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Tilapia production in Asia



1 September 2009 Dan Fegan Daniel Barziza Ryan Lane, Ph.D.



Market preferences drive methods, industry integration continues



Asian farmers generally focus on producing tilapia for export or local consumption – a decision that depends on farm size, cash flow, certification demands and other factors.

Tilapia production in Asia largely revolves around the domestic markets, where tilapia is recognized as an inexpensive, nutritious fish that complements Asian cooking styles. Typically, Asian consumers prefer whole fish, live or fresh chilled, and weighing 500 to 700 grams each. The logistics of supplying local wet markets, restaurants and seafood retailers involves a number of steps in the supply chain from farmers and harvesters to brokers and shippers.

By contrast, the international trade in tilapia in Asia has a quite different structure, mainly because the market preference is for either whole frozen fish (gutted and scaled) or fish processed into frozen fillets and other value-added retail products. These products require larger fish, usually 1 kg or heavier.

As a result of these different market preferences, farmers generally tend to focus on one or the other. Which one they choose depends on factors that include farm size, availability of capital, ease of selling and cash flow. In addition, customer concerns about food safety and the advent of demands for farm certification are adding new complexity for farmers, particularly those in the export segment.

These differences are increasing the rate of farm specialization, and there is a growing trend toward integration of the supply chain in the production of tilapia for export. To meet customer demands for traceability, food safety and environmental stewardship, exporters are looking to integrate their supply chains – either by investing in farms or forming partnerships with their farm suppliers. This mirrors the situation in the chicken and other livestock industries, although it is still early in the development process for tilapia.

Integration expands possibilities

The integration of production and exporting presents interesting possibilities, since the key drivers for business success move from purely production performance to adding value through end-product quality. Instead of producing as much fish of the appropriate size as quickly as possible using value-priced feeds with low feed-conversion ratios, it may be more profitable for an integrated business to produce fewer, high-quality fish with premium feeds designed to provide benefits in end-product quality.

Processing plant economics are driven by fillet yield, as each increase in yield results in more profit and less waste. Fillet quality determines what can be processed into value-added and “ready to eat” products. Raw and cooked flesh color, gaping and flesh texture are key indicators used to select fillets for value-added processing. Skin and scale condition can be used to select fish for value-added, skin- and scale-on products such as loins.



Tilapia is an inexpensive, nutritious fish that complements Asian cooking styles. Asian consumers prefer smaller whole fish, while larger frozen fish and fillets are exported.

Lessons from livestock

Feed producers are challenged to support the needs of two different segments of customers. Customers focused on fillet yield and quality have needs quite different from those domestic producers who simply want a low-cost feed that provides good growth and feed conversion.

Insights from our colleagues who manufacture livestock feeds may offer solutions to these challenges. Though there are differences between fish, pork and poultry, key concepts regarding feed are the same in the three sectors. In many cases, the same or similar solutions can be used.

One of the keys to success is the use of a feeding program in which various elements are employed in sequence to reach the final goal of the customer. By looking at the total production chain and breaking it down into its key elements, it is possible to target nutrition performance to the specific goals of production at each stage.

Strong start

Advantages can be gained through a feeding program that applies targeted technologies to the stages in the production cycle when they are most effective. For example, the goal of production in the early stages is to ensure a good start with fast growth. A number of laboratory and commercial-scale trials have shown that providing high-quality nutrition in the early stages pays dividends, as the initial boost is maintained throughout the production cycle. Even when a high-performance starter feed is later switched to a standard growout feed, the growth is significantly better in the later stages of production.

Since the volume of starter feeds is low relative to total feed use, investing more in this stage can provide an economic advantage over relying on growout and finisher feeds for high performance. Beyond using starter feeds to wean fish onto compound feeds, a good starter feed program can provide a basis for future growth and make it easier for nutritional technologies to manipulate end product characteristics in the finishing phase.

Finishers

Providing high-quality nutrition in the early stages leads to better fish growth in later stages of production.

There is also opportunity to influence total output or the characteristics of the final product in the later stages of production. The majority of the feed, and therefore cost, is incurred during the final stages of production. Manipulation of end-product quality is an expensive option, as the higher cost of nutrition to alter the final product is amplified by the volume of feed used. Larger fish are also generally less efficient at converting food to flesh than younger fish, further complicating the picture.

The optimal nutritional designs to meet processors' needs are often different from those that give the most cost-effective growth. For example, nutrient-dense feeds for faster growth and better feed efficiency can result in more body fat in the gut of the fish, reducing fillet yield. On the other hand, feeds targeting value-added impacts such as omega-3 enrichment of fillets may be too expensive for farmers looking for faster growth.

Consumer concerns

Integration of the supply chain for export also has implications for farming practices. Some international consumers have concerns about the sanitary conditions, food safety interventions and environmental impacts of Asian production. There are indications that domestic consumers are also demanding enhanced standards, as witnessed by the expansion into Asia of international supermarket chains that bring their food quality and safety standards to meet increased local expectations.

Perspectives

For now, local markets continue to demand inexpensive, nutritious food for lower-income consumers. The shift to cutting-edge nutrition or enhanced production standards will only occur as demand merits, and traditional forms of production will continue. However, as Asian economies improve and the urban consumer market increases, demand for better products and nutritional solutions will increase.

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