

World Organisation for Animal Health

SEACFMD LABORATORY NETWORK MEETING

2026 Country Report

BRUNEI DARUSSALAM

جابتن ڤرتانين دان اکري ماکنن
Jabatan Pertanian dan Agrimakanan
KEMENTERIAN EKONOMI, PERDAGANGAN DAN INDUSTRI

VLS VETERINARY LABORATORY SERVICES



Hamsiah Mohd Saat
Head of Veterinary Laboratory Section

10–11 November 2026 · Manila, The Philippines

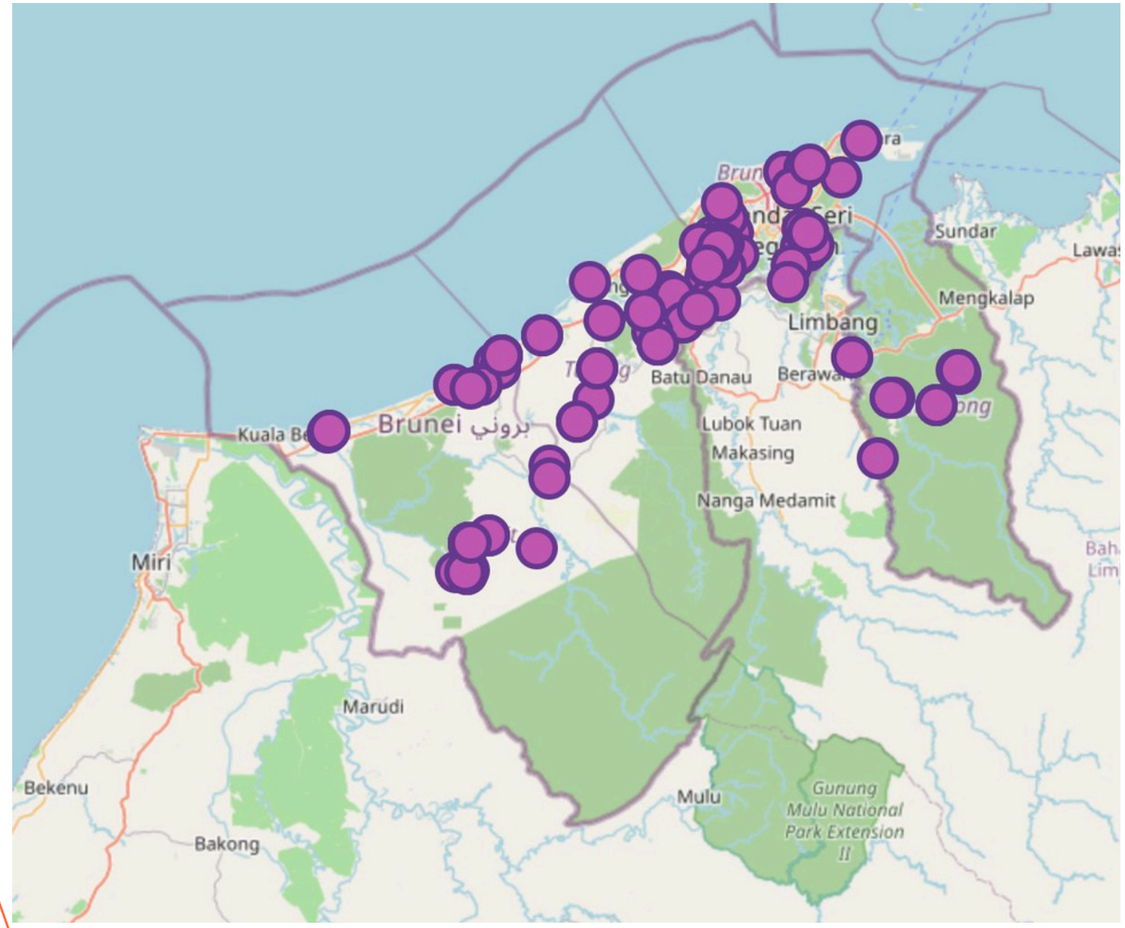
BRIEF FMD SITUATION

1 Status:
FMD-free without vaccination since 2008.

2 Surveillance:
Continuous nationwide serosurveillance across all four districts.

3 Coverage:
Representative sampling across domestic ruminant populations.

4 Surveillance:
Integrated surveillance for Transboundary Ruminant Diseases for PPR and LSD.



KKP : BM -21 · Tutong -1 · Belait -6
Non-KKP: 32

SURVEILLANCE

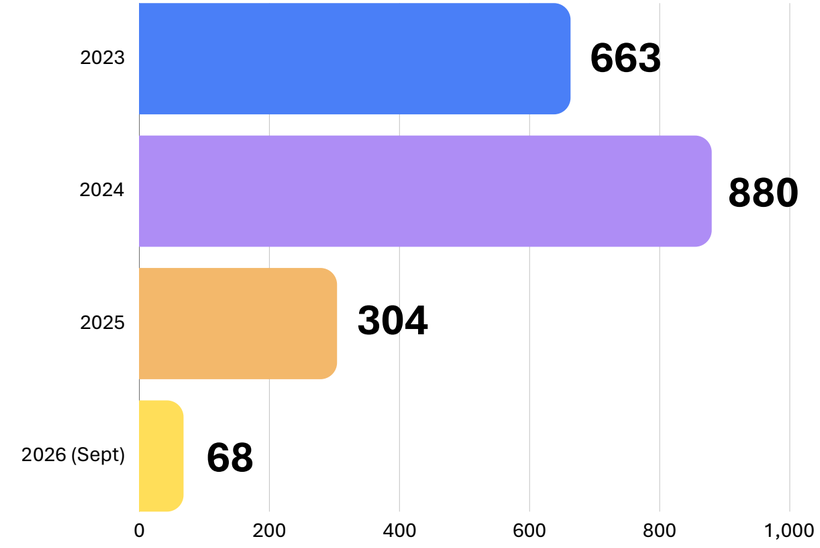
Comprehensive national surveillance for FMD relies on active clinical monitoring of ruminants alongside laboratory diagnostics using serological and molecular assays.

Laboratory Diagnostic Testing

- **NSP-Ab ELISA**
  Detects antibodies against foot-and-mouth disease virus (FMDV) non-structural proteins in bovine and ovine serum samples.
- **FMD RT-PCR**
  Detects the viral pathogen in bovine and ovine serum samples (in-house test; non-ISO accredited).

NSP-Ab ELISA

No. of Samples Tested



