Member experience on prevention and control for Vector Borne Disease

Cambodia

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Vector Borne Disease situations

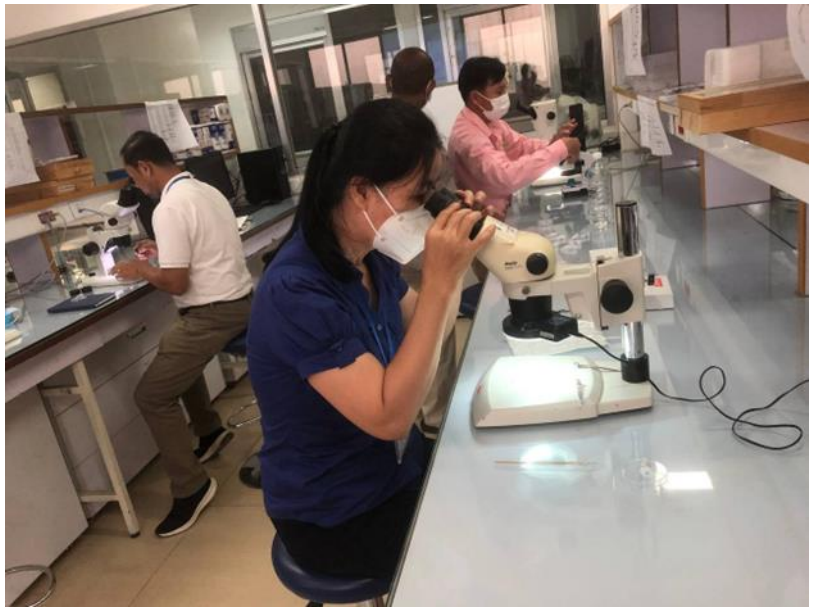
- Brief descriptions of the Vector Borne Disease situations which your country / territory is concerned about (Up to 3 diseases)
- An endemic diseases, zoonotic vector-borne diseases in cattle and dogs
  - ✓ Bacteria: Ehrlichia canis, Rickettsia felis, Mycoplasma haemocanis.
  - ✓ Protozoans: Babesia vogeli, Hepatozoon canis, Anaplasma, Babesia, Dirofilaria immitis and Theilaria.

Detection capacity

- A brief description of surveillance and laboratory diagnosis capacity for Vector Borne Diseases

  - Disease covered: Anaplasma, Borrelia, Babesia, Coxiella, Ehrlichia, Rickettsia, and Theilaria.

  - Type(s) of diagnostic tests
    - ✓ Blood smear examination,
    - ✓ ELISA test
    - ✓ and PCR to more sophisticated methods such as sequencing analysis.



Response to Vector Borne Diseases

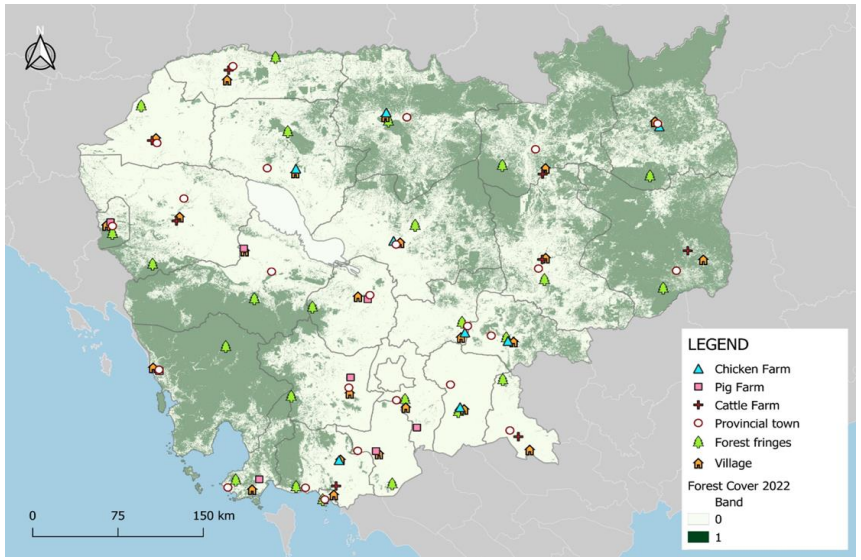
- A brief actions such as:
  - Surveillance (animal and vector surveillance):
    - ✓ Using a taxonomy key to identify of tick species
    - ✓ To carry out a sampling and risk mapping in Cambodia

Cross sectional collection:

Sampling of vectors of veterinary importance in each of the provinces of Cambodia in 4 different ecotypes

