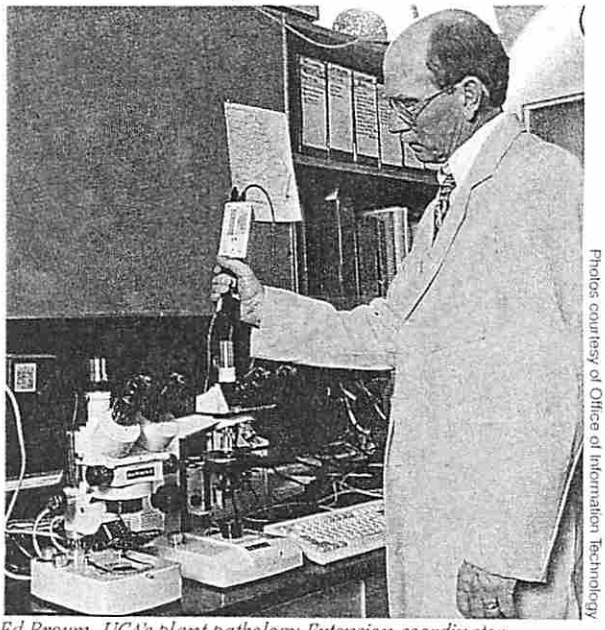
The system

UGA began its cutting-edge program in 1997. Currently, 94 county agent offices have microscopes fitted with digital video cameras with Internet access. All counties have hand-held cameras to facilitate sample submission. Funding to equip the county offices totaled more than $1 million, and most came from grants, Hamilton says.

Recognizing the importance of the agent's time in the field, Hamilton and Brown designed a system that's simple to use. It requires only two hours of training to operate the system. Another four hours of diagnostic training is included for the county faculty.

"After seeing many of the common problems, the agents will be able to refine their diagnostic expertise," Hamilton says. "Hopefully in two or three years many of the problems will be diagnosed by the agent in the field." The diagnostic site is located on the World Wide Web at *www.ces.uga.edu/distance_diagnostics/index.html*. Before the advent of this technology, it often took two days to get the sample to the expert for diagnosis. "Now, many samples are diagnosed in a matter of hours, or sometimes minutes," Hamilton says.

The technology also allows the experts back at the lab to focus on specific significant issues, rather than on common problems. The system is linked to a database of diseases, insects, weeds and plants in different stages of growth. The database is maintained on the UGA campus, with input from other universities. Currently, Georgia is hosting the technology for Louisiana State University and the University of Illinois at Urbana-Champaign. Other universities to come onboard in the near future include Auburn University and Texas A&M University.



Photos courtesy of Office of Information Technology

Ed Brown, UGA's plant pathology Extension coordinator, demonstrates the use of Distance Diagnostics equipment to identify plant diseases.

In its first 18 months of operation, the system saved farmers some $1.2 million in reduced diagnostic time alone. Of the 4,000 physical samples that are submitted for analysis annually, 60 percent are in good enough condition for diagnosis; 34 percent are either deteriorated or otherwise not diagnosable; and 6 percent require isolation, Brown says. Physical samples come to the lab in a deteriorated condition. "Sometimes you have to pour them out of the bag." Of the approximate 1,000 digital samples submitted, 75 to 80 percent are diagnosable, he says.

Bottom line

Digital diagnostics gives the county agent and the farmer direct and fast access to specialists in a number of disciplines.

It speeds up the process of knowing what the problem is and what the solution is.

"There are so many uses for this technology," says Ben Hill County, Ga., Extension agent Hall. "It's definitely helping county agents do a more effective and efficient job."

In the long run, that's the kind of bottom line help a farmer can bank on. *PF*