Sustainable fish farming: “working at the human-animal-ecosystem interaction”

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The challenge of sustainability

Over the next 50 years, the world’s farmers and ranchers will be called upon to produce more food than has been produced in the past 10,000 years combined, and to do so in environmentally sustainable ways.

Jacques Diouf, FAO Director General, 2007

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The three “pillars” of sustainability

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Fish farming: Sustainable?
Trends in “modern” aquaculture to reach sustainability

Source: Diana et al. 2013 – BioScience 63(4)
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Sustainable fish production?
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Sustainable fish production?

Global Fish Production, 1950-2011

Captures and aquaculture of salmon species

Source: FAO

©Worldwatch Institute

Source: www.agbioforum.org - FAO fishstat
Sustainable fish production: effects of diseases on farmed fish production

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**Chilean fish farming: Yield per smolt (kg harvested per smolt)**


**Production of Atlantic salmon in the world (thousand tons)**

Source: FAO fishstat in [www.agbioforum.org](http://www.agbioforum.org)
Good practice:
- Fish health
- Fish welfare

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**THE FARMEDE SALMONID HEALTH HANDBOOK**

IFA Aquaculture

Version 1.0 (2011)
Good fish health practice: vaccination

Reduced use of antibiotics (exclusively as therapeutants):
Improvement of the surrounding environment
Risk mitigation towards AMR
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**Human-animal-ecosystem interaction : AMR**

- Non use or restricted use of critical antibiotics (3rd and 4th cephalosporins, fluoroquinolones...)
- Guideline preparation in different MS (France...)
- Issue related to the standardization and predictive value of antibiograms
- EARS-Net

Human-animal-ecosystem interaction: Prevention of fish zoonotic and fish borne diseases

FISH = VERY SAFE SOURCE OF FOOD

**Parasitic**: Diphyllobothriosis (*D. latum*); Anisakiasis (*A. simplex*); Dioctophymiasis; trematodes

**Bacterial**: Mycobacteriosis; Vibriosis; Edwardsiellosis; Streptococcosis

(Viral)...

**Viral zoonoses very unlikely**: species barrier, environmental barrier

**Variable risk levels / fish species**; rearing environment

**Mostly a problem in developing countries and warm water environments**

**Very weak incidence in Europe and developed countries**

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Some needs for a sustainable work at the human-animal-ecosystem interaction:

Continuing education (daily management of fish health; antibiotics prudent use...)

A sustainable network of fish vet across fish farming regions

Research involvement in applied issues like:
- reliable diagnostic methods (ex. fish amoeba);
- zootechnical improvements for fish welfare (and health);
- Stimulation (specific or not) of fish immune system

Development of sustainability indicators towards fish health and fish welfare
CONCLUSION

Aquaculture = fastest healthy food producing sector. Sustainable fish farming involving science-based operations / multidisciplinary approach based on consensus between stakeholders.

Definition of the “best practices” in fish health and welfare management = key factor to secure the interactions inside the human-animal ecosystem (one health).

Diversity of species, rearing methods and environments Scientific and technical knowledge continuously expanding Clear, precise guideline which fit with each situation = complex and always renewed challenge.

Thanks for your attention and patience