



Chinese Taipei update on PPR and LSD

Cheng-Ta Tsai

Section Chief

Animal Health Inspection Division

**Bureau of Animal and Plant Health Inspection and Quarantine
(BAPHIQ)**



**World Organisation
for Animal Health**
Founded as OIE

24.07.2023
Qingdao, P. R. China



Geography



❌ Chinese Taipei consists of four main islands including **Taiwan, Penghu, Kinmen and Matsu Islands**

Goat and cattle population in Chinese Taipei (2023 Q1)

Items	Goats	Cattle
Farms	1,522	1,583
heads	116,115	159,769

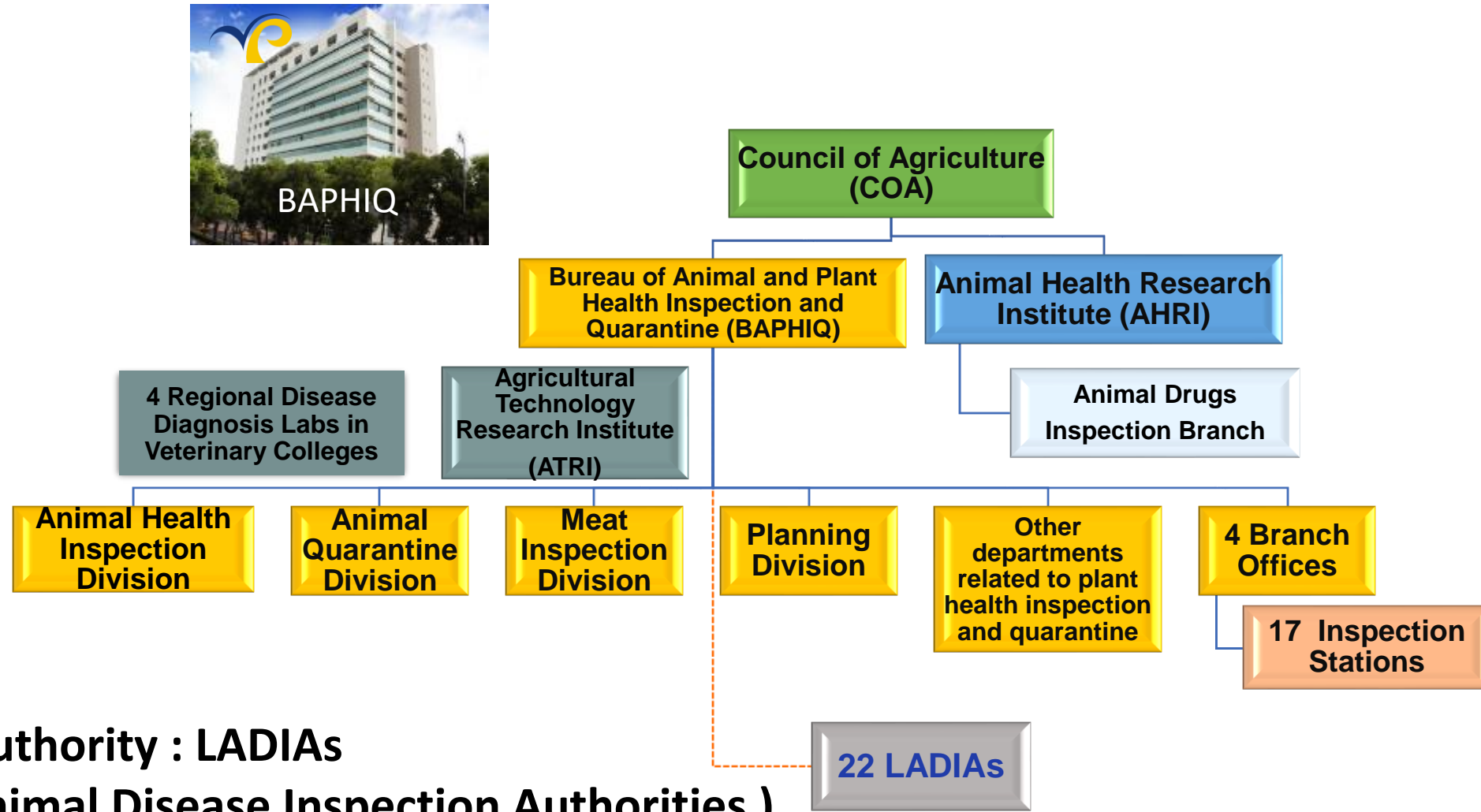
✘ Almost all Caprinae species raised are goats or their hybrids, while sheep are relatively rare, mostly for education or exhibition use

