FAO Constitution gives FAO and the Fisheries Department a clear mandate to undertake, promote and support technical, policy and prospective studies relating to fisheries management and sustainable development at the international, regional and national levels.

Although ‘pure’ research in the traditional sense is not undertaken within the Fisheries Department, a range of activities by FAO staff do fall within the broader category of ‘applied’ research, in the sense of all knowledge-generating activities leading to a better understanding of fisheries resources, their environment and ways in which they are exploited and managed.

The Fisheries Department promotes broad based research programmes focussed on development and management issues and concepts necessary for the elaboration of policy advice.
The Fisheries Department cooperates with a diverse range of national and international institutions and organizations in the execution of its research related activities.

Short- and long-term partnership arrangements are implemented in a contractual, collaborative, cooperative or collegiate mode depending on the activity concerned, and the type of relationship between FAO and the partners and their capabilities and strengths.

Research partnership is an essential activity of the Department
Advisory Committee on Fisheries Research (AFCR)

- Statutory body of FAO to advise FAO’s DG on research and research-related matters for fisheries and aquaculture.
- Research advise provided to FAO’s Committee on Fisheries (COFI) during its regular meeting.
FAO’s aquaculture health management initiatives/activities

Regional Technical Cooperation Programme (TCP)
  - Regional technical guidelines on health management with implementation procedures and diagnostic guide
  - National strategies on aquatic animal health
  - Surveillance and quarterly disease reporting
  - Aquatic animal pathogen and quarantine information system (AAPQIS)
  - Health management in shrimp culture

National TCPs
- Myanmar, Philippines, Indonesia, Latvia
Partnerships in expert consultations/workshops: examples

- Indonesia’s MMAF: Disease emergency preparedness (2004)
- OIE/DFO Canada: Surveillance and zoning for aquatic animal diseases (2002)
- APEC/Mexico: Development of harmonized standards on aquatic animal health management (2000)
- ACIAR/NACA: DNA based molecular techniques for aquatic animal pathogens and diseases (1999)
Partnerships in expert consultations/workshops: examples

- **DFID/NACA/GOB**: Primary aquatic animal health care in rural, small-scale aquaculture development (1999)
- **SEAFDEC**: Chemical use in Asian aquaculture (1996)
- **FHS/NACA**: Health management in Asian aquaculture (1995)

Others

- Member of OIE’s Fish Disease Commission
- Member of NACA’s Regional Advisory Group on Aquatic Animal Health
Contribution of aquaculture to total world fisheries landings 1970 – 2001

Total aquaculture production in 2001 was 48.4 mmt or 34.1% of total world fisheries landings of 142.1 mmt (FAOSTAT, 2003)
## Aquaculture growth

<table>
<thead>
<tr>
<th>Time period</th>
<th>Crustaceans</th>
<th>Molluscs</th>
<th>Freshwater fish</th>
<th>Diadromous fish</th>
<th>Marine fish</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970-2002</td>
<td>18.1%</td>
<td>7.8%</td>
<td>9.6%</td>
<td>7.4%</td>
<td>10.5%</td>
</tr>
<tr>
<td>1980-2002</td>
<td>15.6%</td>
<td>8.8%</td>
<td>11.3%</td>
<td>7.8%</td>
<td>8.9%</td>
</tr>
<tr>
<td>1990-2002</td>
<td>9.0%</td>
<td>10.4%</td>
<td>9.8%</td>
<td>6.6%</td>
<td>12.0%</td>
</tr>
<tr>
<td>1995-2002</td>
<td>9.9%</td>
<td>5.3%</td>
<td>7.8%</td>
<td>7.9%</td>
<td>12.3%</td>
</tr>
<tr>
<td>2000-2002</td>
<td>11.0%</td>
<td>4.6%</td>
<td>5.8%</td>
<td>6.7%</td>
<td>9.5%</td>
</tr>
</tbody>
</table>
Total global farmed terrestrial and aquatic meat production 1970-2001 (Source: FAOSTAT, 2003) (APR 70-01)

Million Metric Tons

- HOG/PIG MEAT (APR 3.1%)
- POULTRY MEAT (APR 5.1%)
- BEEF & VEAL (APR 1.2%)
- AQUATIC MEAT (APR 9.4%)
- MUTTON & LAMB (APR 1.0%)

(Source: FAOSTAT, 2003)
FIGURE 47
World fish production and food use consumption 1976–2030

