

In an increasingly competitive food system like that of fish and fish products, traceability has become a major tool in dealing with concerns of food safety, quality assurance, risk prevention, and in gaining consumer trust.



Development and adoption of traceability system for fish and fish products in Asia



TRACEABILITY ENTAILS ACCESS to relevant data in the fish/product chain, from catch or farming to consumption. Systems for traceability of fish products are deemed necessary as key elements in ensuring quality and safety, and because consumers demand ever more information about the food they eat. The overriding goal of traceability is to reinforce the consumers' faith in fish products as high-quality, healthy, clean and safe. However, despite the noticeable development of traceability systems worldwide, some important questions remain open, particularly at the level of international fish trade and how small-scale fish farmers can cope with these rigid procedures and standards.

Over the last three decades, technological advances in capture fisheries and aquaculture, globalization trends, and market and consumer demands have resulted in the continued growth in the production and trading of fish and fish products. Along with these trends, traceability has become a major concern of the fishery industries, especially as it became a legitimate requirement in international fish trade and, more recently, in the growth of fish retailing in food supermarket chains. Furthermore, as fisheries and aquaculture production becomes more market and consumer driven, the greatest pressure on traceability has been coming from the general public. People are getting more and more concerned on what they eat — whether the food comes from a sustainable source and produced through eco-friendly methods, and whether production, transportation, and storage conditions can guarantee food safety.

The Codex Alimentarius Commission (2004) defined traceability or product tracing as the ability to follow the movement of a food through specified stage(s) of production, processing and distribution. In an increasingly competitive food system, traceability has become a major tool in dealing with concerns of food safety, quality assurance, risk prevention, and gaining consumer trust. For fish and fish products, however, traceability systems can be complex.

They can be used to achieve different purposes or objectives, such as for food safety regulatory requirements or to ensure quality and other contractual requirements. For instance, external traceability allows the tracking of a product and/or attribute(s) of that product through the successive stages of the distribution chain (from boat or fish farm to table), while internal traceability is aimed at productivity improvement and cost reduction within a production unit (e.g. fish plant). In addition, the authentication of traceability system usually rests with different authorities, at the same time that governments/organizations around the world have been developing different standards and guidelines on fish traceability and food safety.

In view of these developments, how can small-scale fish farmers, especially in some Asian developing countries and countries in transition, cope in terms of meeting traceability requirements to enable them to participate and compete in the network of fisheries and aquaculture production, marketing, and trade?

Promoting a better understanding of fish traceability

The above issues set the scene for the international workshop sponsored by FFTC and co-organized by the Indonesian Research Center for Aquaculture held in Bali, Indonesia in November 2007 attended by 12 speakers representing 8 countries in Asia and about 20 local participants. The main objective of the workshop was to provide a venue for the sharing and exchange of knowledge, information, and practical tools toward the development and adoption of a suitable fish and fish products traceability system in Asia, considering the great complexity of the production and distribution chain, as well as the prevailing characteristics of the fish industry in the region.

Specifically, the participants deliberated on: the development of traceability systems in the fish supply chain to meet both regulatory and market requirements domestically and internationally; methods of system

Photos courtesy of F.L. Chen, National Taiwan Ocean University, Taiwan ROC.



As fisheries and aquaculture production becomes more market and consumer driven, people are getting increasingly concerned on what they eat - whether the food comes from a sustainable source and produced through eco-friendly methods, and whether production, transportation, and storage conditions can guarantee food safety.

analysis, technological solutions, data capture and communications along the supply chain; and how all these can be applied within each country's fish industry, eventually toward harmonizing standards and guidelines among trading countries.

The workshop also sought to promote the importance of a traceability system in giving each country in Asia a better opportunity not only in terms of trading, but also in improving overall fish industry management, market position, and competitive edge by ensuring food safety, quality and sustainability of resources.

Why fish traceability?

The growth of the aquaculture industry worldwide has led to significant changes on how its products are perceived and marketed. In becoming an important contributor to the markets for seafood, aquaculture is increasingly subject to safety mechanisms and controls, such as the HACCP particularly in some developed regions. As both safety and trade regulations are harmonized at international levels, quantitative risk assessment and traceability will become integral components of aquaculture management.

Furthermore, as fisheries and aquaculture production becomes more market and consumer driven, people are getting increasingly concerned on what they eat - whether the food comes from a

sustainable source and produced through eco-friendly methods, and whether production, transportation, and storage conditions can guarantee food safety.

Developing countries have increased their share of the seafood export market to nearly 50 percent of global trade, a significant portion being represented by aquaculture products. However, the long-term viability of aquaculture development will very much depend on the capacity of each country to meet the demands of the target markets, particularly the assurance of sustainability, traceability and interactions with the environment. These, alongside quality schemes and safety management, will dictate the survival of the aquaculture industry particularly in the developing regions of the world.

During the workshop, the discussions and deliberation revolved on how traceability system can be applied within each country's fish industry situation, eventually toward harmonizing standards and guidelines among trading countries, and giving small-scale fish farmers in the region a better stake and opportunity to cope with these rigid procedures.

