DESIGN AND IMPLEMENTATION OF NATIONAL ACTIVE TiLV SURVEILLANCE PLAN

INDONESIA TEAM PRESENTATION

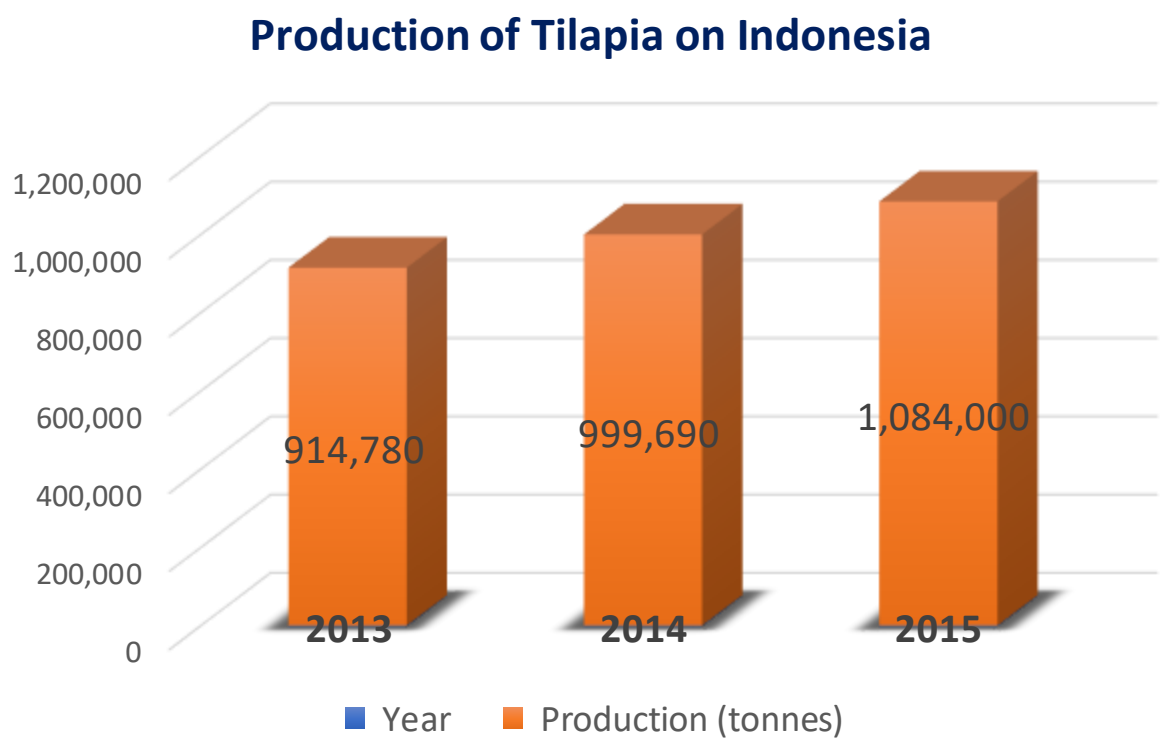
Intensive TiLV FAO training Course, 17-25 June 2018, Sun Yat Sen University Guangzhou, China

