



## 28<sup>th</sup> NACA Governing Council, Dhaka, Bangladesh



The 28<sup>th</sup> NACA Governing Council was convened in Dhaka, Bangladesh, from 25-27 April 2017. Sixteen member governments attended in addition to the Regional Lead Centres for China, India, Philippines and Thailand; the Food and Agriculture Organisation of the United Nations (FAO), the Southeast Asian Fisheries Development Center (SEAFDEC) and the Secretariat of the Pacific Community (SPC). Bangladesh was Chair of the meeting and Maldives Vice Chair.

Member states shared their plans for development of the aquaculture sector and rural communities and collaboration on issues of common interest.

Aquatic animal health was a key concern for all members. In particular, the recent emergence of tilapia lake virus (TiLV) was discussed extensively. Tilapia is not only a significant aquaculture commodity in the region, but as a low-cost fish it is also an important source of animal protein for low-income

groups. TiLV had been detected in Egypt, Ecuador, Israel and Colombia and most recently in Thailand, although retrospective testing of samples had revealed that the disease had been present since 2015. It is likely that the virus will have been introduced to other countries in the region via international trade in tilapia seed. A team led by Dr Tim Flegel (Mahidol University) had generously shared a warning notice and PCR protocol (reproduced in this issue) and were also offering to share a positive control plasmid free for non-commercial labs.

A proposal to establish a Regional Network on Culture-based Fisheries and Stock Enhancement tabled by the Secretariat was accepted. NACA has undertaken significant work on culture-based fisheries (CBF) on the years in Sri Lanka, Vietnam, Lao PDR and most recently in Cambodia through the initiative of Prof. Sena De Silva, a previous Director General of NACA.

### First Regional Training Course on Culture-based Fisheries: Register now!

There are many initiatives underway which are designed to increase food supply, employment and income opportunities in developing countries, most of which require considerable capital inputs. Often overlooked, are the opportunities to produce more food from the natural productivity of local ecosystems.

*Continued on page 2.*

CBF offers a practical way for rural communities to improve their income and nutritional status. Small water bodies such as village dams are stocked to produce an additional crop of fish, producing an additional return on existing infrastructure. Capital requirements are extremely low as there is no feeding, with fingerlings left to forage and grow on natural food supplies. Households may use the crop for household consumption and/or sale for cash, depending on their circumstances, and the activity can be sustained by retaining some of the profit to buy seed for the next cycle. While CBF has significant potential in tropical climates the practice is not yet widespread.

The objectives of the regional network are i) the development of culture-based fisheries and ii) the improvement of stock enhancement programmes. The network will focus on:

- Technical exchange between NACA members.
- Development of better management practices.
- Science-based monitoring and evaluation.
- Sharing of experience.
- Crucially, evidence-based documentation of results, including socio-economic and nutritional benefits.

The network will primarily operate via online networking, teaching (video) and information sharing in the first instance to minimise costs, working within the existing development programmes of member states.

A highlight of the meeting was the presentation of a detailed review “The major contributions of the Network of Aquaculture Centres in Asia-Pacific (NACA) to Regional Aquaculture Development”, by Prof. Peter Edwards. The review had been commissioned at the request of the 27th Governing Council.

The review presented an overview of the development of the organisation since its inception in 1980 until the present and tracked the evolution of the work programmes in response to emerging issues and the changing requirements of member states.



NACA has illustrated that a functional network mechanism for technical cooperation among developing countries can resolve many of the issues in national research programmes including duplication of effort (and expenses) between states, improvement of interaction between R&D workers and thin coverage of diverse farming systems. With diminishing donor assistance to the region and limited national resources the network has reduced the need to invest large capital and operating costs to set up new institutions or expand existing ones, and improves the return on national resources.

Furthermore, NACA has influenced the development of policy in member states with allocation of increasing resources to the development of aquaculture. The strengthening of national human resources and facilities have made it attractive for various organisations and agencies to participate in NACA's collaborative programmes, thereby contributing to further strengthening of the network and expansion of development activities through bilateral and multilateral projects, resulting in a multiplier effect.

