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Global Swine Disease Surveillance: A Near Real-Time, Event-Driven Approach

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FAO Reference Centre for Veterinary Public Health

WOAH Collaborating Centre for Veterinary Services Capacity Building (Americas)

Reference Centre World Organisation for Animal Health
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Outline

- **Background & Context:** CAHFS role in global animal health initiatives, global swine swine diseases burden
- **Global Swine Disease Surveillance Framework:** structure, functioning, and data flow
- **Regional Highlights:** role of international collaboration networks
- **Next Steps:** data visualization through an interactive dashboard

Center for Animal Health and Food Safety, University of Minnesota

Connecting Minnesota and the world to develop solutions to shared challenges in veterinary public health

Some of the CAHFS team
ISVEE, November 2024, Sydney, Australia

- Part of UMN College of Veterinary Medicine
- The center includes a data analysis and research team, a veterinary public health & preventive medicine residency, and eLearning and capacity building programs
- **WOAH Collaborating Centre** for Vet Services Capacity Building and **FAO Reference Centre** for Vet Public Health

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Global Burden of Transboundary Swine Diseases

ASF

China:

- Outbreaks between August 2018 and July 2019 caused a total economic loss of approximately **$111.2 billion**, which represented **0.78%** of the country's GDP in 2019[1].

Vietnam:

- Nearly **6 million** pigs (≈**9% of national pork production**) were culled, leading to an estimated **$420 million** in revenue losses, assuming a 20% decline in pork demand due to consumer concerns[2].

Global trade:

- A 2024 study found that African Swine Fever caused approximately **$16.5 million** in lost global **soybean trade** between 2005 and 2020 due to reduced livestock populations[3].

Potential U.S. outbreak:

- A 2020 Iowa State University study estimated that if ASF spread to feral swine and the U.S. could not eliminate it, the pork industry could face over **$50 billion** in losses over 10 years, along with **140,000 job losses**[4].

CSF

Netherlands:

- An outbreak in 1997–1998 cost over **$2.3 billion** to eradicate, with over **12 million pigs killed**, many for welfare reasons[5].

Colombia:

- The total cost of a 2015–2016 CSF outbreak was $3.8 million, with 86% of the cost attributed to the vaccination campaign[6].

Potential U.S. outbreak:

- A hypothetical CSF outbreak in the U.S. could lead to losses ranging from $2.6 billion to $4.1 billion in the hog industry alone[7].

FMD

UK:

- In 2001 estimated losses of £3.1 billion to agriculture and food industries and £2.7–3.2 billion to tourism[8].

Potential U.S. outbreak:

- Estimated economic losses range from $2 billion to over $200 billion, depending on how and where the outbreak occurs[9].

Swine Global Disease Surveillance

Project goals:

- To establish a proactive surveillance system aimed at the early detection of emerging hazards.
- To maintain ongoing monitoring of endemic disease situations to detect changes in patterns or risk levels
- To assess potential risks to swine industry to support prevention and mitigation of hazards

Present focus:

- Routine monitoring and reporting of swine diseases → **SHIC Monthly Global Disease Monitoring Reports**
- Data are collected in **real-time** and processed to minimize bias and prioritize reporting on risks to US swine industry

Global Swine Disease Surveillance Framework

Raw data

Triage

Verification ★

Data sources:

- Official reports (WOAH - WAHIS, FAO - Empres-i / Regional reports, EU ADIS)
- Unofficial outlets (google alerts, event - based surveillance platforms)

Curation & Scoring of events

Identification and Expansion on Regional Highlights ★

Assembly of Monthly Report

Review & Publication

★ *Key steps where the global network of collaborators are involved.*

Global Swine Disease Surveillance Framework

Tuesday, April 1, to Monday, May 5, 2025

Report Highlights

- **FMD in Europe:** New outbreaks in Hungary and Slovakia prompt heightened surveillance in neighboring countries.
- **ASF in Europe:** Outbreaks surge in Moldova and Romania compared to 2024 records.
- **FMD in South Korea:** Authorities confirm 16th outbreak since mid-March amid ongoing wave following last report in May 2023.
- **New serotype of FMD reported in the Near East:** FAO issues alert as FMD Serotype SAT1 is confirmed in Iraq, Bahrain, and Kuwait since early 2025.
- **Surveillance at point of entry in the UK:** Nearly 60 tonnes of illegal meat were seized at Dover in the first quarter of 2025, raising alarm over the high risk of disease introduction, such as ASF and FMD.

