

Project:	Warm water fish production as a niche production and market diversification strategy for arable farmers with implications for sustainability and public health
Project Investigator:	David Little
Duration:	2005-07
Impact Summary:	The research generated data which provide a basis for developing environmental health and wider public health impact assessment tools for farmed fish in the UK as these currently don't exist

Research Aims

- To investigate the potential for UK farmers to produce warm water fish as a niche market diversification strategy and its implications for sustainability and public health

Contribution to knowledge & understanding

- In examining the marketing considerations surrounding the development of a small scale warm water production system for growing the tropical fish tilapia as a diversification strategy for UK livestock and arable farmers, the research found that farmers should exploit high value niche markets (e.g. ethnic, green and health conscious consumers)
- Data generated by the study have led to new insights in developing novel diversification strategies and provided a basis for developing environmental health and wider public health impact assessment tools

Implications for policy & practice (e.g. recommendations)

- Technical recommendations include the adoption of a simplified recirculating aquaculture system (RAS) design is likely to be most sustainable option for UK farmers with little prior experience in fish production and the re-use of floc as a fertiliser could add further sustainability and financial gains
- Key commercial recommendation is that research and development must include market analysis and assessment of profitability
- Policy recommendations include integrating agriculture and fisheries policies to encourage this type of land-based aquaculture and the development of a better and more joined-up provision of information with a single agency taking the lead

Applications of research for public policy/services and business performance

- The project provided support for three farmers to progress to implementation stage and provided training and advice to over 270 businesses (and potential adopters) via telephone conversations/visits
- In Scotland, the project's commercial partner has invested in a warmwater facility building on the co-developed RAS designs and in Thailand, the commercial partner is using a refined activated suspension technology (AST) concept
- Following contact with the research team, the British Trout Association is exploring opportunities to represent the emergent industry

Stakeholder engagement and contribution

- Collaboration with private sector partners and engineers was built into the project from the start; including a tilapia farmer, an aquaculture engineering company in the UK and a fry producer in Thailand; this external expertise ensured external triangulation of the research
- Regular feedback from a consultation group ensured attainment of internal milestones and rational progression of research
- Strong engagement with Organic Food Federation, Soil Associations and WWF aquaculture on tilapia certification potentials
- The project engaged with a significant number of individuals, many as active participants or recipients of results. Following the main mass media dissemination in 2007 of the prototype RAS concept, the project interacted with over 150 individuals across the UK expressing an interest in small-scale production, distribution and marketing of tilapia from RAS

- Presentations to stakeholders at 11 different events with audiences including: Scottish Collaboration Innovation Programme Technical Transfer Executives; businesses, social enterprises, public sector, food networks and communities with an interest in local or ethical food; SEERAD Farm Business Officers; representatives of Defra, Scottish Executive, Sustainable Development Commission and North West Food Alliance; aquaculture professionals from industry & academia
- Researchers participated in events including: Edinburgh Mela (to gain primary consumer insights with the 'Fish as Food' questionnaire); Tilapia tasting and model system display at Perth and Stirling livestock auction marts in order to engage and disseminate project findings with prospective producers/adopters; at a Farmer's workshop, the team engaged with farmers interested in tilapia as a diversification option in Scotland
- Project team produced a farmer information pack with production and marketing information on tilapia and gave presentations to various farmers and rural entrepreneurs interested in adopting tilapia as a diversification strategy
- Researchers held 3 meetings to advise/brief policy makers

Stakeholder comments

"On a personal level, I have found the research and the subsequent onward communication of the RELU programme to be highly effective...the development of innovative ways to farm tropical fish to provide new food sources and alleviate challenges on fish sustainability." (David Gregory, Technical Director, Marks and Spencer [now retired])

"We found the project very helpful as a guide to setting up a small scale trial hatchery in the UK. It helped us decide what type of system to use and at what markets to aim the final produce at. In a number of UK farms, Large scale setup had taken place with very little prior knowledge of fish keeping. This in all but one case has resulted in massive losses and huge costs. Setting up on a small scale and using this either as a blueprint for a larger business later or expanding on that system for us has been the best way forward. We have visited Stirling twice and are now expanding the hatchery onto a different site on a larger scale. The guys at Stirling have helped us establish a foothold in a new industry and we have now laid the foundations to build on over the next few years. Our other aim is to market end produce on behalf of the satellite farms. As shown, although the margins are small supplying the Supermarkets, the volume turnover is now important to raise an income stream for these 'Burnt' growers. We see it as a spine for the business then all of the profitable value added 'Ribs' can be developed and added as it develops." (James Stretton and Nicholas Gardner, East Anglian Tilapia Limited)

Soft networks (e.g. work shadowing, visiting fellowships)

- Work shadowing scheme provided insights to commercial decision making (2 researchers involved)
- Project had impacts on capacity among non-UK nationals including: an Italian intern based at the private sector partner developed management and technical skills; MSc students involved in project associated activities worked with French, US, Greek and Lebanese nationals and have all produced research dissertations contributing to the project
- Associated work included an MSc on comparative analysis of RAS and pond tilapia sustainability conducted in Thailand through EU-funded 'Production of Aquatic Peri-urban Systems in Southeast Asia' and a 2-year EU funded Marie Curie scholarship researching bio-floc characteristics at IoA
- Project contributed to the research partner in Thailand through improved communication, data handling and research skills with Thai nationals experiencing career progression as a result

Securing future impact (post-project/follow-on work)

- Preparation of joint grant applications to secure further funding
- 2 Research Associates remain in academic posts. 1 Research Fellow due to start on 4-year interdisciplinary project at Stirling in 2009 & 1 RA took up a research position with a Dutch NGO