Understanding and Overcoming the Challenges for the Control of African Swine Fever: A Global Threat in Your Backyard

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USAHA/AAVLD: Overcoming Challenges for the Control of African Swine Fever—A Global Threat in Your Backyard
Livelihoods
Food Security
Sustainable Agriculture and Conservation of Natural Resources

The diagram illustrates the distribution of global cities over the years from 1950 to 2030. The cities are represented as dots, with different colors indicating various population sizes. The map includes data from UN sources, with a dataset comprising urban agglomerations with 300,000 inhabitants or more in 2014. The data are for countries existing in 2014, mapped on modern borders, with projections from 2014.
Consumption of livestock products is growing rapidly...

Per capita consumption of major food items in developing countries – kg per capita per year (index numbers 1961=100)

Source: FAO-SOFA 2009
Meat production is growing

Source: FAO-SOFA 2009
AGAH - Animal Health Service 2013-2019

Risk based surveillance, syndromic surveillance, Information systems, Foot-and-mouth Disease, Classical Swine Fever, African Swine Fever, vaccine production, diagnostic equipment, health and production, Rinderpest, PPR, Newcastle, Brucellosis, Rift Valley Fever, HPAI, MERS, legislation and legislative reviews, workshops, study tours, strategy development, contingency planning, risk analysis, ...
• ECTAD Teams (2019)

EPT2 Global Coordinator – Yilma Makonnen
Regional Manager, Wantanee Kalpravidh, Asia Pacific
Regional Manager, Baba Soumare, West and Central Africa
Regional Manager, Charles Bebay, Eastern Africa
Veterinarians in the international landscape
GLEWS +: FAO, OIE, WHO

Disease Tracking Systems
- FAO EMPRES-I Global Animal Disease Information System
- WHO Global Health Atlas
- OIE WAHID World Animal Health Information Database

Additional data
- Other FAO and UN data
- Refugees movements
- Climatic data
- Production, Economic data
- Wildlife and other migration

Analysis

Early Warning
- Disease alerts
- Trends and analysis
- Forecasting
- Risk assessment

Response
- Preparedness plan updates
- Rapid intervention
- Coordinated response
- Risk mitigation guidelines
- Rehabilitation
GLOCAL
• ASF Virus
  • ds DNA - 200+ genes
  • Hearty – pH, temperature, salting, curing
• No treatment
• No vaccine
• Montgomery’s Disease
1. **Sylvatic cycle**: the common warthogs; bush pigs and soft ticks
2. **Tick-pig cycle**: soft ticks; domestic pigs
3. **Domestic cycle**: domestic pigs and pig products
4. **Wild pig-habitat cycle**: wild pigs; pig- and wild boar products and carcasses; the habitat

**Epidemiological features & regional relevance**

Chenais et al., 2018
Genotypic diversity of the ASFV - variability of a single gene and protein, VP-72

Carmina Gallardo, INIA-CISA, FAO Reference Centre for ASF.
Assessment and early warning

2007 - ASF in Georgia
- 2 FAO TCPs (USD 1M)
- CMC-AH missions
- RF military enters Georgia

2008 - ASF in the Caucasus

2009 - ASF spread in the Russian Federation and the region

2010 - FAO intensifies capacity building to mitigate the impact of ASF in Eastern Europe

2012

2013 - ASF in the Russian Federation: risk factors for Europe and beyond

As of 27 Oct 2019, **10** countries in Asia officially reported ASF:

- China (Aug 2018)
- Mongolia (Jan 2019)
- Vietnam (Feb 2019)
- Cambodia (Apr 2019)
- DPRK (May 2019)
- Lao PDR (Jun 2019)
- Myanmar (Aug 2019)
- Philippines (Jul/Sep 2019)
- ROK (Sep 2019)
- Timor-Leste (Sep 2019)

ASF outbreaks (since 2007) by species (wild boar vs. domestic pig and TOTAL)

Credit: Claudia Pittiglio, FAO, Disease Ecologist and Modeler
African swine fever hits China's pig farms

Year-on-year change in hog inventories (%)

- Live pigs
- Breeding sows

Source: Ministry of Agriculture, via Wind
© FT
Millions of small pig farmers in Asia threatened by swine fever outbreak

ROME (Thomson Reuters Foundation) – Millions of small-scale pig farmers across Asia are seeing their livelihoods and the food they produce threatened as the disease spreads, the United Nations warned on Tuesday.