The review will be published as an occasional paper on the NACA website in due course.

Culture-based fisheries are one example of a relatively simple and low cost technology which can deliver nutritional and economic benefits to rural communities, which often have few livelihood options.

### The course

The first Regional Training Course on Culture-based Fisheries will be held from 29 October to 9 November 2017 in Nha Trang, Vietnam. It will be held on the campus of Nha Trang University. The course is aimed at development professionals and extension officers working in fisheries and aquaculture or with agricultural communities.

### Programme at a glance

The training will consist of lectures, classroom exercises and simulations, covering:

- Current practices and relevance of culture-based fisheries.
- Evaluation of water bodies for culture-based fisheries.
- Establishing a management system.
- Risk and risk management.

- Stocking practices and stock assessment.
- Harvesting and marketing strategies.

### Learn from the experts

The course will be taught by world experts in the field, including:

- Prof. Sena De Silva, Deakin University, Australia.
- Prof. Upali Amarasinghe, University of Kelaniya, Sri Lanka.

- Prof. Liu Jiashou, University of the Chinese Academy of Sciences.
- Dr Tumi Tómasson, United Nations University.
- Dr Guðmundur Þórðarson, Marine and Freshwater Institute, Iceland.
- Dr Yuan Derun, NACA.
- Prof. Pham Quoc Hung, Nha Trang University, Vietnam.

### Sponsor

NACA wishes to acknowledge the United Nations University Fisheries Training Programme,

which has provided financial and technical support to the development and convening of this course. The course is organised in partnership between UNU-FTP, NACA and Nha Trang University.

### Registration

The registration fee for the course is US\$1,000. The fee includes tuition, materials, working lunches and breaks. Registration closes on 30 September. For more information please download the indicative programme and registration form below. Contact [yuan@enaca.org](mailto:yuan@enaca.org) for all enquiries.

<https://enaca.org/enclosure.php?id=915>

## 11<sup>th</sup> Indian Fisheries and Aquaculture Forum, Kochi, 21-24 November

The 11<sup>th</sup> IFAF “Fostering innovations in fisheries and aquaculture: Focus on Sustainability and Safety” will be held in Kochi, Kerala. The objectives of the forum are to:

- Provide a scientific platform to deliberate on current research outputs and identify the R&D needs of the sector.
- Nurture innovation skills to address issues of sustainability and safety of fish.
- Encourage scientists to think, develop and undertake needs-based research to address core issues affecting the fisheries sector.

- To review the research developments in fisheries science and develop strategies for transfer and refinement of these technologies.

Technical sessions will be held on:

- Fisheries resources: Genetics, biodiversity and management.
- Fishing systems for sustainable fisheries.
- Fishery biology, toxicology and environment.
- Aquaculture production.
- Aquatic animal health management.

- Adding value to fish: Avenues in fish biochemistry and processing.
- Safe fish: Quality, risk assessment and regulations.
- Fishomics and frontier sciences for blue bio-economy.
- Socio-economics, gender, capacity building and livelihoods.
- Fisheries trade, policy and governance.

Submission of abstracts closes **15 September**. For more information, including online registration and accommodation advice please visit the 11 IFAF website: <http://11ifaf.in>.