MAY 2025 - OUTBREAKS BRIEF

R	Location	Report Date	Dx	Impact
2	Multiple locations, Hungary	4/17	FMD Serotype O	Two new outbreaks confirmed. Over 2,500 cattle and almost 10,000 pigs affected.
2	Dunajska Streda district, Slovakia	4/4	FMD Serotype O	Outbreak confirmed on a farm housing around 870 bulls.
2	Multiple locations, Kuwait	4/7	FMD Serotype SAT1	10 farms affected - over 1,400 cattle infected.
2	Multiple locations, Romania	April	ASF	26 outbreaks confirmed since the start of the year.
1	Multiple locations, South Korea	4/11	FMD Serotype	Two new outbreaks, making a total of 16 since the first outbreak was reported in

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Regional Highlights

- **Hungary | March 6: first FMD outbreaks in over 50 years at two large dairy farms near the Slovakian border confirmed.** The initial FMD outbreak occurred in a herd of 1,400 cattle in Kisbajcs, followed by a second case in a 3,000-head cattle herd in Lébény, both located in Győr-Moson-Sopron county. **Figure 2** presents the outbreaks and corresponding zoning measures. The virus was identified as serotype O, genetically linked to strains previously detected in Pakistan. Tracing efforts suggest the likely date of infection was March 11, 2025, with potential contacts including personnel (private and Slovakian veterinarians, foreign workers), one milk transport, a semen delivery from an EU-registered establishment, and an animal by-product (ABP) transport. Feed was mixed on-site, and bedding was accessible to wild animals.

Figure 1. Distribution of FMD outbreaks across Europe as of March 31 (Source: WAHIS)

Control measures include mass culling, a **72-hour standstill for all susceptible animal movements** in the affected

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Highlight 1 | Strategic partnerships

ASF in Dominican Republic

- June 28, 2021 | Dominican Republic confirms its first case of ASF since 1981
- Status Reclassification | ASF status officially reclassified from emergency to endemic following the dissolution of the Incident Command structure in November 2024.
- Focus on Endemic Management | Authorities shifted efforts from eradication to maintaining low disease prevalence through sustained prevention and control strategies.

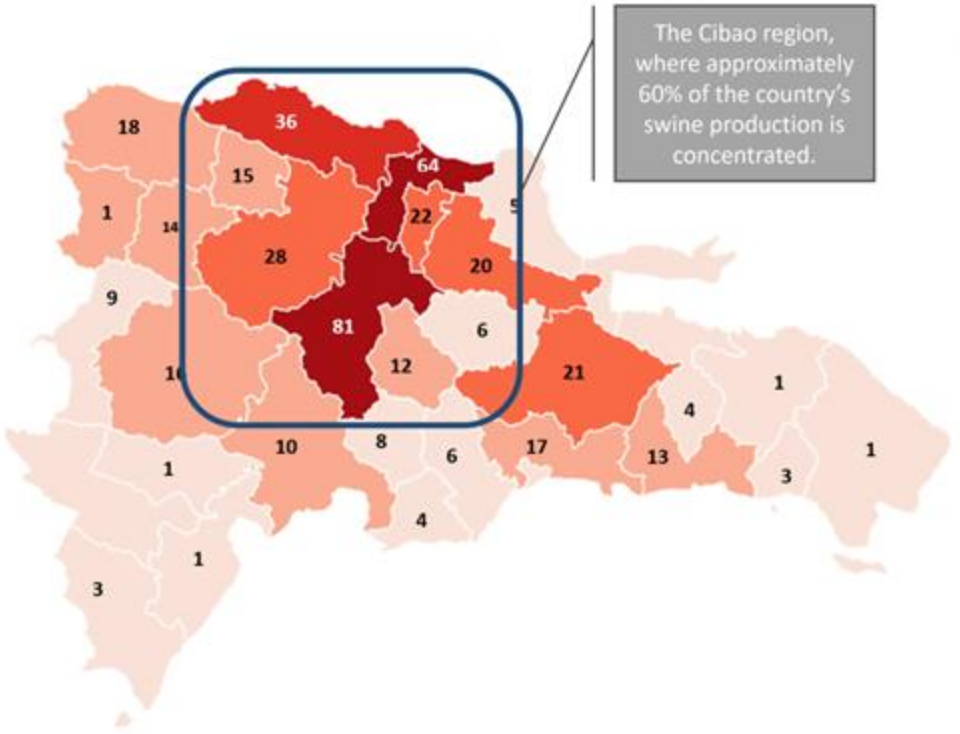
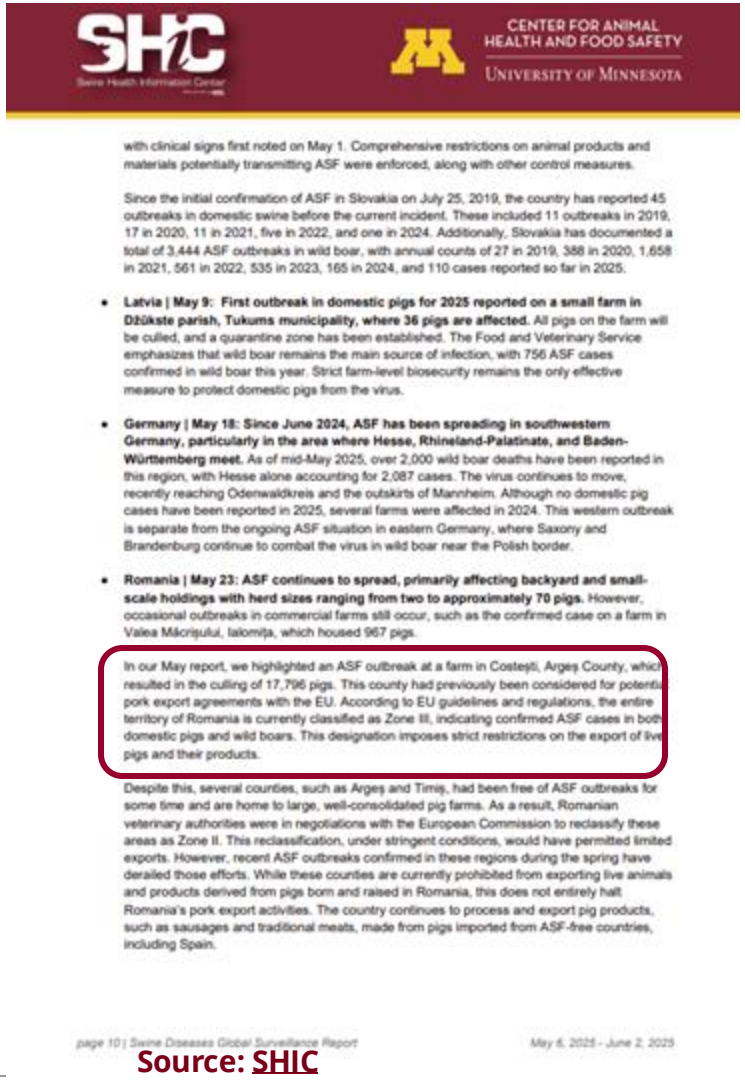