The intractable disease, which is deadly to pigs but harmless to humans, was first detected last August in China, the world’s largest pork producer.

It has since spread to thousands of smaller countries in East Asia, including Vietnam, Cambodia and Laos. The United Nations Food and Agriculture Organization (FAO) has already assisted 15 million farmers in Southeast Asia in controlling the spread of the disease.

The disease is more likely to spread to countries with high risk factors, such as the high prevalence of pig farmers, the low standard of pig husbandry, and the lack of government support and investment in the industry, the report found.

The report also said that the FAO has been assisting governments and small-scale farmers in controlling the spread of the disease, but that more needs to be done to stop the spread of the disease.
“... Ministry sources and news media suggest that around 20 percent of China’s pig inventories had already been culled in the first few months of 2019.”

“...Henan Province ...the sow inventory was down 26 percent year-on-year at the end of January 2019.”

Jilin province - swine inventory to be down by 28 percent “... some reports are pointing to an even higher drop”. “... Veterinary Bureau of Shandong Province reported a 41 percent ‘landslide’ decline in sow numbers between July 2018 and February 2019 at the 33 breeding farms.”

“With the sharp decline in pig inventories, the exponentially rising import trend, especially of soybeans, over the past two decades could come to an abrupt halt. Indeed, the first signs of a slowdown in soybean imports were already evident in 2018. Initial estimates for 2019 suggest that this trend would continue ...”
Market disruptions - spillovers

Changes in prices of meat products in China (2019; Yuan/Kg)

- Pig: +37%
- Chicken: +8%
- Cow: +5%
- Sheep: +3%
African swine fever and the ASFORCE project

African swine fever (ASF) is a complex and devastating disease of domestic pigs caused by a complex virus, the only member of the Asfarviridae family that is maintained in nature under different and complex epidemiological scenarios, involving domestic and wild swine and soft ticks, genus Orithopterus.

The causative agent (African swine fever virus – ASFV), infects domestic pigs of all ages, without sex predilection, and causes a wide range of clinical signs, in particular those typical of a haemorrhagic fever with multiple organ involvement and mortality rates of up to 100%. Humans are not susceptible to ASF infection.

Download the African Swine Fever Flyer

“Targeted research effort on African swine fever” (ASFORCE)
October 2012 to September 2015
Objectives

• identify the priority areas, where joint actions are needed;
• link the research activities and research programmes;
• networking;
• contribute to the international policies of the EU;
• improve the research capacity by supporting young researchers;
• share the results and methodologies

2013-2016
African Swine Fever Threatens the People’s Republic of China

Kreindel, S., Pittiglio, C., Pinto, J., Lockhart, C., Calistri, P., Lubroth, J., and Correa, M.

FAO, March 2018
In March 2017, ASF was reported in Irkutsk, Russian Federation

- Entry of ASF into China would have devastating consequences for animal health, food safety, and food security, and raise the possibility of further spread to SEA, the Korean Peninsula and Japan.
- The FAO rapid risk-assessment framework and methodology was presented to swine disease experts (SME).
- The SMEs considered transport-associated routes (TARs) as most relevant pathways of ASF introduction into China, followed by illegal imports of food and by Chinese workers working abroad.
- China’s northeastern region (Heilongjiang province) was where ASF would be most likely introduced.
- Wild boar population density is a most relevant factor in the spread of the disease.
- The most likely regions for ASF spread were to be northeast (Heilongjiang), followed by the central eastern areas (Henan, Shanxi, Ammui, and Hubei) and the southeast (Hunan).
- Surveillance for swine diseases should be heightened.
- ASF is most likely to persist and become endemic due to the presence of wild boar populations interacting with susceptible domestic species, and lack of biosecurity in smallholdings. Due to restrictions on hunting in China, hunters are not likely to affect the spread and persistence of ASF.
VACDIVA wants, specifically, to assess and provide: Three safe and effective vaccine candidates against ASF for wild boars and domestic pigs that can be administered under field conditions. DIVA diagnostic tests that are validated against the vaccine candidates and effective and inexpensive surveillance.
Vaccine and Vaccination
The tools to control ASF in the EU

