CHALLENGES IN THE CONTROL OF TRANSBOUNDARY AQUATIC ANIMAL DISEASES

9th FAO/OIE Regional Steering Committee Meeting of GF-TADs for Asia and the Pacific: "OIE initiatives on Transboundary Animal Diseases, control".
20 & 21 July 2016, Tokyo

Mohamed Shariff Bin Mohamed Din
Member of the OIE Aquatic Animal Health Standards Commission
28.8% overfished stocks in 2011

71.2% stocks fished within biologically sustainable levels:
- 61% fully fished
- 10% under-fished
Aquaculture growth

+26.4 million tonnes

94% in developing countries

OECD; FAO
Projected growth

- Least developed countries
- Other developing countries
- Developed countries

Percentage growth for different products:
- Skim milk: 26%
- Whole milk: 37%
- Butter: 26%
- Sheep: 23%
- Cheese: 18%
- Beef: 12%
- Pork: 12%
- Poultry: 24%
- Fish: 19%

OECD; FAO
World capture fisheries & aquaculture production

The State of World Fisheries and Aquaculture 2016
How aquaculture began?

Integrated farming e.g., Fish cum duck culture
Food and Income through Integrated Agriculture - Aquaculture (IAA)
Fish harvest from integrated aquaculture
Extensive aquaculture

Polyculture pond with different source of natural food for fish

[Image: https://www.researchgate.net/figure/222988468_fig9_Fig-8-Traditional-multicropping-dike-pond-system-with-macrophytes-papaya-and-banana-on [accessed Jul 18, 2016]]
Major challenge to feed an ever increasing population

Increase food production by 60% to feed extra 3B people
High stocking densities
Sustainability

- Diminishing natural resources
- Compromised ecosystem & lost biodiversity
- Climate change

Need to be sustainable to produce more food

http://www.progressivesforimmigrationreform.org/
Shrimp industry growing rapidly

Intensive aquaculture
- *Penaeus monodon* is still popular
- Short culture period (4 mts) & good profits
Global Transfers of Live Shrimp

From Prof. Donald Lightner, UOA
Shrimp ponds
Use of paddle wheel to aerate pond water to increase $O_2$ in intensive culture systems
After 4 months feeding - nutrient rich sediment at pond bottom
Some farms use to wash out nutrient rich pond sediment polluting the environment.
Nutrient rich effluent discharged without treatment & taken back with water supply causing self pollution.
Resulting in coastal areas severely polluted
> Bigger farms
> Higher stocking densities
> More use of chemicals
Large scale fish farming in coastal area
Large fish cages in the sea
In a reservoir/lakes fish culture in cages
Fish culture in concrete tanks
Oyster culture
Abalone culture
Green mussel
Aquarium fish

$10,000
High densities more money but unsustainable & increase diseases
Excessive use of feed can pollute the environment.
Pollution

- Chemical
- Agro based
- Spills

Toxic wastes killing millions of tiger prawns

By DEVID RAJAH

BANTING: Millions of tiger prawns from 10 farms in Teluk Mengkuang, Sijangkang, 13km from here, are dying from suspected toxic waste poisoning. Farmers have estimated losses...

DEAD LOSS ... workers Kabus Lamit (left) and Kalia Lamit, showing the dead prawns from one of the affected ponds in Teluk Mengkuang. — STARpic by ZABIDI TUSIN

POND OF DEATH
Duck breeder Ans Ahmad (right) appears stumped by the death of hundreds of fish in his Tanjung Tualang farm. The fish started dying on Monday. New Arr is worried that the ducks which drink from the pond, will also be hit. See story on Page 3. — STARpic by LEW YONG KAN
In some cases antibiotics does not work – indiscriminate use resulting in development of resistant strains
Broodstock caught from the wild depleting resources and gene pool
World Shrimp Aquaculture by Species: 1990-2009

Introduction of *vannamei* into Asia

Hatchery producing SPF shrimp larvae
Poikilothermic: body temperature is the same with the environment.