Farm and Wild Population of Tilapia : Sectoral Status

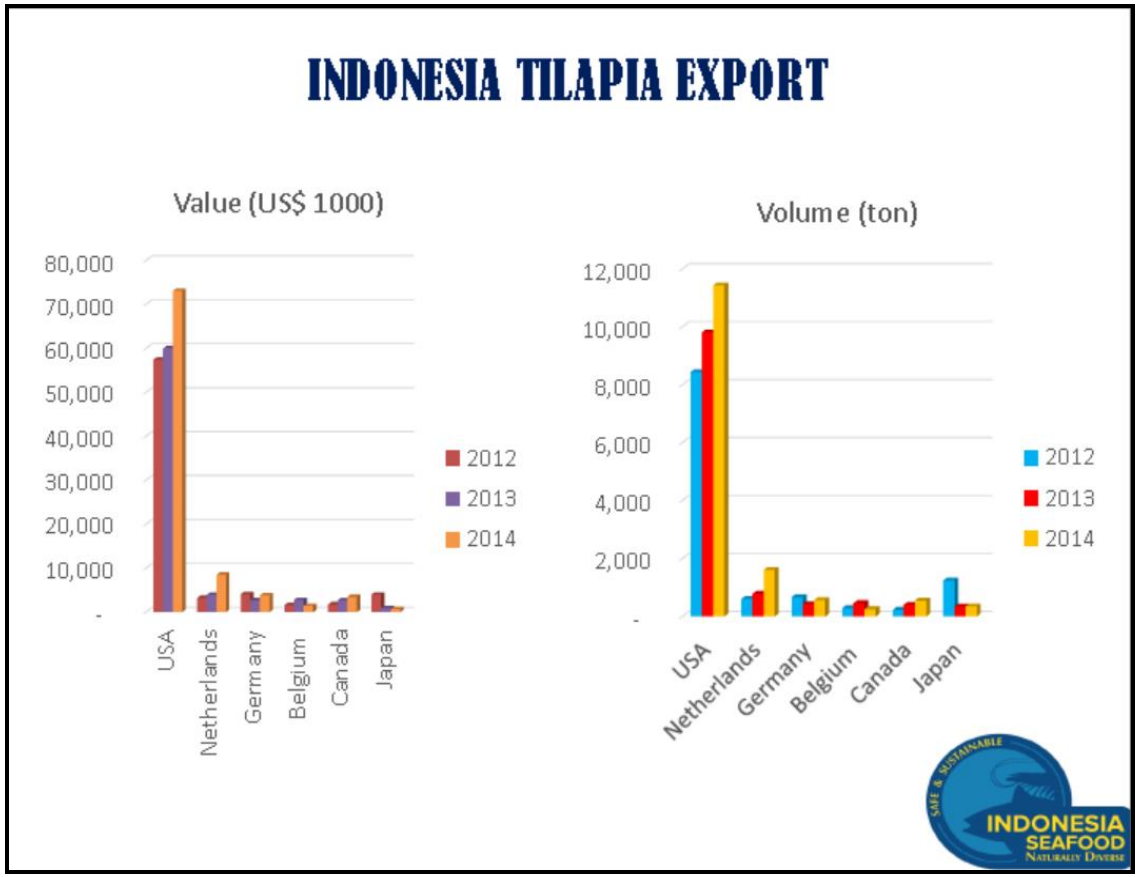
A. Production Statistik

A.1. Wild Species: O. *mossambicus*, O. *niloticus*

A.2. Farmed: O. *niloticus* (GIFT/Black Tilapia, Red Tilapia, Hybrid Tilapia)

