

**Traceability Implementation Project (TIP):  
Successfully Tracking Product Movement  
From Formulator to Field**

**Executive Summary  
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## **Traceability Implementation Project (TIP): Successfully Tracking Product Movement From Formulator to Field**

### ***An Ag Retailer's Perspective***

In spring 2007, the Food and Drug Administration warned consumers nationwide about tomatoes, and later serrano peppers from Mexico, possibly being linked to a *Salmonella* Saintpaul outbreak. In 2006, three people died and more than 100 people were hospitalized as a result of spinach contaminated with *E. coli* bacteria. The U.S. Centers for Disease Control and Prevention estimate that food borne illnesses cause approximately 5,000 deaths in the U.S. each year.

These recent food safety issues have underscored the importance of product traceability. Although the industry admits tracking is laborious and not without gaps, there is broad agreement that improvements must be made to meet consumer expectations. In both recent cases, industry traceability systems provided the information necessary to isolate the location of the contaminated produce. In the case concerning tomatoes, however, the difficulty in isolating the cause and initial diagnosis of contamination contributed to an estimated decline in sales of fresh tomatoes by as much as 60 percent.

Because of serious human health and economic consequences, industry will likely be required to track products throughout the supply chain in the future. Many believe that Homeland Security will eventually regulate product tracking.

### **Traceability Implementation Project (TIP)**

Over the last few years, the Mid America Crop Life Association (MACA)\* has been in the process of proactively developing guidelines that could be used to trace a crop input, such as fertilizer, seed or crop protection product, from the time it enters an agricultural retail dealership to the point it is applied in a grower's field. Such tracking would be extremely helpful in the event of a food, environmental or public safety issue.

At the same time, an effective tracking system will enable retailers to increase efficiency; manage inventory and billing on a more real-time basis; reduce workload and manual input errors; and provide a viable record in the case of liability issues.

Moreover, it will help growers to better evaluate product performance; improve efficiency and profitability; and assure that all products are custom applied in compliance with environmental regulations.

MACA formed the Track and Trace Committee in 2004 and began funding the Traceability Implementation Project (TIP) in 2005. The organization's goal is to establish traceability guidelines that agricultural retailers across the country can integrate into their daily business operations using a variety of business enterprise systems. TIP will highlight the importance of the data capture process and provide a knowledge base that

TIP leaders can then call upon as they play a role in shaping universal traceability guidelines.

Tracking product from the retailer to the producer is already being done to varying degrees. The adoption of traceability systems is probably most well developed in the beef cattle/meat industry where between 1,000 and 1,500 operations every week are reported to be registering with the USDA's National Animal Identification System (NAIS). The NAIS was established in 2004 in response to the discovery of a cow confirmed positive for Bovine Spongiform Encephalopathy in December 2003. NAIS is a voluntary system designed to identify any agricultural operation exposed to a foreign animal disease so that control measures can be more quickly implemented. It includes premises registration, animal identification and an animal tracking database.

While many ag retailers have various systems in place to help meet some operations and purposes (field mapping capabilities, for example), a complete, standardized system for tracking product (which, at ag dealerships, may be mixed with other lots or re-palletized) does not yet exist. Without traceability guidelines, it will be difficult to develop a system that could access product placement data from ag retailers across the country. Ag retail is *the industry action point* where the last knowledge of product movement resides.

#### **Adoption Dependent on Stakeholder Benefits**

Traceability must connect all players and all products (crop protection products, fertilizer, seed and retail services) in the ag supply chain. The successful adoption of TIP will be dependent upon the benefits it offers stakeholders: manufacturers, distributors, ag retailers and growers. Traceability can electronically connect the ag supply chain, which will lead to greater efficiencies of product stewardship, a critical issue as product prices rise.

Success also will depend upon the choice and seamless integration of a variety of business tools, such as inventory management devices and software, to help facilitate the process. The third measure of success will depend upon TIP's ability to be replicated efficiently and cost effectively across the ag retailing sector. Recognizing this, MACA began the TIP pilot program in 2006 with three ag retailers to track products and evaluate return on investment.

Now in the Proof of Concept stage, MACA will eventually take the information learned from these retail test sites and refine traceability guidelines that may be universally adopted.

#### **Existing Technologies Used in Innovative Way**

The TIP participating retailers tested innovations that were all derived from existing technologies. The key to innovation is knowledge of the user environment and the desire to apply these technologies.

The TIP test program has demonstrated the following technologies: wireless scanners; software that integrates to retail accounting systems as well as captures total product

movement; the same software with a Web-based application; and handheld reporting devices that custom applicators can use in the field.

At the beginning of the project, the ag retailers recorded their physical inventories of crop protection, seed and liquid fertilizer into the software program which tracks product from inventory through booking to field application. The retailers repeated their physical inventory every two weeks. Since 2006, MACA has invested substantial resources in the traceability program.

Utilizing a wireless scanner that scans barcode or Radio Frequency Identification (RFID) chip data, the retailers could track incoming supplier shipments, outgoing sales, customer returns and returns to the distributors. The scanner also features a drop down menu that allows users to manually key in product identification at the outset and then input quantity without bar codes or RFID as needed.

