

Warm Water Fish Production as a Niche Market and Diversification Strategy



The Project Team

■ University of Stirling: Multi-disciplinary

- Dr David Little², Dr James Young¹, Dr Andrew Watterson³, Francis Murray ^{1,2,3}, Kathleen Grady ^{1,2,3}, Dr. Jimmy Turnbull², Dr. Kim Jauncey²

¹Department of Marketing,

²Institute of Aquaculture, ³Public Health Group

■ Commercial Partners

- Stirling: Pisces Aquaculture Ltd
- Devon: Freshwater Fish Farms Ltd

■ Communications officer: Anton Immink

■ Industry Liaison: Dr. Sunil Kadri

■ Entrepreneurship: Dr. Sarath Kodithuwakku

The researchable issue

- Diversifying from conventional agricultural production into aquaculture poses major constraints
 - Most cultured fish species are marine carnivores
 - Lack of market information on novel products
 - Lack of appropriate production models

The Project

- The project will develop new knowledge around organic tilapia production in rural areas of the UK
- Why tilapia?
 - Herbivorous species – potential environmental and public health benefits
 - Marine species consumption qualities

Three key issues

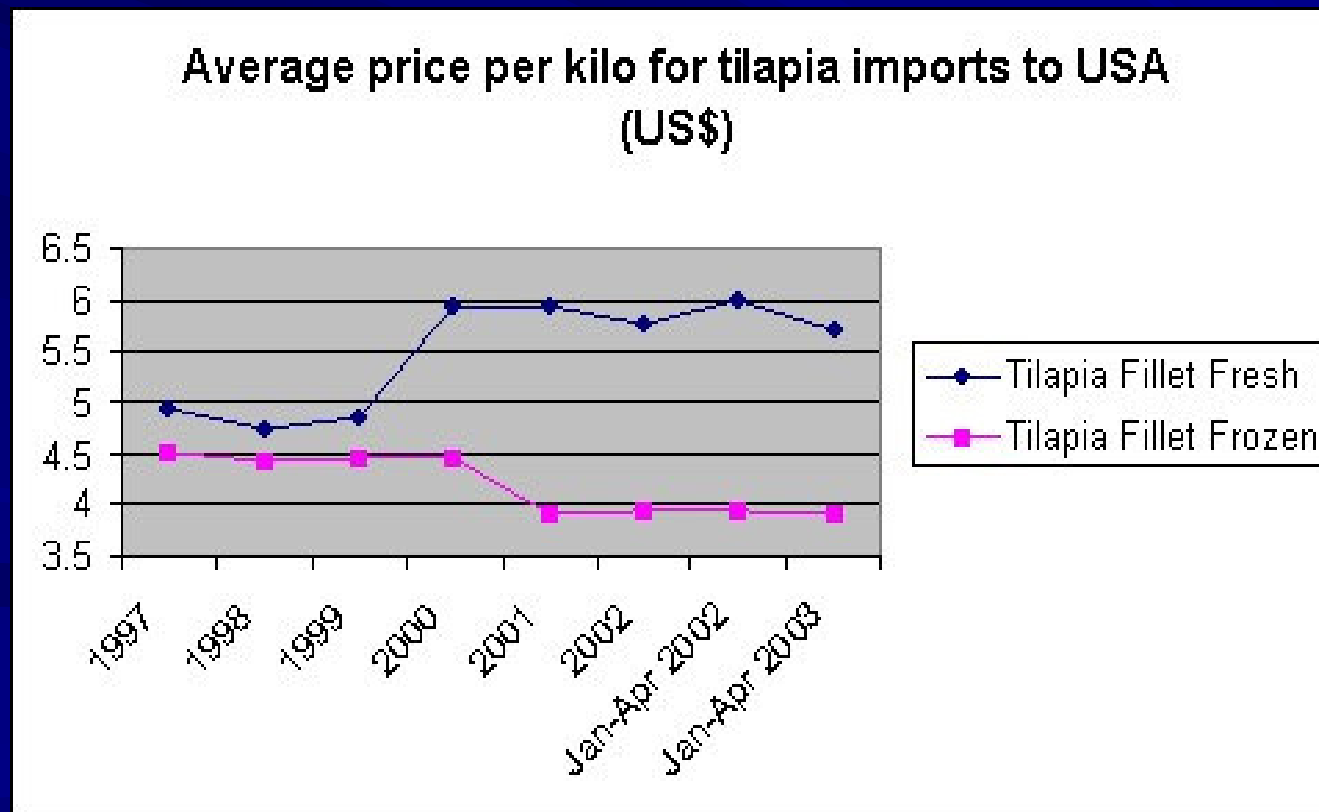
- The market: organic, local and traceable production
 - Ethnic markets
 - ‘Gastropub’
- Production Technology
 - Conventional recirculation systems v novel design
- Public health implications

Market Context

- Emerging market in the west
 - Quality “exotic” seafood
 - Growth of demand in US has been phenomenal in the last decade; now more popular than trout
 - Tilapia consumption in 2005 expected to surpass 180,000 mt.
 - In comparison, European and UK market undeveloped
 - Almost all imports of fresh and frozen fillets

USA Tilapia Fillet Prices

- Average USA Fresh Fillet Tilapia \$5.72
 - Equivalent £3.08
- Average USA Frozen Fillet Tilapia \$3.76
 - Equivalent £2.03



Market Issues

- Niche markets
 - Diverse and growing ethnic groups
 - High cultural value on live, very fresh product
 - Whole fish
 - ‘Gastropub set’
 - Value-added-fillet etc
 - ‘White tablecloth’ – restaurant trade
 - Direct online shopping
 - Farmers’ markets
 - Health conscious consumer
 - Potential organic certification

Organic Certification

■ Perceptions

- Consumer groups
- Producer groups
 - Soil Association

■ Issues to explore

- Animal Welfare
- Environmental and Human Health
- Use of on-farm, traceable, contaminant-free diets

■ Existing organic seafood

- Salmon?

Organic – Higher Valued

Fish	Type	Price (£/kg)
Fresh Salmon (Lancaster Smokehouse, Jan 05)	Whole	6.85
	Fillet	7.70
Organic Salmon (Graig Farm Organics, Jan 05)	Whole	12.51
	Fillet	18.93

Growing warmwater fish in a cold climate....

- Culture in surplus, farm buildings
- Approaches to low cost heat and insulation
- On farm integration
 - Arable: Biomass
 - Dairy: Milk coolers
- Tilapia are highly suitable for low cost aquaculture
 - Omnivorous – no need for processed fish or meat meals
 - Highly adaptable, fast growing

Tilapia in an RAS System

- Conventional practice in temperate countries - Recycled aquaculture systems (RAS)
 - Technically complex
 - High investment costs
 - High risk



Activated Suspension Technology Benefits?

- Technical simplicity
- Lower capital cost
- Allows natural feeding environment
- Lower stocking densities
 - Improved fish welfare: disease and stress
 - Minimal environmental impact
- Sustainable production

Other AST implications

- Unproven in temperate climate
- Husbandry constraints
 - Bacterial floc systems – low visibility
 - Medication?
- Marketing
 - Consumer perceptions
 - Off-flavours
- Cost effectiveness v RAS?

Environment and Health

- Minimal discharge: effluent re-use on farm
- No requirement for fish meals: no impact on marine ecosystems
- Organic tilapia / high health products
 - Low total fat but good essential fatty acids
 - Low, controllable contaminant levels

Public health

- More consumption by target niche groups
 - Aspirational product?
 - Potential for food culture cross-over?
 - More consumption by general public in longer term