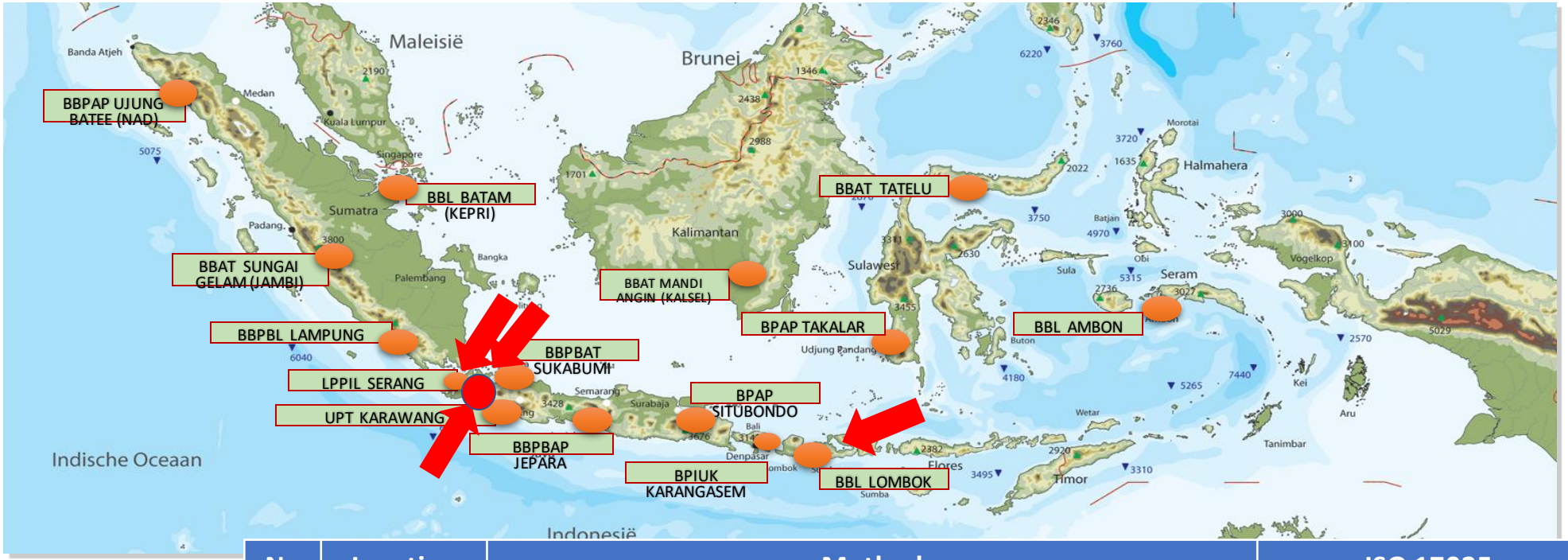


B. Export Data



Diagnostic (in the Country)

Fish Health Laboratories under DGA In Indonesian Region



15 Fish Health Laboratories under DGA and 46 laboratory (under Quarantine)

No	Location	Method	ISO 17025
1	Jakarta	Parasitology, microbiology, molecular, histopathology	Accredited
2	Banten	Parasitology, microbiology, molecular, histopathology	Accredited
3	Depok	Parasitology, microbiology, molecular, histopathology	Accredited
4	Lombok	Parasitology, microbiology, molecular, histopathology	Accredited

Presence of TiLV infection in Indonesia

Tersedia online di: http://ejournal-balitbang.kkp.go.id/index.php/jra

STUDI KASUS INFEKSI *TILAPIA LAKE VIRUS* (TiLV) PADA IKAN NILA (*Oreochromis niloticus*)

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ABSTRAK

Ikan nila atau *Oreochromis niloticus* merupakan ikan konsumsi masyarakat di Indonesia. Kasus kematian massal ikan nila terjadi di beberapa lokasi budaya di Jawa, Lombok, dan Sumatera yang disebabkan oleh infeksi *Orthomyxovirus*, dan disebut sebagai *Tilapia Lake Virus* (TiLV). Tujuan penelitian ini adalah untuk mendeteksi adanya infeksi TiLV dengan metode *semi-nested Reverse Transcriptase-Polymerase Chain Reaction* (RT-PCR) pada kasus kematian massal ikan nila. Lokasi pengambilan sampel di Desa Sigerongan Kecamatan Lingsar, Lombok, Nusa Tenggara Barat. Analisis deteksi RT-PCR menggunakan sampel organ otak, ginjal, limpa, dan hati, selanjutnya dilakukan sekuensing. Hasil pengamatan terhadap gejala klinis terhadap ikan nila *moribund* terlihat kondisi mata yang buram/katarak, serta cekung, abrasi kulit, serta perubahan warna tubuh menjadi lebih gelap. Hasil analisis RT-PCR menunjukkan bahwa kejadian kematian massal pada ikan nila suspektif diakibatkan oleh infeksi RNA virus TiLV. Analisis sekuensing menunjukkan bahwa TiLV dari sampel ikan nila di Lombok mempunyai kesamaan identitas genetik 97% dengan TiLV asal Israel (*Genebank Accession Number* KU 751816.1).