## Audio recordings for regional feed consultation now available

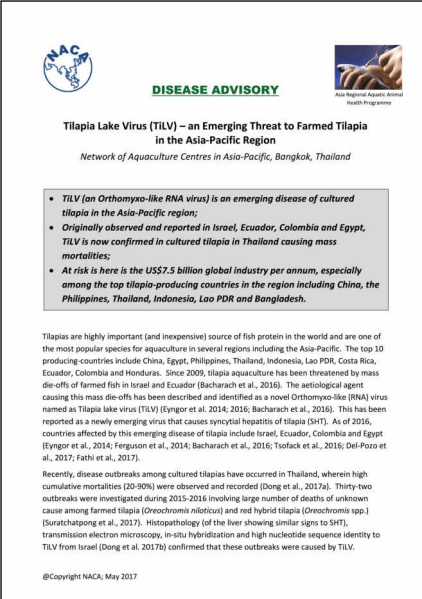
As foreshadowed in the previous issue, audio recordings of the technical presentations made at the Regional Consultation on Responsible Production and Use of Feed and Feed Ingredients for Sustainable Growth of Aquaculture in the Asia-Pacific Region are now available from the link below. Recordings may be downloaded or played online.

The consultation was convened by FAO, NACA and the Thai Department of Fisheries, 7-9 March 2017, in Bangkok. The objective of the consultation was to review and share the knowledge on the current situation of aquaculture feed production and use, in respects of production status, demand and supply, sourcing of ingredients, government policies and institutional support, ongoing progress and development gaps. The consultation also tried to put

forward regional strategies and develop a plan of action to promote responsible utilisation of feed and feed ingredients for sustainable growth of aquaculture in Asia-Pacific through sharing of available knowledge, technological innovations and scaling up successful practices and further research and technology development.

Access the collection of recordings from: <https://enaca.org/?id=886>.

# Disease advisory: Tilapia lake virus - an emerging threat to farmed tilapia in the Asia-Pacific region



**DISEASE ADVISORY**  
The Regional Aquatic Animal Health Programme

**Tilapia Lake Virus (TiLV) – an Emerging Threat to Farmed Tilapia in the Asia-Pacific Region**  
Network of Aquaculture Centres in Asia-Pacific, Bangkok, Thailand

- **TiLV (an Orthomyxo-like RNA virus) is an emerging disease of cultured tilapia in the Asia-Pacific region;**
- **Originally observed and reported in Israel, Ecuador, Colombia and Egypt, TiLV is now confirmed in cultured tilapia in Thailand causing mass mortalities;**
- **At risk is here is the US\$7.5 billion global industry per annum, especially among the top tilapia-producing countries in the region including China, the Philippines, Thailand, Indonesia, Lao PDR and Bangladesh.**

Tilapias are highly important (and inexpensive) source of fish protein in the world and are one of the most popular species for aquaculture in several regions including the Asia-Pacific. The top 10 producing countries include China, Egypt, Philippines, Thailand, Indonesia, Lao PDR, Costa Rica, Ecuador, Colombia and Honduras. Since 2009, tilapia aquaculture has been threatened by mass die-offs of farmed fish in Israel and Ecuador (Bacharach et al., 2016). The aetiological agent causing this mass die-offs has been described and identified as a novel Orthomyxo-like (RNA) virus named as Tilapia lake virus (TiLV) (Eymor et al., 2014, 2016; Bacharach et al., 2016). This has been reported as a newly emerging virus that causes syncytial hepatitis of tilapia (SHT). As of 2016, countries affected by this emerging disease of tilapia include Israel, Ecuador, Colombia and Egypt (Eymor et al., 2014; Ferguson et al., 2014; Bacharach et al., 2016; Tsoref et al., 2016; Del-Pozo et al., 2017; Fathi et al., 2017).

Recently, disease outbreaks among cultured tilapias have occurred in Thailand, wherein high cumulative mortalities (20-90%) were observed and recorded (Dong et al., 2017a). Thirty-two outbreaks were investigated during 2015-2016 involving large number of deaths of unknown cause among farmed tilapia (*Oreochromis niloticus*) and red hybrid tilapia (*Oreochromis spp.*) (Saratchpong et al., 2017). Histopathology (of the liver showing similar signs to SHT), transmission electron microscopy, in-situ hybridization and high nucleotide sequence identity to TiLV from Israel (Dong et al., 2017b) confirmed that these outbreaks were caused by TiLV.