The system of official Veterinary Services

- **Animal disease control is conducted at 2 distinct levels in Chinese Taipei, including central and local levels**
 - ✓ At the **central level**, the competent authority is the Council of Agriculture (COA) under which the Bureau of Animal and Plant Health Inspection and Quarantine (**BAPHIQ**) is established to be responsible for administration of animal health inspection and quarantine
 - ✓ The Animal Health Research Institute (**AHRI**) is established to be responsible for animal disease diagnosis and research
 - ✓ At the **local level**, the competent authorities are the Local Animal Disease Inspection Authorities (**LADIAs**), and it is mandatory for LADIAs to implement animal disease control measures in the field, for establishing the communication chain of command and animal disease reporting and control system of Veterinary Authority (**VA**)
 - ✓ **All central and local government veterinary officials are accredited veterinarians**



The system of official Veterinary Services





● The disease situation of PPR

- Chinese Taipei has been **recognized as free from PPR by the WOAHA.**
- PPR is one of the **notifiable listed-A diseases** in Chinese Taipei. **All confirmed and suspected cattle have to be culled, and vaccination against PPR is prohibited.**
- Without the protection of vaccine-induced immunity, PPR is easy to be identified during **active and passive monitoring in goat farms, slaughterhouses, and rendering plants.**
- The confirm diagnosis for handling suspected PPR cases and some samples for the border inspection is **backed up with AHRI. No suspected PPR case** has been reported or confirmed (including domestic and imported animals).

World Organisation for Animal Health
Founded as OIE

Animal Diseases | Avian Influenza | Call for Experts

PPR free Members

Members recognised as **free from PPR** according to the provisions of Chapter 14.7. of the *Terrestrial Code*:

Argentina	Denmark	Liechtenstein	Portugal ⁽³⁾
Australia	Ecuador	Lithuania	Romania
Austria	Estonia	Luxembourg	Russia
Belgium	Eswatini	Madagascar	Singapore
Bolivia	Finland ⁽¹⁾	Malta	Slovakia
Bosnia and Herzegovina	France ⁽²⁾	Mauritius	Slovenia
Botswana	Germany	Mexico	South Africa
Brazil	Greece	New Caledonia	Spain ⁽⁴⁾
Canada	Hungary	New Zealand	Sweden
Chile	Iceland	North Macedonia (Rep. of)	Switzerland
Chinese Taipei	Ireland	Norway	The Netherlands
Colombia	Italy	Paraguay	United Kingdom ⁽⁵⁾
Croatia	Korea (Rep. of)	Peru	United States of America ⁽⁶⁾
Cyprus	Latvia	Philippines	Uruguay
Czech Republic	Lesotho	Poland	

