Fresh Produce Traceability

Produce Marketing Association

CPMA ACDFL

A Guide to Implementation

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Canadian Produce Marketing Association

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Decision Support Templates and Instructions for their use are available at: www.can-trace.org

Acknowledgements

Enhancing traceability in the produce supply chain is a long-term effort, and surely it must be a collaborative effort if it is to succeed.

Nowhere was that more evident than in the development of these preliminary Produce Traceability Guidelines, and the two Produce Pilot Studies on which they are based.

The success of all these efforts is due to the talent, dedication and cooperation of many individuals, teams and organizations in the United States and Canada, along with their collaborators from around the world.

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- CPMA and PMA Board of Directors and staff for their logistical and material support in coordinating the pilot studies, and preparing and publishing this information to ensure equitable technology solutions for the produce sector.

We look forward to continued collaboration and progress in the future!

Doug Grant
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Executive Summary

◆ Introduction

We live in a world of globalization, a world in which political and commercial realities are the drivers for increasing supply-chain efficiencies, accountability and security.

One key to achieving gains in all three areas lies in the area of traceability.

For the global produce industry, supply-chain traceability is — today, more than ever — a high-visibility issue. Regulatory requirements will mandate partial compliance. But the stakes — and the real issues — go far beyond current and pending regulations.

As fines for recalls, and market access based on traceability competency, become an increasing reality, the North American produce industry is striving to achieve an equitable solution — one that will make traceability fiscally practical, and ensure that responsibility for traceability is assumed by all members of the produce supply chain.

Together, PMA and CPMA, in cooperation with industry and standards bodies, have been focused on developing information standards that will enable a rational transition to whole-chain traceability in North America and internationally.

At the heart of this effort is the recognition that true traceability (as well as the efficiencies, accountability and security that go with it) requires a common language of information, chain-wide and eventually, world-wide.

While technology provides a means toward that end, it is only a facilitator, not an end in itself. The transitional steps toward this common language must be *incremental and implementable* by all partners, at all technology levels, all across the chain.

Equally important, these steps that improve compliance and security must also offer supply-chain members tangible business benefits that enhance their competitiveness in the global marketplace.

◆ The Path Forward

The Pilot Projects, which formed the basis for this document, focused on the operational aspects of traceability at different points of the supply chain, employing mock recalls to ascertain what information was being collected and shared, and where gaps existed that imposed logistical and economic hardships in the tracing-and-recall process. The goal of these simulations was not to impose a technology standard, but to ascertain a path to an information standard that could provide tangible operational benefits to the businesses involved.

Building on the extensive work on traceability both through pilots and through the foundational work of the CPMA/PMA Traceability Task Force (CPTTF) and Can-Trace, it is therefore recommended that industry begin the path to traceability by first standardizing the data which it is necessary to capture,

keep and share along the supply chain in order to ensure total supply chain traceability. The CPTTF determined that the Can-Trace Data Standard should be adopted as the data standard for produce traceability in North America. Throughout piloting in the U.S. and Canada, these standards were tested and validated. In addition, best practices were determined to assist in implementation.

It should be noted that this document is not intended to be prescriptive relative to the data carrier used to capture and carry the data (e.g. bar codes, RFID), but seeks to communicate what pilots have shown to be the data elements necessary for traceability. Decisions on the vehicles to capture and carry the data should be made by industry members in consultation with their supply chain partners. However, to assist in making that determination, the document includes information on three approaches to implementation: paper-based, automated data capture via bar codes, and automated data capture via RFID.

◆ Whole Chain Traceability vs. Segmented

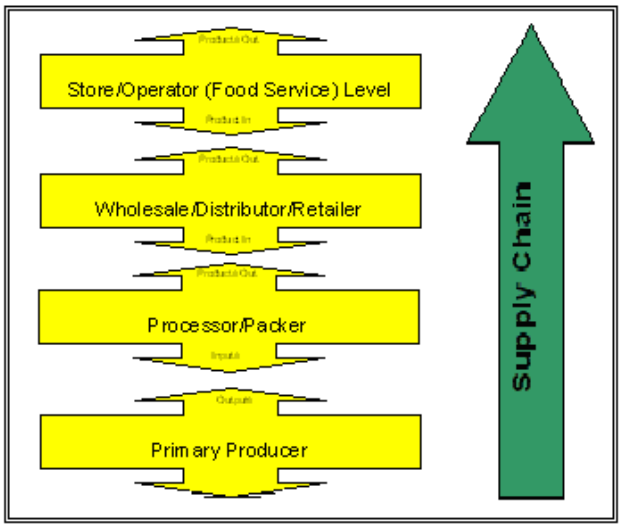
Whole-chain food traceability — the ability to follow the path of food products from point of production to point of consumption, and vice versa — is comprised of both "tracking" and "tracing".

"Tracking" is the capability to follow a specified unit or lot downstream through the supply chain; "tracing" is the ability to identify the origin of a particular unit by consulting records held upstream.

Segmented Traceability

Today, pending regulations and industry requirements vary from country to country. However, the European General Food Law, the U.S. Bio-Terrorism Regulations and the Quebec requirements (all scheduled for implementation in 2005) generally focus on a segmented ("one-step-up/one-step-down") approach to traceability.

Essentially, this means any supply chain participant is responsible for keeping records identifying the immediate previous source of the product, as well as the immediate next recipient.



While this approach regulates each segment of the chain, it also implies that whole-chain (or "external") traceability must exist, since each participant can identify prior product origin and subsequent product destinations.

Practically speaking, in most supply chains today, the information or data required for traceability exists, but lack of an efficient or standardized method of capturing and sharing that data makes traceability cumbersome, slow and sometimes impossible to execute with any certainty.

Widely differing data collection practices — and often, proprietary information/ identification systems — yield multiple "unique identifiers" among various suppliers. For a distributor who may have hundreds of such suppliers, each with proprietary lot identifiers, the challenge is enormous. Once the distributor repackages or reconfigures lots or pallets, the "traceability" challenge is magnified accordingly.

Agro-Terrorism Preparedness

In the USA, the Bio-Terrorism Preparedness Act of 2002 calls for one-up/one-down traceability for each link in the supply chain, to be enforced by the FDA Center for Food Safety and Applied Nutrition (CFSAN).

The Section 306 Administration and record keeping regulation requires that each company in the supply chain keeps information about the company that they received the products from (previous source, nontransporter), the company who delivered the product to them (previous source transporter), the company who took it away (subsequent source transporter), and the company they gave (sold) the products to (subsequent source nontransporter).

The recordkeeping regulations specify what information must be made available, but do not specify how the records must be kept as long as the information can be retrieved within a 24 hour period.

However, basic compliance with traceability regulations will be woefully inadequate to deal with the repercussions of an agro-terrorist act or any other emergency food safety related incident. If our industry is faced with a food safety incident, immediate and effective "external traceability" will be demanded. Only those trading partners with extensive standardization of data (including appropriate labeling at the pallet and case level) will be equipped to respond swiftly and effectively.

Thus, the need for a common language of information; a standardization of data that will simplify not only tracing and tracking but inventory control, shipping and receiving, and all of the business operations along the supply chain.

Whole-Chain Traceability

For true full-chain traceability, product must be uniquely identified and recorded at each stage of its possession or transformation and these identifiers must be linked if they are to be of value in both tracing and day-to-day operations.

Recording of Information
Effective traceability requires standardizing the information that needs to be recorded through each step of the food production and distribution chain.

Linking of Information
To ensure continuity in the flow of traceability information, each partner must pass on information about the identified lot or product group to the next partner in the chain.

It is imperative that the links between the lots and the logistical units (resulting from a product transformation) are recorded. Within a company, the control of all these links and accurate record-keeping make it possible to connect what has been received with what has been produced and/or shipped.

The end result is standardized data representing all of the information necessary to collect**,** keep and share in support of effective whole-chain traceability.

◆ What's In It for Me?

Every business will need to make its own cost/benefit assessment of implementing industry standards for external traceability.

In doing so, many companies may only consider the need for preparedness within the framework of regulatory compliance. Doing so will undervalue the business implications of preparedness, as pressure from the buyer community to comply with traceability requirements and practices also will have impact.

The Can-Trace and CPTTF Pilot Projects clearly demonstrate that "traceability" is not simply an irksome regulatory requirement that increases the cost of doing business. Rather, traceability offers real potential for adding value to the way we conduct our business across the entire supply chain.

Business Benefits of Adopting Traceability Best Practices

1. *Benefits related to maintaining business and achieving regulatory compliance.*
    - Lend support to legislation and associated regulations covering the fresh produce supply chain.
    - Address concerns of agro-terrorism or tampering in the food supply chain.

2. *Market benefits related to meeting market or customer requirements.*
    - Bolster consumer confidence through the industry's ability to promptly identify and recall potentially unsafe product.
    - Retailers will begin requiring the use of newer technologies and standards. This includes EDI, GTIN, SSCC as well as RFID. Therefore, the technical migration required for trace-ability will also meet emerging demands from retailers and foodservice companies.

3. *Risk and recall benefits derived from improvements in traceability systems and management, and the associated reduction in liability costs.*
    - Minimize the scope of product to be recalled. This will minimize liability in recall situation in addition to the cost of product. The financial impact of recalling an entire commodity or brand versus a specific grouping of product (e.g., a batch or lot) can be enormous.
    - By ensuring proper segregation and clear identification of product, companies may demonstrate that their product is not implicated in a given product recall.

4. *Process improvement benefits, which result from using traceability as a tool to improve supply chain operations, increase product quality or reduce costs.*
    - Improve supply chain efficiencies and trading partner collaboration.
    - Create a Feedback Loop from grower to retailer/foodservice to improve product quality, condition, and delivery. Understanding how a particular product performs under different circumstances can create opportunities for growers to improve the performance. For example, understanding differences in quality between orchards from a sales performance point of view.

Quantifying Business Benefits

Finally, it is not difficult to quantify the business benefits associated with adoption of Traceability Best Practices beyond basic regulatory compliance. Can-Trace has produced a business case "Decision Support System" which enables:

- Data collection,
- Cost-benefit analysis,
- Reporting,
- Scenario analysis.

A set of the Decision Support Templates, with instructions, are available for your use on the Can-Trace web site: **www.can-trace.org**

◆ Standards and Traceability

A single industry data standard represents a low risk choice for produce companies who want to coordinate the exchange of information with their trading partners.

The Can-Trace Standard

One such set of standardized data is that developed by Can-Trace, a collaborative project among more than one hundred Canadian organizations including trade associations, government organizations and representatives from all sectors of the food supply chain. The objective of Can-Trace is to define and develop a voluntary data standard for whole-chain traceability, by establishing minimum data elements to be collected, kept and shared by trading partners.
Essentially, the Can-Trace Standard defines the data requirements to support a one-up/one-down traceability model with whole-chain applicability.

These data requirements:

- are voluntary,
- are based on existing global standards (EAN.UCC/GS1 and ISO),
- are consistent with the CPTTF "Traceability Best Practices" report,
- are meant to coexist with, not replace, existing systems,
- represent an information standard, not a technology standard,
- nclude recommendations for mandatory and optional data collection.

The Can-Trace Produce Pilot Project established that the Can-Trace Canadian Food Traceability Standard is sufficient to establish traceability. The Can-Trace Standard was also used as a reference for analyzing the internal tracing activities of mock-recall participants in the CPTTF Pilot Study.

The Can-Trace Standard (version 1.0) was published in November 2004 and although a revised version is expected early summer, it represents the best-fit guidelines available at this time for assessing the quality of an organization's internal traceability, as well as providing a benchmark of an organization's preparedness for external traceability.