Issues and concerns

One of the major issues concerning fish traceability identified during the workshop is the need for effective legal, technical, and administrative

frameworks in the implementation of food safety management systems. Governments must have the political will to take the necessary steps to develop, adopt and implement their own comprehensive national food safety standards, incorporating traceability as one of the key elements. Asian countries must also use as basis existing international standards, guidelines and codes of practice (such as CODEX, HACCP, GAP/GMP/GHP, ISO 9000/01) to meet food quality and safety standards and hence facilitate trading among exporting and importing countries.

Among Asian countries, the level of safety management systems in agriculture/aquaculture production and distribution, wherein traceability system is an integral component, varies considerably due to differences in socioeconomic conditions. Some countries are more advanced than the others in terms of implementing Good Agriculture/Aquaculture Practice (GAP) protocols and traceability systems, while some are still in the level of consolidating a mix of best practices in agriculture/aquaculture production and distribution.

In more advanced countries in the region, GAP protocols and quality management systems are in

place, as well as guidelines and implementing mechanisms on food traceability. These include safety policies and guidelines, and risk assessment regulations and certification for fish and fish products.

While fish traceability is not mandatory in most countries, it is critical to advocate strong government support, political will and legislation in promoting GAP and traceability, particularly in terms of standardization/certification, farmers' education and training, research and development on quality management systems, and funding to develop and maintain traceability systems.

Compliance by the fish farmers must also be encouraged through intensified extension/promotional and educational activities, as well as consumer awareness on the importance of traceability system to ensure food safety and quality, and toward the sustainability of resources.

Prospects and recommendations

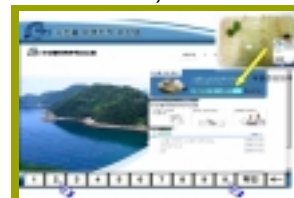
In the context of a globalizing economy, there should be domestic policy support in favor of small- and medium-scale fish farmers. In some developing countries, one way to successfully introduce GAP



Traceable fishery products in the supermarket

Consumers can retrieve fishery product history information through a barcode system terminal installed in some supermarkets in Korea.

Product history information



Consumer retrieves traceability information using barcode terminal.

protocols is to encourage, promote and support group fish farming or production and marketing units.

Enabling policies (e.g. government subsidy) must also be made available to small-scale fish farmers, and they must be provided with training and support services to improve their capacity to adopt safety management systems and traceability.

Cost is a major issue in the development and adoption of traceability system for fish and fish products. Hence, the success of a system (such as bar code, RFID, etc.) is not so much an issue of technology, but of cost-effectiveness. Consumers must also be willing to pay for better access to information on product history, from production to distribution, and attain product trust and satisfaction. Finally, small producers must be provided with incentives such as a better opportunity not only in terms of trading, but also in improving overall fish industry management, market position, and competitive edge.

With the goal of harmonizing standards and regulations among countries in the Asian region, resource sharing and technical collaboration is important in the development of fish and fish products traceability system.



Online seafood history tracking in Taiwan.



Participants of the workshop visited fish processing plants in Bali, Indonesia to gain lessons and insights on the traceability and safety management practices within the fish industry.

International Workshop on Development and Adoption of Traceability System for Fish and Fish Products in Asia

Held in Bali, Indonesia, November 26-30, 2007

No. of participating countries: (8) Indonesia, Japan, Korea, Malaysia, Philippines, Taiwan ROC, Thailand and Vietnam

No. of papers presented: 12

No. of participants: 12 speakers and 20 local participants

Co-sponsor: Research Center for Aquaculture (RCA), Indonesia

List of papers

Resource papers

1. Seafood traceability system in Korea
- Tae Seek Lee, National Fisheries Research & Development Institute (NFRDI), Korea
2. Current situation of traceability system for fish and fish products in Japan
- Jun Sakai, Food Marketing Research and Information Center, Japan
3. Traceability in food safety management
- Sumpeno Putro, Research Center for Marine and Fisheries Products Processing and Biotechnology, Indonesia
4. Seafood traceability system along the auction supply chain – Taiwan Experience
- Cheng-Ming Chang, National Taiwan Ocean University, Taiwan ROC

Country papers

5. Aqua-products in Vietnam: food safety and traceability
- Nguyen Van Trong, Research Institute for Aquaculture, Vietnam
6. Traceability system of cultured shrimp in Thailand
- Nongnuch Raksakulthai, Kasetsart University, Thailand
7. Traceability in Philippine aquaculture
- Simeona E. Regidor, Bureau of Fisheries and Aquatic Resources, Philippines
8. Aquaculture traceability in Taiwan
- Fan-Hua Nan, National Taiwan Ocean University, Taiwan ROC
9. Practical experience of aquaculture traceability in Malaysia
- Raihan Sh. Hj. Ahmad, Department of Fisheries, Malaysia
10. Bio-safety for the fisheries products in Korea
- Han-Kyu Lim, NFRDI, Korea
11. The necessity of a traceability system for aquafarm products and the problems associated with the system
- Masashi Maita, Tokyo University of Marine Science of Technology, Japan
12. Aquaculture industry and traceability system in Indonesia
- Ahmad Sudrajat, Research Center for Aquaculture, Indonesia

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