2023 – 2026 (year to date)

SEACFMD LABORATORY NETWORK MEETING

CURRENT PROJECTS AND PROGRAMMES

VLS VETERINARY LABORATORY SERVICES

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BRU5001 – Enhance Food Safety, Food Security and Trade Facilitation through Nuclear Technology

IAEA

2026–2027

01

Genomic Bioinformatics

LABORATORY CAPACITY-BUILDING

Staff training, improved testing capacity

02

Field Epidemiology

LABORATORY CAPACITY-BUILDING

Strengthened Field-Lab Coordination

03

Emergency Preparedness for Disease Outbreak

LABORATORY CAPACITY-BUILDING

Strengthen laboratory readiness and coordination

SUPPORTED BY THE INTERNATIONAL ATOMIC ENERGY AGENCY

Implementation period 2026–2027 · Laboratory capacity-building across three focus areas

IMPORTANT CHANGES SINCE 2023 SEACFMD LABNET MEETING

1.

Technical & Diagnostic Upgrades

- **ISO 17025 Accreditation for Molecular Testing**
  Developed the in-house FMD RT-PCR assay and will transition from an unaccredited state to full ISO/IEC 17025 accreditation to strengthen international diagnostic validity (*only when required*)
- **Multiplex & Differential Panel Expansion**
  Integrate differential diagnostic panels for clinically similar ruminant conditions (e.g., Lumpy Skin Disease and Peste des Petits Ruminants) to rule out FMD during active clinical surveillance.