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Download the advisory from: <https://enaca.org/enclosure.php?id=864>

## Fact sheet: Tilapia lake virus (TiLV):

### What to know and do?

Published by the CGIAR Research Program on Fish Agri-food Systems

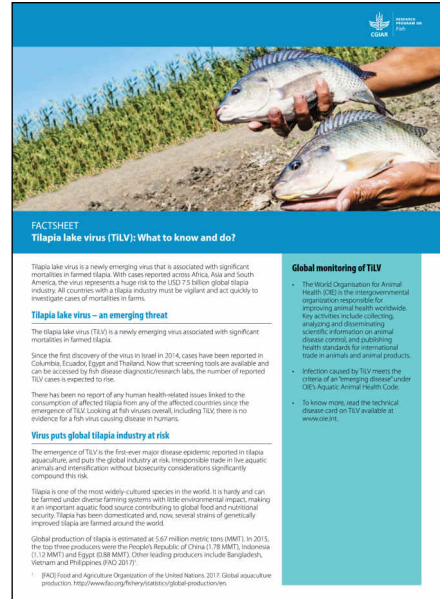
Tilapia lake virus is a newly emerging virus that is associated with significant mortalities in farmed tilapia. This fact sheet describes the threat to industry, clinical signs, diagnosis, risk factors, prevention and control options and actions that must be taken to minimise the impact of this disease on the global tilapia aquaculture industry. All countries with a tilapia industry must be vigilant and act quickly to investigate cases of mortalities in farms.

Since the first discovery of the virus in Israel in 2014, cases have been reported in Colombia, Ecuador, Egypt

and Thailand. Now that screening tools are available and can be accessed by fish disease diagnostic/research labs, the number of reported TiLV cases is expected to rise.

The emergence of TiLV is the first-ever major disease epidemic reported in tilapia aquaculture, and puts the global industry at risk. Irresponsible trade in live aquatic animals and intensification without biosecurity considerations significantly compound this risk.

Download the fact sheet from: <https://enaca.org/?id=871>



**FACTSHEET**  
**Tilapia lake virus (TiLV): What to know and do?**

Tilapia lake virus is a newly emerging virus that is associated with significant mortalities in farmed tilapia. With cases reported across Africa, Asia and South America, the virus represents a huge risk to the USD 7.5 billion global tilapia industry. All countries with a tilapia industry must be vigilant and act quickly to investigate cases of mortalities in farms.

**Tilapia lake virus – an emerging threat**

The tilapia lake virus (TiLV) is a newly emerging virus associated with significant mortalities in farmed tilapia. Since the first discovery of the virus in Israel in 2014, cases have been reported in Colombia, Ecuador, Egypt and Thailand. Now that screening tools are available and can be accessed by fish disease diagnostic/research labs, the number of reported TiLV cases is expected to rise.

There has been no report of any human health-related issues linked to the consumption of affected tilapia from any of the affected countries since the emergence of TiLV. Looking at fish viruses overall, including TiLV, there is no evidence for a fish virus causing disease in humans.

**Virus puts global tilapia industry at risk**

The emergence of TiLV is the first-ever major disease epidemic reported in tilapia aquaculture, and puts the global industry at risk. Irresponsible trade in live aquatic animals and intensification without biosecurity considerations significantly compound this risk.

Tilapia is one of the most widely cultured species in the world. It is hardy and can be farmed under diverse farming systems with little environmental impact, making an important aquatic food source contributing to global food and nutritional security. Tilapia has been domesticated and now several strains of genetically improved tilapia are farmed around the world.

Global production of tilapia is estimated at 5.67 million metric tons (MMT). In 2015, the top three producers were the People's Republic of China (1.78 MMT), Indonesia (1.12 MMT) and Egypt (0.88 MMT). Other leading producers include Bangladesh, Vietnam and Philippines (FAO, 2017).

1. FAO Food and Agriculture Organization of the United Nations, 2017. Global aquaculture production. <http://www.fao.org/fishery/statistics/global-production>.

