Design and implementation of an Active surveillance for TiLV using 12 point Checklist

Vietnamese team

Checklist 1: Scenario setting

Criteria	Response
Status of TiLV in Vietnam	Unknown status (no reported case of TiLV but neiboring countries with shared water bođies are not considered free)
TiLV surveillance	Yes (passive and active surveillance but not enough)
Do you know the status of TiLV in your trading partners or neibouring countries	Yes (base on international disease information, request trade partner to provide evidence)
Do you share watershed with another country	China, Thailand, Lao, Cambodia
Data Sources	Scientific report (internal/external), grey lliterature produccer sector information (need more investigation to confirm), diagnostic report, OIE, WAHIS, QAAD (NACA, OIE, FAO)
The scenario in Vietnam	Scenario 3

Checklist 2:
Surveillance objectives

1. Objective of AAH surveillance (TiLV considered as a risk)

Demonstrate disease freedom

Early detection of disease

2. Certification level

National disease status

4. Timeframe: At least 2 consecutive years of surveillance, 2 times/ a year, May and August.

Checklist 3: Definition of population

- The population of interest: all population susceptible to TiLV in Vietnam (farmed and wild tilapia: *Oreochromis aureus, O. niloticus, O. mosambicu, Oreochromis spp*)

- Target population: all population susceptible to TiLV farmed in 2021-2022 (2 years)

- Study population: sampled popullation

Checklist 4: Disease clustering

- Clustering effect of disease is consider and described:
  - Succeptible specices: farmed and wild tilapia: *Oreochromis aureus, O. niloticus, O. mosambicu, Oreochromis spp*
  - Unit of study (pond, cage, mob, paddock, farm, village, district, region)
  - Characters of pathogens
  - History of disease
  - Disease pattern: Transmission mode, geograpical distribution, environmental factors (temperature 28-32oC, poor water quality...)...

Checklist 4: Disease clustering (cont)

- Clustering effect of disease is accounted in sampling/survey desigh and data analysis
  - Succeptible speices
  - Unit of study (pond, cage, mob, paddock, farm, village, district, region)
  - History of disease
  - Prevalence
  - Susceptible stage
  - Temperature

Checklist 5: Case/outbreak definition

- Suspected: A tank (hatchery)/pond (grow-out)/river, stream (wild) in which sudden mortalities and/or clinical signs has been observed during the previous and ongoing production cycle, attributable to the presence of TiLV (eg. Farmer answer yes to the question whether TiLV has occurred not in that pond)

- Confirmed: upon collection of 30 moribund or sick fish samples, TiLV is confirmed by a possitive test result using PCR and the detection of histopathological signs of TiLV

Checklist 5: Case/outbreak definition (cont)

- Clinical signs: Skin redness/erosion or eyes protrusion/ruptured/cloudiness or abdomen swollen or scale protrusion/loss; wild tilapia shinkage of the eye and loss of ocular functioning

- Laboratory: Level I, II, III

- Epidemiology: mortality 0-100% (red tilapia fingerling 90%, 9% in medium and larger size nile), may occur throughout the year but focus on hot season, horizontal (shedding mucus) and vertical transmission, infection at all life stage, stress and evironmental condition trigger infection, no detection of TiLV carrier, apprerance in China, Thailand, Egypt, Malaysia, India, Mexico, Peru, Isreal, Philippine, Colombia, America, Ecuador

Checklist 6 Application of level I, II, III diagnosis

- Level I
  - Farm record: Tilapia farm/hatchery registry record, profile record, keeping record (stocking date, source of fish, daily feeding, health mornitoring, mortality, treatment..)
  - Preservation and transportation guideline
  - Basic field equiment: thermometer, pH meter, salinometer, GPS, preservation…, sampling equipments

Checklist 6 Application of level I, II, III diagnosis

List of premises randomly selected for sampling in surveillance.

Province	District	Commune	Name farming areas (1)	name of premise owners (2)	Number of establishments ponds	Total area of premises (excluding treatment and pond / handling) of (Unit: ha)	Species (3)	Farming methods (intensive or semi-intensive) (4)	Noted

Record of the sampling

SOCIALIST REPUBLIC OF VIETNAM

Independence - Freedom - Happiness

..................., Dated........month year...........