• Harmonised legislation, scientific guidelines and disease notification system
• National contingency plans
• EU and National Reference Labs - Diagnostic manual
• National Surveillance and Eradication programmes
• Emergency assistance from the Community Veterinary Emergency Team (CVET)
• Training (Better Training for Safer Food, BTSF)
• Scientific advice (EFSA)
• EU funded research programmes
• European Commission’s audits
• Coordination with neighbouring countries (GF – TADs)

SGE ASF Europe – December 2015
SGE ASF Asia – April 2019
SGE ASF Americas – September 2019
Production Systems
Understanding pig production systems

Source: Gilbert et al. 2015
Extensive pig production systems in Asia and SE Asia

2006

extensive = 62%
semi-intensive = 24%
Intensive = 14%

Used in 2015 model (Gilbert et al.)

Source: Gilbert et al. 2015
Semi-intensive pig production systems in East and SE Asia

2006

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sem-intensive = 24%
Intensive = 14%

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Source: Gilbert et al. 2015
Intensive pig production systems in East and SE Asia

2006

extensive = 62%
semi-intensive = 24%
**Intensive** = 14%

Used in 2015 model (Gilbert et al.)
Figure 3. Map of predicted population density of wild pigs for habitat occurring across the world. For terrestrial environments, areas of white represent low density (1 individual/km²), orange moderate density (6 individuals/km²), and dark red high density (≥ 11 individuals/km²). Maps were created using Google Earth Engine 80 and QGIS 2.14.3 90. See Supplementary Figure S5 for finer scale maps of predicted population density of wild pigs for Europe, Asia, Africa, Australia, North America, and South America.

Lewis, J., et al. (2017). Biotic and abiotic factors predicting the global distribution and population density of an invasive large mammal. Scientific Reports. 7. 10.1038/srep44152.
2. Key points for tooth pull-Emergency disposal plan

非洲猪瘟应急控制方案
（同适用于其他高致病病）

一、控制原则
1. 消灭传染源：第一时间清除发病猪，要求及时、彻底，包括可疑猪，周围可能感染猪。
2. 切断传播途径：通过生物防护、消毒、控制接触、消除传播媒介，避免人员物资交叉等，切断病毒传播。
3. 清除或控制易感动物（有感染的通过免疫进行），目前无疫苗，控制的即是及时清理瘟疫期间无价值猪，无论与本病是否有关，特别是过度、病弱、低效的公母猪（公母猪最容易）。
4. 隔离饲养：疑似和实际阳性感染猪，及可处理，尽可能隔离。

二、应急情况报告程序
1. 疑似情况及分场自检异常情况，第一时间向技术部反馈；并第一时间送往实验室确诊。
2. 出售前向检疫部门报检，申报公司是否进一步上报当地农委或畜牧局，兽医部门对供原场的疫病进行检测，同时相关部了解处理相关程序等。
Getting rid or not getting rid of backyard pigs…?
The main problems are not the pigs but rather the infected meat!

Absence of pigs may cause a meat vacuum
1985 OUTBREAK OF ASF IN BELGIUM

Primary case: A small breeding farm (one boar affected, treated by veterinarian)
- Illegal Contaminated meat from Spain fed to one boar

Veterinarian

- Move piglets
  - Breeding farm A
  - Breeding farm B
  - Breeding farm C
  - Breeding farm D

Fattening herd A
Fattening herd B
Fattening herd C
Fattening herd D

Unknown
- Farm X
- Farm Y
- Farm Z

Control zone
- A serological survey of 3008 farms (116,308 blood samples) which remained negative.

Infected zone
- A total of 12 farms were infected in the epizootic out of 185 farms which were in contact.