**Global monitoring of TiLV**

- The World Organisation for Animal Health (OIE) is the intergovernmental organisation responsible for improving animal health worldwide. Key activities include collecting, analysing and disseminating scientific information on animal disease control and publishing health standards for international trade in animals and animal products.
- Infection caused by TiLV meets the criteria of an 'emerging disease' under OIE's Aquatic Animal Health Code.
- To know more, read the technical disease card on TiLV available at [www.enaca.org](https://enaca.org).

## Urgent update on possible worldwide spread of tilapia lake virus (TiLV)

H.T. Dong, R. Rattanarojpong and S. Senapin

Recently, we released a warning of TiLV in Thailand including an improved semi-nested RT-PCR method for rapid detection. The Fish Health Platform in Centex, BIOTEC/Mahidol University has obtained positive test results for TiLV from other countries in Asia where it has not yet been reported. Further,

the majority of our archived samples collected from previous disease outbreaks in several tilapia hatcheries in Thailand during 2012-2017 have tested positive for TiLV, indicating the presence of TiLV in Thailand even before the virus became known to science in 2013.

The origin of the disease is currently unknown, but many countries have been translocating tilapia fry/fingerlings prior to and even after the description of TiLV. Based on records we could obtain about such translocations, we have prepared a map that contains a list of 5 countries with confirmed reports of TiLV

infections and a list of 43 other countries that we believe have imported tilapia that may have been infected with TiLV. We hope that widespread surveillance for TiLV in the Tilapia industry and in translocated fish will help reduce the impact and spread of this disease.

**Recommendations**

- We recommend that the 43 countries we have listed quickly initiate surveillance for TiLV in cultured Tilapia, since the virus may have been introduced via direct or indirect translocation of fry/fingerlings from the five countries where it has been reported.
- Biosecurity should be applied to prevent wider spread of the disease especially by countries with no predictive record of TiLV risk.
- Since TiLV infects very early developmental stages of tilapia (fertilised eggs, fry, and fingerlings) when fish

immune system is not fully developed, the use of vaccines may not be an effective control approach.

- Research should be promoted for the development of methods to clear TiLV from infected tilapia broodstock and allow production TiLV-free fry/fingerlings.
- Programs should be promoted to develop Tilapia stocks specific pathogen free (SPF) for TiLV and other pathogens as a potential approach to limit impact of Tilapia diseases globally.
- Since TiLV infections result in highly variable mortality (9.2-90%), it is urgent that research should be promoted to discover the underlying reasons (e.g., research on the correlation between TiLV virulence and genetic types or other factors).

Download the update from: <https://enaca.org/enclosure.php?id=870>




**Urgent update on possible worldwide spread of tilapia lake virus (TiLV)**  
 HT Dong<sup>a,b</sup>, T Rattanarajpong<sup>a</sup>, S Senapin<sup>a,c</sup>

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<sup>b</sup>Department of Microbiology, Faculty of Science, King Mongkut's University of Technology Thonburi (KMUTT), Bangkok 10140, Thailand  
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Tilapia lake virus disease (TiLVD) (also known as syncytial hepatitis of tilapia-SHT) is a newly emerging viral disease of tilapia caused by tilapia lake virus (TiLV), a novel Orthomyxo-like virus (Ferguson et al. 2014; Eynogor et al. 2014; Bacharach et al. 2016; Dal-Pozo et al. 2017; NACA, 2017; OIE, 2017). Occurrence of the disease was officially documented earliest in Ecuador and Israel in 2013 and 2014, respectively (Ferguson et al. 2014; Eynogor et al. 2014). The virus, however, is believed to have been responsible for massive mortalities in farmed tilapia in Israel since 2009 (Eynogor et al. 2014; Fahh et al. 2017) and more recently from Thailand (Dong et al. 2017a; Surachepong et al. 2017). Natural disease outbreaks result in variable mortalities ranging from 9.2 to 90%, with tilapia fingerlings and juveniles being more vulnerable than larger fish (Ferguson et al. 2014; Fahh et al. 2017; Dong et al. 2017a; Surachepong et al. 2017). Unlike other viral diseases of tilapia, TiLV appears to be widely spread and so may be present in many countries where it is not yet recognized.