CPTTF Best Practices

CPTTF Best Practices are at the heart of External Traceability (traceability between trading partners). The adoption of these practices will not only standardize data flow across the supply chain, but also significantly enhance the efficiency and effectiveness of recalling product from field identification to the receiving dock at a retailer or foodservice outlet.

Finally, while a single data standard across the industry will support External Traceability, the CPTTF Best Practices do not in themselves create any new industry standards. They are built on established and customary supply chain practices that are commonly used within the food industry. While focused on implementation via bar coding, the principles can be applied regardless of the data carrier.

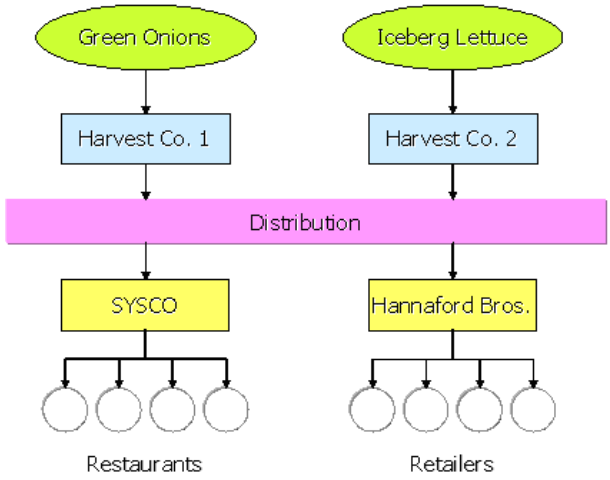
◆ About the Pilot Studies

CPTTF Pilot

To assess and compare the CPTTF "Traceability Best Practices" against real-world conditions, three produce industry firms participated in this study involving a mock recall exercise.

The participants included NewStar Fresh Foods, SYSCO, and Hannaford Brothers.

NewStar was the grower/shipper for green onions received by SYSCO and lettuce received by Hannaford Bros. SYSCO represented the Foodservice side of the supply chain and Hannaford represented the Retailer.



All three participants employed online systems in their workflow with minimal dependence on paper records. The principal objective for this pilot study was to compare Best Practices with each participant's existing processes. This became the basis of a Gap Analysis designed to highlight the changes needed to move from current industry practices to future optimum processes for traceability.

Can-Trace Produce Pilot

The Can-Trace study involved seven participating companies representing diverse supply chain roles. The study focused on:

- Understanding key handling, packaging and production processes at participating companies and some of their supply chain partners,
- Collecting and assessing paper-based documents for adherence to the proposed Can-Trace minimum data standard,
- Executing and studying several traceability scenario simulations.

Three separate simulations were executed against two different scenarios to assess "one-up/one-down" tracking and tracing in the Canadian produce supply chain:

- Scenario 1: Grower>>Packer/Shipper>>Distributor
- Scenario 2: Importer>>Distributor>>Retail Foodservice

A fourth simulation, using a scenario beginning at a Hotel and tracing back to a local Grower, was also executed.

◆ Outcome of the Pilot Studies

Results of Gap Analysis

The most significant finding of the Can-Trace Produce Pilot study was that no common identifier is present throughout the entire supply chain. Product descriptions and product identifiers vary between companies, requiring the use of other identifiers to ensure accurate recall.

The primary recommendation resulting from the Can-Trace study was for industry-wide adoption of a consistent product lot or batch identifier that aligns with the Global Trade Item Number (GTIN).

Similarly, the major issue observed in the CPTTF study was the lack of integration between internal tracking systems and external systems.

The companies participating in the CPTTF pilot study are industry leaders in their use of technology and in their aggressive approach to food safety. However, members of the same supply chain took different approaches to the data collected and stored, and to tracking product internally.

Product was received and then moved into the internal system without maintaining a data "link" to the supplier and to individual cases or pallets. This loss of identity meant that the scope of recall was widened significantly:

- For a recall initiated at the harvest or distribution level, enhanced traceability could significantly reduce the volume of product implicated.
- For a recall initiated at the retail level, gaps in traceability widened the scope to several days worth of production, as opposed to the several pallets actually involved in the simulation.

Outcome of Simulations

Within the defined scope and boundaries of these mock recalls, all scenarios were executed successfully. It was demonstrated that the affected product was identified, could be traced to source, and subsequently recalled from distribution. The participants were all highly competent in their ability to trace product internally.

The lack of consistent use of the CPTTF Best Practices is where the process broke down. The scope of the recalls frequently widened to include product that was not affected, and stores which would not have been involved, had Best Practices been in play.

For example, one simulation involved a "harvest to customer" recall. There, savings from reduced scope of recall (with improved traceability) would have been on the order of fifty percent!

Another simulation of an "importer to retail" recall demonstrated that, had a specific lot number been included in the traceability data within the Retailer's distribution system, five out of six retail destinations could have been spared any recall-related activity, for a truly significant savings in labor costs.

This appears to be an industry-wide issue, and the less-automated firms seem particularly vulnerable at present. But, irrespective of technology, adopting standard data requirements and traceability processes across the produce supply chain will greatly enhance the industry's ability to trace and recall product.

Data Elements for Traceability

◆ About the Can-Trace Traceability Standard (Version 1.0)

The Can-Trace Data Standard has been endorsed by the CPTTF as the North American produce traceability data standard. This Standard defines the data requirements; it does not define how this standard should be implemented (i.e., which data carriers to use.).

The Can-Trace Standard defines two categories of data usage:

Data Usage

- *Mandatory Data* refers to the information that all supply chain partners are obliged to collect, keep, or share.
- *Optional Data* are additional pieces of information that are useful but not essential.

The chart which follows defines the individual data elements in each category.

The Mandatory Data category encompasses two types of data: Master and Transactional. Both are required for traceability.

Data Types

- *Master Data* is information that seldom changes. Master data applies to product, party and location information. It includes information such as product description, buyer identifier, location etc.
- *Transactional Data* is data that is unique to each individual transaction. Examples include lot number, shipment identifier and shipment date.

The minimum requirement for any company is to have paper-based documents that contain necessary information to provide one-up/one-down traceability.

◆ Mandatory and Optional Data

Mandatory Data Elements: Required for Traceability
Buyer Identifier
Lot Number
Product Description
Product Identifier
Quantity
Shipment Identifier
Unit of Measure
Vendor/Supplier Identifier

See Appendix VI for definitions of the mandatory data elements.

Optional Data Elements: For Enhanced Traceability
Best Before Date / Best If Used By Date
Buyer Name
Contact Information
Country of Origin
Pack Date
Logistics Provider Identifier
Receipt Date
Ship Date
Ship From Location Identifier
Ship To Location Identifier
Shipping Container Serial Number
Unit of Trade
Vehicle Identifier
Vendor/Supplier Name

Paper-Based Documentation in the Pilot Studies

In both the Can-Trace and CPTTF Pilot studies, a wide variety of paper-based documentation was examined. These included Bills of Lading, Pallet Labels, Harvest Reports, Invoices and Purchase Orders, Carrier and Receiving Receipts, Waybills, Shipping Advice, and Packing Slips.

Virtually all the data elements in the Can-Trace Mandatory and Optional Data categories are currently being captured in paper documents — but not in a way that is consistent from trading partner to trading partner. For example, in the Can-Trace Pilot Study, “Pack Date,” “Vendor/Supplier Identifier” and “Batch or Production Lot Number” were used by the majority of participants, although not captured consistently by all.

To achieve traceability requires, at minimum, the use of the Mandatory Data Elements. Use of the “Optional Data Elements” can further enhance traceability, depending upon trading partner requirements.

Finally, it is the standardizing of all such data, as laid out in the CPTTF Best Practices, and the sharing of such data in a standard format, that will enable true External Traceability.

Sharing of this data in a standard format enables all trading partners to respond to a recall without the need for additional translation of the supplied data.

In eliminating the need for additional translation, all participants will enjoy operational benefits in normal transactions, and will realize significant time and cost advantages in recall transactions.

◆ Data Elements Across the Supply Chain

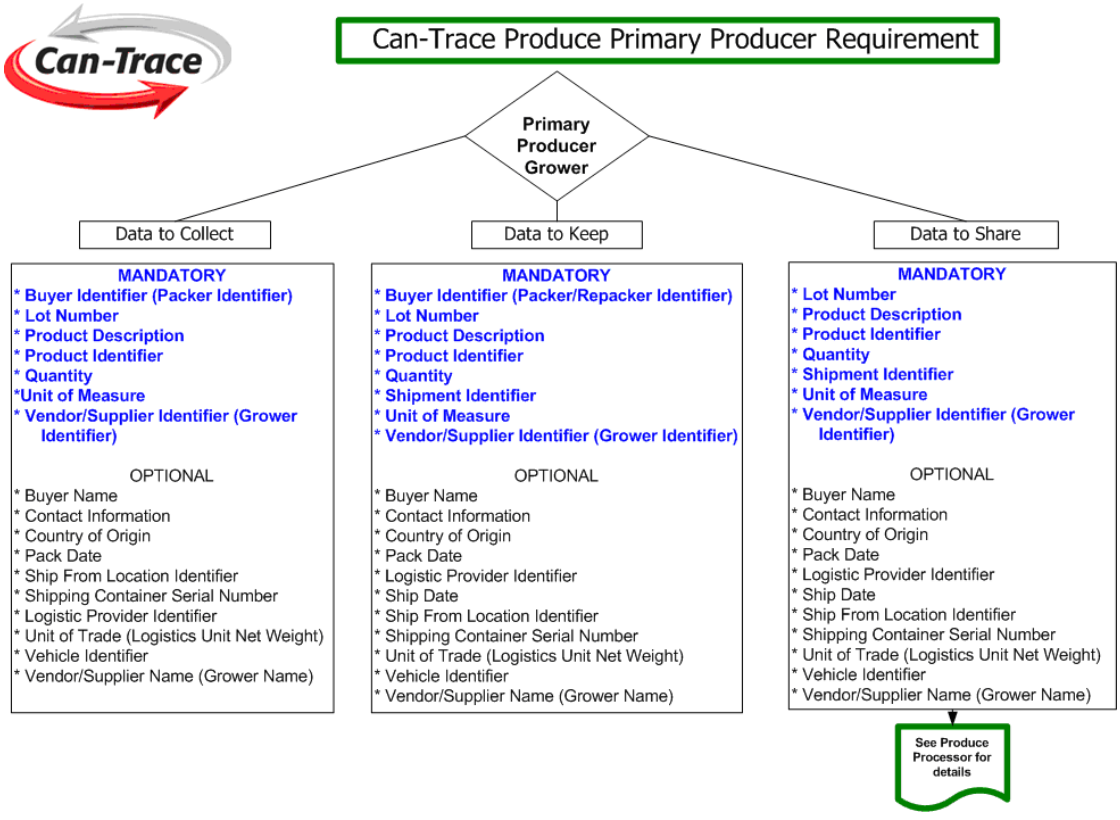
The Can-Trace Mandatory Data requirement is identical for:

