Traceability, Productivity and Compliance Labeling Requirements are driving the fresh food industry to use barcode technology—in the field, on the production line and in storage & shipping.

**CHALLENGE**

Being in the fresh food business means getting short shelf-life products to market as quickly and cost effectively as possible. Wholesalers and retailers are becoming more demanding and the processors, in order to comply with new requirements, are using barcode technology in increasing numbers.

**SOLUTION**

Alaskan fish processors have been using SIMBA software for over 25 years. It was designed in the late 1980’s with the purpose of reporting daily production to management and sales. Since then, the system has expanded to include printing compliance labels, tracking inventory, shipment verification, and complete lot traceability for food safety.

**FLEXIBILITY**

The fresh food industry encompasses everything from fish to produce to meat and poultry to berries and citrus fruits. Each product has its own unique challenges for production, handling and food safety. The following is a discussion of available and scalable solutions for fresh food growers, processors and packers.
With the passing of the Produce Traceability Initiative (PTI) and the recent recalls, the requirements for automation within the fresh food industry have become more complex. The following is a discussion of options available to the Growers, Processors and Packer/Shippers for production reporting, inventory management, lot traceability and shipment verification.

THE GROWER—AUTOMATION IN THE FIELD:

Ideally the Grower will initiate lot traceability in the field where the food is picked. That environment brings with it some complications: dust & moisture, lack of electricity, the requirement for simplicity and speed. The amount of information the Grower chooses to collect will define the system and equipment used.

Option 1: Label Only—A Grower may choose to simply label the cases with a barcode that can be used by the Packer/Shipper and other down-line facilities. This label will initiate the Lot, so the barcode itself should be well-designed. Our recommendation is to design a Lot Number formatted as follows:

2-digit Field Code—4-digit Date—3-digit sequence number
14       080212    001

So the Lot Number is 14080212001.

The barcode label contents is often dictated by the customer and can contain additional information. Scenarios:

Item #/Date/Weight/Lot#
Or
GS1 Supplier#/Item#/Lot#

The in-field labeling process can be managed by:

(1) Preprinting sequential labels and carrying a roll of these labels to the field. This would require a barcode printer, a PC and label-design software at the plant. Since this initiates the Lot traceability, it’s recommended a spreadsheet of the printed labels be retained, and any unused labels be “voided” on the spreadsheet.

(2) Printing labels in the field from a “workstation” that includes the printer, PC and label-design software enclosed in a shed or other weather-resistant enclosure. This would require power to run the various electronic components. Again, keep a spreadsheet of the labels printed. Voiding should not be required as labels can be printed on-demand as cases are packed onto the pallet, truck or van.

(3) A solution that includes a mobile scanning terminal, mobile printer and software that will allow the user to define the contents of the label on the fly. This solution would also include the ability to accumulate a database of cases packed and shipped. The advantage to this method is that the Grower now retains not only Lot traceability data, but can report production and shipments in detail. This expands the simple labeling action into a Field Production Management System.
PACKER-SHIPPER—PRODUCTION MANAGEMENT WITH TRACEABILITY:

The company that receives cartons from Growers and repackages them for shipment to the wholesale or retail customer will need a more complex system than the Grower. This system needs the added capabilities of palletizing and re-boxing or commingling product and inventory management.

PALLETIZING—This feature allows the packer to receive a number of cartons, accumulate them onto a pallet and print a barcode pallet label. All of the cartons on that pallet are associated with the one pallet number, so all can be “moved” or “shipped” with one scan.

COMMINGLING & RE-BOXING—The process of mixing lots (commingling) into one box or removing the contents of more than one box and mixing them in new boxes (re-boxing) add complications to Lot tracking. Any software used by the Packer/Shipper has to have these functions in order to maintain full Lot traceability. There are 2 distinct methods of handling these functions.

TRACK BY LOT OR BY CARTON?

There are two methods of maintaining traceability: (1) track the lots as they move through the supply chain; (2) track lots within cartons as the cartons move through the supply chain.

If a simple lot tracking method is used, as lots are commingled, all the included lots are considered contaminated in the case of a recall. For example:

Lot B is Commingled with a portion of Lots A&C (see diagram). Because there is no way in a straight-forward lot tracking scheme to differentiate which portions of Lots A&C have been commingled, if Lot B is recalled, so are Lots A&C in their entirety. This can get expensive.

A better method is by using a carton tracking scheme. The software accumulates carton data, defining which cartons contain which Lots. Then when Lot B is contaminated, only cartons B, A/B and B/C are recalled. This tracking method (re-boxing or commingling lots by carton) would also pertain to any recalled ingredients in processed foods.

FOOD PROCESSING—When a company alters the fresh food (chops it up; adds ingredients, etc.) the re-boxing and commingling processes are a given.

PRODUCTION SPEED—Fresh food needs to be handled quickly and efficiently in order to retain maximum freshness. The system should be designed for speedy transactions. The SIMBA Food Production and Traceability system uses touch screen technology to solve this problem.
The attributes of the food product (species, grade, size/weight, etc.) and functions (re-box, palletize, print) are selected by touching “buttons” on the touch screen. It’s fast and easy to understand.

**INVENTORY MANAGEMENT:**

Any time the product is stored and then moved or shipped, barcode can be valuable. Inventory management software (or a module within a larger software product) can, with the simple scan of a location barcode and the pallet or carton barcode, record the storage location of that carton or pallet. Current inventory data is then available to sales or production with 99%+ accuracy. Companies who have implemented barcode in their warehouse facilities have on average recognized 50-80% increased productivity.

**THE IMPORTANCE OF SHIPMENT VERIFICATION**

Every company has had shipment disputes. Ideally it would be possible to retain proof of what was contained in a specific shipment. Using a method of shipment verification (sometimes called “van loading”) solves this problem.

As cartons are accumulated onto pallets and loaded onto vans, each is accounted for using a barcode scanning application. Each carton number is assigned to a van and included on the manifest, which is automatically produced. When a customer claims there are cartons missing, it is now possible to prove what was loaded.

**SUMMARY:**

A barcode-based system of inventory management and Lot tracking provides the detailed information that a Grower, Packer, Processor or Shipper needs to both run an efficient, profitable business, and respond to recall and traceability requirements. Key areas to look for:

- Ease of use and speed of production
- Detailed inventory management
- Re-box and Commingling by the Carton
- Shipment Verification
- Equipment designed with the environment in mind
- Support available from the systems integrator

Flow charts of various scenarios are available upon request.

For more information go to: [http://www.a-barcode.com/software/food-traceability/](http://www.a-barcode.com/software/food-traceability/)

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