Maize to Milk: An Analysis of the Traceability Systems of Bulk Commodities

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Presentation Outline

- Terminology
- Standards and Regulations
- Current Affairs
- Project Description
- Project Objectives
- Methodology
- Progress
- Recommendations
- Future Work
Terminology

- **Traceability**: the ability to track any food, feed, food-producing animal or substance that will be used for consumption, through all the stages of production, processing, and distribution (Official Journal of the European Union, 2002).

- **Traceability system**: totality of data and operations that is capable of maintaining desired information about a product and its components through all or part of its production and utilization chain. (International Organization of Standardization, 2007).

- **Tracking**: is the capability to follow the path of a specified unit and/or lot of trade items downstream through the supply chain as it moves between trading partners. (Can-Trace, 2004).

- **Tracing**: is the capability to identify the origin of a particular unit located within the supply chain by reference to records help upstream in the supply chain. (Can-Trace, 2004).
Terminology continued….

- **Internal Traceability**: monitors a product as it is delivered, processed, combined, packaged, within a facility.
- **External Traceability**: monitors a product from raw ingredients through processing to the consumer.
Standards and Regulations

- United States
  - Public Health Security and Bioterrorism Preparedness Act (June, 2002).

- European Union
  - EC 1829/2003 GM Food and Feed (September, 2003).

- Canada

- Internationally
  - ISO 22000 (September, 2005).
  - ISO 22005 (July, 2007).
Current Affairs

- Bovine Spongiform Encephalopathy
  - “Mad Cow Disease”

- Aflatoxin

- E. Coli O157:H7

- Salmonella

- Melamine

- Salmonella
What’s Next?

Internal Traceability

External Traceability

Bulk Commodities

Corporate Interest
1. Analyze internal traceability system currently in place by each respective entity.

2. Analyze external traceability system among all participants.

3. Analyze information exchange between each entity.
Project Objectives

- Create a model/map for tracing these commodities from corn to milk.

- Identify gaps in the traceability systems.

- Provide quality control/quality management strategies and recommendations to improve the external traceability system.
Methodology

Dairy Company Selection
February 8

Meeting with Assistant
Director of Plant Operations
July 15

Assessment

Meeting with Quality
Assurance Director
June 19

Plant Tour
June 20

Recommendations

Kick-off Meeting
April 3

Dairy Farm Tour
And Interview
July 23
Assessment

ISO 22005

Objectives

Products/Ingredients
Flow of Materials
Information Requirements
Documentation Requirements
Establishment of Procedures
Feed and food chain coordination

Regulatory/Policy Requirements
Position in the food chain

Processing Facility

HACCP
GMP's
Pre requisite Programs
Product Flow Diagram
Supplier Guarantee Program
Quality Testing
Biological Testing
Paper Data Capture
Quality Control Procedures

Electronic Data Capture
Supply Chain Mapping

Feed Inputs

Alfalfa Hay → Wheat Straw → Ground Corn → Wet Corn Gluten → Corn Silage → Soybean Meal → DDGS

Suppliers

Ethanol Plant

Brokerage

Nutrition

Lineage Antibiotics Illnesses

Cattle

Milk Supplier

Dairy Farms

Dairy Processor

Milk Supplier

Milk Supplier Inc.

Dairy Processing, Inc.
- Date Received
- Supplier
- Bill of Lading
- Operator
- Silo Destination
- Silo Level

- Silo Source
- Product
- Product Total
- Product Destination
- Cream Destination
- Cream Total

- Filler ID
- Product Description
- PT Tank Source
- Date Received
- UPC Number
- Sell By Date
- Cooler Location
- Pallet ID
- Quantity
- Product Destination
- Route ID
- Order Number
Identified Gaps

- Inconsistent data capture, both electronic and paper.
- Lack of a product recall procedure
- Lack of objectives, the foundation of an ISO 22005 traceability system.
Quality Control/Quality Management Strategies

- Standardization of data collection methods and adoption of uniform data format.
- Implementation of product standards at the processor level that will subsequently affect the entire supply chain.
- Requirement of all suppliers to develop and implement defined traceability systems to achieve feed and food chain coordination.
- Implementation of monitoring and verification systems to ensure supplier compliance with company standards.
Future Work

- Work with management to develop recall policy.

- Implement traceability concepts in already established quality assurance and HACCP procedures.

- Eventually, develop a defined traceability system based on ISO 22005 standards.
Thank You!