

Hawaii Plans Trace-Back Program for Fresh Food

Beginning in November, three of the state's farms will begin using EPC Gen 2 RFID tags so farmers, retailers and distributors can monitor product movement and trace problem produce back to its source.

By Claire Swedberg

Oct. 24, 2007—About one year ago, a flood in Kauai caused runoff water from a cow pasture to contaminate lettuce growing in a field below. That lettuce, subsequently served in Hawaiian restaurants, sickened at least eight diners. Many of those affected were tourists from the mainland, who ate at number of different restaurants and didn't show any symptoms until after leaving the islands, and it was several months before the state's [Department of Health](#) was able to trace the contaminated produce back to a particular farm. By that time, all the affected lettuce had already been consumed, and there was little that could be done.

With this in mind, the [Hawaii Department of Agriculture](#) may be the first U.S. state agency to launch a pilot of RFID tracking designed to help farmers, distributors and retailers track their produce through the supply chain, and to allow for traceability in the case of contamination.

Beginning in November, three Hawaiian farms will begin employing EPC Gen 2 RFID tags to track the produce they ship as it moves throughout the supply chain. The pilot is a part of Hawaii's Seal of Quality effort to improve the traceability of fresh food. The Seal of Quality program is funded with \$450,000 from the [Economic Development Alliance of Hawaii](#) (EDAC), which oversees private nonprofit economic growth associations, and \$50,000 from the USDA-run [Federal-State Marketing Improvement Program](#) (FSMIP). The FSMIP provides matching funds to state departments of agriculture to assist in exploring new market opportunities for U.S. food and agricultural products, and to encourage research and innovation aimed at improving the efficiency and performance of the U.S. marketing system. The pilot program, according to John Ryan, administrator for the Hawaii Department of Agriculture's quality-assurance division, will provide an audit trail and help farmers, retailers and distributors monitor the movement of fresh produce.

The trial will track tomatoes grown at Sugarland Farms, a 2,000-acre farm on Oahu; lettuce from [Hamakua Springs](#), a smaller grower on the Big Island of Hawaii; and strawberries from Kula Country Farms on Maui. Armstrong Produce Ltd., a distributor in Honolulu, will receive tagged cases of the produce and send them to two [Foodland](#) supermarkets located on Oahu.

According to Ryan, the pilot is a cooperative effort with [Lowry Computer Products](#) and [GlobeRanger](#) to enable the Hawaii Department of Agriculture to monitor shipment data on a server hosted by the state. Lowry is providing systems integration for the pilot, while GlobeRanger is supplying its iMotion software, which connects reader data to the state-hosted server. In addition, paper products company [Weyerhaeuser](#) will attach RFID tags to the cardboard boxes it supplies to Sugarland and Hamakua Springs in the future, and has already provided the Department of Agriculture with RFID technology training at the company's RFID center in the city of Federal Way, Washington. The participants will use [Motorola](#) RFID interrogators, but Lowry has not yet decided which tag manufacturer will supply the tags used for the pilot.

The three farms were chosen because they represented a variety of crops and farm sizes in Hawaii. Most Hawaiian farms are considerably smaller than those in the continental United States. Lettuce, strawberries and tomatoes, Ryan notes, are all harvested during the winter, when the pilot will be underway.

At Sugarland Farms, staff members will sort the harvested tomatoes and pack them in cartons for shipment. They will manually attach RFID tags to each carton and pallet, says Jeff Talezaar, Lowry's RFID product manager, then use handheld Motorola 9090s readers to capture each tag's Electronic Product Code (EPC) number and link it with the date and time of the read as the produce is taken to the loading dock.

The Kula Country Farms pilot, Talezaar explains, will include using RFID to track the harvesting process. Prior to picking the berries, farm workers will place an RFID tag on a large corrugated cardboard container, then use a handheld Motorola 9090s interrogator to capture the tag's EPC number and link it with the date and time of the read. Once the container has been loaded with smaller containers of strawberries, the staff will scan the tag again, thereby recording the time of completion. With that data, they will then be able to upload the information to the company PC, helping the company track how long the harvesting took, and how long the picked berries may have been sitting in the fields. That data, including the time when picking began and ended, will be uploaded onto the state-hosted server, where it will be visible only to Kula Country Farms and the state.

At Hamakua Springs, workers will affix tags to cartons and pallets loaded with lettuce, then use a handheld Motorola 9090s reader to capture the tags' EPC numbers as the cartons are packed. The tag ID numbers will again be captured as the cartons are loaded onto trucks. Because the grower is located on the Big Island of Hawaii, monitoring how long the product sits in any location is more imperative, Talezaar explains, since it has a longer journey to the retailer.

The data from the readers used by all three farms will be transmitted via the Internet to the state-hosted server. Once shipments arrive at Armstrong Produce, the pallets and cartons will pass a Motorola XR440 fixed reader, which will capture the pallet and box RFID tag numbers and transmit them to a PC via a cabled connection. There, the iMotion software will direct the data to the server so the growers and retailers can determine when the shipments arrived at Armstrong.

The products will also pass a second XR440 reader installed at a cooler, allowing the system to keep a trail of how long the products wait between unloading and being moved into cold storage. When the cartons come out of the cooler, they will be automatically read again. Armstrong employees will then separate the cartons bound for specific stores, and use a handheld MC9090 reader to capture the cartons' tag ID numbers before loading them onto the trucks.

At one of the two participating Foodland stores, employees will use handheld interrogators to document the time when the products arrive before being loaded into coolers, then again when they are sent to the sales floor, and once more as the boxes are discarded. At the other store, which has a larger staging area, fixed readers will capture that information at each of the transition points—the dock doors, the entrance to the sales floor and the trash receptacles. The system is also designed to send an alert if a box of produce remains outside of the cooler for too long, such as on a dock after being unloaded from a truck. Such an alert would allow the distributor or grower to respond to the problem in real time by, for example, instructing staff members to move the carton or investigate further.

In addition, the state agency intends to use RFID-enabled temperature and humidity sensors in the boxes at some time during the pilot, Ryan adds, though details have not yet been worked out.

The pilot is scheduled to run through April or May, Ryan says, if funding allows. After that, he says he hopes to see the trial expanded to include all of the state's 5,000 farms within the next three years. That deployment,

however—and even the length of the pilot—also depends on funding. In the meantime, he states, "We're going to test how fast we can trace back from a problem and get to the source." At some point during the pilot, Ryan intends to run a mock recall to test the system's ability to trace and recall products. He envisions being able to locate and trace problem produce to its source, as well as launch a recall of other boxes from that batch—all within about one hour.

RELATED_ARTICLES If the RFID pilot is expanded to full deployment, growers will need to pay for their own RFID tags and readers, which might prove to be a hardship for some. "We need alternatives for farmers who can't afford thousands of dollars for readers," Ryan says. As such, the system will potentially enable farmers to manually input identification numbers for their boxes into the system without using RFID, or to attach RFID tags without capturing a read.

"As far as we know, we are the only state that's done this, so we want to play with lots of things," Ryan says. "We've decided to take a leadership role, and we hope we can be a model for others."

Copyright ©2005 RFID Journal, Inc. All Rights Reserved