RECORD OF SAMPLING FISH IN DISEASE SURVEILLANCE

1 / Information on staff directly samples:

- Full name: ....

- Office: ....

- Telephone number (if applicable): ....

2 / Information on the fish farmers:

- Full name: ....

- Address (name, district, province): ....

- Telephone (if applicable): ....

- Full name of people directly look after the pond: ... ...

- Telephone (if applicable): ....

- Technical qualification of people look after pond: ....
... .

- Geographic to ordinates of the pond (Use your GPS device was granted and measure to ordinates in the first round of sampling):

+X (Longitude): ....

+ Y (Latitude): ....

- The total number of household ponds ?: ....ao.

- The total area of the pond: .... ha

- Total area of ponds to be sampled: ....ha;

- Stocking density estimated: ....animal / M²

3 / Information on the sample:

TT	Sample Symbol	Species	Condition of shrimp was sampled (Healthy or Sick?)	Fish age (Day of age)	Culture period (from stocking date) is how many days	Sampling time (date / month / year)
1.						
2.						
3.						
4.						

Checklist 6 Application of level I, II, III diagnosis (cont)

Map location of weather station near tilapia pond (Hung Yen, Nam Dinh province)

Checklist 6 Application of level I, II, III diagnosis (cont)

- ***Laboratory system***

- Number of laboratory

Total 35 public laboratories: 8 National level labs (DAH) (1 central and 7 regional), 27 provincial labs

Research laboratories: RIA 1, 2, 3

University laboratories: 5

Private: 5

-Competence

Level II: 2 national level labs and RIA 1, 2, 3

Level III: All laboratories (PCR)

Number of accredited labs with ISO: 18 labs

Checklist 6: Application of level I, II, III diagnosis (cont)

- Number of staff: 188 (DAH system)

20 masters, 65 veterinarians, 51 bachelors of aquaculture, 14 bachelors of aquatic pathogens, 13 bachelors of livestock, 14 staff graduated for other major and 14 under-graduated staff

Checklist 6: Application of level I, II, III diagnosis (cont)

Distribution of labs

Checklist 7: Study design and sampling

- Sampling unit: a tank (hatcheries)/pond (grow-out)/river/stream (wild)
- Sampling method: Representative
- Sampling size:
- Hatcheries: ponds 143/1,800 (2%) (randomly select from total 300 premises)
- Grow-out: Commune: 225/500 (1%), ponds/cages: 149/48,000 of the selected communes (2%)
- wild: need survey to estimate population number, 200 fishes/a river

Checklist 7: Study design and sampling (cont)

- No sampling frame: randomly sampling in excel

- Sampling frame

	Farm ID	Commune ID	Region	Species	date.stock	stock	Stage	pond size
1								
2	20304111	2030411	1	*aureus*	15/04/2021	140122	fry	a
3	10723112	1072311	2	*niloticus*	03/03/2021	130100	<3 months	b
4	40309373	4030937	1	*mosambicu*	01/01/2021	222000	>3 months	c
5	70503098	7050309	2	*aureus*	16/04/2021	450000	fry	a
6	81703185	8170318	1	*niloticus*	08/04/2021	140000	fry	b
7								

Checklist 7: Study design and sampling (cont)

Number of ponds

Species	Region1			Region 2			Total ponds
	fry	>3 months	<3 months	fry	>3 months	<3 months	
aureus	17	27	30	12	16	14	
niloticus	40	58	44	20	21	25	
mosambicu	35	26	32	40	33	10	
							500

Total ponds 500

Propotion number/total

Species	Region1			Region 2		
	fry	>3 months	<3 months	fry	>3 months	<3 months
aureus	0,034	0,054	0,06	0,024	0,032	0,028
niloticus	0,08	0,116	0,088	0,04	0,042	0,05
mosambicu	0,07	0,052	0,064	0,08	0,066	0,02

Sample size 225

Species	Region1			Region 2			Total ponds
	fry	>3 months	<3 months	fry	>3 months	<3 months	
aureus	7,65	12,15	13,5	5,4	7,2	6,3	
niloticus	18	26,1	19,8	9	9,45	11,25	
mosambicu	15,75	11,7	14,4	18	14,85	4,5	
							225

Checklist 8: Data collection and management (cont)

- Data collection form: Farm

The questionnaire collects information on risk factors

COLLECT INFORMATION FORM ABOUT THE RISK FACTORS (Applies to farmers)	
Number of votes:	
Date of acquisition:	
Week collection (from 01-20):	

I. ANSWERING INFORMATION OF INTERVIEWEE

1. Name: .... Phone ....

2.Role: ☐ Owners of Establishments ☑ Technical Officer ☐ Other

II. GENERAL INFORMATION ABOUT THE FACILITY

3. Name of premise: .... Phone... ....

4. Address: Village / hamlet: .... Commune / ward / town:

Checklist 8: Data collection and managment

....