Species	Total
Provincial Town	
Cat	
Rhipicephalus sanguineus	44
Rhipicephalus spp.	2
Cattle	
Rhipicephalus australis	18
Rhipicephalus microplus	152
Rhipicephalus spp.	30
Dog	
Rhipicephalus australis	1
Rhipicephalus microplus	9
Rhipicephalus sanguineus	1,045
Rhipicephalus spp.	56
Villages	
Cattle	
Rhipicephalus australis	640
Rhipicephalus microplus	827
Rhipicephalus sanguineus	21
Rhipicephalus spp.	843
Dog	
Haemaphysalis canestrinii	1
Rhipicephalus australis	4
Rhipicephalus microplus	3
Rhipicephalus sanguineus	329
Rhipicephalus spp.	220
Goat	
Rhipicephalus australis	5
Rhipicephalus microplus	2
Rhipicephalus spp.	1

Species	Total
Farms	
Cattle	
Rhipicephalus australis	564
Rhipicephalus microplus	1,283
Rhipicephalus spp.	1,144
Pig	
No tick	
Chicken	
No tick	
Forest fringe, Cave, etc	
Wild pig	
Dermacentor auratus	1
Dermacentor filippovea	4
Environment (Vegetation)	
Carios batuensis	117
Dermacentor steini	1
Haemaphysalis hystricis	2
Haemaphysalis papuana	1
Haemaphysalis shimoga	2
Haemaphysalis spp.	52
Haemaphysalis wellingtoni	2
Rhipicephalus spp.	6
Grand Total	**7,432**



- 7,432 ticks were collected
- 4 Genus, 12 Species
- Most abundant species:
  - *Rh. microplus* (cattle)
  - *Rh. sanguineus* (dog)
- More habitat (forest, cave, etc.) or more host types inspected

--> more species?

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Response to Vector Borne Diseases

- A brief actions such as:
  - Responses and control: There are 3 mains
    1) To addresses the current state on ticks and TBDs in country
    2) Focuses on the development of new research approaches related to TBPs and TBDs
    3) Identifying the most important challenges and offering recommendations for future research on TBPs and TBDs in the region.
  - Preventive measures to avoid introduction:
    - ✓ Strengthen for tick management that can prevention of tick- borne pathogens and tick-borne diseases
    - ✓ Finding better ways to detect and manage the associated diseases
  - Vaccination (if applicable): There aren't vaccines for prevention of vector borne diseases. For cattle, they used Ivermectin is an anti parasite medication to treat ticks.

Response to Vector Borne Diseases

- A brief actions such as:
  - Contingency plans available: Collaboration with Pasteur Institute to conduct one health project related to ticks and tick-borne diseases in future:

✓ Develop tick DNA sequence database for gene barcoding

✓ Using Maldi-ToF for identification of tick species in country

Impact of the actions

- A brief description of the impact of risk mitigation measures implemented to prevent and control Vector Borne Diseases

✓ Ticks, fleas are the most common vectors transmitting pathogens to cattle and dog

✓ Ticks, as critical vectors of a variety of pathogens, pose a significant public health challenge globally. Ticks are responsible for transmitting a diverse array of pathogens affecting animals and human.

✓ Results:

- 2 species on cattle of genus Rhipicephalus australis and Rh. Microplus
- 5 hard tick species (Dermacentor filippovea, Dermacentor steini, Haemaphysalis canestrinii, Haemaphysalis hystricis, and Haemaphysalis wellingtoni) that can transmit several pathogens including Babesia bigemina and Babesia bovis (bovine babesiosis), Anaplasma marginale (anaplasmosis) and the severe fever with thrombocytopenia syndrome virus.
- 1 soft tick species (Carios batuensis, formerly Ornithodoros batuensis) that can cause of ASF on pig.

Impact of the actions

- A brief description of the impact of risk mitigation measures implemented to prevent and control Vector Borne Diseases

✓ To prevent and control VBD should be based on actions:

- Using an anti parasite medication with repellent properties for prevention from infected vector-borne pathogens and reduce the risk of exposure to these pathogens.
- Cattle must be keep and give feed in the cage.

Challenge and possible solutions

- A brief description of challenges in implementation of VBD surveillance activities and control programmes and your actions/ideas to overcome these challenges
  - ✓ Lack of understanding, data and information on the epidemiology and entomology of vector-borne diseases
  - ✓ Limitations in current of VBD surveillance and control capacity
  - ✓ Lack of dedicated tick genomic for research extensive size of tick full genome sequencing

Collaboration with other sectors under One Health approach

- Brief description of collaboration experience with other sectors to prevent or control Vector Borne Disease (If any)

- We don’t have any project that relevant with vector borne disease surveillance with another sector for One Health approach

Challenge and possible solutions to strengthen the collaboration

- A brief description of challenges to strengthen the collaboration with other sectors and your actions/ideas to overcome these challenges

✓ We got only one project which is the first time that collaboration supported from Pasteur Institute to conduct vector research in Cambodia. The objective are:

1) Develop a national expertise in Veterinary Entomology in Cambodia
2) Develop appropriate scientific surveillance tools for vectors of veterinary importance
3) Sampling and risk mapping in Cambodia

✓ We will continue collaboration for the phase 2 near the future.

Thank you

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