Million tonnes

200

Aquaculture, China
Aquaculture, world excluding China
Capture fisheries, China
Capture fisheries, world excluding China
Food use, world

150

Projection

100

90

80

70

60

50

40

30

20

10

0


Note: Data are from the Global 1 report; in general they are supported by the Global 2 report.
Major issues and challenges

- Aquaculture is an income generating activity.
- Rapid sector growth has, in some instances, outstripped planning and regulatory activities.
- There are regulatory rebounds, resource use conflicts, image problems.
- The role of aquaculture in food security has been a major concern of the sector for many years.
- Maintaining sustainability, achieving food safety and quality, promoting equity, and improving health and **Biosecurity** are major challenges.
Is Fish Farming Safe?

Aquaculture has become the world’s fastest-growing food business. But it’s taking a hit from environmentalists.

By TERRY MCCARTHY/CAMPBELL RIVER

Monday, Nov. 25, 2002

Flying in a seaplane up the east coast of Vancouver Island in British Columbia you see little but forested hills, a myriad of islands and the blue waters of the narrow...
Eating prawns has major environmental and human rights consequences.

EJF has spent 18 months investigating these impacts and is campaigning for fundamental change in the way prawns (also known as shrimp) are produced.

To read more about the impacts of shrimp production, click here.

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**waste**

Trawlers catch and discard up to 20kg of marine life for just 1kg of prawn. In farms, prawns are fed over twice their weight in fish before they are sold...

**hunger**

Prawn trawling has devastated local fish stocks, leaving poor, local fishers unemployed and hungry. Prawn farms have ruined land and polluted water and reduced food security...

**violence**

Prawn farms have bought conflict to coastal communities. Threats, intimidation, arson, violence and rape have ensued...

**destruction**

Prawn farms destroy coastal forests and threaten coral reefs and marine wildlife...

...you can stop it.
EU ban on chloramphenicol residue — Exporters up the ante on seafood standards

Deeptha Rajkumar

KOCHI, Sept. 4

In a recent move, Europe said any container of seafood found testing positive for chloramphenicol, the banned drug residue, will be destroyed completely. With each container of seafood valued around Rs 1 crore, this move could effectively throttle all seafood exports to the EU and put the exporters to serious hardships.

``Is this not one kind of an indirect trade barrier? Ordinarily the `tainted` container should be sent back to us so as to enable us to carry out tests on the products," Mr A.J. Tharakkan, Chairman of Seafood Exporters Association of India, told Business Line.

Is the issue here one of food safety or is it not that with the
Keeping up with safety and quality

- There is a need for aquaculturists to develop systems for farming aquatic animals that assures food safety
- Risk assessments, HACCP and GHP are all important.
- New demands for trace-ability of aquaculture products
- Not easy with the large number of small-scale farmers
- Substantial institutional re-organization, legal and policy development, awareness raising and capacity building efforts will be essential
Keeping up with safety and quality

- This further emphasizes the need for harmonization of food safety assurance procedures.
- There is a need therefore to better understand the implications of new food safety standards and international trading standards for small-scale farmers.
- Asian aquaculture systems have many traditional and diverse advantages in safe, healthy and sustainable seafood production:
  - Ecologically sound integrated farming systems.
  - Collaborative research and development should be used to encourage both the traditions and innovations in aquaculture farming that can give the region comparative advantage in this new trading environment.
Combating disease and managing health

The current trend to meet the demand for more aquatic food, through expansion, intensification, and diversification, will continue to provoke the emergence and recurrence of disease challenges.

How industry, government and other stakeholders rise to meet these challenges will dictate how aquaculture survives and achieves true sustainability.

Most important consideration for achieving better health is to improve and/or maintain strict Biosecurity.
Developing countries: research opportunities and challenges

- Biosecurity
- Epidemiology
- Risk analysis

Highly interrelated all aimed at making good use of scientific research for disease prevention and control.

Epidemiological research and risk analysis are basic requirements of a biosecurity program.

