



Fresh Produce - Pre-Cool

# Improving Produce Quality During PreCool with On-Demand Data Visibility

**Solution Benefits:**

- Utilizes pallet-level temperature monitoring to help determine proper precooling for each pallet to maximize quality and shelf life
- Helps to identify hot and cold spots in precoolers that can impact quality and shelf life
- Easy to deploy with limited infrastructure requirements
- Supports existing workflows for rapid deployment
- Includes light tree-based visual alert system
- The PreCool Monitoring System can be a component of a more comprehensive inventory management system for dynamic routing of product based on relative remaining shelf life
- Immediate positive impact to the bottom line and product quality

The Intellex and ProWare Services PreCool Monitoring System provides growers and packer/shippers with the ability to improve Delivered Freshness™ by enhancing the monitoring and management of the temperature of fresh produce at the pallet-level before and during precool. Combining Intellex XC3 Technology™ temperature monitoring tags and RFID readers with ProWare Services FreshAware™ software provides the ability to easily capture, record and manage produce temperature data at the pallet-level throughout the precool process.

With Intellex and FreshAware, you can quickly determine the temperature of individual pallets as they are received at the packinghouse to determine appropriate pallet-level precool requirements to help reduce shrink caused by heat on a pallet-by-pallet basis. You get actionable data on-demand that enables you to easily monitor your produce to ensure it is being cooled properly and avoid the overchilling or underchilling that can result from relying on ambient precooler temperature monitoring or manual temperature probing. The solution includes a light tree to provide visual cues for packinghouse personnel about current product temperature conditions and alerts when product temperatures go out of the desired range.

**The Need for On-Demand Visibility**

A significant percentage of harvested produce goes to waste each year due to improper temperature management throughout the cold chain. The cost of this temperature-related shrink is borne by the producers, packers, distributors and retailers through reduced profitability and diminished quality and brand value. Temperature and harvest conditions vary widely throughout the day creating unique precool requirements for each pallet. Traditionally, producers, growers and packers have had to either manually probe each pallet or have been limited to monitoring the ambient temperature of the precooler or external pallet temperatures. This forced packinghouse staff to estimate or guess proper precooling requirements. As a result, produce may end up overchilled or underchilled when it is loaded onto trucks for delivery to distribution centers, putting the quality and freshness of the produce at risk.

**The Challenge**

Because of design, size, product placement, and ventilation, temperature and conditions within precoolers can vary significantly. This, combined with the fact that



produce arrives at the packinghouse having already experienced significant pallet-level temperature variation, means that it is difficult to determine the optimal precooling for each pallet. Most precoolers are limited to having one or two fixed temperature devices that record only the ambient temperature in the cooler. As a result, while the overall precooler temperature may be within range, there can be “hot” or “cold” spots that cause the individual pallets to be exposed to temperatures outside the acceptable ranges that compromise the product. Lot-level monitoring is inadequate and visual inspection provides few, if any, clues as to the products’ condition or proper precooling requirements.

### The Solution

ProWare Services’ FreshAware works with Intellex RFID readers and temperature tags to provide a comprehensive PreCool Monitoring System for improving produce quality and delivered freshness. You can easily and automatically capture, monitor, and report pallet-level temperature throughout the precool cycle, QC and into distribution.

FreshAware works with Intellex RFID temperature monitoring tags that are placed in each unit (case, pallet, etc.) upon receipt at the packinghouse. Monitoring at the pallet or case-level is critical because temperature variations, and elapsed time of those variations, vary by pallet or container meaning that each unit has a unique precool requirement. Overchilling or underchilling has significant impact on the quality and shelf life of the produce and can result in undesired shrink.

The tag records the product-level temperature of the produce before, during and after precool. This data is “harvested” wirelessly in the precooler using Intellex readers to help determine and ensure that each pallet is receiving the proper precooling. Because the tags are placed in the pallets with the produce, the solution provides the ability to monitor the product-level temperature of the pallet while it is in the precooler—versus the ambient temperature of the precooler or exterior of the pallets—to report the conditions that the produce is actually experiencing. Light tree devices, placed outside the precooler, continuously notify personnel about the product temperature conditions and provide alerts for conditions that require immediate attention.

The ProWare and Intellex PreCool Monitoring System can also be integrated with field to packinghouse and packinghouse to distribution center cold chain monitoring solutions for calculating the unique relative remaining shelf life for each pallet—in real-time—to enable dynamic routing of the product to the most appropriate destination based on the actual remaining shelf life of each pallet.

### XC3 Technology

Intellex XC3 Technology temperature tags deliver the capability of active RFID-based solutions at a fraction of the cost.

- Easily read tags and monitor temperature at the pallet level
- Read tags inside pallets or cases without unpacking
- Tags include on-chip memory for tracking and storing temperature, waypoint and traceability data with multiple levels of security
- Compatible with ISO/IEC 18000- 6:2010 and EPCglobal C1G2 standards
- Handheld, fixed and portal-based readers are available

### ProWare Services

Software solutions designed specifically for the produce industry.

- Integrated with Intellex RFID platform
- Monitor temperature and product information in transit to enable shelf life prediction for dynamic routing of product
- Easy to operate in the field, packing houses, distribution centers and in shipments
- The PreCool Monitoring System will record and alert, through highly visible illumination arrays, any temperature breaches

### For More Information

#### Zest Labs

[www.zestlabs.com](http://www.zestlabs.com)

+1 877 694 3539 Toll Free

+1 408 200 6500 International/Direct

[info@zestlabs.com](mailto:info@zestlabs.com)

#### ProWare Services

[www.prowareservices.com](http://www.prowareservices.com)

+1 813 752 7952 International/Direct

[marketing@ProWareServices.com](mailto:marketing@ProWareServices.com)