Honeywell

Tracing Food in the Supply Chain

Honeywell Scanning & Mobility

Executive Summary

High-profile instances of food contamination highlight the need for better food traceability — knowing when and where fruits and vegetables were picked, with the ability to trace these items from the field to the packing center to store shelves. The issue is becoming increasingly important following significant recalls involving nuts, milk, romaine lettuce, spinach and other produce. In addition, as retailers look to locally-grown and organic foods, they will face consumer pressure to provide some way to track the origination of these in-demand perishables.

Growers employing integrated logistics management ensure critical traceability, from the moment produce is field packed to when it arrives in retail stores. As an added benefit, deploying this type of technology can significantly improve operational efficiency and supply chain visibility for growers.

An IBM consumer study[1] conducted in 2009, following the salmonella contamination of peanut products linked to nine deaths and nearly 700 illnesses, found that consumer confidence in retailers, manufacturers, and growers is declining. Unfortunately, the peanut recall is far from an isolated incident. Experts point to a long-term trend of lost confidence going back to an E.coli outbreak in spinach in 2008 that contaminated over 200 people.

In addition to significant public health concerns, lack of food traceability has caused long-term effects on the food industry and individual companies. In 2008, an E.coli scare led to an industry-wide recall of tomatoes which cost the industry an estimated $250 million. The actual culprit was Serrano peppers that came from a farm in Mexico that had been mixed with salsa and other food products.

The real-time spread of this story was, in some ways, faster than the outbreak itself, contributing to this erroneous recall, as any hesitation on the part of health officials to act quickly and decisively may be presented by the media as a lack of action. Seen in this light, it's not only the ability to trace back to the lot, case, and even item level, but to do so with the same real-time electronic speed that a negative story can spread.

Mandated traceability coming

In light of these developments, Congress passed the Food Modernization Act in January 2011, which requires retailers to trace the products they buy. Rather than have the government mandate a solution, the produce industry voluntarily has moved forward with developing its own standard. Three associations — United Fresh Produce Association, the Canadian Produce Marketing Association and the (US) Produce Marketing Association are sponsoring an industry-led effort to standardize industry traceability throughout the entire produce supply chain.

1 http://www-03.ibm.com/press/us/en/pressrelease/27817.wss

The FDA and retailers such as Kroger, Wal-Mart, Safeway and Food Lion have applauded the produce industry's Produce Traceability Initiative (PTI), which envisions supply chain-wide adoption of electronic traceability for every case of produce by the year 2012.

As the industry continues to adopt traceability, retailers will have the ability to find sources of food contamination quickly when it occurs, without having to endure a widespread and expensive recall. That's not to say there are not hurdles to overcome. PTI recently moved out the timetable of some of its industry adopted milestones and is calling for industry pilots to help address industry concerns. Milestones to add human-readable information on all cases and to add a Global Trade Item Number and lot number in bar codes have been rapidly achieved, as well as milestones calling for receivers (namely, retailers) to read and store information on inbound cases.

In addition, the produce industry is extremely cost-based, so adding even a nominal cost to their products can have a tremendous impact on overall profitability. Facing such price and competitive pressures, growers could be reluctant to implement the standard, unless others they compete with also do so.

This type of sweeping change, while certainly accelerated by governmental pressure, is seen by many in the industry as contingent upon action from retailers. Retailers will respond when concerned consumers demand this kind of visibility from them.

"The biggest challenge will be in determining how to get the various entities to share," says H. Donald Ratliff, Regents Professor and executive director of the newly established Integrated Food Chain Center at the Georgia Institute of Technology in Atlanta. The Center, established by Georgia Tech's Supply Chain & Logistics Institute and Memphis-based Sterling Solutions LLC, aims to assure growers, processors, retailers and logistics providers that they can deliver quality perishables via greater efficiency throughout the supply chain.

"The biggest value (from PTI) will come when the industry shares this data and applies analytics to eliminate waste in the chain and reduce inventory."

Traceability in Produce Today

The produce industry handles an estimated 6 billion cases of produce in the U.S. each year. Most produce can be tracked from company to company through the supply chain, provided companies comply with the "one step forward and one step back" requirements of the U.S. Bioterrorism Act of 2002, when the federal government determined that the nation's food supply was vulnerable to terrorist attack.

"As food products move through the food chain from production to consumption, they are typically transferred between multiple entities for packing, processing, storage and transportation, creating the potential for food safety issues at each point of the chain," notes Ratliff. He adds that there are particular risks at the transfer points because the product must be handled and because knowledge of how the product needs to be treated, and its expected remaining life, is often lacking.

"The breakdown occurs because there is not adequate information at each transfer point regarding the age of the product, its expected life and how it has been treated prior to that point. Further, there are vague specs on how the product should be handled, which results in products being stored, handled and delivered at wrong temperatures, creating quality issues and potentially food safety concerns," he says.