Water temperature changes - an important factor causing stress.
Constant temperature is maintained in the hatchery with thermostats.
For hatchery - water supply passed through gravel filtered & UV or ozone
Removing sediment to maintain health pond bottom
Probiotics are being used to maintain water quality in ponds
Pond lining for easy maintenance
Objective of listing of aquatic animal diseases

180 members

Harvested pond dried and limed
Use of reservoir ponds to allow vectors to settle or eliminated by use of chlorine, before water is supplied to culture ponds.
Reservoir for water treatment in shrimp farm
Use of dip to disinfect booths
Filter bags drying after disinfection
KHV transmission
Restriction of animal movement – Road Block
Culling and decontamination
Strategic clinical and laboratory surveillance
Spread of White Spot Syndrome Virus
Acute hepatopancreatic necrosis disease (AHPND)

China (2010)
Vietnam (2011)
Malaysia (2011)
Thailand (2012)
Mexico (2013)
Philippines (2015)

(FAO, 2013 & Dabu et al., 2015).
Historical review of AHPND in Vietnam

- 2010  1\textsuperscript{st} occurred
- 2011  30 Provinces
- 2011 April Officially reported
- 18 June 2011: Contact OIE
- 5 July - Prof. Lightner visit
- 11 July - FAO CMC
- 28 May 2012 – Steering Committee

1 year

2 years
Historical review of AHPND

- First occurred in 2010
- 28 July 2011 (Decree 52/2011/TT-BNNPTNT) Regulation on disease prevention & control of aquaculture shrimps
- 16 August 2011 (Decree 56/2011/TT-BNNPTNT) : Guideline on national management tasks of aquatic animal

No emergency preparedness
80% shrimp processors in Mekong Delta – on the verge of bankruptcy

- Target exports $6.5 billion – actual export $2.4 billion
- Soc Trang lost VND4 trillion ($190 million) during 2011-2012 season
Emergency preparedness Exercise - FAO Project

- Officers - various levels, made aware of their roles & protocol
- Strengthen protocol - identify weakness & gaps
- Evaluate, assess & recommend capacity needs
- Strengthen interdepartmental, interagency coordination
- To create awareness & ensure stakeholders (including private sector) understand protocols & enable them take action & prevent spread of disease
AT OIE 1ST REPORTING OF AHPND

March 2013

- Reported through NACA/FAO/OIE quarterly reporting for Asian Pacific region

- China, Malaysia, Thailand & Vietnam

- OIE Aquatic Animal Commission (AAC) noted sig. impact on shrimp industry

- Disease card and other info on NACA website

- Etiological agent not identified

3 years later

4 countries
AHPND info reviewed for listing

Oct 2013 1st.

- Uncertainty of pathogen identity – among strains of *V. parahaemolyticus*
- Lack of specific diagnostic test
- Report as an emerging disease

ACC drafted factsheet with input from experts for OIE website

Request members countries to provide info especially on diagnosis

Does not meet criteria for listing
AHPND info reviewed for listing

Feb 2014  2nd

- ACC reviewed info & considered insufficient for:
  - Accurately characterise the causative agent
  - No specific test available to detect the agent in subclinical infections

- ACC noted that research being undertaken

- Encourage the sharing of biological material
AHPND info reviewed for listing

Oct 2014 3rd

- ACC reviewed info & considered for listing with the available of diagnostic method – Article 1.2.2.
- **Recommended an ad hoc Group** be convened to develop chapter on AHPND for inclusion in the Aquatic Manual
- ACC updated info on the OIE website
- **Revised Chapter1.3** – for **Member Countries comment**
March 2015  4th

- *ad hoc* Group developed chapter on AHPND for *Aquatic Manual* provides information supporting reliable identification of the aetiological agent

- Proposed for listing at 83 GA in May 2015
AHPND info reviewed for listing

May 2015

General Assembly accepted listing of AHPND
Advocating aquatic animal health

- Encourage disease notification
- Encourage interregional cooperation
- Improve interdepartmental cooperation
- Upgrade research and services
OIE trade standards provide the mechanism

- Revise periodically
- Encourage application
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