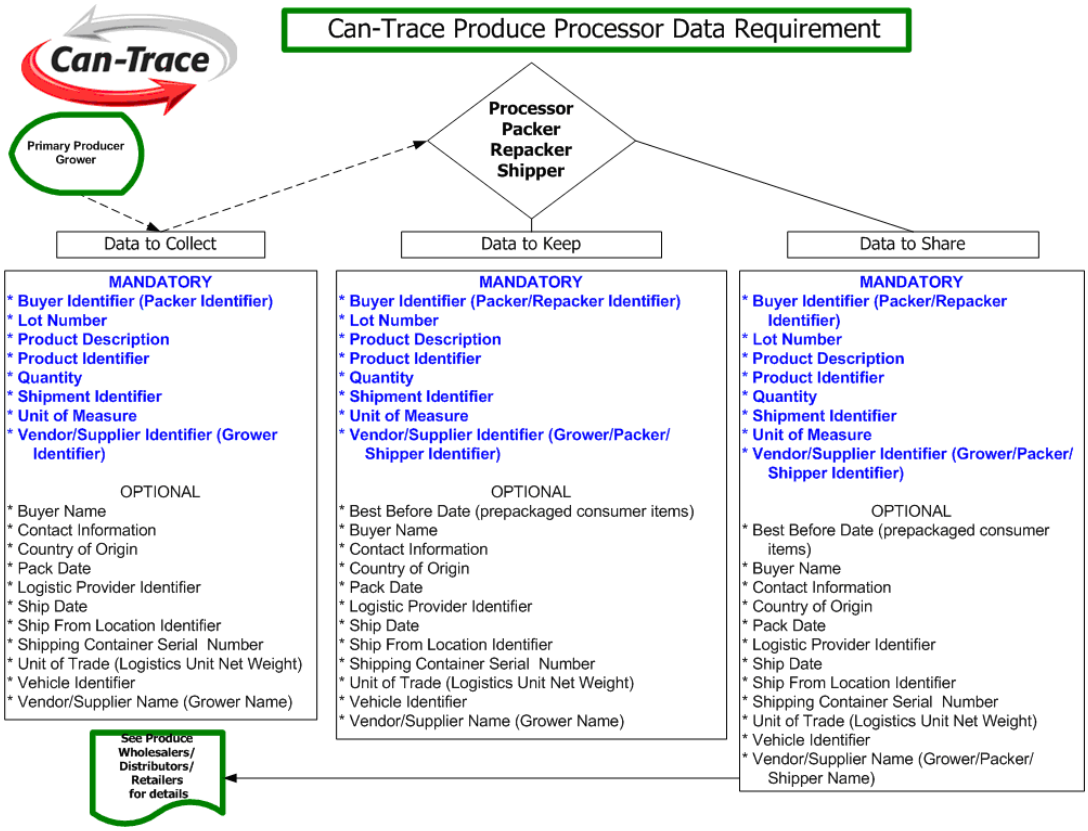
- Primary Producers
- Processors
- Wholesalers/Distributors/Retailers

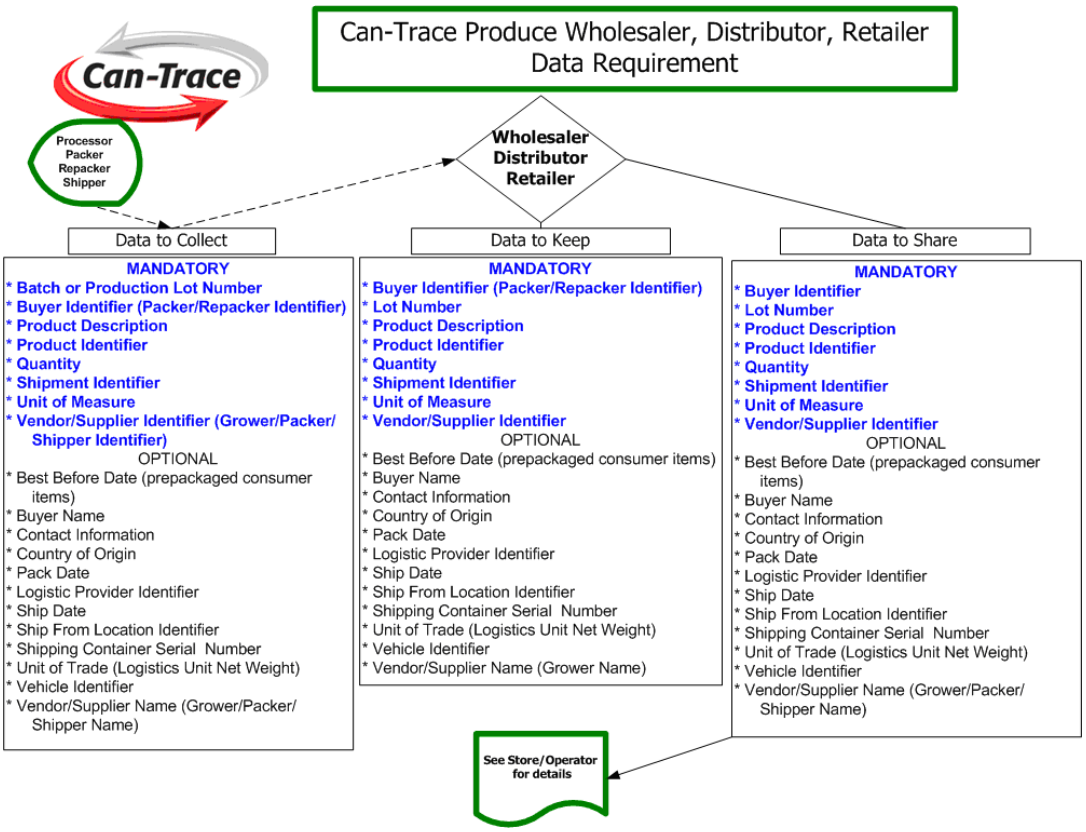
However, the data elements that are collected from an upstream trading partner, those that are kept, and those that are shared with a downstream trading partner, will differ somewhat according to one's position in the supply chain.

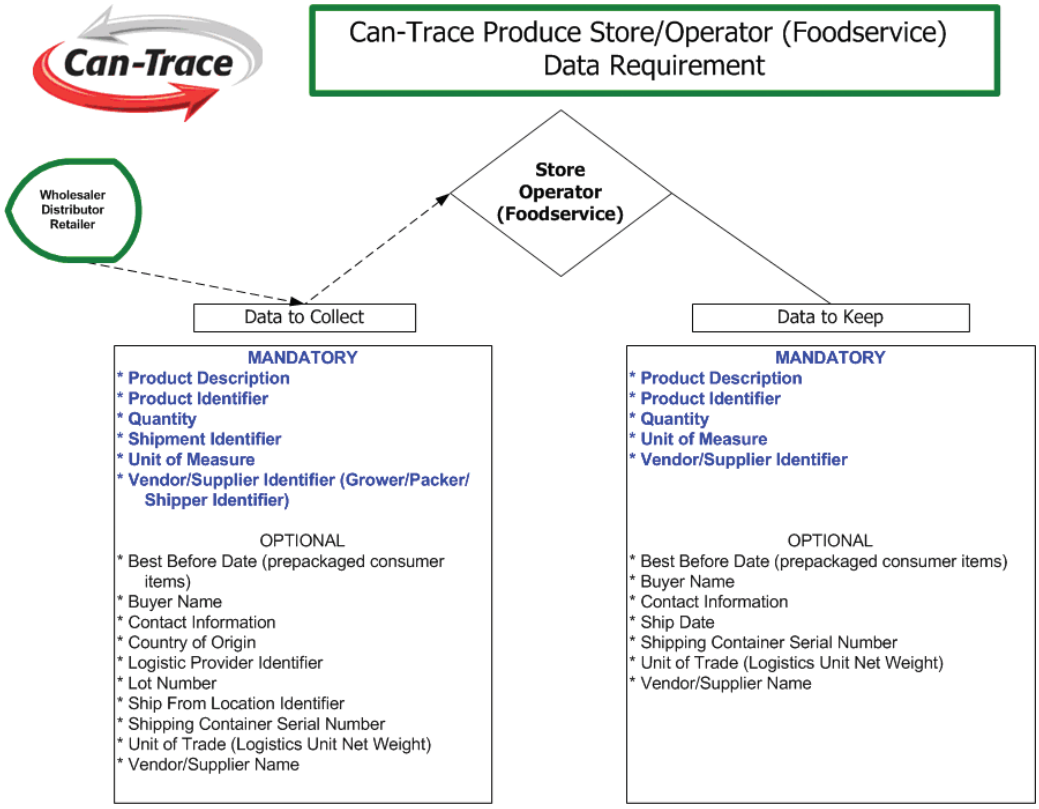
The charts that follow provide at-a-glance reference to Mandatory and Optional Data Elements — those to be *collected*, those to be *kept*, and those to be *shared* — for individual produce supply chain participants including:

- Primary Producers/Growers
- Processors/Packers/Repackers/Shippers
- Wholesalers/Distributors/Retailers
- Store Operators (Foodservice)
- Third-Party Logistics




Can-Trace
Can-Trace Produce Processor Data Requirement
Primary Producer
Grower
Processor
Packer
Repacker
Shipper
Data to Collect
Data to Keep
Data to Share
MANDATORY
* Buyer Identifier (Packer Identifier)
* Lot Number
* Product Description
* Product Identifier
* Quantity
* Shipment Identifier
* Unit of Measure
* Vendor/Supplier Identifier (Grower Identifier)
OPTIONAL
* Buyer Name
* Contact Information
* Country of Origin
* Pack Date
* Logistic Provider Identifier
* Ship Date
* Ship From Location Identifier
* Shipping Container Serial Number
* Unit of Trade (Logistics Unit Net Weight)
* Vehicle Identifier
* Vendor/Supplier Name (Grower Name)
MANDATORY
* Buyer Identifier (Packer/Repacker Identifier)
* Lot Number
* Product Description
* Product Identifier
* Quantity
* Shipment Identifier
* Unit of Measure
* Vendor/Supplier Identifier (Grower/Packer/Shipper Identifier)
OPTIONAL
* Best Before Date (prepackaged consumer items)
* Buyer Name
* Contact Information
* Country of Origin
* Pack Date
* Logistic Provider Identifier
* Ship Date
* Ship From Location Identifier
* Shipping Container Serial Number
* Unit of Trade (Logistics Unit Net Weight)
* Vehicle Identifier
* Vendor/Supplier Name (Grower Name)
MANDATORY
* Buyer Identifier (Packer/Repacker Identifier)
* Lot Number
* Product Description
* Product Identifier
* Quantity
* Shipment Identifier
* Unit of Measure
* Vendor/Supplier Identifier (Grower/Packer/Shipper Identifier)
OPTIONAL
* Best Before Date (prepackaged consumer items)
* Buyer Name
* Contact Information
* Country of Origin
* Pack Date
* Logistic Provider Identifier
* Ship Date
* Ship From Location Identifier
* Shipping Container Serial Number
* Unit of Trade (Logistics Unit Net Weight)
* Vehicle Identifier
* Vendor/Supplier Name (Grower/Packer/Shipper Name)
See Produce Wholesalers/ Distributors/ Retailers for details


Can-Trace
Can-Trace Produce Wholesaler, Distributor, Retailer Data Requirement
Processor
Packer
Repacker
Shipper
Wholesaler
Distributor
Retailer
Data to Collect
Data to Keep
Data to Share
MANDATORY
* Batch or Production Lot Number
* Buyer Identifier (Packer/Repacker Identifier)
* Product Description
* Product Identifier
* Quantity
* Shipment Identifier
* Unit of Measure
* Vendor/Supplier Identifier (Grower/Packer/Shipper Identifier)
OPTIONAL
* Best Before Date (prepackaged consumer items)
* Buyer Name
* Contact Information
* Country of Origin
* Pack Date
* Logistic Provider Identifier
* Ship Date
* Ship From Location Identifier
* Shipping Container Serial Number
* Unit of Trade (Logistics Unit Net Weight)
* Vehicle Identifier
* Vendor/Supplier Name (Grower/Packer/Shipper Name)
MANDATORY
* Buyer Identifier (Packer/Repacker Identifier)
* Lot Number
* Product Description
* Product Identifier
* Quantity
* Shipment Identifier
* Unit of Measure
* Vendor/Supplier Identifier
OPTIONAL
* Best Before Date (prepackaged consumer items)
* Buyer Name
* Contact Information
* Country of Origin
* Pack Date
* Logistic Provider Identifier
* Ship Date
* Ship From Location Identifier
* Shipping Container Serial Number
* Unit of Trade (Logistics Unit Net Weight)
* Vehicle Identifier
* Vendor/Supplier Name (Grower Name)
MANDATORY
* Buyer Identifier
* Lot Number
* Product Description
* Product Identifier
* Quantity
* Shipment Identifier
* Unit of Measure
* Vendor/Supplier Identifier
OPTIONAL
* Best Before Date (prepackaged consumer items)
* Buyer Name
* Contact Information
* Country of Origin
* Pack Date
* Logistic Provider Identifier
* Ship Date
* Ship From Location Identifier
* Shipping Container Serial Number
* Unit of Trade (Logistics Unit Net Weight)
* Vehicle Identifier
* Vendor/Supplier Name (Grower/Packer/Shipper Name)
See Store/Operator for details