Recently, we released a warning of TiLV in Thailand, including an improved semi-nested RT-PCR method for rapid detection and we urge those involved in Tilapia culture to test for the virus in their country (Dong et al. 2017b). The Fish Health Platform in Centres, BIOTEC/Mahidol University) has also obtained positive test results for TiLV from other countries in Asia where it has not yet been reported, supporting our appeal for wider testing. Further, the majority of our archived samples collected from previous disease outbreaks in several tilapia hatcheries in Thailand during 2012-2017 have tested positive for TiLV (unpublished data), indicating the presence of TiLV in Thailand even before the virus became known to science in 2013. The origin of the disease is currently unknown, but many countries have been translocating tilapia fry/fingerlings prior to and even after the description of TiLV. Based on records we could obtain about such translocations, we have prepared a map that contains a list of 5 countries with confirmed reports of TiLV infections (red, Fig. 1) and a list of 43 other countries that we believe have imported tilapia that may have been infected with TiLV (blue, Fig. 1). We hope that widespread surveillance for TiLV in the Tilapia industry and in translocated fish will help reduce the impact and spread of this disease. To this end, we



**1. CAUSATIVE AGENT**

- 1.1. Pathogen type: Virus
- 1.2. Disease name and synonyms: Tilapia lake virus (TiLV) disease.
- 1.3. Pathogen common names and synonyms: Tilapia lake virus (TiLV).
- 1.4. Taxonomic affiliation: The taxonomic affiliation has not been definitively considered, however, TiLV has been described as a novel virus in the Family Orthomyxoviridae (Eynogor et al. 2014).
- 1.5. Authority (first scientific description, reference): The virus was first described by Eynogor et al. (2014).
- 1.6. Pathogen environment (fresh, brackish, marine waters): Fresh and brackish water.

**2. MODES OF TRANSMISSION**

- 2.1. Routes of transmission (horizontal, vertical, indirect): Co-habitation studies have demonstrated that direct horizontal transmission is an important route of transmission. There is no evidence of vertical transmission. The biological characteristics of the virus are not well characterized as it is difficult to determine the significance of indirect transmission by fomites.
- 2.2. Reservoir: Infected populations of fish, both farmed and wild, are the only established reservoirs of infection. The original source of TiLV is not known.
- 2.3. Risk factors (temperature, salinity, etc.): Disease has been associated with transfer between ponds and thus may be associated with stress (Ferguson et al. 2014, Dong et al. 2017). No other risk factors (temperature, salinity, etc.) have been identified as potential risk factors.

**3. HOST RANGE**

- 3.1. Susceptible species: Mortalities attributed to TiLV have been observed in wild tilapia, Southbrood (Tilapia gulosus), farmed tilapia (Circotomus niloticus and common hybrid tilapia (O. niloticus X O. aureus) (Bacharach et al. 2016; Ferguson et al. 2014; Eynogor et al. 2014). To date only tilapia have been shown to be susceptible. It is possible that other species will be found to be susceptible.
- 3.2. Affected life stage: In the outbreak reported by Ferguson et al. (2014) and Dong et al. (2017) fingerlings were mainly affected. Dong et al. (2017) reported approximately 90% mortality in red tilapia fingerlings within one month of stocking into cages. Mortality just over 9% in medium to large sized Nile perch was noted by Fahh et al. (2017). Other reports have not commented on different levels of mortality by life stage (Eynogor et al. 2014).
- 3.3. Additional comments: There is some evidence that certain genetic strains of tilapia are resistant. Ferguson et al. (2014) noted that one strain of tilapia (genetically male tilapia) incurred a significantly lower level of mortality (10-20%) compared with other strains.