● The disease situation of LSD

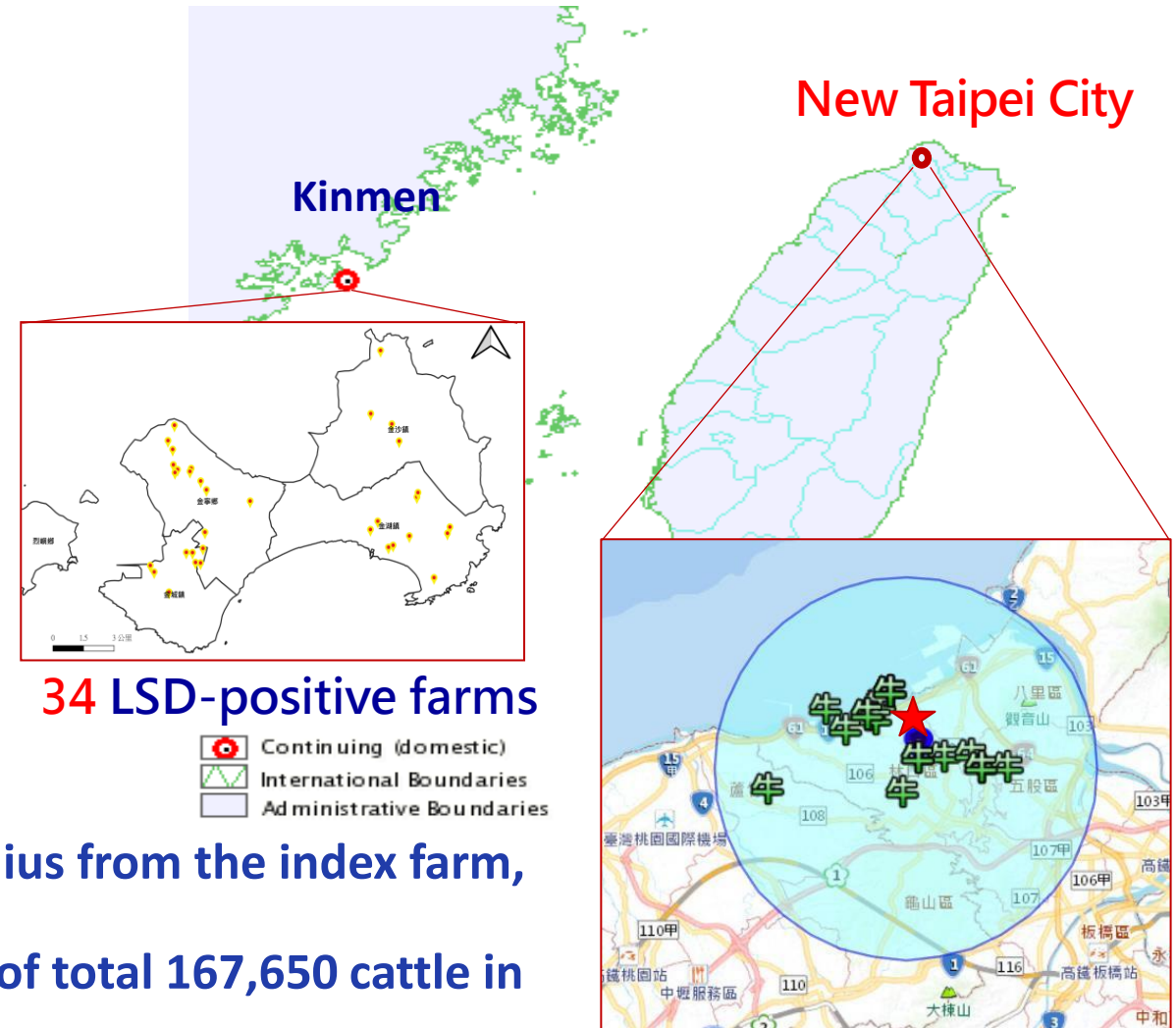
➤ LSD is also the notifiable listed-A diseases in Chinese Taipei.

➤ In Kinmen




- ✓ **34 farms** were confirmed and **269 confirmed and suspected cattle** were culled, then remaining **6,342 cattle** were vaccinated in 2020.
- ✓ **At present only newborn 6-month-old calves must be vaccinated.**

➤ In New Taipei City

- ✓ **Only one** LSD case on Taiwan main island was confirmed by PCR diagnosis on April 15, 2021.
- ✓ Index farm killed and disposed of **31 cattle.**
- ✓ There are **12 cattle farms** located within **10 km radius** from the index farm, the cattle were all in good health at that time.
- ✓ Completed health inspection and LSD vaccination of total **167,650 cattle** in **2021.**
- ✓ **Taiwan, Penghu, and Matsu islands** have not been administering the LSD vaccine since **2022.**
- ✓ **No LSD outbreak** since **May, 2021.**



34 LSD-positive farms

-  Continuing (domestic)
-  International Boundaries
-  Administrative Boundaries

Only one LSD-positive farm



- **LSD emergency vaccines from the EU**

- **WOAH RRAP assisted on resourcing LSD emergency vaccines from the EU.**

- **LSD emergency vaccines (10,000 doses/400 vials, 25 doses/vial) donated by the EU arrived in Kinmen on July 22, 2020.**



● LSD vaccination in **Kinmen**

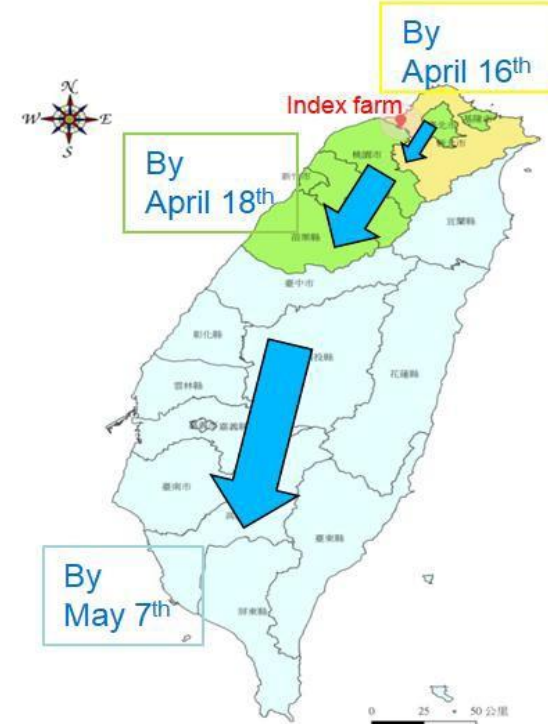
- A LSD-vaccination team was composed of 50 members, including the staff from Local Animal Disease Inspection Authorities (LADIAs), the teachers and students of veterinary colleges, and private veterinarians.
- The vaccination was operated from July 23 to August 4, 2020 .
- Kinmen County boosted LSD vaccine in 5,503 cattle in 2021.