21,000 pigs were slaughtered on these infected premises and movement controls

ASF confirmed by lab and surveillance started
New case confirmed by surveillance
No new cases
Declare of ASF free

Beginning of 1985
First outbreak
March
Sept
Wild boar mapping

- Growing number of sub-national datasets spanning across Eurasia and into East Asia
- Modified GLW modelling approach
  - habitat mapping
  - population modelling
- This will allow us to map the interface between the wild boar maps and pigs raised in different systems
- Important contribution to ASF prevention and control strategies
Experience from Cambodia

- Materials from OIE rapidly

Current control measures

- Quarantine and movement control: no pigs and pig products are allowed to move out the infected areas.
- Establishment of more animal quarantine stations on the roads from the North to the South for strict movement control of pigs and pig products.

Vietnam policies at national level

Many policies from ministry, government, party have been issued to prevent and control ASF, among others:
- Action Plan for Emergency Response to ASF (15 Nov 2018) by MARD on controlling of pigs and pig products from affected communes; ASF positive farms have been depopulated
- Resolution (16/NQ-CP, 7 March 2019) by PM on compensation
- Directive (No.34-CT/TW, 20 May 2019) by the Party
- New guidance (No.37/CT-BNN-TY, 28 May 2019) by MARD on slaughtering pigs and consumption of pig products
- Decision (793/QĐ-Ttg, 27 June 2019) by PM on mechanism, policies and plans to control ASF in Vietnam
Global and regional coordination

Standing Group of Experts on ASF for Europe


Standing Group of Experts on ASF for Asia

• SGE-ASF Asia meeting held with the International symposium on ASF organized by Beijing (4.2019) and Tokyo (7.2019)
• SGE-ASF Americas in Panama (9.2019)
Risk Profiles and Priority Actions
Risk profiling
- Swine husbandry
- Transport systems
- Market chains
- Live pigs
- Pork products
- Wild pigs
- Contaminated (inanimate) objects
- Competent vectors
- Behaviour
Capacity building

**Epidemiology Trainings:** Ukraine: (May 2009; > 50 participants); and Belarus (May 2009; > 20 participants)

**Lab Trainings:** Ukraine (March 2010; 16 diagnosticians from Belarus, Moldova and Ukraine); and Kazakhstan (with CISA-INIA; Sept 2013; 10 participants)

**Collection & identification of *Ornithodoros* ticks:** Georgia, June 2013 (with CIRAD): 10 participants from Georgia (2), Armenia (1), Kazakhstan (1), Russia (2), Bulgaria (2), and Ukraine (1)

**Epi & Diagnosis:** Italy, Nov 2013 (with IZS-UM): 9 participants from Georgia (1), Armenia (2), Belarus (2), Russia (1), Moldova (1), Ukraine (2) and Serbia (1)

**Contribute to EC’s BTSF GF-TADS workshops**
Portable PCR for **Sensitive** Detection of ASF Virus

The validation study showed that Portable PCR (Pockit iiPCR) provide the same level of sensitivity and specificity compared with Lab-based qPCR for ASFV detection.

### Table: Sensitivity and Specificity of Portable PCR (Pockit iiPCR) vs Lab-based qPCR for Detection of ASFV

<table>
<thead>
<tr>
<th>Target</th>
<th>qPCR</th>
<th>iiPCR</th>
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<tbody>
<tr>
<td></td>
<td>Copy #</td>
<td>Ct</td>
</tr>
<tr>
<td>FMD</td>
<td>240</td>
<td>28.4</td>
</tr>
<tr>
<td></td>
<td>24</td>
<td>33.8</td>
</tr>
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<td>2.4</td>
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<td>0.24</td>
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<td>3.3</td>
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<td></td>
<td>0.33</td>
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<tr>
<td>ASF</td>
<td>125</td>
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<td>12.5</td>
<td>36</td>
</tr>
<tr>
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<td>1.3</td>
<td>38</td>
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<tr>
<td></td>
<td>0.13</td>
<td>ND</td>
</tr>
</tbody>
</table>

Credit: Ken Inui, FAO, VN
Portable PCR for **Early** Detection of ASF Virus

- Portable PCR (Pockit iiPCR) enables *early detection* of ASFV at/near the outbreaks for *quick response*

