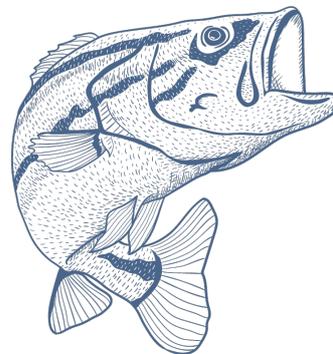


October 2018

POLICY BRIEF

LOOMING THREAT FROM DISEASE: A WAKE UP CALL FOR KENYAN TILAPIA FISH PRODUCTION



BACKGROUND

Tilapia remains the most popular fish species reared in fish ponds in Kenya, with Nile tilapia accounting for about 75% of total aquaculture production in the country. Farmed tilapia contributes to filling the growing gap in fish supply associated with dwindling wild fish stocks and high population growth and provides access to affordable source of protein, jobs and earnings from local and regional markets for millions of people, including many smallholders. The Economic Stimulus Programme (ESP) of the Government of Kenya under Vision 2030 agenda led to increased interest as a result of training and provision of inputs such as feeds and young fish for stocking into ponds to tilapia farmers and

has since been witnessed in many parts of the country. Tilapia farming contributes 0.8% to the gross domestic product, provides direct employment opportunities to over 500,000 people and supports over 2 million people directly ⁽⁷⁾. At global production of 6.4 million tonnes with an estimated value of 9.8 billion US dollars in 2015, tilapia fish is a mainstay of global food security and nutrition⁽³⁾.

But this is set to change. This is due to the danger of a threatening, emerging viral disease known as Tilapia Lake Virus Disease ⁽⁶⁾. This disease is caused by a virus of the influenza family called Tilapia Lake Virus (TiLV) ⁽⁵⁾. The disease has been responsible for massive losses in farmed tilapia in Israel since 2009 ⁽¹⁰⁾. It has led to huge declines in tilapia populations in Egypt and in other parts of the world ⁽⁴⁾.

WHAT IS THE ISSUE?

First recorded in Ecuador and Israel in 2013 and 2014 respectively, tilapia lake virus disease has affected global tilapia production. Unlike what its name may suggest, the virus is not only found in lake fish but also in other water bodies including culture systems such as ponds⁽¹⁰⁾. The disease has been confirmed in three continents including Africa (Figure 1). Due to its potential to wipe out entire tilapia populations, the virus is considered a major threat to food security, nutrition and livelihoods. Records already indicate that Tanzania, Uganda and Zambia are at high risk while Kenya is on high alert to outbreaks

of this disease⁽¹⁾. Of concern to Kenya is that the virus has recently been detected in both farmed and wild Nile tilapia from Lake Victoria⁽⁹⁾. Furthermore, Egypt, a country connected to East Africa by the River Nile, has been hard hit by the virus and is a potential source of infection to Kenya. Young fish have been found to be most vulnerable to infection. Unlike other viral diseases of tilapia, TiLV appears to be widely spread and may therefore be present in many countries where it is has not been reported. Like other viruses, TiLV has no treatment and has the potential to evolve, making it difficult to control.

