CGIAR RESEARCH PROGRAM ON Fish

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 global tilapia industry, whose 2015 production was valued at USD 9.8 billion. 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 Columbia, 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 it 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 6.4 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].

[1] [FAO] Food and Agriculture Organization of the United Nations. 2017. Fishery and Aquaculture Statistics. Global production by production source 1950-2015 (FishstatJ). In: FAO Fisheries and Aquaculture Department [online]. Rome. Updated 2017. www.fao.org/fishery/statistics/software/fishstatj/en.

Global monitoring of TiLV

- The World Organisation for Animal Health (OIE) is the intergovernmental organization responsible for improving animal health worldwide. Key activities include collecting, analyzing 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.oie.int.

Take action to prevent TiLV and minimize its impact

What are the clinical signs of infection with TiLV?

Mass mortalities of farmed tilapia (20–90 percent) are an indicative sign of infection with TiLV. Gross signs include dermal lesions and ulcers, ocular abnormalities, opacity of lens, loss of appetite, slow movement, gathering in the pond bottom and reduced schooling behavior.

How can infection with TiLV be diagnosed?

Presently, histopathology and PCR (RT-PCR and semi-nested RT-PCR) have been described and used to detect and confirm TiLV. Considering the seriousness of infection with TiLV, it is suggested that samples from mortality events be screened for TiLV. WorldFish also recommends that tilapia breeding programs and multiplication centers/hatcheries include mandatory TiLV screening for their seed before selling to hatcheries or grow out farmers.

What are the risk factors?

Currently, there is limited epidemiological information available. What's known is that:

- outbreaks appear more during summer months
- different strains of tilapia are affected
- in polyculture systems, other species like mullets and carps do not die.

There is an urgent need to gather more information through epidemiological studies to identify methods of transmission, survival of TiLV outside the host or in frozen fish, carriers, and potential risk factors for disease outbreaks. These findings will enable the development and testing of management interventions to minimize the impact of TiLV.

What are the prevention and control options?

There is no treatment for viral pathogens. The impact of TiLV has to be managed through farm-level management interventions, stricter biosecurity controls and restricted/regulated movement of animals from affected farms.

Published studies show that fish that survive TiLV become resistant to infection. Currently, no vaccines are available but may be in the future.

What immediate actions are required?

Countries where TiLV presence has been confirmed should act quickly to:	Countries with a tilapia industry where TiLV has not been detected should consider all preventive steps, including:
• Implement capacity building and awareness programs at different levels to farmers, hatchery operators, value chain actors, extension service providers and consumers to support implementation of simple farm level biosecurity programs • Set up TiLV task force with representatives from key national institutions • Set up a simple/practical surveillance plan to map the spread of TiLV • Monitor movement of fish from affected farms • Initiate research to understand the role of TiLV in mass mortalities • Designate and equip one or two national laboratories to lead TiLV diagnosis • Facilitate development of regional and international projects for donor support.	• Conduct a risk analysis for any live tilapia introductions • Screen live tilapia entering the country as seed or brood fish for aquaculture purposes • Investigate all reports of tilapia mortalities • Develop contingency plans to deal with outbreaks.

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