<table>
<thead>
<tr>
<th></th>
<th>Sampling</th>
<th>Sample transportation</th>
<th>Testing</th>
<th>Total time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Portable PCR</td>
<td>1 hour</td>
<td></td>
<td>2 hours</td>
<td>3 hours</td>
</tr>
<tr>
<td>Lab-based PCR</td>
<td>1 hour</td>
<td>Days</td>
<td>2 hours</td>
<td>3 hours + Days</td>
</tr>
</tbody>
</table>

Credit: Ken Inui, FAO, VN
<table>
<thead>
<tr>
<th>Sample</th>
<th>Virus ID</th>
<th>Diluents</th>
<th>Isolate</th>
<th>CSF</th>
<th>PRRS NA</th>
<th>PRRS EU</th>
<th>ASF</th>
<th>SIV</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>ASF</td>
<td>pig sera</td>
<td>Dominican Republic (genotype 1)</td>
<td>negative</td>
<td>negative</td>
<td>negative</td>
<td>positive</td>
<td>negative</td>
</tr>
<tr>
<td>2</td>
<td>CSF</td>
<td>pig sera</td>
<td>Thailand 1997 (genotype 2.2)</td>
<td>positive</td>
<td>negative</td>
<td>negative</td>
<td>negative</td>
<td>negative</td>
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<tr>
<td>3</td>
<td>PRRS-NA</td>
<td>pig sera</td>
<td>PRRSV - strain NADC-8</td>
<td>negative</td>
<td>positive</td>
<td>negative</td>
<td>negative</td>
<td>negative</td>
</tr>
<tr>
<td>4</td>
<td>SIV</td>
<td>allantoic</td>
<td>A/swine/Pinjarra/AS-11-1723-3/2011 (pH1N1)</td>
<td>negative</td>
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<td>negative</td>
<td>positive</td>
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<tr>
<td>5</td>
<td>-</td>
<td>pig sera</td>
<td>Negative pig sera</td>
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<td></td>
<td></td>
<td>negative</td>
<td>positive</td>
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<td>positive</td>
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<tr>
<td>7</td>
<td>PRRS-EU</td>
<td>pig sera</td>
<td>PRRS European Strain - Lelystad</td>
<td>negative</td>
<td>negative</td>
<td>positive</td>
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<tr>
<td>8</td>
<td>PRRS-NA</td>
<td>pig sera</td>
<td>PRRSV - strain NADC-8</td>
<td>negative</td>
<td>negative</td>
<td>negative</td>
<td></td>
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</tr>
<tr>
<td>9</td>
<td>ASF</td>
<td>pig sera</td>
<td>Dominican Republic</td>
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<td>10</td>
<td>PRRS-EU</td>
<td>pig sera</td>
<td>PRRS European Strain - Lelystad</td>
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<tr>
<td>11</td>
<td>CSF</td>
<td>allantoic</td>
<td>A/swine/WA/1977</td>
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<tr>
<td>12</td>
<td>SIV</td>
<td>allantoic</td>
<td>A/swine/WA/1977</td>
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<td>PRRS-SEA</td>
<td>pig sera</td>
<td>PRRS-SEA C1</td>
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<td>14</td>
<td>PEDV</td>
<td>pig sera</td>
<td>PEDV Colorado</td>
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<tr>
<td>15</td>
<td>CSF</td>
<td>pig sera</td>
<td>Russia (genotype 1)</td>
<td></td>
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</tr>
</tbody>
</table>

**ASF isolate: Dominican Republic, 1978 (VP72 genotype 1)**

| Sample | Virus ID | Test virus | A1 | M3 | N1 | N2 | O1 | O3 | H1 | H2 | H3 | F1 | F2 | F3 | E3 | A5 | G1 |
|--------|----------|------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
|        |          | A1         | 16.6| 23.6| 27.6| 31.1| 31.9| 31.9| 26.7| 24.7| 26.7| 41.5| 37.2| 37.2| 37.2| 37.2|

* Single replicate result reported
Training on ASF management in wild pigs

• Kaunas, Vilnius, 22-23 Nov 2017
• Participants: Belarus, Moldova, Ukraine, Bulgaria, Estonia, Germany, Hungary, Latvia and Lithuania, FAO, OIE, DG SANTE, and FACE
• Day 1 - Technical presentations
• Day 2 - Field day at a hunting group
Emergency Management Center for Animal Health

- EMC-AH also identifies needs to be addressed and provides platform, tools and support countries’, regional and international emergency preparedness including prevention, detection, response and recovery.