Figure 1. The distribution of African swine fever outbreaks in the Dominican Republic from January to September 2025. Source: Epidemiology Unit, DIGEGA.

Highlight 2 | Local Perspective

ASF outbreak undermines Romania's pork export opportunities:

- April 8, 2024: A major ASF outbreak hit a large farm in Costești, Argeș County, leading to the culling of nearly 18,000 pigs and raising concerns over Romania's pork export eligibility.
- Local media reported potential EU export restrictions, but through our direct contacts in Romania, we confirmed that while national exports remain restricted under Zone III, Argeș had been a candidate for reclassification to Zone II before the outbreak.
- Our network provided timely clarification that the incident derailed Romania's efforts to regain limited export privileges through zoning.
- While exports of live pigs and domestic pork remain banned, Romania continues exporting processed products made from pigs imported from ASF-free countries, mainly Spain.



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with clinical signs first noted on May 1. Comprehensive restrictions on animal products and materials potentially transmitting ASF were enforced, along with other control measures.

Since the initial confirmation of ASF in Slovakia on July 25, 2019, the country has reported 45 outbreaks in domestic swine before the current incident. These included 11 outbreaks in 2019, 17 in 2020, 11 in 2021, five in 2022, and one in 2024. Additionally, Slovakia has documented a total of 3,444 ASF outbreaks in wild boar, with annual counts of 27 in 2019, 388 in 2020, 1,658 in 2021, 561 in 2022, 535 in 2023, 165 in 2024, and 110 cases reported so far in 2025.

- **Latvia | May 9: First outbreak in domestic pigs for 2025 reported on a small farm in Džūkste parish, Tukums municipality, where 36 pigs are affected.** All pigs on the farm will be culled, and a quarantine zone has been established. The Food and Veterinary Service emphasizes that wild boar remains the main source of infection, with 756 ASF cases confirmed in wild boar this year. Strict farm-level biosecurity remains the only effective measure to protect domestic pigs from the virus.
- **Germany | May 18: Since June 2024, ASF has been spreading in southwestern Germany, particularly in the area where Hesse, Rhineland-Palatinate, and Baden-Württemberg meet.** As of mid-May 2025, over 2,000 wild boar deaths have been reported in this region, with Hesse alone accounting for 2,087 cases. The virus continues to move, recently reaching Odenwaldkreis and the outskirts of Mannheim. Although no domestic pig cases have been reported in 2025, several farms were affected in 2024. This western outbreak is separate from the ongoing ASF situation in eastern Germany, where Saxony and Brandenburg continue to combat the virus in wild boar near the Polish border.
- **Romania | May 23: ASF continues to spread, primarily affecting backyard and small-scale holdings with herd sizes ranging from two to approximately 70 pigs.** However, occasional outbreaks in commercial farms still occur, such as the confirmed case on a farm in Valea Măcrișului, Ialomița, which housed 967 pigs.