Because the produce supply chain rarely goes directly to the consumer (the increase in farmers' markets being an exception), but to a retail distribution center, current systems do not trace the product once it leaves the grower's hands. Though the growers may have traceability systems in place, the information does not flow through the supply chain down to the end user.

That has changed. PTI uses a Global Trade Item Number (GTIN) to achieve external traceability. A GTIN includes a

GS1 company prefix that can be readily incorporated into a UPC bar code and works with RFID or human readable codes. It also includes a unique item reference number. The "GTIN Assignment Strategy" has been created specifically to help suppliers ensure consistency when assigning GTINs to cases, providing standard product attributes to be used to organize and categorize products. Similarly, to ensure that one label can be used for the entire industry, a standard case label template has also been created.

Technology will play a major role in this effort. Companies targeting this market include software companies that create solutions optimized for the grower and warehouse management system companies that provide efficiencies for warehouses to speed perishables to the shelf while maintaining better data from suppliers. Rugged mobile computing leader Honeywell Scanning & Mobility offers cold storage, handheld, wearable and vehicle-mounted computers designed for use across the supply chain.

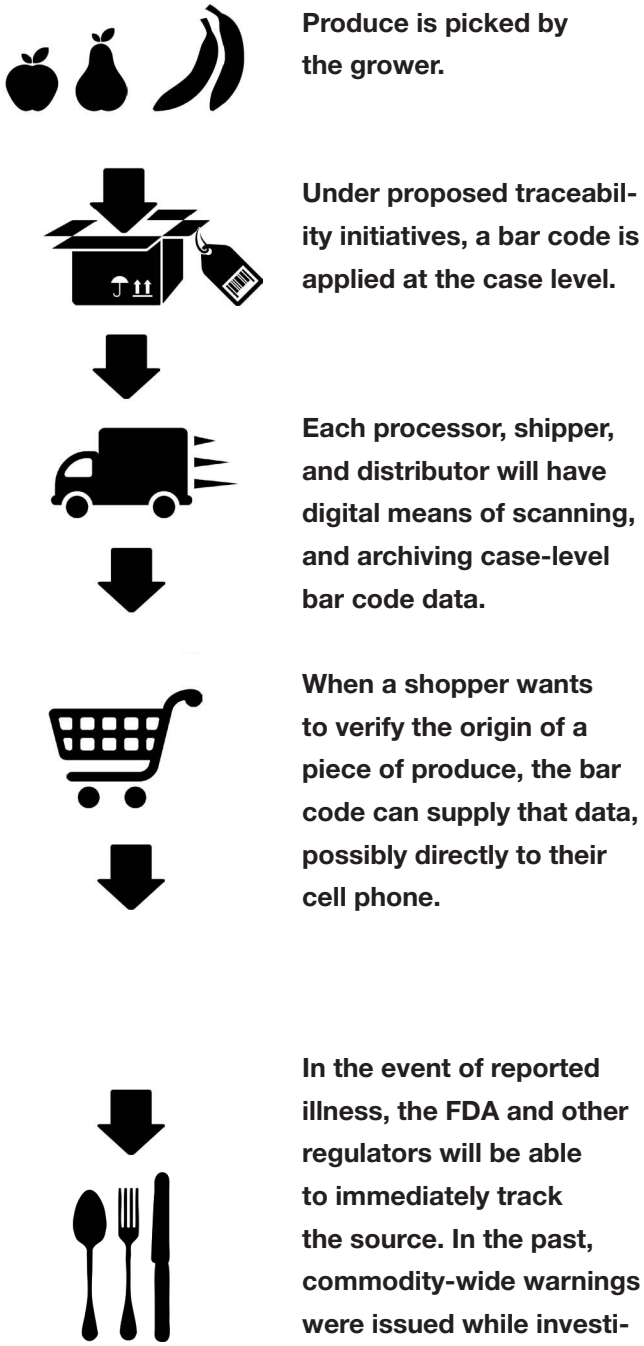
Growers employing integrated logistics management will ensure critical traceability from the moment produce is field packed to when it arrives in retail stores. At the same time, this technology can significantly improve their operational efficiency and supply chain visibility.

Traceability — Start Small, with Capacity to Grow

The promise of traceability solutions for produce growers and packagers goes beyond better tracking and visibility to include operational efficiency, better inventory replenishment, and delivery of a higher quality product to retailers, and ultimately consumers.

"There's not much visibility back up the food chain, even in the best of circumstances," stated John Bartholdi, director of research for the Integrated Food Chain Center at Georgia Tech in a June 2010 news release announcing the launch of the center. "What we are really focusing on is knowing the history of food and when we receive it. If we can have much better estimations of shelf life, then we can move the product more efficiently through the supply chain."

Early adopters of traceability start with a printer, a label and a hand-held device in the field. These companies then build on that basic application to create a transactional database that can track product information as it moves from the field to a packing facility to the retail or foodservice destination.



