ASF Prevention and control based on epidemiology investigation in China

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Disease situation:
122 outbreaks in 30 provinces (by 9th Apr, 2019)

- Affected animals: 18,000
- Deaths: 13,000
- Incidence: 5.4%
- Mortality: 69.4%
Prompt outbreak response

• MARA dispatched the working groups to the field for each outbreak

• About 300 people were dispatched to the field for epidemiological investigation.
CFETPV trainees play an important role in local ASF investigations
Reinforcing screening and surveillance

Very challenging for early detection and reporting
The disease spread slowly and persistently with high mortality.

- **Study area:**
  Xuanzhou District in AnHui

- **Study objects:**
  - pigs
  - pork products
  - Swills
  - Virus in pigpens
Reinforcing screening and surveillance

\[ R_0: \ 7-14 \]
\[ R(0): \ 2-4 \]

<table>
<thead>
<tr>
<th>Epidemic point name</th>
<th>The time interval from onset to culling (days)</th>
<th>( \sigma_1^* ) (%)</th>
<th>( \sigma_2^* ) (%)</th>
<th>( \sigma_3^{**} ) (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guquan</td>
<td>16</td>
<td>11.46</td>
<td>66.04</td>
<td>22.11</td>
</tr>
<tr>
<td>Jinba</td>
<td>11</td>
<td>19.697</td>
<td>86.728</td>
<td>49.35</td>
</tr>
<tr>
<td>Liancheng</td>
<td>4</td>
<td>3.3573</td>
<td>27.299</td>
<td>45.304</td>
</tr>
</tbody>
</table>

2 days later

* Probability of infection on the day when the dead pig was first discovered
** Probability of infection on the day before culling
*** Incidence rate on the day of culling
Reinforcing screening and surveillance

- National wide screening
  - Farms, markets, slaughterhouses, disposal factories
  - Using data of livestock insurance and disposal program
  - Increasing compensation to improve reporting incentives
    *From CNY 800 (USD 110) to CNY 1200 (USD 170)*
  - Joint-survey for wild boar
Transmission patterns
### Transmission routes of outbreaks

*(n=111, domestic pig)*

<table>
<thead>
<tr>
<th></th>
<th>Live pig and pig product movement</th>
<th>Swill feeding</th>
<th>Vehicle and personnel contact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of outbreaks</td>
<td>16</td>
<td>49</td>
<td>46</td>
</tr>
<tr>
<td>Proportion</td>
<td>14.4%</td>
<td>44.1%</td>
<td>41.5%</td>
</tr>
</tbody>
</table>
Stop swill feeding

30 Aug. – Forbid swill feeding in provinces with ASF cases and their neighboring provinces

18 Oct. - Forbid swill feeding national wide
Strengthen health inspection in slaughterhouses

Feb 1\textsuperscript{st}, 2019 – Lab detection of ASF in slaughterhouse

• Conduct strict entry-inspection
• Test \textit{every batch} of live pigs
• Issue quarantine certificates based on lab test
Pork products processing enterprises carry out ASFV detection
Live Pigs Movement Restriction

Movement of live pigs from one prefecture in Guangxi
Strict live pig and its products movement control

- Among first 15 outbreaks, 7 were associated with animal and its products. Up to now, 41.8% outbreaks were attributed to this factor.

- Oct 30-MARA launched policies to strengthen live pig and pig product movement control
Movement restriction

• Suspend the policy of free toll fee for transport of live pigs
• Restrict movement of live pigs and risk products of province with ASF outbreaks
• Closing live pig markets of province with ASF outbreaks
Regulations on vehicles

• Vehicle hygiene should meet requirement from veterinary authorities
• GPS in the vehicle: cross-province movement
• Vehicle should register in local vet authorities
• Strict cleaning and disinfection to vehicles
## Improve bio-security level of farms

### Farm scale

<table>
<thead>
<tr>
<th>Farm scale</th>
<th>No. of pig farms</th>
<th>2010</th>
<th>2016</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-99</td>
<td></td>
<td>60772202</td>
<td>41634230</td>
</tr>
<tr>
<td>100-499</td>
<td></td>
<td>742772</td>
<td>718590</td>
</tr>
<tr>
<td>500-999</td>
<td></td>
<td>145175</td>
<td>167224</td>
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<tr>
<td>1000-4999</td>
<td></td>
<td>65579</td>
<td>77737</td>
</tr>
<tr>
<td>5000-9999</td>
<td></td>
<td>5915</td>
<td>7079</td>
</tr>
<tr>
<td>10000-</td>
<td></td>
<td>3679</td>
<td>4572</td>
</tr>
</tbody>
</table>

The proportions of different transmission routes for different scale farms:
Improve bio-security level of farms

Poor biosecurity in large-scale farms: outbreak investigation in a farm found that the pig houses adjacent to the exit rooms had 15 times higher risk of getting infection earlier, then we found poor hygiene in their internal transfer vehicle.
Improving farm biosecurity

• Launched awareness campaign (e.g. social media)
Global ASF outbreaks (cases)

- 1,000 in 2011
- 2,000 in 2012
- 3,000 in 2013
- 4,000 in 2014
- 6,000 in 2015
- 7,000 in 2016
- 8,000 in 2017
- 9,000 in 2018

Hundreds of thousands of tons of risk offal smuggled to China
3 different strains
Cracking down smuggling

Smuggling
Since August, China Custom investigated about 323 tones smuggled risk products.
29th Oct. Huangpu Custom found 30 containers about 864 tones

Passengers carry-on
Found 2,650 person-time, 4,510 kg pig product from countries with ASF outbreaks (Since Aug. 2018)
Reinforcing surveillance in wild boars
Reinforcing surveillance in wild boars

Collaboration with the State Forestry and Grassland Administration:

• Surveillance in key areas

• Forbid domestic wild boars to be free-ranged
What’s next

- Strengthen implementation of current policies
- Multi-sector collaboration for preventing transboundary transmission
- Well manage the market supply and support industry
- Implementing regionalized management
THANK YOU