

Intellex Documents the Cost of Cold Chain Shrink and the Value of Delivered Freshness for Produce

Pilot Project Reveals How In-transit Pallet-level Temperature Monitoring and Dynamic Routing Can Reduce Waste and Improve Cold Chain Operations

SANTA CLARA, Calif. – Nov. 17, 2011 – Intellex, a leading provider of on-demand data visibility solutions, and ProWare Services, a software and services company focused on providing solutions for the fresh food industry, today announced the results of a recent pilot program that documented the value of Delivered Freshness™ and quality of produce by dynamically routing product in real-time based on remaining shelf-life. Intellex enables Delivered Freshness through the use of its temperature monitoring tags that provide actionable data through the use of pallet-level temperature monitoring. This solution has a proven ability to help minimize losses and maximize freshness at the point of delivery. Spanning the operations of a major North American berry producer, the program, which incorporated tens of thousands of data points, tracked the temperature of hundreds of pallets of berries in-transit at the pallet-level from local Mexican growers to a packing house and cold-storage facility in Mexico and then from that packing facility to three distribution centers in the United States. Data from the program documented how pallet-level temperature monitoring enables the calculation of relative shelf life loss between each pallet to provide actionable data for FEFO+ (enhanced First Expired, First Out) inventory management and dynamic transit routing.

“This study by Intellex and ProWare convincingly demonstrates the multiple opportunities to improve the quality of delivered produce in the cold chain,” said Ann Grackin, CEO, ChainLink Research. “Cold chain suppliers can apply the learnings to their own operations, knowing that they now have the benefit of readily available product to combat losses and document the freshness of their perishables throughout the cold chain and at the point of sale.”

Intellex temperature monitoring tags were initially placed in pallets of berries in the field as they were harvested, and the temperature was recorded by the tags every 15 minutes from the field to the pack house. The distance from the fields to the packing house varied significantly, from an hour to over four hours, and the temperature at harvest varied significantly by the time of day. After quality control at the pack house, the temperature data was downloaded and each pallet’s relative remaining shelf life index was calculated using ProWare’s FreshAware™ software. Each pallet was then intelligently routed to the most appropriate distribution center based on its unique remaining shelf life index to maximize delivered freshness and reduce waste. The study identified that 30 percent of the pallets would require prioritized routing to help avoid loss in-transit that would have resulted from delivering spoiled berries.

The program then studied the temperature of the pallets of berries in-transit from Mexico to a distribution center in Southern California to compare the pallet-level temperatures against the ambient temperature in various refrigerated trailers and measure the previously undocumented impact on shelf life. The program revealed that there was as much as 30 percent difference between the temperature of pallets and the ambient temperature in a single refrigerated trailer. While ambient trailer-level temperature monitors indicated an average temperature of approximately 35 degrees throughout the five-day journey, over 13 percent of the pallets experienced temperatures higher than 40 degrees Fahrenheit during the trip, losing as much as nine days of shelf life in less than five days of actual transit time.

Other notable findings of the study included:

- **Significant Temperature Variation in Harvest-to-Precool:** The pallet temperature and length of time spent prior to precooling varied significantly by pallet, dramatically impacting remaining shelf life. This “invisible shrink” could not be detected or managed by visual inspection of the fruit. By knowing the temperature history of each pallet and calculating its relative remaining shelf life index at the pack house prior to precool, loss could be reduced or avoided.
- **Ambient Temperature Monitoring Is Inadequate:** The air temperature *outside* the pallet (ambient temperature, not product temperature) in-transit from the field, in precool and in-transit to the distribution center, did not reliably correlate to the temperature *inside* the pallets and therefore did not provide an accurate indication of product condition or relative remaining shelf life. In fact, pallet-to-pallet relative shelf-life loss varied by as much as 40 percent within a single refrigerated trailer in transit from Mexico to California.
- **FEFO+ Maximizes Post-Harvest Yield:** Pallet-level temperature data delivers the ability to implement an enhanced First Expired, First Out (FEFO+) inventory management – instead of First In, First Out (FIFO) – by which growers, packers and shippers can aggregate pallets based on each pallet’s unique remaining relative shelf life index and dynamically route them to the most appropriate destination, based on transit time, to ensure maximum freshness.

Rapid Payback – One Harvest Cycle

The program revealed that the cost per case for pallet-level temperature monitoring from growers to distribution centers was less than two cents per case. The program further revealed a payback period (calculated according to the value of the perishables and the cost of the Intellex XC3 Technology™ RFID readers and tags and ProWare software) of one harvest cycle – based on demonstrated reduced shrink.

“Until very recently, technology to monitor perishables throughout the cold chain was either too expensive or too difficult to deploy at the pallet level,” said Peter Mehring, CEO of Intellex. “That limited solutions to checking refrigeration compliance rather than monitoring product freshness. Intellex temperature tags combine the ease of wirelessly reading core pallet temperatures, critical to calculating relative remaining shelf life, with a new value point for wireless temperature monitors. For the first time, these combined features deliver a deployable solution that enables fresh produce owners to optimize their cold supply chain management based on actionable product freshness data.”

“Perhaps the greatest value of the study has been in providing information that enables growers, packers and shippers to work within their existing cold chain infrastructure,” said Steve Dean, General Manager of ProWare Services. “With the Intellex and ProWare solution, suppliers don’t have to try to ‘fix their cold chain,’ but instead can instantly make more informed decisions by simply having better information about the real-time condition of their products.”

Learn More – Food Logistics Webinar

You can learn more about this study by attending an upcoming Food Logistics Webinar, *Stop Guessing: A Case Study on Improving Delivered Freshness* being held on December 15 at 11am PST/2pm EST. The webinar will feature Peter Mehring, President and CEO of Intellex, Dr. Jean-Pierre Emond of the University of South Florida, and Beth Bronger-Jones of The Hartford Insurance Group. You can register for this complimentary webinar [here](#).

Study Results Available

To request a report highlighting the detailed results of the survey and a methodology for calculating costs, savings and payback period for the use of RFID technology in the cold chain, contact Intellex toll-free at 877-694-3539, email info@intellex.com, or [click here](#).

About ProWare Services

ProWare Services, LLC is a software development and services company focused on providing solutions for the fresh food, seafood, and floral industries. The company's center of concentration remains upon supply chain products and services that are affordable to growers, packer/shippers, brokers, and distributors. ProWare staff provides complete consulting and system integration services to facilitate an effective implementation and long term support of these solutions. AgWare™, an ERP package for managing your business with the added benefits of lot traceability for food safety, is a mature and stable platform deployed in the agricultural community since 1999. FreshAware enables your operations, QC, and sales to match sales orders to customers destinations based on the actual shelf life remaining to ensure quality and reduce waste. ProWare Services provides un-paralleled products, and services with commitment and integrity. For more information, visit www.ProWareServices.com.

About Intellex

Intellex® provides on-demand, data visibility solutions for cold chain and asset management. Its industry-leading XC3 Technology™ RFID products enable a range of solutions for fresh produce, perishable food, and pharmaceutical temperature monitoring, asset tracking, personnel monitoring, retail, healthcare and other applications. These real-time monitoring solutions can help organizations reduce shrink or loss, more closely track and manage assets, reduce cost of operations, and increase profitability. For more information, visit www.intellex.com.

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