

Food Safety Legislations in International Trade: The Obstacles for the Export the Export of Aquaculture Products

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Abstract

The world market for fish and fishery products is expanding, while wild stocks are declining. The gap created between rising demand and the dwindling supply has to be filled by aquaculture production, most of which are expected to come from enterprises in developing countries. This means opportunities exist for developing countries in sub-Saharan Africa like Uganda which can learn from their Asian counterparts how to promote and target aquaculture exports to markets in the European Union (EU), United States and other industrialised regions. However, consumers in industrialised countries have demanded increased food safety controls because of heightened concern over food safety risks. In response, market authorities have imposed strict requirements for industry and governments in exporting nations to institute risk-based food safety control systems to safe guard the health of the consumers. Developing countries which do not implement risk-based food controls in the entire food chain risk to be denied access to prime markets for fish and fishery products in the world.

Uganda has progressed in developing risk-based food controls to facilitate trade in fishery products from capture sources with her trade partners in developed countries. But with fears that the capture sources may not be sustainable due to many factors including overfishing, Uganda is developing a commercial aquaculture industry that targets both the export and local markets. To this end, Uganda needs to develop risk-based food control systems that meet the requirements of developed-country markets to facilitate trade in aquaculture products.

The study was aimed at identifying the international food safety regulatory requirements that are applied in trade of aquaculture products and to assess the status of compliance of Uganda's aquaculture food safety systems against those requirements. By examining 10 representative commercial fish farms in Uganda, the

potential for food hazards at critical control points (CCPs) in aquaculture production chain was assessed using international principles based on Hazard Analysis of Critical Control Points (HACCP). In addition, the farms were evaluated in respect of food safety control measures applied to the main CCPs, on-farm traceability measures, policy, legal and certification requirements, and use of written on farm standard operating procedures which are a pre-requisite for Good Aquaculture Practices (GAQPs) among others were evaluated for compliance with international recommendations. Thirty eight samples of the potential aquaculture export products (20 for Nile tilapia and 18 African catfish, typically two randomly selected fish for each species from each farm) were obtained from the 10 representative farms. The international regulated chemical contaminants in the sampled fish (14 organochlorine pesticides, total polychlorinated biphenyls [PCBs] and the heavy metals of mercury, cadmium and lead) were determined in the laboratory using Accelerated Fat Extraction and Electron Capture Gas Chromatography and Inductively Coupled Plasma – Mass Spectroscopy respectively, and compared with the international Maximum Residue Levels (MRLs) applied in the EU and the US markets. Also, the National Food Control System (NFCS) comprising of national legislation used to regulate aquaculture production, the government competent authority for aquaculture products, inspection services and laboratory testing services, were evaluated for their compliance with international requirements for guaranteeing safety of aquaculture products.

The findings clearly indicate that the Ugandan aquaculture chain has potential food safety risks from the biological and chemical food hazards associated with fertilizing the fish ponds using animal manure, hygiene in the production of fish feeds, uncontrolled storage and movement of chemical products at the farm, the uncontrolled movement of animals, potential predators of fish and trespassers within the farm premises. The study showed that food safety control measures applied at the CCPs in aquaculture chain did not comply fully with international recommendations. On the scale of 0 to 5 where zero denotes total non-compliance, and 5 full compliance, the food safety control measures at all the CCPs had an average score of 3 indicating some limited compliance which occurred in some CCPs but lacked in others. Most non compliances occurred in CCPs of feed storage facilities and feed processing

areas. The aquaculture chain in Uganda lacked traceability for fish products and feeds, with no evidence of implementation of written (SOPs) where they existed.

With regard to chemical residues, the aquaculture products complied with the MRLs applied in the EU and the US markets for organochlorine pesticides, PCBs, mercury and cadmium. One sample (n=38) appeared to exceed the MRL for lead although traces of lead residues were detected in all samples. Traces of mercury were also detected in 82% and cadmium in 5.3% of the samples. There was no significant difference in residue levels of lead and mercury for Nile Tilapia and African cat fish, but more samples of African Catfish contaminated than Nile Tilapia. PCBs were not detected in any of the samples. Traces of DDE, a metabolite of DDT [ranging between 0.0012ppm - 0.035ppm against the MRL of 5.0ppm], were detected in 26.3% (n=38) of the fish samples. Traces of endosulfan sulfate and DDT [0.002ppm for each] were detected in one sample. Apart from two samples of Nile Tilapia which were containing DDE, the rest of the pesticides were detected in African catfish indicating that African catfish is more prone to contamination compared to Nile Tilapia.

Assessment of the National Food Control System for aquaculture revealed that the current requirements for guaranteeing safety for aquaculture products to the markets were generally not complied with, and, therefore, the aquaculture products might be denied access to the markets or rejected at points of entry, due to failure to comply with basic official control requirements. On a score scale of 0 - 5 (with 0 indicating lack of compliance and 5 indicating full compliance) the most affected components which were the national food legislation (the Fish (Aquaculture) Rules 2003), and the Department of Fisheries Resources (DFR) - that hosts inspection services for aquaculture products (Aquaculture and Quality assurance units), scored 1.52 and 1.73 respectively. DFR as competent authority scored 2.2. The laboratory services had a score of 3.3 on average indicating better performance since they already carry out tests for official control of capture fishery products that can similarly test aquaculture products. The average score for all the four components was 2.2.

Although the low performance of food safety controls for aquaculture products in Uganda should be understood in light of the fact that commercial aquaculture is still in infancy stages; with food controls having just been initiated by both government

and industry, the implication of this low performance is that Uganda needs to invest more resources to establish appropriate food safety controls for aquaculture products as was done for fishery products to meet the requirements of export markets. The development and implementation of risk-based food controls for capture fishery products led to Uganda's fishery products being accepted in developed country markets. To do so effectively and in a timely manner will require a thorough review of the aquaculture legislation to focus the regulatory enforcement in the aquaculture sector for both fish and fish feed to meet appropriate food safety and consumer protection standards. Specifically, future studies should focus on understanding the potential sources of lead and residues of DDE, a metabolite of DDT, in light of government push to control mosquitoes that spread malaria with DDT.