Reaching a Technology Neutral Audience — Growers

The majority of the smaller growers that make up the bulk of the produce industry are multi-generational family businesses, with business practices that have worked and have made them successful over time that do not involve technology. While these growers may be reluctant to embrace technology as a solution, the ones that do have an opportunity for a competitive advantage.

Honeywell is working with both large firms, such as leading apple grower Zirkle Fruit Company in Washington state, to smaller companies such as Fruit Patch, a family owned, Central California grower of peaches and nectarines. The company operates a packing shed on its 30-acre site, as well as 20 cold-storage rooms that provide more than 150,000 square feet of storage.

"Ease of use is critical, as well as expandability," says Doug Brown, Honeywell's supply chain vertical marketing manager. The produce growers he talks with are receptive to solutions that can start out small, such as label printing applications, but can grow to a complete solution.

"Companies don't want a quick fix. They want a partner that can provide a complete solution — from voice to hand-held scanning to cold storage, with software that can take care of their immediate needs and will integrate with their ERP systems down the road," notes Brown.

"Even though the legislation is in a holding pattern, we can't wait," says Fruit Patch IT manager Arthur Negrete. "Our employees are learning how to use new bar coding equipment like the Honeywell MX7 hand-held, and we're finding opportunities to apply the data we capture with the MX7 to improve operations. We're not there yet, but we've placed a long-term priority on lot- and case-level traceability, regardless of whether it is a compliance mandate or not."

Many Honeywell mobile devices are sunlight-readable outdoors and can withstand the demanding environments encountered in the field. The company's product range includes WWAN-enabled mobile computers, voice-directed wearable computers, and cold-storage devices. Honeywell's Bill Roeder, director of supply chain product management, says the company is applying lessons learned as a provider of cold-storage mobile rugged computers to the produce market. These lessons range from ergonomics to hygiene to the job requirements of the employee doing the work.

In addition, the hardware must run software optimized for the produce business. Scanning labels doesn't ensure traceability alone. The software that is collecting the data needs to be capable of tracking multiple size, pack, price, quality and color attributes for each item. It should be able to track multiple lots on the same pallet. And when the product is ready for shipment, pick and ship the right product to avoid charge backs. The software is integral to maintaining the records that will give officials the means to trace the origin of a particular shipment.

Dialogue Expanding into Cold Chain

The Atlanta-based Georgia Tech Integrated Food Chain Center is particularly interested in the cold chain. Launched in June 2010, the Center is bringing together academics and industry experts together to study the challenges of food logistics and best practices for managing and monitoring the food supply chain. With the U.S. being the biggest importer and exporter of perishable food goods, "it's vital to focus energies on the complex system of cold chain shipping and receiving that currently exists and refine," the Center stated in its launch release.

"The food supply chain is a lot more complex than any other supply chain and the cold chain is the most fragile; the quality of food is dependent on how food products are handled at every touch point throughout the food chain," notes Ratliff.

The first step, according to Ratliff, is to be systematic in determining where better integration can improve product quality and post-harvest life, and what the economic value would be for improving integration.

"The next step is to determine how much of this improvement can be cost justified. These activities will require industry to provide knowledge and data and academics to provide analytics and a forum for cooperation," he says.

The Center has already begun to set up models to analyze the economic value that can result from being able to better predict the remaining shelf life of products at each point in the chain and utilize this in managing inventories. “We are also working with several producers, distributors and retailers in developing predictive models in being able to monitor and control the cold chain before problems arise.”

Traceability as an Industry Norm in Next 5 Years

Food traceability from “farm to fork” is going to become a reality, say industry watchers, with market forces, consumer demand and government regulation all converging to push a new level of supply chain visibility and standards-based integration in the U.S. produce industry.

Please visit www.honeywellaidc.com for more information about our supply chain solutions.

About Honeywell

Honeywell Scanning & Mobility, a leading manufacturer of high-performance image- and laser-based data collection hardware, delivers the latest functionality to meet customer demands.

3 ways that produce traceability can build business

Compliance for compliance’s sake, or to avoid a costly recall, may be the driver behind automation, but there are also positive business benefits to adopting the Product Traceability Initiative (PTI):

1. Connect with suppliers: farmers can use bar code scanning to save time on ordering and replenishing supplies, essentially making their farm into a mini-warehouse for their supplier. This efficiency leads to greater productivity.
2. Connect with retailers: in today’s marketplace, retailers need every ounce of efficiency they can get from their supply chains. Growers that utilize interoperable standards build relationships with those retailers, that could turn into shelf space.
3. Connect with consumers: many consumers are actively seeking locally-grown and/or organic produce. Some producers and retailers have blurred the lines of what “organic” or “local” means, adding skepticism to any claims. Traceability offers proof that produce is fresh, local, and ready to enjoy. As more consumers carry bar code scanner-enabled smartphones, there is an opportunity for an item itself to communicate its “life story” to a shopper, right in the aisle.

For more information visit:

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