The Aquaculture Innovation Network

Since the latter half of 2003, Stirling Aquaculture (The consultancy and project management arm of the Institute) has been working with 13 other EU organisations to create the "Aquaculture Innovation Network", with the aim of encouraging and supporting innovation and technology transfer within the aquaculture sector.

The main emphasis at present is on the needs of the New Member States of the European Union as they adapt to new market and regulatory conditions. The network is being created with the support of the European Commission (DG Information Society - Previously DG Innovation and SMEs) through a research and demonstration project under the 5th Framework Programme. The full project title is "Creating a Supporting Network for Innovatory Transfer of Technology" (acronym - "CSN-INTRAN").

The first phase of the project has involved a study of the European Aquaculture sector and especially the situation in partner countries Hungary, Czech Republic, Poland and Estonia. In addition to examining the general status of aquaculture, and the level of technology employed, the consortium are also examining processes of innovation and technology transfer and the structures and organisations, and social and cultural factors that either support these or act as barriers.

The study has revealed a complex picture, with many aquaculture enterprises that were established under the Soviet system struggling to survive in the changing economic climate whilst alongside them, new entrepreneurs are developing state-of-the-art facilities and seeking to take full advantage of the liberalised trade environment. These are in the minority though, and much of the industry - as well as many of the supporting institutions - need to embrace change and innovation.

Many of the challenges faced by aquaculture producers in the New Member States are shared by the whole European industry. EU enlargement changes the market for all producers, whilst strengthening environmental and food safety regulations are an issue for all countries, and especially small producers. For this reason the project has chosen to focus on three main technical areas, namely: product quality and diversification; environmental control using recycle systems; and improved health control, especially through vaccination.

Arrangements are now in-hand for a series of technology-transfer initiatives including study visits to Norway and Germany, training courses in Poland and Hungary, and a workshop in the Czech Republic. These will be supported with a web site providing a range of services including information resources, partnering services and on-line learning modules. This will be hosted on the Aquamedia site, providing facilities for the content to be presented in several European languages, and for shared facilities such as the Aqualex multilingual glossary.

A key feature of the project approach is a close attention to innovation and technology transfer processes. The study has included learning lessons from other sectors, where different types of networking and collaborative arrangements have been studied in more detail, especially in the context of small and medium sized enterprises. Essential elements in successful technology transfer include real learning processes that develop new competencies in the adopting organisation, and the formation of personal relationships that stimulate an interest in change as well as acting as a channel for learning and providing the practical capacity to effect technology transfer.

For small aquaculture producers with relatively limited internal resources for innovation, development is predominantly based on transfer of technology from other producers, suppliers, or less commonly, directly from research organisations. However, there are obstacles to the establishment of trust between companies due to competitive pressures and difficulties for producers in adequately evaluating the offerings of different suppliers. It is in this area where independent brokers such as consultants and government extension workers can play a particularly valuable role. Such brokers can also be an important bridge in helping small companies access the necessary finance to implement innovations, or to understand and properly respond to regulatory changes.

The activities of the project therefore bring together all the necessary elements for effective technology transfer, such as challenge, expertise, capability, learning opportunities, and peer support. This is achieved through the unique partnership of organisations involved, which includes European networking organisations, research institutes, universities, consultants, suppliers, farmers, an aquaculture business incubator and sector analysis and media organisation. Stirling Aquaculture is overall coordinator. Further information is available at http://www.aquainnovation.net.

Needs assessment visit to a trout farm in Poland

Discussing carp production issues at a fish research station in the Czech Republic

The 'Aquaculture Innovation Network' team at the first consortium meeting in Brussels. Network partners are: Federation of European Aquaculture Producers, European Aquaculture Society, Eurofish, SINTEF Fisheries and Aquaculture AS (Norway), French Research Institute for the Exploration of the Sea (IFREMER) (France), Aquapark Association (Hungary), University of South Bohemia, Research Institute of Fish Culture and Hydrobiology (Czech Republic), Double Delta Ltd (Hungary), Hodowla Ryb Paraszyno (Poland), Estonian Agricultural University (Estonia), Aqim (Iceland), Aquaculture Vaccines Ltd. (UK), Aquacultur Fischtechnik GmbH (Germany) and the Institute of Aquaculture, University of Stirling (UK) (Coordinator).

Research Awards

Dr Stuart Bunting, £61,361, DFID/HTS Development Ltd: NRSP: Evaluating Action Planning for Enhanced NR Management in PU Kolkata

Professor Brendan McAndrew, £33,817, DEFRA: Genetics of PKD Resistance in Rainbow Trout. – this is a studentship awarded to Gareth Butterfield with 50% University funding and in collaboration with the BTA and Roslyn and is a continuation of Professor McAndrew's LINK aquaculture project on selective improvements of rainbow trout.

Professor Brendan McAndrew and Dr John Taggart, £169,303, BBSRC: Genetic Control of Infectious Pancreatic Necrosis (IPN) in Salmon. This is a collaborative project with Landcatch Natural Selection, The Roslin Institute and the Marine Lab in Aberdeen looking for markers associated with IPN resistance in Atlantic Salmon. Ann Gilmour is the technician working on the project.

Dr Andy Shinn, £4,830, Novartis Animal Vaccines Ltd: In-vitro Study: The Antiprotozoal Activity of Pyceze Against Theronts of I. Multifiliis.

Dr Herve Migaud, £27,669, Intravision Group: Co-operative Work on Light Spectrum Trial: Andrew Davie is the research assistant working on this and the aim is to investigate the effect of narrow bandwith light using a new technology lighting system in ongrowing salmon in cages on growth and maturation. This is in collaboration with a Norwegian lighting manufacturer (Intravision) and Ewos innovation.

Dr Jimmy Turnbull, £70,628, DEFRA: Rainbow Trout Fin Erosion- Epidemiological Analysis of Prevalence, Development, Risk Factors and Effects on Welfare.

Dr Jimmy Turnbull and Dr Ben North, £252,238, DEFRA: The Interaction between Water Quality and Welfare in Farmed Rainbow Trout.

Dr Trevor Telfer, £4,117, BP Chemicals Lts: Rocky Shore Surveys at Finnart and Hound Point 08/04.

Dr Herve Migaud, £21,864, SAMS Ardtoe: Haddock Photoperiod Project. For the study of effects of photoperiod regimes on sexual maturation and growth of haddock. This work was originally iniated by Professor Niall Bromage.

Dr J Turnbull, £9,551, DEFRA/University of Liverpool: Mathematical Modelling of Fish Diseases.

Professor Chris Sommerville and Dr Rod Wootten, £29,880, Anglian Water Services Ltd: The Study of the Status of Adult Female *Ergasilus sieboldi* on the Gills of Fish in Rutland Water.

Dr David Little, £19,814, EC: Managing Pesticides in Vegetable Systems in SE Asia.

Dr Nigel Wilby, Dr D Gilvear, £5,225, English Nature: *Ranunculus* PhD Feasibility Study: Causes of the Decline of *Ranunculus* in Trout Streams in Southern England.

Professor Sandra Adams and Dr David Morris, £246,954, BBSRC: Examination of the Life Cycle of *Tetracapsuloides bryosalmonae*.

Dr Periyathamby Vinobaba from the Department of Zoology, Eastern University, Sri Lanka has rejoined the Parasitology group on a 6 month Commonwealth Fellowship to receive training in advanced parasitological techniques. While based at Stirling, Dr Vinobaba will also investigate argulid and ergasilid infections of economically important wild fish from Sri Lankan brackish lagoons, with particular focus on species belonging to the genus *Siganus*.