District / town / city: .... Town / city: ....

5. Having keeping record diary of farming or not? ☐ Have ☐ Not ☐ Unknown

6. Method of shrimp farming (actual observations to tick the box below):

☑ Extensive ☐ Semi-Intensive ☐ Intensification ☐ Other

7. The current stocking density on average at the premise:

Species 1: .... / m2 Species 2: .... animal / m²

8. The existing farming situation:
Total ponds / rammer .... (pond) Total farming water surface area: .... ha
Among them:
Total species 1 ponds: .... Total Spcecies 1 farming area: .... Ha
Whole species 2 ponds: .... total species 2 farming area: .... ha

9. Total number of reservoirs   The total reservoir area.. .... ha

10. Instruments (fishing, net, Brass / pots, buckets ......):
Sterilization of instruments in the process of raising or not ?

☐ No ☐ Yes ☐ Unknown

11. Water supply and discharge resource:

☐ Match one way ☐ Separate

There are water filter net system: ☐ Yes ☐ No

Pond inlet of the following kind:

☐ Water from common rivers / canal / canal to all farming areas

☐ Directly from the sea

III. PREPARATIONS OF ON FARMING POND OF PREMISE

1 2. Improving pond bottom or not : ☐ Yes ☐ No

1 3. If yes, how?

Remove entire bottom mud after each crop: ☐ Yes ☐ No

Plough/turn up Pond bottom: ☐ Yes ☐ No

What chemicals used to improve bottom ?:

☐ Lime (name, dosage?)

Checklist 8: Data collection and managment

- Data collection form: Testing

No	Name of disease	Pathogen	Type of sample (species)	Age	Receipt date	Sampling adress (commune, district, province)			Sender	Testing agency	Number of samples	Method	Number of positive	Purpose of stocking	Farming type	Testing purpose	Finicial source	Market	Accredited	Note
	1	2	3	4	5	6a	6b	6c	7	8	9	10	11	12	13	14	15	16	17	18
1	Bệnh sữa	*Ricketsia like*	Tôm hùm	30	14/04/2020	Vạn Thạnh	Vạn Ninh	Khánh Hòa	Chi cục NTTS Khánh Hòa	Chi cục Thú y vùng IV	15	PCR	3	Giống	Lồng	CĐB	ĐP		C	
2	AHPND	*Vibro parahaemolyticus*	Tôm sú	20	16/04/2020	Hòa lạc	Vĩnh Châu	Sóc Trăng	Trần Văn A	Chi cục CN&TY A	8	PCR	2	Thương phẩm	TC	KHGS	TN	Trung Quốc	K	
3	WSD	*WSSV*	Tôm thẻ	100	25/04/2020	Năm Căn	Cái Nước	Cà Mau	Công ty A	Chi cục Thú y vùng VII	17	PCR	8	Thương phẩm	BTC	1038	TW	Úc	C	
4	WSD	*WSSV*	Tôm thẻ	40	05/05/2020				Công ty B	Chi cục Thú y vùng VI	17	PCR	8	Thương phẩm	BTC	KDNK	TN	Ấn Độ	C	
5	Gan thận mủ	*Edwardsiella ictaluri*	Cá tra	120	05/05/2020	Tân Xuân	Ba Tri	Bến Tre	Công ty C	Chi cục Thú y vùng VI	8	PCR	8	Thương phẩm	BTC	4995	ĐP	Hoa Kỳ	C	
6	AHPND	*Vibro parahaemolyticus*	Tôm sú	88	01/06/2020	Hòa Tú 1	Mỹ Xuyên	Sóc Trăng	Chi cục CN&TY Sóc Trăng	Chi cục CN&TY Sóc	8	PCR	2	Thương phẩm	TC	KHPCDB	ĐP		C	