- Mission will be deployed only by governments’ requests.

GEMP: Good Emergency Management Practice
EMC-AH African swine fever missions in 2019

<table>
<thead>
<tr>
<th>Country</th>
<th>When (2019)</th>
<th>Type</th>
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</thead>
<tbody>
<tr>
<td>Papau New Guinea</td>
<td>October</td>
<td>Alert</td>
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<tr>
<td>Cambodia</td>
<td>May</td>
<td>Response</td>
</tr>
<tr>
<td>Viet Nam</td>
<td>March</td>
<td>Response</td>
</tr>
<tr>
<td>Mongolia</td>
<td>February</td>
<td>Response</td>
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<tr>
<td>Lao People’s Democratic Republic</td>
<td>June</td>
<td>Alert</td>
</tr>
<tr>
<td>Myanmar</td>
<td>February</td>
<td>Alert</td>
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</tbody>
</table>
FAO ASF Checklist: a rapid-assessment tool

- The EMC-AH team developed a rapid-assessment tool for countries to self-assess their readiness to manage an ASF outbreak.
- The activity is a means for each country group, often from different sectors, to reach a consensus on their country’s status.
- The Checklist also helps to identify gaps and develop actions.
- The tool was tested at the ASF Multilateral Cross-Border Meeting in Greater Mekong Subregion in Beijing, China November 2018.
**What is African Swine Fever (ASF)?**

ASF is a contagious viral disease of pigs and wild boar that causes severe economic losses to the pig sector. Originally introduced to Africa, it was introduced from Georgia in 2007, from where it spread onwards (Eastern and Central Europe) and onwards within Europe. The disease has now been reported in China, inclusive neighbouring countries in East and Southeast Asia.

**How is the disease transmitted?**

Virus can be transmitted from infected to non-infected pigs by direct contact, especially oro-fecal is prevalent. Healthy animals can also get infected when they consume contaminated feed products, either while scavenging or when fed uncooked meat. They can also become infected by feeding on infected pigs or carcasses, or through contaminated tools and equipment (plastics, needles, vehicles, etc.).

**Which animals can be affected?**

The ASF virus exclusively infects pigs, e.g. pigs and wild boar.

**Can humans be infected with the virus?**

No.

**What causes ASF?**

The disease is caused by a virus that is very resistant and can survive for long periods, even months, in feeds, meat products, frozen, boiled and dried or dehydrated, and carcasses of dead animals. The virus, however, can be killed with some disinfectants, such as 2% formaldehyde, 2% NaOH or pentaerythritol tetranitrate (PETN).

**What are the clinical signs of the disease?**

Infection can cause a wide range of clinical signs. Some pigs develop fever, in the backfoot joints, pigs show a lack of appetite followed by sudden death. Other clinical signs are observed. In commercial farms, pigs may also show depression, weight loss, hemorrhages in the skin (head of ears, tail, legs, chest and abdomen), lameness and abscesses in pregnant sows. Clinical signs may be more difficult to see in wild boar because of their long hair.
Awareness and technical materials are developed and adapted

- Recognizing ASF - A Field manual
  [http://www.fao.org/documents/card/en/c/bd35c569-752e-4b57-892e-e3e2e0ee0c9c/](http://www.fao.org/documents/card/en/c/bd35c569-752e-4b57-892e-e3e2e0ee0c9c/)

- Translated to Albanian, Macedonian and Serbian
GF-TADs Manual on African Swine Fever in wild pig—ecology and biosecurity