Can-Trace
Can-Trace Produce Store/Operator (Foodservice)
Data Requirement
Wholesaler
Distributor
Retailer
Store
Operator
(Foodservice)
Data to Collect
Data to Keep
MANDATORY
* Product Description
* Product Identifier
* Quantity
* Shipment Identifier
* Unit of Measure
* Vendor/Supplier Identifier (Grower/Packer/
Shipper Identifier)
OPTIONAL
* Best Before Date (prepackaged consumer
items)
* Buyer Name
* Contact Information
* Country of Origin
* Logistic Provider Identifier
* Lot Number
* Ship From Location Identifier
* Shipping Container Serial Number
* Unit of Trade (Logistics Unit Net Weight)
* Vendor/Supplier Name
MANDATORY
* Product Description
* Product Identifier
* Quantity
* Unit of Measure
* Vendor/Supplier Identifier
OPTIONAL
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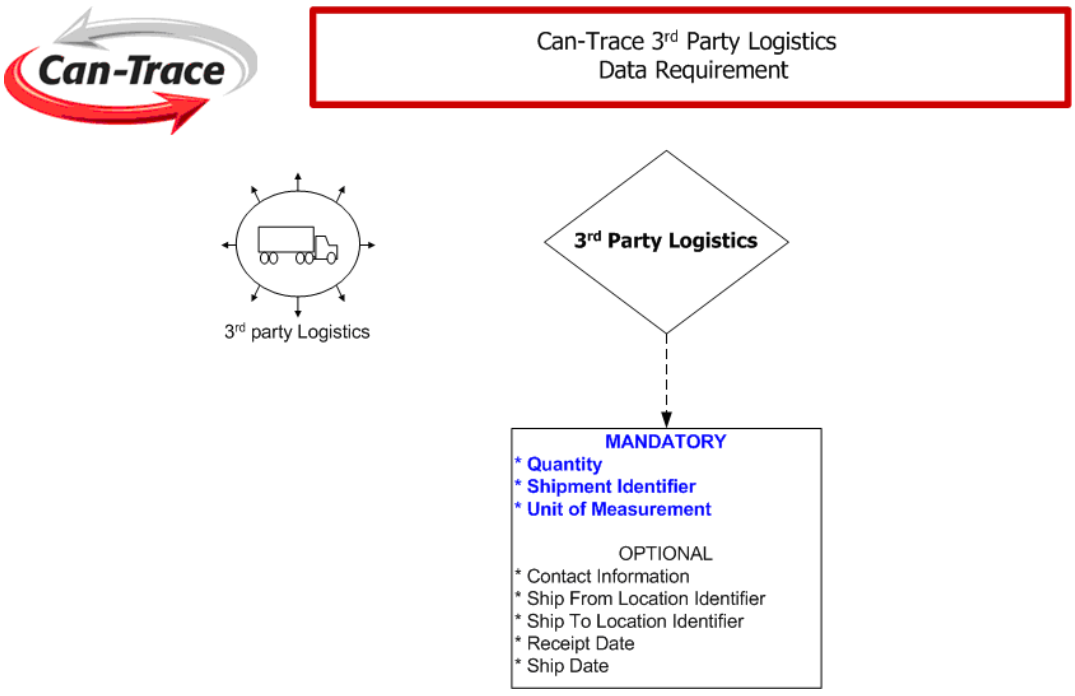
* Contact Information
* Ship Date
* Shipping Container Serial Number
* Unit of Trade (Logistics Unit Net Weight)
* Vendor/Supplier Name


Can-Trace
Can-Trace 3rd Party Logistics
Data Requirement
3rd party Logistics
3rd Party Logistics
MANDATORY
* Quantity
* Shipment Identifier
* Unit of Measurement
OPTIONAL
* Contact Information
* Ship From Location Identifier
* Ship To Location Identifier
* Receipt Date
* Ship Date

Implementation

◆ Overview

The CPTTF Best Practices document differentiates between Internal and External traceability and defines them as follows:

> *"Internal traceability refers to confidential or proprietary data and processes that companies use within their span of operations to track product."*
>
> *"External traceability refers to the data exchange and business processes that take place between trading partners."*
>
> *Source: CPTTF Traceability Best Practices*

When determining goals for traceability, companies should:

- Create a traceability project team within the organization.
- Conduct a Gap Analysis on existing traceability practices.
- Conduct a Business Case Analysis to quantify Return On Investment and competitive advantages resulting from enhanced traceability. (Decision Support Templates are available for your use at **www.can-trace.org**.)
- Develop a strategic plan for enhancing traceability.
- Develop a migration path for incremental adoption of recommendations contained in this document.

Obviously, few — if any — businesses can simply scrap their existing systems and jump to an entirely new level of operations that fully embraces all ten CPTTF Best Practices as well as the most advanced technology available to support external traceability.

Progress, if it is to be achieved, must come incrementally.

That said, every change made to address "compliance" should be viewed as an opportunity to adopt best practices, and make operations and processes more consistent with emerging standards, and thus with trading partners.

For companies with paper-based systems, or those with "legacy" IT systems:

- New systems or major enhancements to existing systems should include migration to EAN.UCC industry standards for numbering cases and pallets (GTIN for cases, and SSCC for pallets – see "Technologies for Data Capture – Appendix III).
- Acquire an EAN.UCC/GS1 Company Prefix as part of this process.

For companies with robust IT systems and traceability processes:

- Take advantage of your capabilities to use existing minimum data standards consistently with your value chain partners. It is recommended that industry members collaborate on joint projects to further streamline the traceability processes between enterprises.

While knowledge and standards will continue to evolve, the following section includes implementation recommendations suitable for companies of all sizes, at all stages of technology, all along the supply chain. These recommendations encompass three approaches:

- **Implementation Approach 1:**
  Paper-Based and human-readable systems
- **Implementation Approach 2:**
  Technology-Based (automated data capture via bar codes)
- **Implementation Approach 3:**
  Technology-Based (automated data capture via RFID)

Regardless of the implementation method, each supply-chain participant should have a "Traceability Team" to take the lead in any recall or tracing/tracking activities.

◆ Creation of a Traceability Team

Participants in the pilot studies all had documented procedures in place for recall. It is recommended that all companies establish such procedures, which include identifying a Traceability Team in advance. Whether or not your team includes a designated "Public Relations" person, your team should be prepared for dealing with the media.

Implementation Approach 1: Paper-Based and human readable systems

◆ Minimum Requirements

The minimum requirement for any company is to have paper-based documents that contain necessary information to provide one-up, one-down traceability.

While the adoption of electronic data exchange technologies will facilitate traceability, it is possible to use paper-based systems to capture and share the minimum data elements required for traceability.

However, existing systems may need to be modified to ensure that all the necessary data elements are being captured in paper-based documents.

To recap, the Can-Trace Mandatory Data Requirements, essential for traceability, include:

- Buyer Identifier
- Lot Number
- Product Description
- Product Identifier
- Quantity
- Shipment Identifier
- Unit of Measure
- Vendor/Supplier Identifier

◆ Current Practices

Overview

Generally, where current traceability practices rely on following the paper trail, delivery receipts (from distribution centers or direct store delivery) are examined to provide information on products received during a recall timeframe. Delivery records typically contain a summary description of the product, the number of cases/pallets, the date/time of delivery, shipping and receiving locations. Unfortunately, current practices demand considerable investigation, subsequent time delays, and a potentially-large scope of product implicated. An additional tracking process is required to handle final disposition, such as recording the product identification and problem description, recording the return/disposal or release of product for re-sale.

Human-readable information at the case level would have value where product implicated could be referenced to inventory in the back room, and associated records.

Data Capture and Usage in the Can-Trace Pilot Study

As shown in the table below, data elements used in the simulated recalls included many, but not all, of the Can-Trace proposed Mandatory and Optional Data Elements.

Can-Trace Mandatory Elements		Other Data Elements
Used	**Not Used**	**Used**
Grower/Importer/Distributor		
Product Description (a.k.a. 'product label')	Product Identifier	Buyer's Purchase Order Number
Vendor/Supplier Identifier (descriptive, not numeric)	Shipment Identifier	Date of Harvest
Buyer Identifier (descriptive, not numeric)		Carton Label (including grower number)
Lot Number (Batch or Production) (a.k.a. 'pallet label', 'serial number')		Pack Date
Quantity		Product Size
		Cool Store location
		Pack House
		Recall Authorization Number
Retailer		
Product Identifier (product number & look-up code)	Date of Harvest	
Product Description	Shipment Identifier	
Vendor/Supplier Identifier (descriptive, not numeric)		
Buyer Identifier		
Lot Number (Batch or Production)		
Quantity		

Observations Concerning Current Data Usage

1. Pack Date, more so than Date of Harvest, was perceived as a significant data element for traceability by the participating companies.
2. Shipment Identifier is not currently used to communicate recall information. Buyer's purchase order number is used for this purpose, but purchase orders in their current format may not provide the specificity required for full traceability.
3. Shipped quantity is used in recall communications.
4. Master data elements such as supplier phone numbers, traceability contact names, customer phone numbers, e-mail addresses, etc., are used during recalls and other traceability exercises. While these elements are not specified in the standard, the Vendor/Supplier Identifier provides the link to this contact information.

◆ Paper-Based Document Limitations

With respect to traceability, studies identified limitations in the paper-based documentation currently used in the produce supply chains studied:

1. No common identifier of product is present consistently throughout the supply chain. Product descriptions at the various companies vary and other identifiers are required to ensure recalls are accurate.
2. Absence of a lot number for tracking means that other, less effective means must be used to identify recalled product resulting in a wider product scope.
3. Pack date, as captured by growers, is not consistently carried through the supply chain.
4. Distributor recall notification did not include shipment identifier or shipment date. Both pieces of information are typically present and could be included to allow for specific identification of received product and to reduce the time spent locating product, particularly for destinations not yet capable of working by pallet label (serial number).
5. Product lot or serial numbers are not always identified as such. Although present, they can be identified as pallet tags, etc. This can lead to confusion.
6. Where present, supplier lot number is not always recorded. A new lot number may be assigned within the next operation, but the supplier's lot number should be recorded whenever one is supplied. The supplier's lot number should be linked to any new lot number created at the next operation.

◆ Recommendations from Pilot Projects

1. Suppliers and distribution centers should mark cases with human-readable data includ ing supplier name, product description and lot number. In the pilot studies, participants had proprietary codes for each of these elements; without human-readable labeling, there is no easy way to cross-reference this information.
2. Add the Lot Number to fixed-weight consumer packs containing a supplier ID. For consumer packs, addition of the lot number would improve traceability. (As noted previously, addition of a lot number for loose produce would be impractical at present, due to logistical issues, technical limitations and increased costs.)