Driven by trade and increasing consumer demand for high quality and healthy product.
Developing countries: research opportunities and challenges

**Biosecurity**

- Increasing as aquaculture develops and as new host-pathogen-environment interactions are tested
- Makes good use of science
- A cost effective way of managing disease risks
- Research emphasis on generating information to support biosecurity assessments to improve their accuracy and better-targeted risk management measures
- An important initial step is educating farmers about the risks, good risk management practices and how to reduce the risk of disease spread between neighbours – local networks to help raise awareness and foster cooperative approach to problem
- Have achievable objectives, commensurate with available resources and technologies; should take into account impact and benefits to farmers; regularly reviewed, cost effective and addressing current threats.
Developing countries: research opportunities and challenges

Epidemiology: mostly in humans and livestock, far less in aquatic animals but gaining more attention as it can provide realistic solutions to aquaculture problems

- Morbidity and mortality rates, Distribution
- Pattern of spread, Nature of the pathogen
- Incubation period, Routes of transmission
- Risk factors, Interventions
- Advise farmers to develop a system of notification to prevent infection spread
- Human health implication

Needs: Capacity building and training, better experimental design and surveillance techniques, emergency preparedness and response
Developing countries: research opportunities and challenges

- Risk analysis
  - Health status and services of trading partners
  - Biological pathways for introduction (release assessment), establishment (exposure assessment) and spread (consequence assessment) of a pathogen
  - Host susceptibility
  - Modes of transmission
  - Prevalence and incidence of disease occurrence
  - Infectivity, virulence and stability
  - Intermediate hosts and vectors
  - Effects of processing, storage and transport

Movement back to basic investigatory studies – more general observational information needed to allow accurate biosecurity risk assessment and risk management

Output of a risk analysis can assist in prioritising future research
How could research assist in establishment of better management practices, self regulation and empowerment of small farmers as a practical way forward towards improving biosecurity in aquaculture in developing countries?
Fish Health Section
Asian Fisheries Society

Melba B. Reantaso
Chairperson
Executive Committee
(2002-2005)
History

- 1985: Asian Fish Health Network with IDRC support
- 1986: First AFHN meeting in conjunction with First AFS meeting – raised the idea of forming a regional society for fish health; AFHN Coordinator (Dr JR Arthur) – Fish Health Workers Questionnaire - to 130 fish health workers
- 1987: Second AFHN meeting reviewed the results of the questionnaires and established two ad-hoc committees: organising and newsletter; AFS agreed to establish “Fish Health Study Group”.
- 1989: FHS officially established during the Third AFHN meeting initially with 20 AFS members
- 1990: 90 members
- 1992 to present: > 300 members
Specific Goals

- To promote effective interaction and cooperation among persons involved in aquatic animal health research;
- To encourage and promote investigation and advances in knowledge in aquatic animal health;
- To focus attention on aquatic animal health problems by disseminating technical and other information on all aspects of aquatic animal health; and
- To promote the proper implementation of effective aquatic animal health protection practices in the region.
Activities

- Triennial basis – Symposium on Diseases in Asian Aquaculture (DAA) – a meeting of both members and non-members to discuss broad issues and specific topics related to aquatic animal health

- Compile and disseminate proceedings, notes and abstracts of FHS sponsored and co-sponsored aquatic animal disease conferences and workshops – to section members and the general public;

- Promote the development and use of standardized, internationally accepted techniques for the detection and diagnosis of diseases of aquatic animals of regional importance.
Diseases in Asian Aquaculture

- DAA I: 1989, Bali
- DAA II: 1992, Phuket
- DAA III: 1995, Bangkok
- DAA IV: 1999, Cebu
- DAA V: 2002, Goldcoast
Diseases in Asian Aquaculture

- **DAA VI: 2005, Colombo**
  - Training course
    - Ornamental Fish Health
  - Workshop
    - PANDA
    - NC-CVO
  - FAO Expert Consultation
    - Health Guidelines to
    - Support CCRF
  - 7th TGM of FHS/AFS

*Aquatic animal health: facing new challenges*
*6th SYMPOSIUM ON DISEASES IN ASIAN AQUACULTURE*
*25 - 28 October 2005*
Publications

- DAA I, II, III, IV, V (in preparation)
- Disease
- Bibliographies
- Grouper Health
- Newsletter
- E-newsletter
What can FHS/AFS offer?

- FHS/AFS provides an authoritative, holistic and current overview of important developments on the subject.
- Provides a regional forum for discussion, dissemination and cooperation on scientific research in aquatic animal health.
- Provides a venue for presentation of the latest scientific findings on original research and various aspects of aquatic animal health management in Asian aquaculture.
- Provides a venue for interaction among aquatic animal health workers in the region and outside.
Thank You!