Classical Swine Fever: A risk to the hemisphere

Swine Disease Working Group

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123nd USAHA MEETING, PROVIDENCE USA, 24-30 OCTOBER, 2019
Disease surveillance and control historically difficult in the Caribbean

Spatial reporting of Emerging Infectious Diseases events

Caribbean: among the lowest no. of (animal & human) disease reports

- Under-reporting
- Lack of diagnostics
- Lack of Surveillance
- Unpublished reports

Frequency of country listed as authors addressed in J Inf Dis from 1973

Jone et al., Nature, Feb. 2008 Global trends in Emerging Infectious Diseases

A region at risk for diseases

✓ Increase of movements - Globalization.
People, tourism, animals, by-products, waste management

✓ Highly sensitive natural island systems.
Natural Disasters, urbanism/deforestation, climate change

✓ Diversity of animal production.
Backyard vs intense industrial systems

✓ Lack of protocols harmonization across the region.

✓ Weak diagnostic capacity.

Zika
Chikungunya
West Nile Fever
Porcine Epidemic Diarrhea
Citrus Greening
Black Sigatoka

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123rd USAHA meeting, Providence, 24-30 October, 2019
Steering Committee

34 «countries » = Veterinary Services (CVOs)
6 Universities & Research institute
5 International Organizations
2 Political organization (1) & intergovernment organization (1)
Objectives of CaribVET

- Structure, reinforce and harmonize national surveillance networks;
- Improve and harmonize the control of animal diseases and implement an early warning system;
- Reinforce the technical skills and support the development of tools necessary for surveillance and control including diagnosis capacity;
- Improve knowledge on animal diseases and their distribution.

Functions of the SDWG

- Contribute to the control and/or eradication of the CSF in Haiti, DR and Cuba and to support external regional efforts;
- Identify, liaise with, and provide regional experts in different areas;
- Working group (Epi and Lab) to develop tools to improve surveillance and diagnostics capacities;
- Propose and support research on any disease of interest for the region.
World distribution of CSF
Regional situation of CSF

✔ Caribbean swine production
  ✔ Jamaica, 2nd producer CARICOM
  ✔ DR, 85% national production.

CSF endemic year
✔ DR, since 1997
✔ Haiti, since 1996
✔ Cuba, since 1993

Classical Swine Fever in the Caribbean, in 2011

[Map showing infection and non-infection areas]
Cuba

**Investigation of chronic and persistent classical swine fever infections under field conditions and their impact on vaccine efficacy**

Lani Gonzalez, Jose Alejandro Bohórquez, Sara Muñoz-González, Lester Jose Perez, Rosa Rosell, Consuelo Fernández, Laisen Delgado, Carmen Laura Perez, Mirta Teresa Fiala and Lilianne Langer.

**Figure 1.** Time trend graph of Classical Swine Fever affected premises by month in Cuba (2010–2016). Dashed line shows the linear tendency during the studied period.

Spanish Journal of Agricultural Research 16 (2), e0506, 9 pages (2018)
eISSN: 2171-9292 https://doi.org/10.5424/sjar/2018162-12487

**Figure 2.** Directional distribution of Classical Swine Fever affected premises by year in Cuba (2010–2016) (one standard deviation ellipses).
The presence of chronic and persistent CSF infections was demonstrated in an endemic scenario under vaccination.

In field conditions, subclinical infections in animals are not detected by clinical diagnosis and, despite being infected with CSFV, the animals are vaccinated, rather than diagnosed and eliminated.

Animals with persistent and chronic CSFV infections are refractory to vaccination, likely due to the superinfection exclusion phenomenon.

CSFV eradication in some endemic areas will require the elimination of persistently and chronically infected animals by relying heavily on laboratory tools for effective diagnosis and a vaccination strategy that confers sterilizing immunity to avoid the generation of subclinical infections in the field.
Haití

✓ CSF samples submitted 2018-2019: 510

✓ Vaccination campaigns:
  ✓ Pilot phase of vaccination in the border strip and the islands of Haiti (2017)
  ✓ Intensive vaccination carried out in the 10 departments of the country (2018)
  ✓ Vaccination campaign planned for the beginning of the year 2020

✓ Strengthening the national network and departmental surveillance networks of the Classical Swine Fever (CSF).

Source: MARNDR, Haiti 2019
Challenges for Haití

- Animal control movement across the country.
- Lack of control in the trade of pigs and by products between Haiti-DR.
- Limited resources.
Dominican Republic

✓ 32 confirmed cases (3 years)
✓ Re-structured plan for control-eradication
  ✓ National vaccination campaign
  ✓ Strengthening diagnostic capacities
  ✓ Strengthening national surveillance network

Source: María Irian Percedo, Osvaldo Foncesa, CENSA
Challenges for DR

- New disease presentation (Non-specific clinical signs)
- Limited resources.
- Secure a good vaccination coverage.
- Need for improvement of the diagnostic capacity.
- Animal control movement.
Challenges for the region

✓ The endemism of CSF in the region is resulting in the emergence of low / medium pathogenic CSF strains, which are causing non-specific clinical signs in pigs, and are resulting in the disease going undiagnosed.

✓ The high proportion of backyard swine in the Caribbean.

✓ The lack of availability of lab tests that can be used for the differential diagnosis of CSF / ASF and other hemorrhagic diseases of swine.

✓ The need for emergency programs to better respond to threats from emerging diseases, especially related to the increasing threat from ASF.
Disease control in the Caribbean
A need for regional platforms

Caribbean countries/territories

✔ Lack of resources / competences

✔ Challenging environment

✔ Cannot appropriately
  ▪ Detect pathogens, early warning
  ▪ Prevent disease introduction
  ▪ Monitor diseases
  ▪ Control diseases
  ▪ Assess / Communicate risks

REGIONAL STRATEGY OF CARIBVET

✔ Pooling of resources, knowledge.
✔ Train animal health professionals.
✔ Share information.
✔ Conduct research, risk assessments, surveys…
✔ Improve disease surveillance & control.
On going projects

✓ Strengthening the Diagnostic Capacities for Transboundary Swine diseases in the Caribbean region: Emphasis for classical swine fever control.
  ✓ Main focus: Developing diagnostic methods for subclinical cases, strengthening diagnostics capabilities, analyzing the cross-reactivity between field and vaccine strains, characterization of field strain circulating.
  ✓ IRTA-CreSA, Spain.
  ✓ Countries: DR, Cuba, Haití, Jamaica.

✓ Swine disease surveillance and preparedness project.
  ✓ Main focus: Strengthening diagnostic capacities for CSF and ASF, improving surveillance systems and emergency response.
  ✓ USDA-APHIS (VS/ Puerto Rico/ FADDL/ CEAH and IS).
  ✓ Countries: DR (pilot project), Haiti, Trinidad and Tobago.

✓ CaribVET regional strategic planning workshop for ASF preparedness
  ✓ Main focus: To identify and prioritize key actions for ASF prevention and preparedness.
  ✓ Countries: Caribbean region
Acknowledgements