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Emerging Trends in US Logistics Part II: Food Safety Trends

The supply chain of fresh vegetables in the US. Part II: food safety trends.

Risks in global food chains

Food safety is becoming news for all the wrong reasons: the melamine contamination in China, the finding of salmonella in peanut butter in the US, the failure of 10% of food outlets in NSW in passing basic food safety inspections...no wonder consumers are getting nervous about this issue.

The risk profile of fresh foods in particular has been influenced by modern supply demand dynamics, namely:

- Modification in agronomic practices, processing and packaging technologies.
- Evolution of global supply chains, which provide horticultural products sourced from many regions, all year round.
- Changes in population demographics (e.g. an increase of the elderly population segment worldwide).
- Emerging medical conditions that compromise the human immune system (e.g. HIV).
- Increasing popularity of fresh fruit and vegetables, as a result of the recognition of their nutritional benefits.

During my visits to the fresh produce industry in California last year, sponsored by the Logistics Association of Australia and CHEP Asia-Pacific, I held meetings with several food safety experts that helped me to understand the impact of supply chain practices on the US lettuce industry. My thanks to Ramon Aboytes (Director of Microbiology, IEH Laboratories & Consulting), Maria Brandl (Produce Safety and Microbiology Research Unit, United States Department of Agriculture), Greg Komar (Technical Manager at NSF Davis Fresh NSF Davis Fresh), and Lisa Lurie (Agriculture Water Coordinator at the Agriculture and Water Quality Alliance).

Food safety hazards in fresh produce

Fresh produce rates high in the scale of food safety risks. Outbreaks and cases of diseases associated to the consumption of fresh fruit and vegetables and unpasteurized juices have been on the increase in recent years. In the USA, 45% of foodborne illnesses cases reported from 1998 to 2006 were due to contaminated fresh produce. In Australia, 23 outbreaks reported since 1991 have been attributed to consumption of fresh fruit and vegetables.

Food poisoning illnesses can have long lasting consequences in the victims, as illustrated by a series of E.Coli O157:H7 outbreaks in the US during 2006: as a result of the consumption of contaminated shredded lettuce in several franchises of a fast food restaurant chain, 53 people were hospitalised and 8 people developed hemolytic uremic syndrome (HUS), a disease that leads to kidney failure. Another similar incident with contaminated spinach led to 102 hospitalizations, 31 cases of HUS and 3 deaths in the same year.

I was fortunate to meet staff that worked in some of the companies involved in the food safety incidents mentioned above. The emotional stress that these people and their colleagues went through, arising from the intense scrutiny during the investigation of the outbreaks and the media focus on the victims, made a lasting impact on the way these professionals now see their jobs and responsibilities. There is no doubt in my mind that a breach in food safety leading to life threatening consequences to consumers is one of the most difficult situations that a supply chain manager can face.

The present state of food safety in Californian leafy greens

The outbreak episodes mentioned above prompted the creation of the Leafy Green Products Handler Marketing Agreement (LGMA) in 2007. The LGMA uses a combination of self regulation and government enforced rules that are followed by producers representing approximately 99% of the volume of Californian leafy greens. LGMA membership requires verification of compliance with the accepted food safety practices through mandatory government audits.

Further, the Produce Marketing Association (PMA) and other produce associations released the Produce Industry Traceability Initiative, which helps the industry maximize the effectiveness of current traceback procedures, while developing a standardized

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industry approach to enhance the speed and efficiency of traceability systems for the future.

Traceability in the food chain

Many of the companies I visited in Salinas have excellent records of where the product has been harvested. Packages have a unique product code that contains all the elements needed for effective traceback such as the manufacturing plant code, the date of production, the shift, the packaging line and a "Best if Used By" (BIUB) date. However, I noticed that product sourced from other countries (e.g. South and Central America) was processed, bagged and stored in the same facilities that held fully traceable product grown in the US.

After manufacture, salad boxes are transported to several states and beyond the American border to Canada and other countries. This is accomplished through a variety of distribution channels such as retail, independent grocery stores, foodservice and organic. The most complex distribution networks can have over five nodes between farm and consumer. Although some may be "paper links" (i.e. a paper trail from one buyer to another), most links in the chain involve the physical movement of food shipments using the distribution centres and transport capabilities of the supply chain partners. Depending on the level of coordination and communication across the chain, the product will be subjected to different levels of food safety practices and systems.

When the product arrives at a home, hospital or (perhaps most importantly) a restaurant, the packaging is discarded and the product code disappears with it. After that point, tracing back the product becomes even more difficult.

After a contamination is detected and the Crisis Management Program develops, several questions arise, such as: Where was the product contaminated (in the field, at the plant, during transport)? In a DC (which one)? Was the contamination intentional or accidental? How many lots were affected? Where is the contaminated product right now? The answers to these questions needs to be provided in a very short timeframe, to avoid further damage to consumers and to the reputation of the companies involved in the distribution and preparation of the contaminated food. Planning and assistance from all parties involved is essential in these cases.

Future issues: the link between food safety and environmental impacts

Focus on the environmental impacts of horticulture in California has prompted discussions on the need to reconcile perceived conflicts between food safety and environmental protection. For example, many US growers face increasing pressure from auditors and buyers to remove vegetation and wildlife from their farms in the interest of food safety. Further, the use of recycled water for horticultural crops is controversial, with some arguing that pathogens and harmful chemicals are not eliminated through standard water treatments, while others believe that high quality recycled water can be safely used for irrigating fresh vegetables.

Environmental drivers are also leading to the development of new distribution models, such as urban, local and regional chains, which aim to decrease the distances between growers and markets. Other future developments may lead to sharing of distribution networks and infrastructure between supply chain partners: although not popular for the distribution of highly perishable items, the model is being used by Kraft, Nestle, Heinz, Unilever and several retailers in Europe for transporting shelf-stable foods.

In the US, the Clean Cargo Working Group is a multi-sector, business-to-business collaboration between ocean carriers, freight forwarders and shippers of cargo. Members of this group include Coca-Cola, Wal-Mart, Chiquita Brands and Starbucks, among other companies involved in food manufacturing.

Tools used to enhance communication between participants are annual environmental surveys, intermodal emission calculators and CSR performance surveys.

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