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TRACKING AND TRACEABILITY SYSTEM USING LIVESTOCK IRIS CODE IN MEAT SUPPLY CHAIN

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Abstract. *As the global development of food industry and trade, emergent event on food safety shows rapid expansion and spreading, such as hand-foot-and-mouth disease and bovine spongiform encephalopathy (BSE or mad cow disease). Food safety concerns have put tracking and tracing at the center point of discussion. However, in food commodities, the establishment of tracking and tracing capability meets many barriers that have prevented their broad use. The prominent problem is to establish a feasible identification (ID) system capable of quick tracking animals from birth to slaughter, and tracing meat from consumer to farm. This paper introduces a tracking and traceability system for meat supply chain, using livestock iris code. In the tracking module, iris code is used to mark large animal, such as pig, cattle and sheep, which are the main source of meat. And in the traceability module, two-dimension iris code, generated from the iris code, is printed in product package to help consumers to trace the product from supermarket to plant. This paper takes cattle as an experimental object, and generates iris code by using suitable algorithms.*

Keywords: Tracking and traceability, Iris code, Meat supply chain, Two-dimension iris code, Food safety

1. **Introduction.** Supply chain management has been a hot spot of the management science. Many researches focus on innovating supply chain management to improve supply chain performance, such as joint building inventory mechanism [1] and virtual supply chain mechanism [2]. Meanwhile, the safety of supply chain, especially the food supply chain, draws much attention, for serious outbreaks of food diseases (e.g., BSE, dioxin contamination of animal feeds and hand-foot-and-mouth disease). These events posed a threat to food safety and human health. Much more serious, these food safety accidents not only directly led to the decline in market sales volume, but also a blow to consumer confidence in buying.

Public and industry concerns over food safety have grown considerably over the last decade. Food safety has been perceived and positioned as the voluntary responsibility of companies. Tracking and traceability system, capable of tracking animals from birth to slaughter and tracing from consumer back to farm, is considered as a good solution to better deal with food safety events. Meat producers believe such a system is needed to better deal with animal diseases or meet foreign market specifications, while some consumer groups and others believe the system is also useful for retail information purpose. According to the survey carried out in China [3], consumers are willing to pay a 6% premium for traceable fishery products over the price of no-traced products.