IMPLEMENTATION OF NATIONAL ACTIVE TiLV SURVEILLANCE

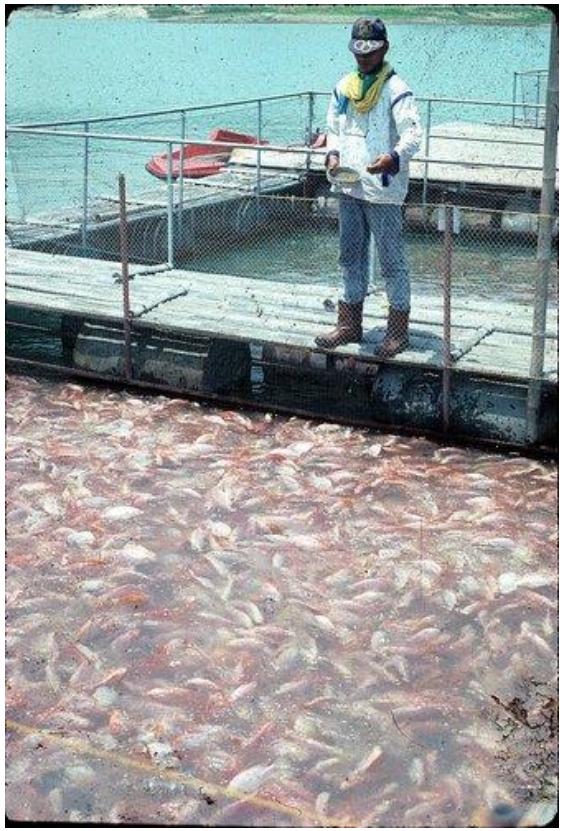
DOF have not been notification

SURVEILLANCE : DESIGN AND IMPLEMENTATION

Intensive TiLV FAO training Course, 17-25 June 2018, Sun Yat Sen University Guangzhou, China

1. Objectives

- To measure TiLV prevalence at Lombok island in wild and farm populations during 2018/2019.
- To identify possible risk factors for spreading TiLV in order to develop a disease control program at the area.
- To establish a transparent (according to OIE requirements for emerging disease) reporting system.



2. Definition of population

All the **susceptible species of tilapia** (young, fingerling, adults stages and brood-stocks) in farms and **wild population** (specifically in Lombok province) based on *Koesharyani et al. (2018)*

3. Clustering of the disease

TiLV occurs mostly at water temperatures ranging between 24 - 25^{o}C. TiLV has not been reported from broodstock but we would like to know the prevalence or the carrier of the broodstocks in Lombok. The sampling will be conducted **3 times a year for 2 years.**

Country	Which month of the year			
	Q1	Q2	Q3	Q4
Indonesia	(Feb - Mar)	(Jun - July)	(Sept – Oct)	

4. Case outbreak definition

- A group of fish in a tilapia susceptible farmed at all levels (**young, fingerling, adults stages and brood-stock**) showing at least 20% mortality for 3 consecutive days with or without clinical signs.
- Tilapia population in wild environment (such as in a lake) with **10-30%** mortality with a specific clinical signs to TiLV (skin discolouration, exophthalmos and lethargy), etc.

5. Sampling

a. **Wild fish population**: random spatial sampling can be used. The team will sampling the fish with a total of 10% from the catch population.

b. **Farmed fish** :
   - sampling unit is farm
   - Sample size = Total 30 farms : 50% of the farm population, at 30 fish per farm (95% confidence level)

c. **Sampling materials :** Liver and brain for RT-PCR and histopathology

d. **Sample selection :** Tilapia with and without clinical signs at the specific time of sampling

6. Diagnostic/Testing

1. List of Laboratory

- **Three (3) national reference laboratories** will be involved in the sampling and testing of the surveillance samples.
  - Mariculture Center Laboratory (Lombok)
  - Research Station for Fish Disease Control (Depok)
  - Fish Disease & Environment Investigation Station (Banten)
  - Quarantine Centre laboratory (Jakarta)

2. Tests to be used

- Semi nested RT-PCR (Dong et.al, 2017)
- Histopathology
- Sequencing of PCR product (confirmatory test)
- Validation test – send unknown samples to the reference labs for confirmation

7. Study design and Analysis methodology

1. Survey Design

Wild fish population: The surveillance is designed to provide **95% confidence level.** The value of 5% (design prevalence) is selected to be practical and to reflect the current knowledge of TiLV in participating countries.