• Technical, but practical
• Compendium of information about hunting management, biosecurity and wild boar carcass disposal
• Briefly describes range of practical management and biosecurity measures or interventions.
• To be translated into Serbian
On carcass management

• Carcass management for small and medium scale livestock farms – Practical considerations

Manuals

• Good practices for biosecurity in the pig sector (EN, FR, SP, RU) [http://www.fao.org/docrep/012/i1435e/i1435e00.pdf]
• Preparation of ASF contingency plans (EN, FR, SP, RU, GEO, ARM) [ftp://ftp.fao.org/docrep/fao/012/i1196e/i1196e00.pdf]
• Recognizing ASF - A Field manual (EN, RU, CH, SR, LT) – [http://www.fao.org/documents/card/en/c/bd35c569-752e-4b57-892e-e3e2e0ee0c9c/]
Economic impact - Livestock Policy Simulation Model (LPSM)

Source: Alejandro Acosta, Livestock Policy Lab (LPL), FAO 2019
Regional Strategy for the Control of African Swine Fever in Africa

ASF Regional Strategy for Asia

Ottawa Framework
Regionalization and Compartmentalization

From concepts and theories to reality

1. Understanding the pathogen and the epidemiology
2. Global Trends
   a) Forecasting
   b) Related commodities and services (i.e., feed, transport, genetic improvement ....).
3. Human behaviour – driven by economic
4. Local culture – driven by tradition
5. Strengthened veterinary systems or Animal Health systems
   a) Not just veterinary services
   b) Oversight and compliance
6. Participation and buy-in from the varied private interest groups
From concepts and theories to reality

1. Biosecurity
2. Biosecurity
3. Biosecurity
4. Risk Management ...
Biosecurity is likely to steer the response

From guidelines and technical papers to good animal husbandry practices (GAHP) and their implementation
Key Components of [Sub-Regional] Strategy for ASF Prevention, Preparedness, Detection and Response

- **Understanding** of *pig sectors, value chains*, possible *risks and drivers* for ASF introduction and spread
- **Advocacy and communication**, including awareness on ASF risks and importance for timely reporting
- **Capacity development**
  - Laboratory diagnosis
  - Good Emergency Management Practices
- **Policies**
  - Compensation
  - Zoning / Compartmentalization
- Swine *herd health management* including biosecurity practices, vaccination schedules, nutrition
- **Swine sector specific risk management**, including safer movement and trades;
- Multi-sectoral and multi-lateral *coordination and collaboration* among stakeholders
  - Commercial and allied industries
  - Other ministries (e.g. transport)
- **Strengthening of veterinary systems** and the enabling environment
A global strategic approach for ASF Prevention and Control would be expected to achieve four outputs:

- Importance of ASF and its impact is recognized globally
- ASF is controlled in most of countries and eliminated in some of countries not free today, while protecting free status of other continents/countries
- Prevention and control of other major diseases of swine are improved as a result of the ASF control strategy
- Opportunity to establish sustainable private-public partnerships on disease prevention and control

Such an approach requires technical and financial capacity to “tackle the disease at source”
Progressive Control Pathway

Risk Management ...

Stages:
- **Stage 0**: Identify risk and control options
  - EMD risk not controlled, no reliable information

- **Stage 1**: Implement risk-based control
  - From 0 to 1: Comprehensive study of FMD epidemiology planned

- **Stage 2**: Implement control strategy to eliminate circulation
  - From 1 to 2: Risk-based FMD control plan

- **Stage 3**: Maintain zero circulation & incursions
  - From 2 to 3: Develop aggressive strategy to eliminate FMD
  - No endemic FMD in domestic livestock

- **Stage 4**: Maintain zero circulation & incursions; withdraw vaccination
  - From 3 to 4: Apply for official status (OIE), 'free WITH vaccination'

- **Stage 5**: Free without vaccination
  - From 4 to 5: Apply for official status (OIE), 'free WITHOUT vaccination'

Note: The process involves steps towards achieving freedom from the disease without the need for vaccination.
What are you doing?

(ASF is coming)
Thank you

Protecting people, animals, and the environment everyday

Drawings: FAO/Chiara Caproni