# RFID for Tracking Worker Productivity

**A group at the University of Florida has partnered with RFID technology vendor Intelletto to create a system combining RFID and bar codes to monitor and boost worker productivity.**

By Mary Catherine O'Connor

Oct. 6, 2005—Four years ago, a major produce packing company approached Bruce Welt, coordinator of the University of Florida's Agricultural and Biological Engineering Department's Packaging Science program, asking that Welt's team develop a way to measure the productivity of the company's packers. The vendor wanted to establish an incentive program to reward its most productive workers, but did not have a means of knowing how many boxes of fruit or vegetables each worker was packing per day.

After a bar code-based pilot system Welt and his team devised proved unsuccessful, he partnered with Intellet , an Ontario provider of HF and UHF RFID readers able to integrate with bar code scanners. With Intelletto's help, the Welt's team developed a system called Gatorpacker, combining bar code and RFID data.

*Bruce Welt, Univ. of Florida*

In the coming months, the companies plan to pilot the system for both the produce-packing company and a vendor that creates floral arrangements. Each packer will be assigned a stack of reusable passive UHF EPC Class 1 RFID tags, to which their unique ID has been encoded. "The tag might be in the form of something like a poker chip or a laminated card," Welt explains. As a worker packs a reusable plastic tote, he or she will slip a tag into a pouch on the side of the tote. All totes each packer uses have bar code labels already attached to them for identifying the contents.

As a full tote travels down a conveyor, a bar code scanner will read the bar code label. Next, an RFID interrogator will read the tag in the tote's sleeve. A .Net-based program created by Welt's team will collect this bar code and RFID data and correlate it in a database that tabulates how many boxes each worker produces. This database will then be updated in real time. "The RFID tags are similar to the 'inspected by' labels you'll often see in assembled products," says Welt.

"The idea behind this system is to benefit the worker first, who stands to make more money based on productivity, and then also the company, through increased productivity. So it's a win-win [scenario]," says Welt, who notes that this system could be used in other labor-intensive assembly or packing environments. This would enable the hardest workers to earn the highest wages.

The RFID tags will replace the bar code stickers used in Welt's initial pilot. Because the workers wear gloves and perform in a highly humid (and sometimes cold) environment, the participants of the bar code pilot had trouble getting the sticker to adhere to the boxes of produce. Plus, it made a mess. "After a few hours, the workers—who stand shoulder to shoulder—were knee-deep in label backing material,"

says Welt.

Still, despite these tactical issues, the bar code pilot did provide encouraging results and showed that such a system could help companies get a handle on the activities of its laborers. "The production manager could easily see who was working hard and who wasn't," Welt adds. "There often is a language barrier between the packers and the supervisors, and workers often don't vocalize the problems they are having." By enabling supervisors to keep tabs on each worker's productivity, the system can serve to alert supervisors to the possibility that a worker is having a problem, such as running out of totes.

In the upcoming pilots, Welt also hopes to mount computer monitors that would be linked to the software and viewed by workers and their supervisors. The monitors would show metrics in real time, displaying how many totes each worker filled. This, he says, could be combined with some type of reward system for the top five or 10 packers, for instance.

According to Intelletto President and CEO Hassanali Namazi, as empty totes are collected in the upcoming pilots, one of two scenarios will follow. They will either be sent down a conveyor, where another reader will rewrite worker IDs to the tags inside the totes' sleeves, as needed—for instance, ID 123 will be encoded to 20 tags, and those totes will be brought to the worker assigned to that ID—or the tags will be pulled from the totes, read and then manually sorted based on the ID already encoded to the tag.

"Gatorpacker is a prime candidate for using both bar code and RFID technology," says Namazi. Because the RFID tags are located on the side of the tote, rather than inside it, he does not expect the moisture content of the produce or flowers inside the tote to cause enough interference to make the tags unreadable. "But we will address these problems if they arise, and find a way to make the system work," he says.