**4. GEOGRAPHICAL DISTRIBUTION**

TiLV has been reported in Colombia, Ecuador and Israel (Bacharach et al. 2016; Ferguson et al. 2014; Tardak et al. 2016), and most recently, Egypt (Fahh et al. 2017) and Thailand (Dong et al. 2017). However, a lack of thorough investigation of all mortality incidents means that the geographic distribution of TiLV may be wider than currently. For example, reports of mortality in tilapia in Ghana and Zambia in 2016 have not been investigated. TiLV but the available information does not indicate that the presence of the virus has been investigated. A partial genome from Thailand showed relatively high variation in amino acid from Israel (second 97% nucleotide identity) (Dong et al. 2017).

TILAPIA LAKE VIRUS (TiLV), May 2017

**Tilapia lake virus (TiLV) - a novel Orthomyxo-like virus**

Published by the Office International des Epizooties

This disease card published by the World Organisation for Animal Health (OIE) provides information about tilapia lake virus (TiLV), a recently observed pathogen causing significant mortalities in farmed tilapia.

The disease card provides details of the pathogen, modes of transmission, host range, geographical distribution, clinical signs, diagnostic methods, socio-economic significance, transmission risk


and a list of available references. We urge laboratories to test for TiLV when abnormal tilapia mortalities occur.

Download the disease card from: <https://enaca.org/?id=869>

**Quarterly Aquatic Animal Disease Report, January-March 2017**

The 73<sup>rd</sup> edition of the Quarterly Aquatic Animal Disease Report contains information from 14 governments. The foreword provides a disease advisory on tilapia lake virus (TiLV), an emerging threat to farmed tilapia in the Asia-Pacific region.

Download the report from: <https://enaca.org/enclosure.php?id=918>



2017:1

Network of Agriculture Centres for Asia-Pacific  
 The OIE Regional Representation for Asia and the Pacific  
 Food and Agriculture Organization of the United Nations

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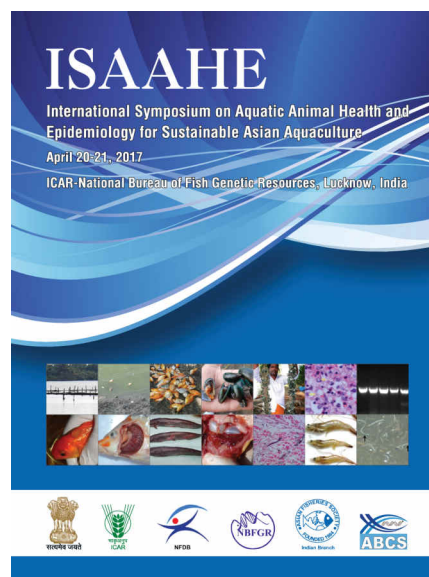
July 2017

## Proceedings of the International Symposium on Aquatic Animal Health and Epidemiology for Sustainable Asian Aquaculture

These are the proceedings of a symposium convened by the ICAR National Bureau of Fish Genetic Resources, Lucknow, India, from 20-21 April 2017. The symposium included presentations from national and international experts on aquatic animal epidemiology and related disciplines to address a range of risk factors that catalyse horizontal spread of disease,

spread of transboundary pathogens and increased disease susceptibility, thereby contributing to strengthening of surveillance efforts, especially in the Indian context.

The proceedings may be downloaded from: <https://enaca.org?id=924>



## ICAR-CIBA launched “Vanami Shrimpapp” a mobile app on Pacific white shrimp (*Penaeus vannamei*) farming

The Central Institute of Brackishwater Aquaculture, ICAR, has launched “Vanami Shrimpapp”, a mobile application for Android-based phones and tablets. The app facilitates the dissemination of technical information among stakeholders in the shrimp farming sector.

The app provides information on better management practices for Pacific white shrimp (*Penaeus vannamei*) farming in the form of “Frequently Asked Questions” targeted for shrimp farmers and field level extension workers of coastal states. Clients can view the content either topic-wise or through key word search. Clients can also post questions through the app and have it answered by an expert within two working days.