2.

Quality Assurance & Regional Integration

- **Regular Participation in Regional PT Schemes**
  Continue active annual participation in proficiency testing schemes for both NSP-Ab ELISA and RT-PCR to validate assay sensitivity and specificity.
- **Sequencing Capabilities or Regional Partnerships - *in planning***
  Establish a formal Referral Pathway (SOP) with Regional Reference Laboratories (RRLs) for rapid sample submission and genetic sequencing if suspect samples are detected during active surveillance.

3.

Operational & Surveillance Enhancements

- **Targeted High-Risk Sero-Surveillance**
  Optimize sample collection protocols targeting high-risk pathways (imported live ruminants at entry points and holding yards) using NSP-Ab ELISA to ensure early detection of unrecorded viral exposure.
- **Digital Laboratory Information Management System (LIMS) - *in planning***
  Streamline internal sample tracking and data flow between field inspection reports and laboratory result notifications for faster reporting to WOAH.

BEST PRACTICES AND EXPERIENCES TO SHARE

1. Import-Only Sourcing & Rigorous Border Quarantine

- **Risk-Based Import Restrictions**
  Brunei permits live ruminant imports exclusively from recognized FMD-free countries/zones.
- **Designated Entry-Point Controls**
  Mandatory random clinical inspection at all official entry points (land, sea, and air) combined with restricted live-ruminant transit serve as the primary line of defense against viral entry.
- **Practical Example**
  Holding yards serve as dedicated sampling checkpoints where high-risk consignments undergo active serological screening before release into domestic supply chains.

2. Rigorous Diagnostic Validation Protocols (NSP-Ab ELISA)

- **Repeatability & Precision Tracking**
  Demonstrating strict internal quality control, VLS systematically tests precision across multiple operators, maintaining a low standard deviation to ensure consistent result interpretation.
- **Practical Example**
  Standard operating procedures mandate that any positive or borderline ELISA screening result undergo immediate secondary validation (such as molecular RT-PCR testing) to prevent false positives and rule out cross-reactivity.

3. Dual-Layered Surveillance Architecture

- **Combining Active & Passive Surveillance**
  While relying on routine passive reporting from farmers, Brunei actively targets high-risk sectors (imported livestock, municipal slaughterhouses, and breeding goat/sheep herds) through routine ante- and post-mortem inspections and targeted blood sampling.

Practical Lessons Learned

Border Management
Transit routes pose an understated risk equal to direct imports.
Implement strict permit-and-health certification requirements for any ruminants in transit through bordering regions.

Lab Quality Control
Single-operator bias in serology can impact routine monitoring.
Conduct regular multi-operator inter-assay reproducibility tests to benchmark laboratory precision.

Regulatory Framework
Surveillance is only as effective as the underlying legal framework.
Enforce mandatory disease notification laws (such as Brunei's Animal Diseases and Quarantine Order) to mandate permit requirements for all ruminant movements.

COLLABORATION AND NETWORK NEEDS

01 ISO/IEC 17025 Quality Standard Expansion & Diagnostic Accreditation

- Proficiency Testing (PT) & Quality Assurance: Continued and expanded participation in WOAH Reference Laboratory (e.g., WRLFMD, RRL Pakchong) inter-laboratory proficiency testing schemes. This guarantees that diagnostic sensitivity and specificity for NSP-Ab ELISA and molecular assays remain aligned with international benchmarks.

02 Molecular Epidemiology, Sequencing & Referral Pathways

- Establishment of Formal Sample Submission SOPs: Given Brunei's status as free without vaccination, establishing clear, pre-arranged mechanisms and biological material transfer agreements (MTAs) for rapid dispatch of suspect samples to WOAH Regional Reference Laboratories (RRLs) for confirmatory sequencing is critical.
- Genomic Surveillance & Technology Transfer: Technical training on next-generation molecular tools (e.g., portable sequencing platforms like Oxford Nanopore/MinION) to perform rapid on-site strain identification if suspect cases arise.