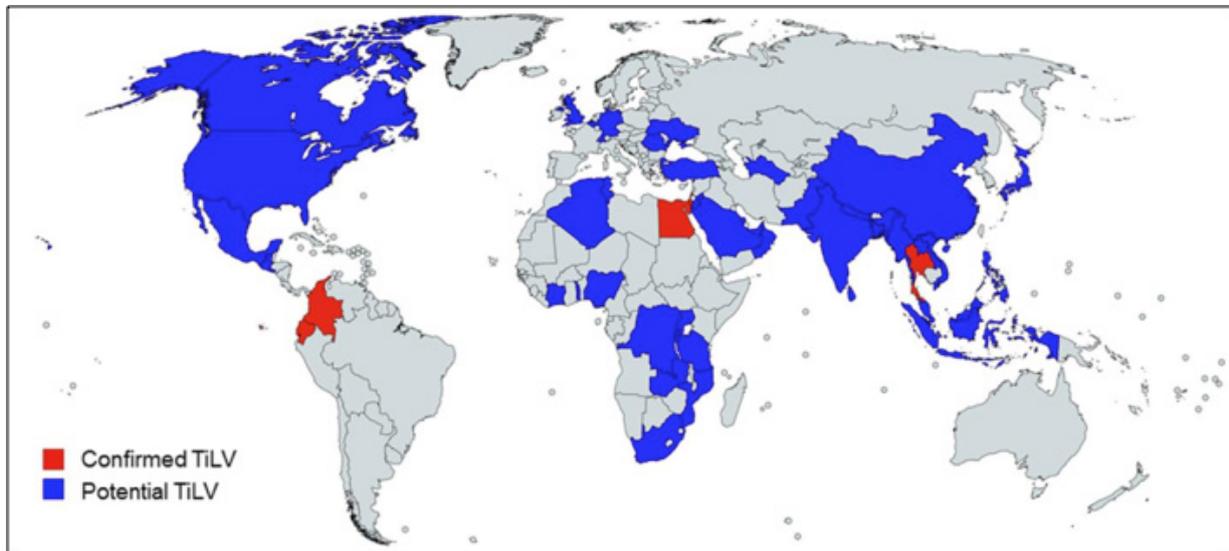


Figure 1: Possible worldwide distribution of TiLV. Countries with confirmatory evidence (red color). Countries with potential evidence as a result of importing tilapia infected with TiLV (blue color). Confirmed - 5 countries; potential - 43 countries. (Source: 1)

WHAT IS KNOWN ABOUT TILAPIA LAKE VIRUS?

- It is an emerging disease of cultured tilapia that significantly threatens the USD 9.8 billion global tilapia industry.
- Handling and movement of fish is a significant risk factor for outbreaks.
- The virus survives in both fresh and brackish water environments.
- Direct transmission from fish to fish is an important route of infection
- Infected fish shows loss of appetite, slow movements, dermal lesions and ulcers, ocular abnormalities, and eye lens opacity (Plate 1)
- It has been detected in Africa including Kenya. (9; 11)





Plate 1: A fish infected with tilapia lake virus (Photo: 1)



Plate 2: Dead tilapia as a result of tilapia lake virus disease (Source: 12)

REQUIRED ACTION: What should be done about TiLV?



By the Government: (State Department of Fisheries & Directorate of Animal Health)



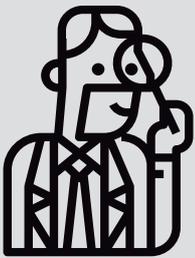
Designate and equip a national TiLV diagnosis laboratory



Create awareness on TiLV and educate fish farmers and the public on signs, risks and control of TiLV disease



Develop and implement a surveillance and monitoring program for TiLV among East African member states as well as a reporting mechanism for tilapia mortalities



By researchers and institutions of higher learning



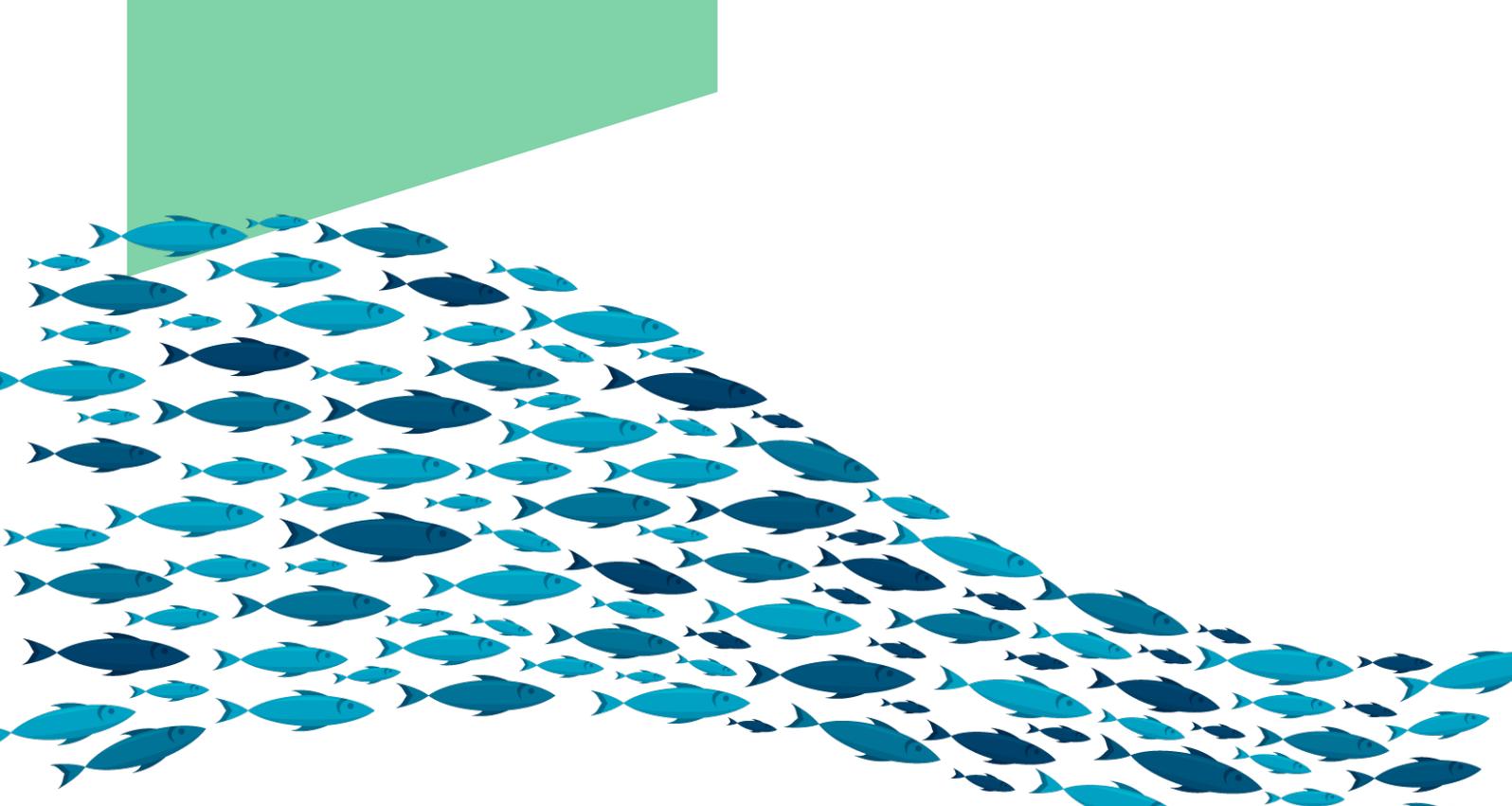
Isolate virus from Lake Victoria and investigate its ability to cause disease and virulence in susceptible fish.