3A. Shipment Identifier should augment or replace a buyer's purchase order number in recall communications, as Shipment Identifier is defined to be unique. With the possible use of backorders, multiple products, multiple receiving locations, and multiple receiving dates on one purchase order, cannot be guaranteed unique to a shipment. (Traceability practices in other industries have shown unique shipment identifiers are superior to purchase order numbers in isolating shipments. Thus, the use of a Shipment Identifier is recommended as a best practice.)

3B. Ship Date, when known, should always accompany Shipment Identifier. It serves to further specify the transaction containing recalled product. This would speed recalls by more precisely identifying the transaction containing compromised product. *This is especially valuable for locations not yet equipped to work with pallet labels such as SSCC or serial numbers.*

4. Product lot or serial numbers should always be identified as such, rather than using other nomenclature (e.g., “Pallet Tags”) which can lead to confusion.
5. Supplier lot number should always be recorded, even when a new lot number is assigned in the next operation. In such cases, the supplier’s lot number should be linked to any new lot number created.
6. Automation of data gathering and management would facilitate faster recall processes for organizations that do not currently have such support.

Implementation Approach 2: Technology-Based (automated data capture via bar codes)

Many companies today are successfully using bar code systems within the span of their internal operations. Most use proprietary numbering systems and lack data synchronization with their trading partners, which limits implementation of “whole chain” or external traceability.

The CPTTF Best Practices paper describes how bar coding and e-Commerce can be utilized across the supply chain to enable external traceability. It prescribes the adoption of standard bar codes for cases and pallets, and requires both data synchronization (products and locations) along with transactional e-commerce (including Advance Ship Notices).

At this time however, there is concern about the costs associated with scanning individual case bar codes (needed for external traceability). Other companies are examining RFID (Radio Frequency Identification) to determine their future technology strategy.

◆ Current Practices

Overview

The use of proprietary numbers for case and pallet will continue to hamper the adoption of external traceability as well as several other industry technology initiatives. Any bar codes implemented with proprietary numbers would not be meaningful to trading partners downstream. Yet, to resolve this problem would result in an enormous (if not impossible) task for retailer/foodservice companies to synchronize proprietary numbers with their suppliers.

A prerequisite for external traceability is to share (and synchronize) standard data between trading partners. Therefore, the priority for our industry must be to adopt the EAN.UCC numbering system; such as the GTIN and GLN numbers for products and locations. These standard numbers support both bar code and RFID technology.

Retail/foodservice companies must have processes in place to synchronize supplier GTIN's and GLN's with their internal systems. Companies can work collaboratively on this initiative with their trading partners, or work through a third-party data synchronization service. The key outcome is to ensure that retailer/foodservice companies can scan a GTIN (and Lot#) bar code on a physical case of product and have it reference to the appropriate product description within their internal system.

The foundation lies in product coding – providing a standard and consistent means of identifying the product at three levels: the logistics level, the trade level and the consumer level.

The final step for global traceability is the seamless sharing of these common identifiers in a common language, all across the supply chain. It goes without saying that "seamless sharing" promises the business benefits that will make all trading partners more competitive: entering data just once instead of many times, yielding faster, more labor-efficient operations and improved accuracy in transactions and traceability.

The vision is to achieve an industry-wide, standards-based approach to data capture, compatible to global standards.

(For further details, refer to Appendix III: "Technologies for Data Capture")

◆ Bar Coding Standards

Case Codes

Case Codes define "any item or standard grouping of items made up to facilitate the operations of handling, storing, order preparation, shipping, etc." (Source: *Fresh Produce Traceability Guidelines*.)

The EAN.UCC-14 is a 14-digit GTIN that identifies the unit of trade (cartons, trays, bins, etc). The GTIN can be printed in one of two symbologies:

- *Interleaved 2 of 5* is a relatively large and simple symbology, suited for direct print to corrugated. It is limited in that it does not allow for encoding the lot number and other data needed for traceability.
- *UCC.EAN-128* is a smaller, more comprehensive symbology incorporating AIs (Application Identifiers) in addition to the GTIN. An AI is a prefix that defines the meaning and format of the information following.

Pallet Codes (SSCC)

The Serial Shipping Container Code (SSCC-18 or EAN.UCC-18) is commonly known as a Pallet Code, or Pallet License Plate. It is used to uniquely identify "an item of any composition established for transport and/or storage, which needs to be managed through the supply chain."

◆ E-commerce Standards

Electronic Data Interchange (EDI)

Sometimes known as "e-commerce," EDI represents the computer-to-computer exchange of a full range of business transactions in a standard format. EDI enables any given trading partner to capture or review (in a standardized way) the full amount of data that defines a transaction. The underlying data is transmitted to a computer. The data "tag" (whether RFID or bar code) is the shorthand "key" that unlocks the full identification stored in the computer.

The ASN (Advanced Ship Notice)

The ASN is an EDI document that fully describes what is on a pallet, and is sent to the recipient's computer in advance of the pallet's arrival. An SSCC code on the pallet is the key that "unlocks" all the ASN data that's in the computer. When the pallet arrives, the SSCC code is scanned into the computer. It automatically "fetches" the corresponding ASN data, thus automating the receiving process.

◆ Recommendations from Pilot Projects

1. As previously noted, suppliers and distribution centers should mark cases with human-readable data including supplier name, product description and lot number. This is particularly important for participants currently using proprietary codes for each of these elements. The addition of human-readable labeling is essential for cross-referencing this information in traceability scenarios.
2. Organizations need to consider using a feasibility study to determine if existing IT systems can handle the replacement of proprietary codes with standard codes like GTIN and SSCC numbering. (See "Pallet and Case Coding — PMA Best Practices, December, 2002" on **www.pma.com.**)
3. Companies should acquire EAN.UCC /GS1 Company prefixes as part of their migration to industry standards for numbering cases and pallets.
4. A universal numeric product identifier (such as GTIN and Lot Number) can support the proposed minimum data standard. The Global Trade Item Number (GTIN) is recom mended as the standard format for carrying data, as it is internationally recognized and understood. (It should, however, be noted that the current state of coding in the produce industry will only allow merging [rolling up] the GTINs at the distribution level [e.g. consolidating the many codes to one code and assigning a new GTIN] and passing this new code to the next trading partner.)
5. The routine use of EAN.UCC identification (with standard data attributes defined) at the case and pallet level for packaged product would deliver consistent information and so facilitate product withdrawals and recalls.
6. Any advancement in automated data collection is proven to reduce errors and facilitate faster recall processes; these benefits are magnified to the degree that such advance ment is geared to a common language of whole-chain traceability.

7. Use of e-commerce as it relates to data synchronization and transactional data where it supports traceability. For example, EDI purchase orders, Advance Ship Notices and Invoices provide a wealth of information useful for external traceability.

To implement total supply chain traceability based on bar coding, all supply chain partners, including distributors (retail/foodservice distributors) must capture case and pallet code information.

Implementation Approach 3: Technology-Based (automated data capture via RFID)

There are many inherent benefits to RFID, however implementation will be gradual as the technology matures and becomes less costly. It is safe to say that bar codes will remain a viable technology, co-existing with the gradual adoption of RFID for some years to come.

◆ Current Practices

Many large organizations, including Wal-Mart, Metro-AG, Tesco and Albertsons, are taking the lead in implementing advanced technologies within their own facilities. Some have gone past the "pilot" stage and are beginning to require adoption from some of their suppliers.

Overview

Radio Frequency Identification (RFID) technology has the potential to greatly improve supply chain efficiencies and lower costs over the long term. Product traceability and visibility across the supply chain will be light years ahead of where we are today. An enormous amount of data captured through RFID will provide the "fuel" to drive other technology and business initiatives such as continuous replenishment, category management, e-commerce and Traceability.

While RFID technology has been around for decades, it has only recently "emerged" as a viable grocery supply chain solution. However, with fresh produce being "high volume and low margin" along with other complexities unique to our industry, obtaining a reasonable ROI for many companies is still months, if not years, away.

◆ RFID Limitations

Fresh produce companies that are currently participating in RFID initiatives are finding that the technology is expensive and problematic. There are multiple standards, internal computer systems are not RFID capable, and many procedural issues have yet to be resolved. Their focus has been on meeting the immediate requirements of retail versus exploring the benefits RFID could have to internal operations.

Other companies are taking a cautious approach to RFID. They are learning from the pilot projects underway and waiting for technology to "prove itself" and become more cost-effective before deciding to proceed. This cautious approach mitigates risk in the short term, but may prove damaging as other companies make technological leaps past them.

The RFID landscape is expected to change radically over the next few months. A global standard (EPC Gen 2) has been ratified and technology vendors are becoming compliant. As demand for RFID technology increases, costs will drop accordingly. A favorable outcome from RFID with leading retailers will force other retailers to accelerate their RFID plans, putting greater pressure on suppliers to proceed earlier than later.

◆ Recommendations from Pilot Projects

1. Adopt the EAN.UCC numbering system, and implement standard numbers for products and locations (GTIN's and GLN's).
2. Implement data synchronization processes with trading partners.
3. Some companies may be required to participate in RFID initiatives with their trading partners. Other companies should form an RFID team within their company to examine the technology and develop a business case strategy for their company.

Consumer Item Traceability: The Final Frontier

The CPTTF efforts to define a data standard and improve traceability along the produce supply chain, do not currently extend to all consumer produce items.

Currently, there are significant economic and logistical barriers to the full adoption of common traceability standards and processes at the consumer item level.

In most instances when a consumer detects product contamination, it may be days or weeks after the purchase date. Packaging (shrink wrap, bags, etc) or PLU stickers and product identification numbers will most likely not exist at time of consumption. Given the time elapsed, the scope of product implicated may well have completed its cycle through the supply chain. As well, cross-contamination may have taken place at any point in the supply chain or during consumer handling.

For consumer packs, the addition of lot number would improve traceability. However, for loose produce, this addition would be difficult due to logistical issues, technical limitations, and significantly increased supply chain costs.

Identification at the case level limits the scope of product implicated and provides the required information for trace-back. Unfortunately, once product is emptied onto retail store displays, card-

board cases are crushed and recycled, or in the case of RPCs, they are returned shortly after use. Retail displays containing cardboard cases or product held in the back room may not accurately reflect the product (or lot number) actually sold to consumers.

Changing retail level practices is not an easy undertaking. For a complete solution, all retail stores/ foodservice outlets would need the necessary bar code scanning technology and related systems. Given the investment required, case level scanning (at retail store/foodservice outlet level) is not a practical option at this time. As such, current traceability practices are reliant on following the paper trail.

For this reason, any steps towards implementing Best Practices elsewhere throughout the supply chain will move our industry closer to achieving the “critical mass” required to effect improved traceability at the consumer item level.

Appendices

APPENDIX I: CPTTF 10 Best Practices for Enhanced Traceability

■ At the Store/Foodservice Outlet

1. Add the lot number to fixed-weight consumer packs containing a supplier ID (e.g. bagged lettuce).

2. Suppliers should mark cases with human readable data including supplier name, product description and lot number.

■ At the Distribution Center

3. Encode GTIN and lot number in a UCC.EAN-128 bar code.

4. Use human-readable supplier name, product description, and lot number.

5. During the slotting process (where mixed pallets are built for store delivery), scan the supplier case and link to the internal pallet number (or to the store location identifier).

6. During receiving, use supplier pallet tags by encoding the company prefix and serial number in UCC.EAN-128 bar code format.

7. Receive the EDI ASN (Advance Ship Notice).

8. Scan supplier pallet data during the receiving process and match to EDI ASN data.

■ At the Supplier Facility

9. Use supplier case coding by encoding GTIN and lot number in UCC.EAN-128 bar code, as well as human-readable supplier name, product description, and lot number.