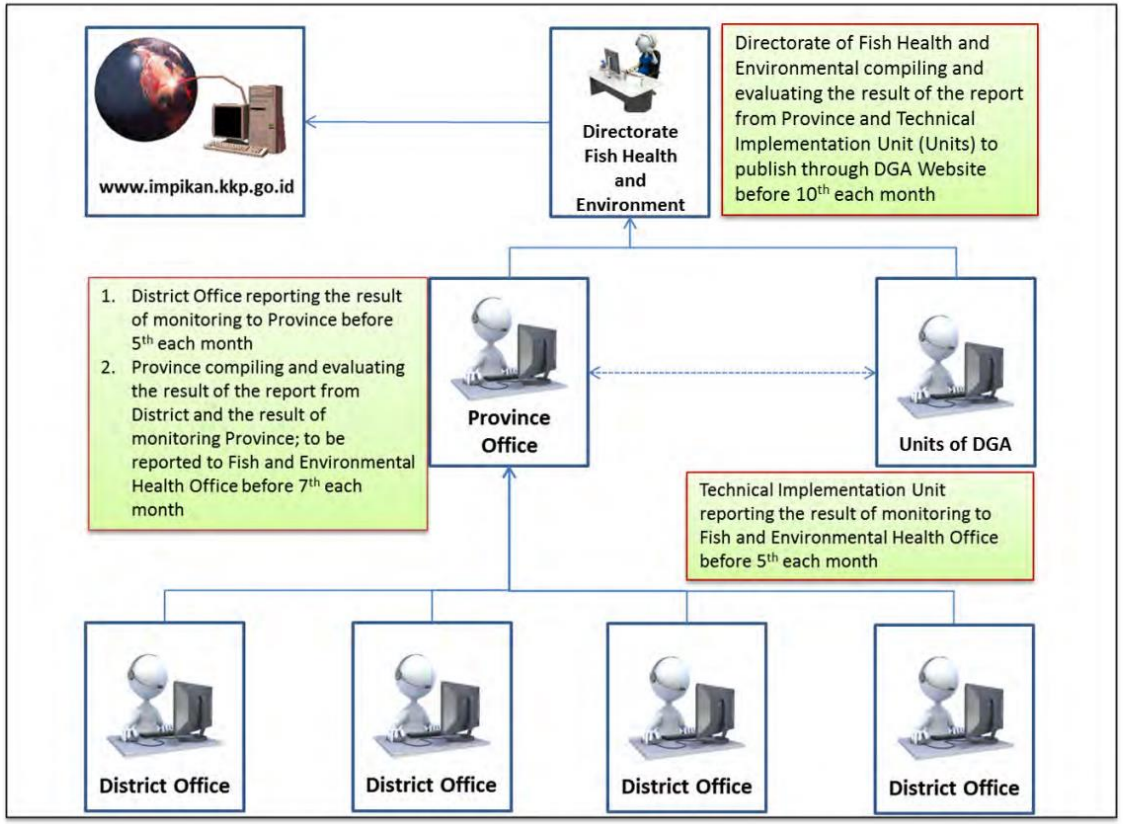
2. Methods data analysis

Farmed fish population: Detected farms, will be sample at 10% of population.

8. Data Flow & Management

Data form and data base will be entry to an **excel data sheet**.

The flow of reporting Surveillance and Monitoring Fish Disease result through SSMPI ONLINE



9. Validation

- Fish sampling – **SOP** of Indonesian National Standard (2011).
- Validate of the test method (by PCR and histopathology) with the other laboratories, universities or experts.

10. Quality Assurance

1. Establishment of national surveillance team (NST) from DGA and its researchers.
2. Training and education by experts (e.g. University expert, researchers).

11. Human and Financial Requirements

1. Surveillance team (NST) : 2 persons
2. Diagnostic team : 3 staffs (technician of microbioloy, molecular and histopathology)
3. Field support team : 1 person

Budget for 3 people (4 days) defined as 1 expert, 1 local staff, 1 technician from Reff lab:

- Travel & local transportation = IDR 9.000.000
- Accommodation = IDR 7.200.000
- Personnel payment = IDR 3.000.000

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= IDR 19.200.000

- Diagnostic materials = IDR 10.000.000

Total budget per sampling = IDR 29.200.000 (USD 2,100)

Budget for 3 times sampling/year = **IDR 63.600.000 (USD 4,600)**

Financed by DGA of Indonesia

12. Surveillance Programme at National Level

INFORMATION OBTAINED FROM SURVEILLANCE PROGRAM:

1. TiLV database and distribution Map
2. Listed TiLV in National Pathogen List (NPL).
3. Traceability of tilapia source that causing TiLV.
4. Regulation and policy of TiLV status.
5. Determined the TiLV prevalence results from Surveillance program for design the Biosecurity Program.

13. Management and Control

Control methods …

- **Restrictions on the movement of live tilapines** from farms and fisheries where the virus is known to occur will limit the spread of the disease.
- **Generic biosecurity measures** to minimise fomite spread via equipment, vehicles or staff (i.e. cleaning and disinfection) should also be implemented.

THANK YOU