Since TiLV infections result in highly variable mortality (9.2-90%), urgent research should be conducted to discover the underlying reasons (e.g research on the correlation between TiLV virulence and genetic types or other factors).



Develop and implement a surveillance and monitoring program for TiLV among East African member states as well as a reporting mechanism for tilapia mortalities



Acknowledgments

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References

1. Dong, H & Rattanarojpong, Triwit & Senapin, Saengchan. (2017). Urgent update on possible worldwide spread of tilapia lake (TiLV)
2. Food and Agriculture Organization of the United Nations (FAO) (2017a). FAO issues alert over lethal virus affecting popular tilapia fish
3. Food and Agriculture Organization of the United Nations (2017b). Global aquaculture production.
4. Fathi M, Dickson C, Dickson M, Leschen W, Baily J, Fiona, Ulrich K, Weidmann M. (2017). Identification of Tilapia Lake Virus in Egypt in Nile tilapia affected by 'summer mortality' syndrome. *Aquaculture* 473: 430-432
5. Ferguson H W, Kabuusu R, Beltran S, Reyes E, Lince J A, del Pozo J (2014). Syncytial hepatitis of farmed tilapia, *Oreochromis niloticus* (L.): a case report. *Journal of Fish Diseases* 37: 583-589
6. Jansen M D, Dong H T, Mohan C V (2018). Tilapia lake virus: a threat to the global tilapia industry? *Reviews in Aquaculture*. Online version. <https://doi.org/10.1111/raq.12254>
7. KMFRI (2017). Kenya's Aquaculture Brief 2017: Status, trends, challenges and future outlook. Kenya Marine and Fisheries Research Institute, Mombasa, Kenya. 12pp
8. Mugimba K K, A A Chengula S, Wamala E D, Mwege C J, Kasanga D K, Byarugaba R H, Mdegela S, Tal B, Bornstein A, Dishon S, Mutoloki L, David Ø, Evensen H M, Munang'andu (2018). Detection of tilapia lake virus (TiLV) infection by PCR in farmed and wild Nile tilapia (*Oreochromis niloticus*) from Lake Victoria. Online version <https://doi.org/10.1111/jfd.12790>
9. Network of Aquaculture Centers in Asia-pacific, Bangkok, Thailand (NACA) (2017). Tilapia Lake Virus (TiLV) – an emerging threat to farmed tilapia in the Asia-Pacific region. Disease Advisory.
10. Surachetpong W, Janetanakit T, Nonhabenjawan N, Tattrayong P, Sirikanchana K, Amonsin A (2017). Outbreaks of tilapia lake virus infection, Thailand, 2015-2016. *Emerging Infectious Diseases*.
11. World Organization for Animal Health (OIE) (2017). Tilapia Lake Virus (TiLV) - novel Orthomyxo-like virus
12. <https://andina.pe/.../noticia-especialistas-sanipes-investiga>. Accessed on 5th August 2018

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