10. Use supplier pallet tags by encoding company prefix and serial number in UCC.EAN-128 bar code.

Adoption of these Best Practices will result in enhanced traceability from field identification to the receiving dock at a retailer or foodservice outlet.

A copy of the complete CPTTF report on recommended Best Practices can be obtained from the PMA website, at **www.pma.com** or from the CPMA website at **www.cpma.ca.** The report goes into detail on each practice and explains the rationale supporting them. These Best Practices are voluntary. Companies are free to use and adapt these best practices in a manner that enhances the flow of information with their supply chain partners.

APPENDIX II: Executive Summaries of Pilot Studies/Pilot Participants

■ Can-Trace Produce Pilot Executive Summary

RCM Technologies Canada was commissioned to support the development of standards for the produce sector under the Can-Trace Traceability and Standards initiative. This analysis examines the current tracking and tracing capabilities of the Canadian produce sector through a pilot study with a group of voluntary industry participants.

The pilot studies had three main objectives related to traceability standards:

- Developing an understanding of key handling, packaging and production processes at the participating companies and some of their supply chain partners (suppliers, carriers, customers);

- Collecting samples of paper-based documents and product labels to determine adher ence to Can-Trace's proposed minimum data standard for traceability; and

- Executing several traceability simulation scenarios and studying processes used and results achieved.

The data for the pilot study was collected through site visits to the participant companies and phone conferences to collect the paper-based traceability data and to perform traceability simulations. Data collection for the pilot studies and the business case was supplemented through the use of business case questionnaires.

The pilot study yielded a number of results which can be addressed in establishing valid and reasonable traceability standards.

Our most significant finding is that no common product identifier is present throughout the entire supply chain. Product descriptions and product identifiers vary between companies, requiring the use of other identifiers to ensure accurate recall. We recommend a consistent product lot or batch identifier that aligns with the Global Trade Item Number (GTIN) be adopted by the industry.

At the grower level, it is recommended that 'pack date' replace the proposed Can-Trace standard of 'harvest date'. Various mixing and packing operations are performed after harvesting and products may include components with multiple harvest dates. It should be noted that our recommendation potentially limits recall flow for certain potential scenarios (in-field damage, etc.).

Several changes at the initiating distributor level could simplify coordination of recalls.

- Recall notification does not include shipment identifier or shipment date. Both pieces of information are typically present and could be included, reducing the time needed to locate specific product, particularly for destinations not yet capable of working by pallet label (SSC or serial number).

- Product lot or serial numbers are not always called such. Although present, they can be identified as pallet tags, batches etc. This variation in nomenclature leads to confusion.

- Where present, supplier lot number is not always recorded. A new lot number may be assigned within the next downstream operation, but the supplier's lot number should be present whenever one is supplied.

The traceability simulations (via mock recalls) were executed successfully, with product sources and destinations accurately identified. As the mock recalls did not actually involve the physical recall of product and notification of end customers, there was no ability to measure the actual time required to complete neither the recall, nor define the precision with which product could be identified outside of the participant companies.

Participating Pilot Companies

Company Type	Supply Chain Role(s)	Participant Name
Hotel	Foodservice	Fairmont Hotels and Resorts
Foodservice Distributor	Distributor	Neptune Food Service
Grower/Importer/Distributor	Grower, Importer, Packer/Shipper, Distributor	The Oppenheimer Group
Distributor	Distributor	Pro Organics
Retailer # 1	Distributor, Retailer	Sobeys
Retailer # 2	Retailer	Thrifty Foods
Grower	Canadian Grower, Packer/Shipper	All Season Mushrooms

CPTTF Pilot Study Executive Summary

Recent food safety events in the produce sector have driven home the need for traceability systems in produce supply chains which can respond quickly and accurately to recalls. RCM Technologies (RCMT) was asked to conduct this CPTTF Pilot Project to compare current practices to the Best Practices outline in the CPTTF report "Traceability Best Practices". The Best Practices are based on the standardization of data, which is to be transferred through produce supply chains. Many of the best practices advocate use of standard numbering standards, such as GTIN and SSCC, and standardized machine readable formats, such as UCC.EAN 128 bar codes.

The companies participating in the pilot study are industry leaders in both their use of technology and their aggressive approach to food safety. Even so, it was apparent that members of the same supply chain took different approaches to the data collected and stored, and to tracking product internally. These differences lead to loss of product identity in some situations and the resulting

widening of the scope of recalls in order to be sure to capture implicated product.
One pilot study firm, SYSCO, demonstrated that by compelling partners to comply with their internal traceability system can enforce whole chain traceability based on the internal system. SYSCO has effectively created and enforced whole chain traceability since each transaction from the field to final customer is based on a SYSCO product number and lot number and it can be traced forward and tracked backward. While this approach works with one trading partner at a time, it would not be successful industry wide, as each interface of a non-standard internal system with an external supplier presents a new integration challenge. The lack of integration among the systems studied was significant, as it increases the cost and complexity of business transactions and decreases the certainty in recall situations. Modifying existing systems to accept CPTTF "Best Practices" will, in the long run, be the most economical and efficient way to achieve whole chain traceability.

The major issue observed in the study was the lack of integration between internal tracking systems and external systems. Product was received and then moved into the internal system without maintaining a data connection to the supplier and to individual cases or pallets. This loss of identity meant that the scope of recall was widened significantly. For a recall initiated at the harvest or distribution level, enhanced traceability could result in a significant reduction in scope of the volume of product implicated. However, with the gaps in traceability, a recall initiated at the retail level working back and then forward would require a scope that could amount to several days of production, rather than several pallets.

Achieving the CPTTF Best Practices can improve data collection and communication through produce supply chains. While it will not be easy or without cost, whole chain traceability can enable significant benefits through improvements in the accuracy and timeliness of recalls, the increase in operational efficiencies and potential new revenue sources, as well as improvements in customer and consumer confidence in the produce sold in North America.

■ Participating Pilot Companies

Participant Name	Supply Chain Roles
NewStar Fresh Foods www.newstarfresh.com	Grower, Importer, Packer/Shipper, Distributor
SYSCO (Baugh Supply Chain Cooperative and Foodservice of San Francisco) www.sysco.com	Importer, Packer/Shipper, Distributor
Hannaford Brothers www.hannaford.com	Distributor, Retailer

APPENDIX III: Technologies for Data Capture

GTIN: The Backbone to Efficiencies

The term GTIN (Global Trade Item Number) can be viewed as a type of "umbrella term". What North Americans once called the UCC-12 or UPC A (UPC bar code) is one type of GTIN. What the rest of the world once called the EAN-13 (bar code) is a GTIN. What all of us called the SCC-14 (case code) is a GTIN. The much-discussed RSS-14 symbology is also a GTIN. And the newest GTIN on the block is the SGTIN.

As noted in UCC's *GTIN Implementation Guide*, "A GTIN is used for the unique identification of trade items worldwide within the EAN.UCC System. A GTIN has a 14-digit data structure though its data carrier (bar code) may contain only 12-digits (the UPC), 13-digits (EAN-13) or 8-digits (EAN-8). The GTIN is defined as a 14-digit number to accommodate all the different structures."

Case and Pallet Coding

While consumer item coding (via the generic UPC and PLUs) was embraced by industry, case and pallet coding has seen slow adoption. Also, unlike consumer item coding, case and pallet coding does conform to the EAN.UCC guidelines when utilized. Adoption by the produce sector has been slow, however driving forces such as traceability and data synchronization/data catalogues is putting pressure on industry to adopt these methods of coding. (The advent of Radio Frequency Identification, RFID, has caused a great deal of discussion in industry relative to which method of case and pallet level identification should be adopted but it is clear that regardless of the data carrier utilized, the GTIN will be an integral part of the identification. There will be more on RFID later in the document.)

Case Codes (EAN.UCC-14)

The EAN.UCC-14, a GTIN formerly known as the SCC-14, is a 14 digit code used to identify fixed content shipping containers and can be printed in one of two symbologies:

- Interleaved 2 of 5 (also known as I 2 of 5 or ITF) or,
- UCC.EAN-128
- *The Interleaved 2 of 5* is a relatively large and simple symbology that consists of the GTIN "encased" in thick black bars. (Its size relates to scan capacity when printed on corrugated which does not allow for the same preciseness in ink adherence and therefore must contain simple lines for scanning.) The ITF has the advantage of direct print to corrugated capacity but is limited since it can only contain the company prefix and item reference number and does not allow for encoding of the lot number, and other data necessary for traceability. Because the information it contains is relatively static how ever, it allows for printing and inventory of cases for use in a future field or pack house

ITF-14 symbol

environment.

- *The UCC.EAN-128* is a much more complex symbology which occupies less space than the Interleaved 2 of 5 and can incorporate additional information through the use of Application Identifiers (AIs) in addition to the GTIN.

An Application Identifier (AI) is a prefix used to define the meaning and format of the information following in a data field. For example, (AI 01) indicates, in the following example, that the number that follows is a case level trade item number (or Case GTIN).

The case code is commonly considered for use as a trade unit defined in the Fresh Produce Traceability Guidelines (FPTG) as “any item or standard grouping of items made up to facilitate the operations of handling, storing, order preparation, shipping, etc.” A trade unit can be a box, case, bulk bin, or even a pallet in limited cases.

The UCC.EAN-128 symbology is not intended for data scanned at POS.

Pallet Codes (SSCC)

- *The Serial Shipping Container Code (SSCC-18 or EAN.UCC-18)* is commonly referred to as the pallet code or pallet license plate. The pallet code is commonly considered for use on a logistics unit defined in the FPTG as “an item of any composition established for transport and/or storage, which needs to be managed through the supply chain.” Logistic units require a unique identification number.

SSCC-18

An Overview of Emerging Technologies and Implications for Bar Coding

The following section addresses some of the issues concerning two emerging data capture technologies with potential to change produce coding at the consumer level:

- RSS-14 (Reduced Space Symbology -14)
- RFID - EPC (Radio Frequency Identification – Electronic Product Code)

This section also briefly discusses the implications for the future of bar codes, including case codes.

We are indebted to the CPMA/ACDFL White Paper on "Industry Technology and Efficiencies" (November, 2004) for this technology overview.

RSS-14

RSS stands for Reduced Space Symbology. While there are many different symbologies (or RSS bar codes) available, the produce industry has focused on the RSS-14 Stacked Omni directional bar code as a potential enhancement of the current PLU system for item identification and data capture for loose produce.

The term RSS-14 Stacked Omnidirectional refers to a reduced space symbology (or "baby bar code"), utilizing 14 digits in its data structure, with the lines and spaces stacked on top of each other, and capable of being scanned and read at Point Of Sale (POS) in all directions.

(01)Is the Application Identifier for a trade item.

(01)00611414100012
UCC/EAN-14 Identification of a

RSS-14 versus PLU

The UCC formed a working group in 1999 to examine the potential of the RSS-14 as a more efficient coding/data capture vehicle for produce sold loose/variable measure at retail. The limitations of the generic produce PLUs were evident at the point of data capture. While the PLU clearly identifies the commodity and often variety, it does so only in a human readable format and does not allow for identification of the supplier name or brand (except in a human readable format) – information necessary for enhanced category management and other efficiencies. While the human readable 4 or 5 digits representing the commodity/variety is key entered at POS by the cashier, the supplier company

name or brand is never captured at POS. In addition, human error in entering the PLU number, errors that can lead to significant losses.

How does the RSS-14 address these limitations?

- Since it is a bar code symbology, the RSS-14 can be scanned at POS, thereby eliminating human error.
- Since the RSS-14 is a GTIN, it allows for company and item identification and information capture in retail systems.