● LSD vaccination for an emergency case of **New Taipei City**

- Vaccine demand: **45,000 doses stockpile + 180,000 doses from vaccine bank**
- Vaccination priority:
 - ✓ **The cattle farms located within a radius of 10 km from the index farm (completed on April 16, 2021)**
 - ✓ **New Taipei City → Northern counties → Central and Southern counties**
 - ✓ **Dairy cows → meat cattle**
- Vaccination team: composed of teachers and students of veterinary colleges, and private veterinarians to assist LADIAs implementing LSD vaccination.
- Completed health inspection and LSD vaccination of total **167,650 cattle** in Taiwan, Penghu and Matsu Islands in 2021.

Date of complete



● For PPR:

- **Antigen detection:** real-time RT-PCRs based on WOAHA Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, **CHAPTER 3 . 8 . 9, have been set up and applied (N gene, Bao *et al.*, 2008 & Kwiatek *et al.*, 2010)**

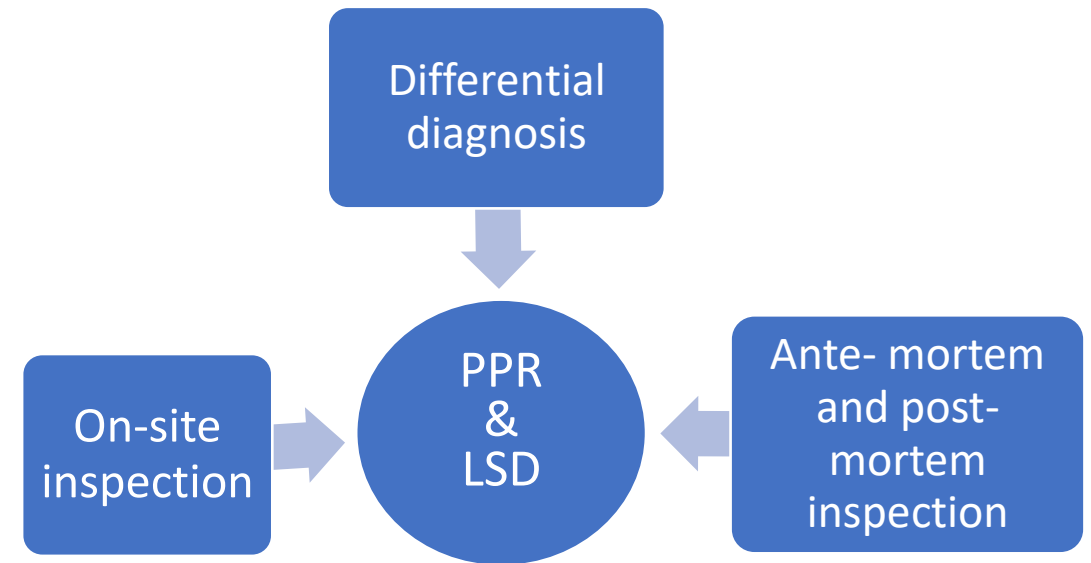
● For LSD:

- **Antigen detection:**
 - ✓ A **real-time PCR** based on WOAHA Manual of Diagnostic Tests and Vaccines for Terrestrial Animals, CHAPTER 3.4.12, has been set up and applied (ORF 068, Balinsky *et al.*, 2008).
 - ✓ A dual **DIVA real-time PCR to differentiate between virulent and vaccine strains of LSD** has been developed as an in-house method.
- **Virus isolation:** by primary sheep testicle (not for routine diagnosis)
- **Whole genome sequencing:** complete coding sequence of LSDV/KM/Taiwan/2020 isolate (GenBank accession number OL752713) obtained by NGS technique (Huang *et al.*, 2022)



- Prior to the goats being sent for auction market, **goats must be tied with the traceability belt individually and be marked identity numbers.** With this information system, the farms of origin and slaughterhouses of marketed goats **are able to be connected by tracing back those identity numbers.**
- The slaughtering of all livestock (including goats and cattle) for human consumption shall be carried out in a slaughterhouse and the central competent authority shall dispatch **inspectors** to the slaughterhouse to **implement meat inspection** and **owners have to provide the Livestock Health Declaration.**
- Meat inspectors are accredited by the central competent authority in the slaughterhouse.
- Offenders **failing to provide the Livestock Health Declaration** shall be fined an amount of **NT\$50,000 to NT\$1,000,000.**
- **Continue to set up a vaccine bank and stockpile emergency vaccines in response to LSD emergencies.**