03 Integrated Differential & Multi-Pathogen Diagnostic Panels

- Syndromic Surveillance for Transboundary Ruminant Diseases: Sourcing and acquiring established multiplex assays to simultaneously screen for foot-and-mouth disease (FMD), Lumpy Skin Disease (LSD), Peste des Petits Ruminants (PPR), and Vesicular Stomatitis.
- Reagent & Diagnostic Standard Exchange: Bilateral sharing of control panels, reference antigens, and diagnostic reagents to maintain diagnostic readiness across co-circulating ruminant threats without needing live virus handling.

04 Transboundary Risk Assessment & Border-Area Intelligence

- Cross-Border EpiNet–LabNet Coordination: Enhanced real-time sharing of molecular lineage dynamics and outbreak intelligence from neighbouring regions to anticipate transboundary viral movements and illegal livestock trade risks.
- Joint Simulation Exercises: Co-organizing sub-regional table-top and laboratory emergency-response exercises to test national preparedness plans and rapid diagnostic workflows during a simulated emergency.

05 Laboratory Capacity Building & Staff Exchange Programs

- Sub-regional Expert Training & Attachments: Hands-on training attachments for VLS technical staff at regional reference centers focusing on advanced biosafety, assay troubleshooting, and diagnostic validation techniques.
- Digital Integration & LIMS Best Practices: Knowledge sharing on adopting scalable Laboratory Information Management Systems (LIMS) for real-time tracking, integration with field epidemiology data, and automated reporting to WOAH databases.

2026 – 2028 WAY FORWARD

Priority Action (2027–2028)	Expected Results / Key Performance Indicators	Regional Support & Collaboration Needed
1. Diagnostic Quality Assurance & PT Participation Continue to participate in regional proficiency testing (PT) schemes	• Satisfactory performance in annual international PT schemes. • Elimination of operator bias and high inter-assay repeatability for NSP-Ab ELISA.	**WOAH / RRL Pakchong PT Schemes:** Annual provision of standardized serological and molecular PT panels to benchmark laboratory performance.
2. Targeted High-Risk Sero-Surveillance Refine active sampling protocols (NSP-Ab ELISA) focused on high-risk pathways, such as border holding yards, imported ruminants, and abattoirs.	• Continuous verification of Brunei's WOAH FMD-free status without vaccination. • Zero undetected viral circulation or exposure in domestic herds.	**Sub-Regional EpiNet Units:** Real-time intelligence sharing on livestock trade dynamics, illegal transit risks, and transboundary movement patterns.
3. Standardized Referral SOPs for Molecular Lineage Tracking Establish formal Material Transfer Agreements (MTAs) and standard submission pathways for rapid referral of suspect samples.	• Finalized referral SOPs and MTAs for sample dispatch. • Rapid genetic sequencing turnaround in the event of a suspected outbreak.	**WOAH Regional Reference Laboratories:** Prioritized access to Sanger/NGS sequencing platforms for rapid viral strain and lineage identification.
4. Staff Capacity Building & LIMS Integration Conduct technical staff training on advanced diagnostic techniques and align Laboratory Information Management Systems (LIMS) with national surveillance.	• Up-skilled laboratory staff in modern molecular diagnostics & genomic surveillance. • Seamless data flow between lab diagnostic results and field epidemiology teams.	**SEACFMD Network & Regional Reference Centers:** Hands-on staff training attachments, expert attachments, and LIMS integration technical assistance.

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Visit BRUNEI 2027
Abode of Peace

SEACFMD LABORATORY NETWORK MEETING

Thank you for your attention

Department of Agriculture and Agrifood
Ministry of Economy, Trade and Industry



Dayang

Baju kurung corak tenunan Bunga Putar bertudung.

Awang

Baju cara melayu bergulambir; Dastar tambatan Teruna; Sinjang tapihan si Bujang.

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