Checklist 8: Data collection and managment

Flow chart of information collection and response
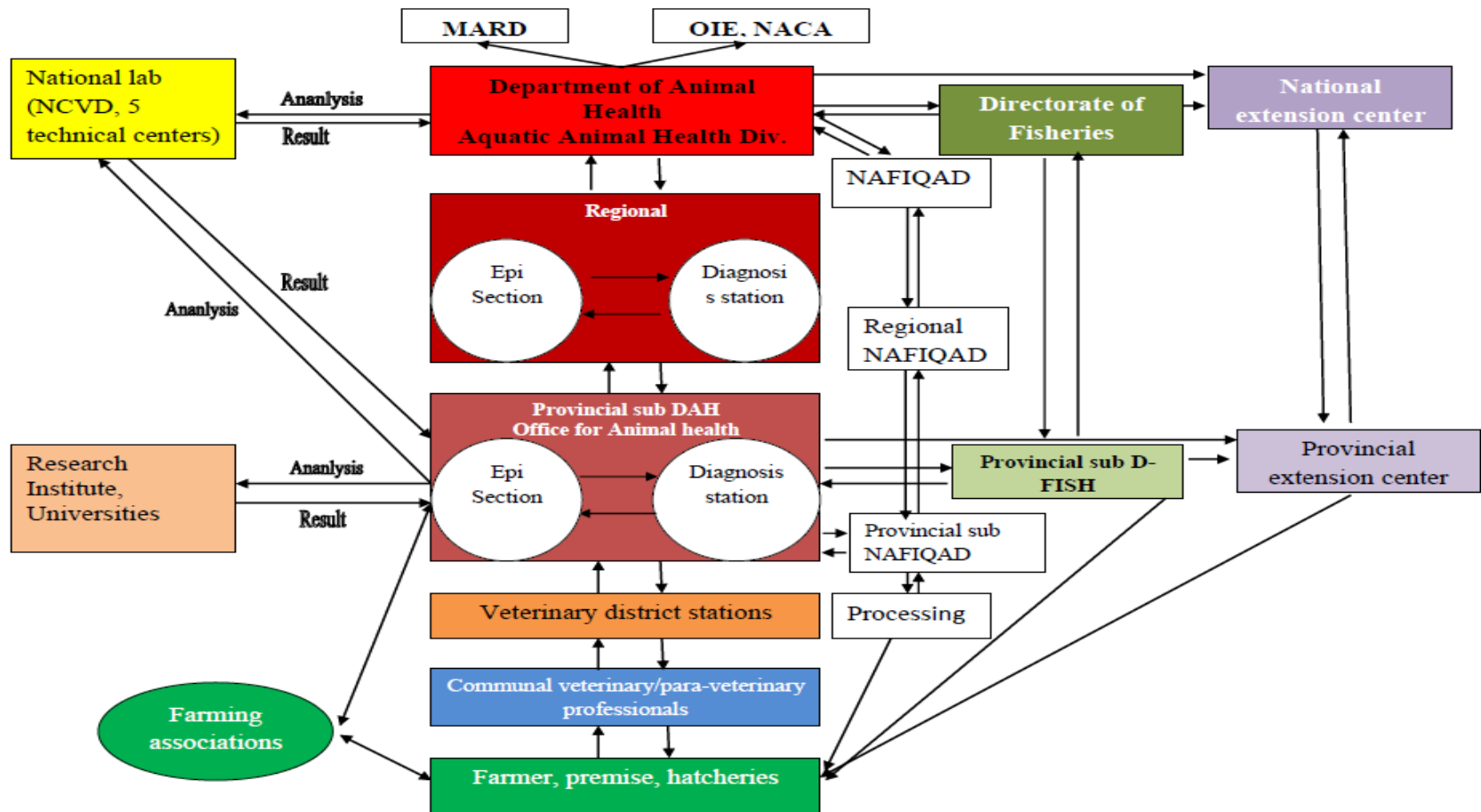
Checklist 12: One health

- National program:
  - National surveillance program for aquatic animal disease 2021-2030
  - National AMR program for 2021 and 2025
- Collaboration
  - Particpant: DAH (leading), D-FISH, NAFIQAD, Extension center, Research Institute, Universities, processing company, farmer, association (processing, farming…), media…, international partners
  - Mechanism: legal text on funtions, regulated responsibilities in the program