Questions about RSS-14

- Will it scan through the plastic bag consumers use to gather loose produce?
- What is the cost to implement RSS-14?
- Since it uses a GTIN structure, will the industry adopt the EAN.UCC System standard for item identification (in other words, each company assigns its own numbers for this part of the GTIN) or will the industry-governed PLUs be the item identification/reference component of the RSS-14?

Unfortunately these questions remain unanswered to a large degree. Pilots have struggled to get enough participation to make the findings meaningful, the issue surrounding the PLU is still being examined and the excitement around the newest data capture tool on the block, the EPC, has focused attention away from the RSS-14 to a certain degree.

RFID and EPC

It is difficult to imagine a technology topic which has generated more discussion recently in the produce sector than the RFID (Radio Frequency Identification) and the EPC (Electronic Product Code). Ask any retailer currently involved in testing and implementation and they will all say "It's not a matter of if, it's only a matter of when."

What is RFID?

RFID is a generic term for technologies that use radio waves to automatically identify individual items. It is helpful to think of the RFID as the physical carrier of the data, which is in the form of the EPC.

There are several methods of identifying objects using RFID, but the most common is to store a serial number that identifies a product, and perhaps other information (the EPC), on a microchip that is attached to an antenna (the chip and the antenna together are called an RFID transponder or an RFID tag). The antenna enables the chip to transmit the identification information to a reader. The reader converts the radio waves returned from the RFID tag into a form that can then be passed on to computers that can make use of it. *(Source: RFID Journal).*

What Is The EPC?

The EPC is a numbering scheme that uniquely identifies all objects and is built as part of a network, EPC Global. Each EPC on an item is the key to information about that item which exists on the EPC

Global network. In each country a division of EPC Global will manage the EPC system and the data carried through the EPC/RFID.
There are various EPC tag coding standards, depending on what the EPC is used for. For item identification, the EPC standard is the SGTIN. Like bar codes, the EPC (SGTIN) contains numbers that identify the company and the item but in addition the EPC (SGTIN) includes a serial number which uniquely identifies that particular item.

What is EPC Global's role? As noted by EAN International, "Under the terms of the agreement with the Auto-ID Center, EPC Global will oversee the development of open, global standards for the EPC Network to facilitate worldwide, multi-sector industry adoption."

Basic format of the EPC (SGTIN)

- *Header* – a number which identifies the length, type, structure, version and generation of the EPC.
- *EPC Manager Number* – which identifies the company or company entity (like the Company Prefix in a traditional bar code).
- *Object Class* – which is used to identify a class of objects – similar to the Item Refer ence portion of a traditional bar code or to an SKU.
- *Serial Number* – number to make each EPC/item unique (e.g., instead of indicating a 5-lb. bag of carrots, the serial number would uniquely identify it from every other 5-lb. bag of carrots in the world).

01.	203D2A9.	16E8B8.	719BAE03C
Header	EPC Manager Number	Object Class	Serial Number

Questions about RFID/EPC

Although there are many challenges concerning RFID/EPC, perhaps none is greater than the need for synchronization of data between trading partners. Without synchronization it has been suggested that all RFID will achieve will be the more efficient movement and collection of bad data.

As with all technology there will be slow and fast adopters but what may be the future legacy of the RFID is the unique identification of items via the EPC. This in itself represents a revolution at the case/trade unit (and consumer item) level. While the SSCC includes a unique serial number per pallet or logistics unit, this is not the case for items carrying an RFID tag. How important is this? The implications for traceability, supply chain logistics and other issues will form this answer for industry. One thing is clear, for companies like Wal-Mart, Metro AG, Tesco, Albertson's and others, the

projected savings with RFID implementation ensure its place in future supply chains.

Produce Pilot Study

Background

The produce pilot study included participants from growers through to retail and foodservice. The Canadian Produce Marketing Association identified traceability as a significant issue for the produce sector. A 2001 CPMA survey found that less than thirty percent of suppliers put bar codes on their pallets of boxes shipped. Those that did often used their own system, with no supplier ID and they used a variety of formats. The low adoption of traceability technologies and the lack of a common data standard would dramatically reduce the ability of stakeholders to respond to a food safety recall.

The issue of produce traceability is becoming increasingly important as the industry undergoes significant changes. Concentration at both the retail and distribution levels means that more products are flowing through a limited number of logistics locations and then flowing out to many retail locations. This magnifies the consequences of an untraceable recall. Rising produce movement (both domestic and import), increases supply chain complexity and the importance of traceability. In addition, new opportunities like organic produce, requires traceability systems to assure consumers that they are actually receiving product which are produced under organic standards.

From a produce firm perspective, industry-wide standards reduce the risks associated with investments in traceability systems. When companies make an investment they are assured that the system will capture, store and communicate data relevant to supply chain partners. To assist Can-Trace in setting and verifying standards RCM Technologies was asked to analyze two produce supply chain scenarios at a minimum, for “one up/one down” tracking and tracing. These chains were considered representative of typical Canadian produce supply chains.

The two scenarios were as follows:

- Scenario 1: Grower » Packer/Shipper » Distributor
- Scenario 2: Importer » Distributor » Retail/Foodservice

These chains were represented adequately by the participants involved and the Scenario 2 chain was analyzed in more depth than originally specified as two separate traceability simulations were executed. Thus, three separate simulations were executed against these two scenarios. A fourth traceability simulation, using a scenario beginning at a Hotel and tracing back to a local Grower was also executed.

Identity Preservation through the Supply Chain

There are two areas of the produce supply chain where identity of the product can be lost. Where product is not field-packed and is subjected to storage and/or sorting operations prior to packing, traceability back to growth date and field of origin can be lost. When product is with-

drawn from its case packaging and used by foodservice or displayed in retail product from multiple origins, it is typically blended together and unique identification can be lost. Also, as first-in, first-out handling principals cannot be guaranteed in these situations, identification can be further jeopardized.

Benefits Perceived By Participants

Participants acknowledged that the scope of recall can be reduced by implementing enhanced traceability systems. This leads to lower recall costs not only within the individual participant, but across the supply chain as a whole. There are costs associated with automating some business processes, but the overall benefits from automation (especially relating to speed and accuracy in data collection and management) should offset these.

The costs of recall are not necessarily born by the level accruing the costs. The costs tended to be pushed back down the chain and there are frequently negotiations over the costs and who will pay them. Reduced scope of recall can, thus, reduce both recall and related financial management activities associated with the recalls.

Improved response to food safety concerns was identified as a key benefit of traceability. Other perceived benefits included:

- faster responsiveness to changing customer demand;
- improved corporate reputation, or at least minimize negative impacts;
- increased product quality through better access to quality data;
- reduced liability;
- improved customer and government audit support; and
- reduced lost sales due to reduction in scope of recall.

Costs of Adding Traceability

In many cases the firms participating in the produce pilot study have much of the technology they require to implement traceability; so the technology costs and challenges for them may not be as significant as the industry generally perceives them to be. Participants showed some concern over the potential for increased labor costs associated with collecting traceability data. Automated systems can reduce the cost of collecting and managing data, as well as significantly reduce or eliminate errors in the information.

As some traceability benefits can only be achieved when an entire product supply chain is adequately traceable, a high degree of collaboration and industry planning will be required to oversee the delivery of whole-chain benefits. This notion will in turn lead to the whole question of cost-benefit allocation and balancing where in the value chain costs exceed the benefits and where benefits exceed costs.

Validating the Business Case Template Using the Produce Pilot Study

We have applied the model using the data from one of the participants. We have also illustrated how

the next step of analysis can be taken using the 3D Visible Enterprise *(further information on the Business Case Template is available at www.can-trace.org)*. Although the results are somewhat generalized since complete cost data was not available, it is apparent that there may be significant benefits from traceability. It is also obvious that moving to the next level of modeling can provide a much more comprehensive and thorough examination of the impacts across the entire chain and a detailed implementation plan.

APPENDIX V: Glossary

AIs (Application Identifiers) are predefined numbers enclosed by parentheses used in the EAN.UCC-128 bar code symbol to delineate additional information about the item.

Application is a group of software programs that provides functionality for the business (examples are General Ledger, Order Entry, Inventory, Quality Control, etc.).

Appt. is an Appointment Number.

ASN (Advance Shipment Notice) is an EDI transaction in which the shipper advises the receiver of a pending shipment. The ship notice/manifest enables the receiver or retailer to identify short shipments before receipt and plan warehouse receiving more efficiently. Also known as the EDI transaction sets 856 or 857.

Bar Code is the array of bars and spaces representing data. The combination of symbol characters and features required by a particular symbology, including quiet zones, start and stop characters, data characters, check characters, and other auxiliary patterns that together form a complete scannable entity. Also known as the bar code symbol.

Bill of Lading (BOL) is a document that establishes the terms of a contract between a shipper and a transportation company. It serves as a document of title, a contract of carriage and a receipt for goods.

Check Digit is a number found at the end of a UPC, GTIN, or SSCC for the purpose of verifying that all of the numbers preceding the last digit are accurate. The check digit is considered to be part of the number and should therefore be stored along with the other preceding digits.

Commercial Invoice represents a complete record of the transaction between exporter and importer with regard to the goods sold. Also reports the content of the shipment and serves as the basis for all other documents about the shipment.

Company Prefix is the number assigned to a company by either an EAN member organization or the UCC.

Consumer Unit is the smallest unit normally intended to be sold to the end retailer. Also known as an item or package (the product inside the carton when the lid has been opened).
Cool Store location is a physical location in which product is stored at cooled temperature for preservation.

Data Elements are pieces of information contained in an EDI document (for example, business address, quantity, sales price). Equivalent to data fields in a computer file.

Data Synchronization refers to data sent from the originator matching data stored at the receiver.

DC is a Distribution Center.

DOA is the Department of Agriculture.

DOT is the Department of Transportation.

Dry Case is cargo that is not liquid and normally does not require temperature control.

EAN FPT (Fresh Produce Traceability) Guidelines are aimed at providing a common approach to tracking and tracing fresh produce by mean of an internationally accepted numbering and bar coding system: the EAN.UCC system. See http://www.ean-int.org/Doc/TRA_0402.pdf

EAN.UCC System is a global standard numbering system to identify services and products. It comprises those standards endorsed by the EAN Member Organizations (including UCC and ECCC in North America).

ECCC (Electronic Commerce Council of Canada)/GS1 Canada is a not-for-profit, EAN Member Organization that promotes and maintains global standards for the identification of goods, locations and related e-commerce communication such as bar code issuance and maintenance.

EDI (Electronic Data Interchange) is the electronic exchange of structured information between locations over a telecommunications network. It usually refers to business transactions transmitted from one computer application to another computer application. It is a voluntary public standard.

Electronic Commerce is the conduct of business communications and management through electronic methods, such as EDI, fax, internet, e-mail, and automated collection systems.

FDA (The U.S. Food and Drug Administration) is a federal agency that has developed voluntary guidelines for Good Agricultural Practices (GAP) for reducing the potential for microbial contamination of produce.

GAP (Good Agricultural Practices) are guidelines established to ensure a clean and safe working

environment for all employees while eliminating the potential for contamination of food products. A GAP program addresses site selection, adjacent land use, fertilizer usage, water sourcing and usage, pest control and pesticide monitoring, harvesting practices (including worker hygiene, packaging storage, field sanitation, and product transportation), and cooler operations. Standard operating procedures are developed and incorporated into the GAP program providing guidance with respect to potential points for contamination and preventative or corrective measures to mitigate their effects.