*P. vannamei* is currently being farmed under varying conditions in India ranging from very low to oceanic salinities with different levels of technology adoption ranging from extensive, zero water exchange to biofloc based intensive systems and formulated feeds with varying protein contents. Currently *P. vannamei* shrimp farming is being practiced in about 60,000 hectares in nine coastal states, mostly by small scale farmers, with a production of 360,000 tonnes leading to an export to the value of around US\$3.4 billion.

Shrimp farming provides livelihoods for nearly 150,000 farm families and 200,000 workers in the coastal states of India. The app is currently being translated into additional languages including Hindi, Telugu, Tamil, Oriya, Bengali and Gujarati. The team behind the app was

comprised of Dr M. Kumaran, Shri. P.R. Anand, Dr D. Deboral Vimala, Shri J. Ashok Kumar and Dr K.K. Vijayan.

Vanami Shrimpapp was officially launched by Shri Baburaj V. Nair, the Chief Human Resources Officer of ‘The Hindu’ newspaper group in the presence of Dr K.K. Vijayan, Director, CIBA during the occasion of the ICAR-CIBA Foundation Day, 4 April 2017.

The app was developed based on the frequently made questions received from Indian shrimp farmers. It may also be of use in able to shrimp farmers in other south and south-east Asian countries and elsewhere in the tropical belt.

The app is available for Android devices via Google Play.

## New NACA website

Finally it’s here! The NACA website has been rebuilt, re-organised, re-edited, re-indexed, re-illustrated and re-coded from scorched earth using the purpose-built Tuskfish Content Management System.

The new site is greatly simplified. The home page now provides a rolling timeline of NACA’s news, projects, publications and everything else, so there is only one page you need to keep

track of to stay up to date and you can filter it by subject if you have a particular interest.

Resources include our Email Newsletter, Event Calendar, RSS feeds and contact points for NACA member governments, research centres and committees.

An Experts Database in in preparation, which will provide profiles and contact points for key scientific personnel in

participating centres, in order to assist people to find relevant expertise and facilitate technical exchange.

NACA website: <https://enaca.org>

Email newsletter subscriptions: <https://enaca.org/email-newsletter.php>

RSS feed: <https://enaca.org/rss.php>

## Pakistan officials train on aquaculture certification

FAO's Pakistan Office requested NACA to conduct a two-week training course for four provincial fisheries officers on Good Aquaculture Practices and Certification in Thailand from 14th to 31st May 2017. The officers were: Anser Chatta, Deputy Director of Fisheries (Punjab); Muhammad Ramzan, Deputy Director of Fisheries (Punjab); Muhammad Imanan, Assistant Director (Punjab); and Abdul Hadi, Assistant Director (Balochistan).

A series of lectures and discussions were carried out by experts from NACA, the National Bureau of Agriculture Commodity and Food Standards and the Department of Fisheries, Thailand. These lectures covered an array of topics ranging from the relevance of good aquaculture practices and certification in relation to sustainable aquaculture development and food safety, standard setting, certification schemes, and implementation of good aquaculture practices.

The participants were also provided with opportunities to visit aquaculture farms and interact with Thai farmers on farming practices and compliance with various standards. They used

Thai Good Aquaculture Practices as examples in connection with institutional and farm visits to understand and learn the process for standard setting and implementation, and practiced skills in farm auditing and field sampling.

During the training process, participants were also encouraged to link their work experience and development contexts of Pakistan with training contents to stimulate their thinking about how GAqP should be developed and implemented in Pakistan. In addition, some technical details on tilapia seed production, semi-intensive pond culture, feed production and feeding etc. were intensively discussed on various training occasions.

Participants expressed interest in further collaboration with NACA in areas of technical assistance, capacity building and possible joint research and development projects. Some follow-ups were suggested including a joint effort to appraise and document the current aquaculture development status in Pakistan and NACA's continuous assistance in development and implementation of good aquaculture practices in Pakistan.



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