- Since PPR cases never have been found in Chinese Taipei, an incidence of PPR infection in goats may lead to a major epidemic. Symptoms exhibited by infected animals (high fever, excessive oral and nasal discharge, drooling, necrotic oral and gastro-enteric lesions, bronchitis and pneumonia etc.) are easily identifiable through clinical inspection.
- To monitor PPR and LSD, **on-site inspection** will be carried out by LADIAs, and any suspected PPR and LSD cases will be sampled for diagnosis, accompanied by movement control of the origin farm.
- Meat inspectors perform **ante- and post-mortem inspections** on goats, cattle, and their carcasses in the slaughterhouse for PPR or LSD monitoring.



- **Comprehensive vaccination campaign and multi-sectors cooperation is crucial to the control of the LSD (PPR is also expected) outbreak, which depends on early detection and rapid response.**
- **Strengthen the cleaning and disinfection (C&D) measure and vector control in all cattle farms and relevant ports.**
- **Continue to strengthen multi-sectoral collaboration and join the PPR and LSD international conference and learning the experiences.**



- **Vector sampling: conducted in the cattle farms for LSDV early warning monitoring**
- **Vector control: Strengthen guidance for livestock owners to hang bug zappers for 24-hour light trapping, and weeding the surrounding environment of the all cattle farms to reduce the chance of hiding the vector**
- **Strengthening the quarantine measures for imported cattle and goats at the border**
- **Enhancing public awareness, prevention, inspection, surveillance, early warning and laboratory diagnosis for PPR susceptible species.**



	Proposed activities in 2 years (2023-2025)	When, Where, Led by
I (Activities under GF-TADs)	<ul style="list-style-type: none"> • WVAC 2023 <ul style="list-style-type: none"> ✓ TADs control and one health ✓ CSF surveillance in domestic pigs of Taiwan between 2021-2022. ✓ Avian influenza virus • APVS 2023 <ul style="list-style-type: none"> ✓ African swine fever in Asia ✓ strategies for developing and diagnostic tools for African swine fever virus with nanobiotechnology ✓ recent progress in ASF vaccine research ✓ Classical swine fever in Japan 	<p>WVAC: 26-29 April 2023 in Taipei, Taiwan Veterinary Medical Association (TVMA)</p> <p>APVS: 30 July-2 August in Taipei, Taiwan Association of Swine Veterinarians (TASV)</p>
II (Topics other than TADs)	<ul style="list-style-type: none"> • WVAC 2023 <ul style="list-style-type: none"> ✓ Japanese encephalitis ✓ Zoonotic SFTS in dogs and cats ✓ Global pandemic and zoonotic swine viral disease, etc. • APVS 2023 <ul style="list-style-type: none"> ✓ PRRSV epidemiology, diagnosis, prevention and control in the USA ✓ Swine mycoplasma vaccines development in Taiwan ✓ What we learned from porcine epidemic diarrhoea vaccine development, etc. 	<p>WVAC: 26-29 April 2023 in Taipei, Taiwan Veterinary Medical Association (TVMA)</p> <p>APVS: 30 July-2 August in Taipei, Taiwan Association of Swine Veterinarians (TASV)</p>
III (Any activities or topics)	<ul style="list-style-type: none"> • WVAC 2023 <ul style="list-style-type: none"> ✓ Other issues related to veterinary services • APVS 2023 <ul style="list-style-type: none"> ✓ Other issues related to veterinary services 	<p>WVAC: 26-29 April 2023 in Taipei, Taiwan Veterinary Medical Association (TVMA)</p> <p>APVS: 30 July-2 August in Taipei, Taiwan Association of Swine Veterinarians (TASV)</p>

Thank you for your attention!

**BUREAU OF ANIMAL AND PLANT HEALTH INSPECTION AND QUARANTINE
COUNCIL OF AGRICULTURE, EXECUTIVE YUAN**
10F., No.100, Sec. 2, Heping W. Rd., Zhongzheng Dist., Taipei City 10070, Taiwan (R.O.C.)
TEL: +886-2-2343-1453 FAX: +886-2-2304-7055
E-mail: tctaga@mail.baphiq.gov.tw
Cheng-Ta Tsai D.V.M.
Section Chief
Animal Health Inspection Division



**World Organisation
for Animal Health**
Founded as OIE