GLN (Global Location Number) is a 13-digit number used to identify a location (similar to the Dunn and Bradstreet number). The GLN consists of two parts: a company prefix and a four-digit location number assigned by the owner of the GLN**.**

GTIN (Global Trade Item Number) is the umbrella term for several kinds of item numbers and a shorthand term for the EAN.UCC Global Trade Item Number. A GTIN may use the EAN.UCC-8, UCC-12, UCC-13 or UCC-14 Data Structure. This data structure comprises a 14-digit number that has four components: (1) an indicator, (2) a manufacturer prefix, (3) a unique number to that manufacturer, and (4) a check digit. The GTIN has gained a lot of traction in the consumer packaged goods (CPG) marketplace and has largely been the accepted standard for the packaged goods side of the business. The recommendation in this paper is to use the GTIN (EAN.UCC-14 Data Structure) at the case level.

HACCP (Hazard Analysis and Critical Control Point) is a food safety program for preventing hazards that could cause foodborne illnesses by applying science-based controls, from raw material to finished products.

- Analyze hazards
- Identify critical control points
- Establish preventive measures with critical limits for each control point
- Establish procedures to monitor the critical control points
- Establish corrective actions to be taken when monitoring shows that a critical limit has not been met
- Establish procedures to verify that the system is working properly
- Establish effective recordkeeping to document the HACCP system

Indicator is the first digit of the GTIN revealing the relationship of the number on the outside of the case to the number on the items inside the case.

IPD (Industry Product Database) is an initiative in the produce sector to help address product identification. It will enable a retailer's SKU# to be mapped to a supplier's product code (i.e. GTIN or other number). This will help facilitate data synchronization between trading partners. See **www.pma.com/IPDFactSheet.**

ISO (International Standards Organization) 9000 comprises eight quality management principles that can be used as a framework to guide organizations towards improved performance. They are:

- Customer Focus

- Leadership
- Involvement of people
- Process approach
- System approach to management
- Continual improvement
- Factual approach to decision making
- Mutually beneficial supplier relations

Item ID describes the five digits of the UPC-12, EAN-13 and EAN.UCC-14 numbers that are unique to each product for a specific company prefix. The item ID acts as a database key to an associated product description.

ITF (Interleaved 2 of 5) is a bar code symbology also called I 2/5. It is a 14-digit number often used to encode the GTIN for bar codes that need to be applied directly to corrugated cardboard.

IV Number is an Invoice Number.

Linear Bar Codes are one-dimensional bar codes that are read left to right or right to left.

Lot Number is one of several AI's that may be applied using EAN.UCC-128.

Maps are the work required to equate one piece of data received from a trading partner to the corresponding piece of data within another trading partner's system. When cross-referencing item numbers, maps must be created and stored for future use. Also known as mappings.

Multi-dimensional Bar Codes are non-linear bar codes that contain much more information than their linear counterparts.

Packaging Type is the first digit of the SSCC number indicating the type of container being used at the pallet level.

Packing Slip is an itemized list of commodities with marks/numbers but no cost values indicated.

Pallet is a platform with or without sides, on which a number of packages or pieces may be located to facilitate handling by a lift truck.

Phytosanitary Certificate is a certificate issued by Agriculture Canada to satisfy import regulations of foreign countries; indicates that a Canadian shipment has been inspected and found free from harmful pests and plant diseases.

PO is a Purchase Order.

POS (Point-of-Sale) is the retail checkout where consumer items with EAN.UCC bar code systems

are normally scanned.

Produce Attributes are additional characteristics of an item that assist in identification. In the context of this document, the attributes are defined by the PMA Produce Coding Attributes.

Product Code is a number issued by the supplier to internally distinguish it from other products. Used by itself, the product code has no value to anyone other than the supplier.

Product Traceability describes the qualitative follow-up of products. It essentially relies on correct record-keeping and the thoroughness of information concerning the product. A manufacturer uses it to find the causes of a quality fault either upstream, if the incident could have occurred at his supplier's premises, or downstream, if the incident could have occurred during shipping, for example.

RSS (Reduced Space Symbology) refers to a family of bar code symbols that can contain 14 characters of information. One member of the RSS family, the RSS Expanded, can hold up to 74 characters of information (but, because of its size, is also a larger bar code symbol). With the advent of the RSS, there is the potential to code a UPC-like format into a much smaller bar code symbol.

Scanner is an electronic device that reads bar codes and converts them into electrical signals understandable by a computer.

Serial Number links to the supplier's produce description attributes. The combination of supplier ID and serial number uniquely identifies the pallet globally.

Shipping Advice is a notice sent to a local or foreign buyer advising that shipment has gone forward and contains details of packing, routing, etc. A copy of the invoice is often enclosed and, if desired, a copy of the Bill of Lading.

SLOC Number Selection Location.

SSCC (Serial Shipping Container Code) is an 18-digit number comprising:

- a 1-digit extension number,
- a 2-digit number system character,
- a 5-digit manufacturer ID,
- a 9- digit serialized code to uniquely identify the shipment,
- a 1-digit check code.

This number (often represented in a bar code) is also known as the "license plate" used on variable content containers, pallets, and shipments.

Standard Product Identification is the number assigned to an item that abides by certain rules and conditions. The standards used for product identification in this document are governed by the EAN.UCC system.

Supplier ID is assigned by EAN member organizations (including ECCC and UCC in North America). Also known as the company prefix.
Symbology is a defined method of representing numeric or alphabetic digits using bars and spaces that are easily scanned by computer systems.

Ti-Hi Dimensions is the configuration of the number of cases in a pallet layer (Ti) and the number of layers on a pallet (Hi).

Tracing is the capability to identify the origin of a particular unit and/or batch of product located within the supply chain by reference to records held upstream in the supply chain. Products are traced for purposes such as product recall and investigating complaints. In the context of this document the focus is on tracing produce from retail to grower.

Tracking is the capability to follow the path of a specified unit of a product through the supply chain as it moves between organizations. Products are tracked routinely for obsolescence, inventory management, and logistical purposes. In the context of this document, the focus is on tracking produce from the grower to retail point of sale.

Trading Partner is a company that exchanges electronic documents as part of a predefined business relationship.

UCC™ (Uniform Code Council)/GS1 U.S. is a U.S.-based membership organization that jointly manages the EAN.UCC System with EAN International, and administers the EAN.UCC System in the United States and Canada.

UCN Number is a Unique Component Identification Number.

UPC Number (Universal Product Code) is the standard bar code symbol for retail food packages in the USA and Canada.

XML (eXtensible Markup Language) is a computer language used to exchange data. XML is a form of electronic commerce used similarly to EDI.

APPENDIX VI: Can-Trace Data Attributes Applicable to Produce

Acronyms

GTIN = EAN.UCC Global Trade Item Number

GLN = EAN.UCC Global Location Number

SSCC = EAN.UCC Serial Shipping Container Code

ISO = International Standard Organization

CLIA = Canadian Livestock Identification Agency

Data Attribute Name	Data Attribute Definition	Business Rules	Business Examples	Best Practice
Best Before Date OR Best If Used By Date	Product is the freshest to this date.	Optional Format ccyymmdd OR Canadian Food and Drug Regulation: YY (abbreviated month in English and French) dd	Sept 24 2004 expressed as 20040924	Ccyymmdd
Buyer Identifier	A number or code that uniquely represents the party purchasing the product.	Mandatory (Kept)	EAN.UCC GLN Internal Customer Number Dun & Bradstreet Number	EAN.UCC GLN
Buyer Name	The name of the party purchasing the product.	Optional	Customer Business Name	
Contact Information	The company contact information.	Optional	ABC Company Phone number Fax Number Email Address	
Country of Origin, Province or State	The country in which the goods have been packed, processed, or manufactured. Where required includes Province or State.	Optional	International Standard Organization (ISO) Codes: Country of Origin = Canada Expressed as “CA” Country / Province of Origin = Alberta, Canada Expressed as “CA-AB”	ISO Codes
Logistics Provider Identifier	A number or code that uniquely represents a transporter, carrier, or other 3rd party logistics provider.	Optional	EAN.UCC GLN Dun & Bradstreet Number	EAN.UCC LGN
Lot Number	A number or code assigned to uniquely represent a batch or group of inputs, products, and/or outputs. The number is generally assigned by the company or individual creating the goods.	Mandatory (Collected, Kept, Shared)	Lot Number Batch Number Production Number Best Before Date Pack Date	
Pack Date	The date that the product was packed.	Optional Format ccyymmdd	Date of Pack Sept 24 2004 expressed as 20040924	Ccyymmdd

Data Attribute Name	Data Attribute Definition	Business Rules	Business Examples	Best Practice
Product Description	A description of the product without any pre-defined format.	Mandatory (Collected, Kept, Shared)	3lb bag Carrots 12 - 6oz cans of Canada Fancy Corn	
Product Identifier	A number or code that uniquely represents a commercial trade Item. For Farm product: the product identifier uniquely distinguishes individual units of production (i.e. animal, bin, catch, flock). For processed or finished goods: the product identifier represents a seller's retail trade item (or product); or non-retail trade item (such as the case or master carton).	Mandatory (Collected, Kept, Shared) Note: Traceability of variable weight or bulk product may not be possible at the consumer unit level. Note: For traceability of processed or finished goods, the product Identifier has to be combined with a serial number or lot number in order to uniquely identify the particular trade item.	<u>For farm product:</u> EAN.UCC GTIN <u>For post-farm product:</u> EAN.UCC GTIN Proprietary Product Code	EAN.UCC GTIN
Quantity	Count, net weight, or net volume of product (trade item) identified. See Footnote 1, below.	Mandatory (Collected, Kept, Shared) Note: Quantity and Unit Of Measure must be used together.	10 20	
Receipt Date	Date that the shipment is received at its destination.	Optional	Ccyymmdd	
Ship Date	The date that goods were sent.	Optional	Sept 24 2004 expressed as 20040924	Ccyymmdd
Ship From Location Identifier	A number or code that uniquely identifies origin of the shipment. This location may be a premise, or a specific company location such as a manufacturing plant.	Optional Primary Producers will use, where available, location identifiers assigned for their sector.	EAN.UCC GLN Dun & Bradstreet Number + Proprietary Number	EAN.UCC GLN
Ship To Location Identifier	A number or code that represents destination of a shipment, which may be a premise or a specific company location.	Optional Primary Producers will use, where available, sector specific location solutions.	EAN.UCC GLN Dun & Bradstreet Number + Proprietary Number	EAN.UCC GLN
Shipment Identifier	A number or code that uniquely distinguishes a shipment of product. May be linked to a lot number.	Mandatory (Collected, Kept, Shared)	Bill of Lading Number Invoice Number (unique) Purchase Order Number Bill of Lading	

Data Attribute Name	Data Attribute Definition	Business Rules	Business Examples	Best Practice
Shipping Container Serial Number	A seller-assigned number that uniquely represents a logistic unit (i.e. case or pallet).	Optional	EAN.UCC SSCC Proprietary Pallet Number	EAN.UCC SSCC
Unit of Measure	Description of the units in which a quantity is being expressed. Note: Where this measure is used to describe weight, volume or count, a "net" value is applied. The term Net is taken to mean the product exclusive of its container or packaging. See Footnote 1, below.	Mandatory (Collected, Kept, Shared) Note: Quantity and Unit Of Measure must be used together	kilo, pound, litres case bin	
Unit of Trade	The logistic unit of weight of the product. This is the net weight.	Optional	Lbs, kg "11.5 KG" value – pounds, grams	
Vehicle Identifier	A number or code that uniquely represents a vehicle or a vessel transporting goods.	Optional	Truck Number Trailer Number Container Number	
Vendor/ Supplier Identifier	A number or code that uniquely represents the party selling the product.	Mandatory (Collected, Kept, Shared)	EAN.UCC GLN Internal Supplier code Dun & Bradstreet Number	
Vendor/ Supplier Name	The name of the party selling the goods.	Optional	Supplier business name	

[1.] There are two different EDI standards of codes used to describe Units of Measure and Package Type Description Codes: EANCOM and X12. Contact your national standards organization.