### **Barcoding Challenge**

A key industry challenge will be to get manufacturers and distributors to put barcodes on all of their products. One of the participating retailers noted that some products do not have any barcodes while some packages are “hit and miss.” The retailer explained that if one has three different products on one pallet, for example, the pallet tag should have barcode information for all three products. The retailer also recommended that the barcode be placed in a very convenient place to facilitate warehouse scanning. A box of 10-ounce bottles of a product should have a barcode on both the box and at the top of each bottle, for example.

### **Attacking Costly Shrinkage**

Manufacturers have not always had a good reason to invest the time and expense in barcoding products, but now there is a need and use, the retailer said. With traceability technology, a manufacturer, distributor or retailer could eliminate most inventory errors and reduce shrink.

The participating retailer added that with the steadily increasing cost of crop inputs, early identification of shrink can make a tremendous difference in one’s bottom line. With the technology used in TIP, this dealership was able to take inventory once daily versus once a month and cross reference the inventory management and accounting applications to ensure product numbers matched up.

The inventory management application can communicate with the retailers’ accounting systems. This, in addition to the scanner, allows for more up-to-date inventory management as well as the ability to bill on a more real-time basis. The technology can also be used to create shipping documents for government agencies, such as departments of transportation or agriculture.

Many retailers use a combination of software and paper forms to manage inventory. However, information from paper forms that are used to receive and ship products from inventory require manual input into back office systems. Manual input often results in

errors and time delays, which puts the warehouse manager at a disadvantage and can result in costly shrinkage. *By reducing shrink by as little as one percent, one could see a payback in the equipment in 12 to 18 months.*

### **Labor Saver**

The retailers participating in TIP also use software which operates on a handheld device for remote locations. This allows the custom applicator driver to call up scheduled orders in the field. The device calculates the quantities of product needed for each load. At the end of the day, the custom applicator can dock the device at the office computer system and transfer completed orders to the retailer's server and schedule program. This can also serve as a record in case of spray drift liability issues. The operator can use the device to record wind direction and speed as well as product and amount applied.

One of the participating retailers noted that the traceability technology has reduced the amount of time each operator would otherwise need to spend completing reports by 15 minutes to two hours per day. The device has helped reduce labor time and the potential for application errors. At the end of the day, the inputted information is sent to billing. Applicator driver log books are automatically completed.

One of the participating retailers said that the traceability system is probably *the* most significant "human saver" that he has seen in his business for some time. The field device reduces the applicator's workload and stress level, particularly in the spring busy season, he said.

### **Improved Grower Decision-Making**

The robust software's Web-based application allows the retailers' grower customers to go online, access maps and enter crop inputs that they themselves have applied on a field by field basis. Accurate recording of field placement of products applied by the grower, however, remains a challenge to be overcome.

The Web-based application will allow retailers to share real-time information, such as crop plans and application orders, with grower participants. Using a login, the growers will be able to access the information via the retailer's Website. Collecting such information at the field level should enable dealers to engage in more consultative selling and strengthen relationships with growers. Retailers will be better able to provide agronomy services from both current and historical data gathered through the traceability system.

### **Implementation in Stages**

Any ag retail system will be modular—with various components that could be implemented to solve specific traceability tasks. Traceability systems will be implemented in stages solving the most critical issues first. Software components will range between \$1,500 and \$2,500 per module per location (multiple components will be required for a complete solution). The number of components will be dependent on individual needs.

### **Grower and Other Stakeholder Benefits**

Ultimately, growers will need to see the value of providing field data to retailers to make traceability a success. TIP has identified several grower benefits, including: enhanced awareness of crop inputs by field as well as by input package performance; improved efficiency and profitability; assurance that all products are applied in compliance with regulations; and leverage of other technology investments, such as GPS equipment, yield monitors and variable rate application technology.

Traceability also can help strengthen the grower's relationship with grain handlers and food, feed, fuel and fiber processors. The grain handler, for example, will have better assurance that the grower's crop has met production requirements while the processors are more assured that grain met their purchase specifications.

Many growers are protective of their data and are wary of retailers or manufacturers having access to it. One of the participating retailers said that for the TIP concept to work, retailers and regulatory officials at the local level must be called upon to communicate the advantages of traceability to growers. TIP must be explained in a way that helps growers realize traceability will help them maximize their returns on investment. The retailer suggested working with progressive farmers on the local level to test the traceability system so that they can then answer questions and communicate benefits to their peers. Working with innovative growers will be key to the success of the concept.

Finally, as each group of industry players understands the benefits of the system and then implements guidelines, traceability will help better assure consumers that their food is being safely produced and that problems can be targeted should they arise.

*\* The Mid America CropLife Association (MACA) is a non-profit association of manufacturers, distributors/formulators and allied industry of crop protection products in 13 Midwestern states. MACA works to identify existing and emerging issues relating to agribusiness and to take action to address those issues identified as important to its members.*

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