In our May report, we highlighted an ASF outbreak at a farm in Costești, Argeș County, which resulted in the culling of 17,796 pigs. This county had previously been considered for potential pork export agreements with the EU. According to EU guidelines and regulations, the entire territory of Romania is currently classified as Zone III, indicating confirmed ASF cases in both domestic pigs and wild boars. This designation imposes strict restrictions on the export of live pigs and their products.

Despite this, several counties, such as Argeș and Timiș, had been free of ASF outbreaks for some time and are home to large, well-consolidated pig farms. As a result, Romanian veterinary authorities were in negotiations with the European Commission to reclassify these areas as Zone II. This reclassification, under stringent conditions, would have permitted limited exports. However, recent ASF outbreaks confirmed in these regions during the spring have derailed those efforts. While these counties are currently prohibited from exporting live animals and products derived from pigs born and raised in Romania, this does not entirely halt Romania's pork export activities. The country continues to process and export pig products, such as sausages and traditional meats, made from pigs imported from ASF-free countries, including Spain.

Source: SHIC

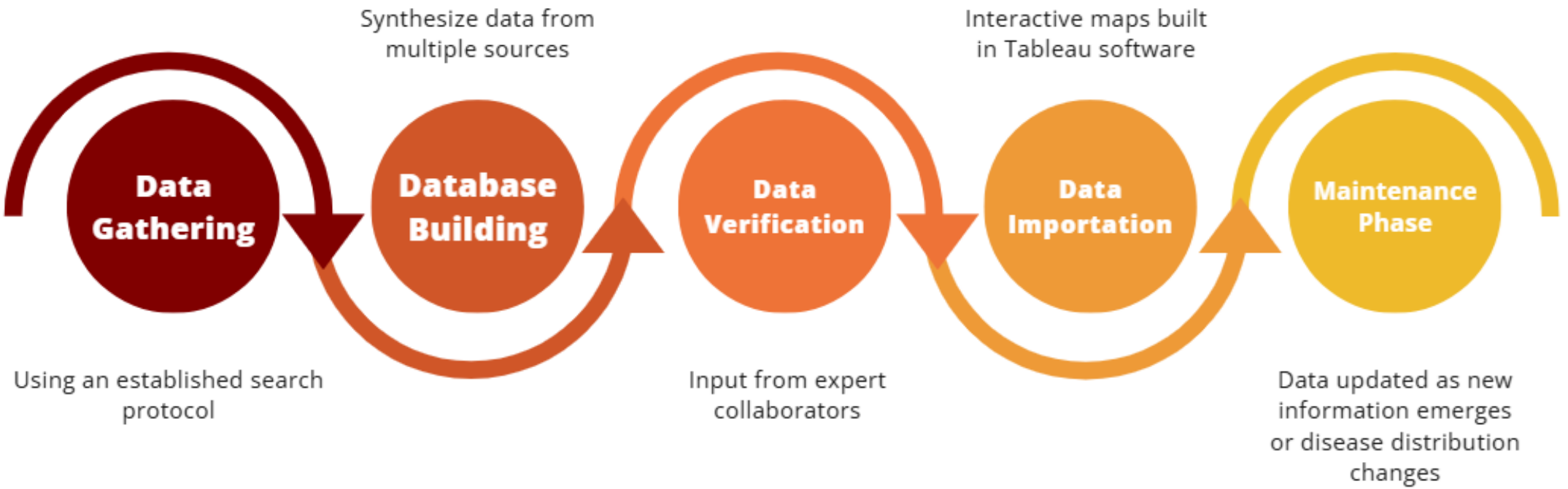
Highlight 3 | Global Research Initiatives

ASF Incursion Risk to Selected Latin American Countries:

- Qualitative risk assessment of ASF incursion in selected Caribbean and Latin American countries using publicly available data (peer-reviewed publication).
- Assessed ASF response capacity through country questionnaire; results informed capacity-building framework (publication forthcoming).
- Assess ASF incursion risk to the U.S. through travelers and trade from selected countries, presented in an interactive format.

https://doi.org/10.3389/fvets.2025.1587131

Next Steps: Developing the dashboard



FYI: USDA ASF/CSF "Higher Risk" Swine Surveillance

- "Higher risk" – less biosecure (garbage feeding, outdoor housing, exposure to feral swine, etc.), with focus on "higher risk states" Florida, Texas, Georgia, Louisiana, New York, New Jersey, Puerto Rico, and the U.S. Virgin Islands
- Ongoing study to understand practices and explore communication/outreach with small-scale, alternative, niche, diversified, and other types of non-intensive swine farms
- **PI: Rachel Schambow, University of Minnesota**
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- Would like to hear from those who have had success in reaching these types of swine farmers – please contact if you are interested!

SDGM Report Team

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