ASSESSMENT OF BIOSECURITY LEVEL IN PIG AND POULTRY PRODUCTION SYSTEM IN VIETNAM USING BIOCHECK TECHNOLOGY

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Current situation

➢ The total area: 331,210 km²
➢ Total population: 95,51 million people
➢ 70% population is based on agriculture.
➢ Agriculture contributes about 18,12% GDP.
➢ Animal production consists of about 26,5% in agricultural production.
➢ Contribution of Animal production was approximately estimated 5% of GDP
National Institute of Animal Science

- Established in 1952
- Under the Ministry of Agriculture and Rural Development
- 1264 staffs: 682 scientific staff
  - 55 PhD
  - 145 Msc
  - 444 university graduates.
Directorate board

Research Dept.
1. Dept. of Animal Nutrition & Feed
2. Dept. of Animal Genetic & Breeding
3. Dept. of Animal Physiology, Bio-chemistry & Behaviors
4. Dept. of Rare Animal & Bio-diversity
5. Dept. of Economics & Farming System
6. Dept. of Livestock Environment
7. Dept. of Ani. Products Processing, Preservation & food safety
8. Dept. of Research and development of livestock farming technology.
9. Lab of Animal Products & Animal Feed Analysis

Functional divisions
1. Personnel and Administration
2. Financial Accounting
3. Scientific Management & Inter. cooperation
4. Training & Information

Sub.Institute & research units
2. Thuy Phuong Poultry RC (4 breeding farms)
3. Thuy Phuong Pig RC (3 breeding farm)
4. Ani. Exp. & Farmed Animal Conservation Center
5. Large Ruminant BC.
6. Liv. R& Training Center
7. Dai Xuyen Duck B&R Center
8. Ba Vi Cattle and Forage RC.
9. Son Tay Goat and Rabbit RC
10. Livestock R&D Center in Northern Mountainous Region
11. Livestock R&D Center in Central
12. Honey bee research center
13. Key Lab. of A.Cell Technology
80% chicken and 78% pigs produced in small and medium-scale farms.

28.151 million pigs and 408.97 million chicken, producing 3.82 million tons of pork and 1.097 million tons of chicken meat accounting for 92 percent of the country’s meat output.

Livestock value chain is complicated and effected by many factors: sociality, culture, economic tendency.

- Low biosecurity level in livestock value chain
- Uncontrolled antibiotic use in livestock production and veterinary.
- Increased antibiotic resistance
- Increased risks of disease transmission between farm, animal and human
• Why do we implement biosecurity in animal production in Vietnam?

- Partnerships
- Globalization
- Commercial Agreements

Free trading livestock commodities → Intense competition

- Improved quality
- Reduced product cost
- Appropriate marketing
- Environment and human health

Biosecurity would be prerequisite and crucial to animal production
Objectives

to describe the biosecurity status in the Pig and poultry production systems in Vietnam using Biocheck technology
Interviewing pig and poultry farms Hanoi and Dongnai
# The numbers of farms

<table>
<thead>
<tr>
<th>№</th>
<th>Location</th>
<th>Pig farms</th>
<th>Poultry farms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Hà Nội (Quốc Oai, Chương Mỹ, Thanh Oai)</td>
<td>18</td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>Đồng Nai (Trảng Bom, Thông Nhất, Long Khánh)</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td></td>
<td><strong>Total</strong></td>
<td><strong>30</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>
Biocheck questionnaires

- 109 questions for pig farms
- 79 questions for poultry farms
EXTERNAL BIOSECURITY

1. Purchase of animals
2. Transport of animals, removal of manure and carcasses
3. Feed, water and material supply
4. Entrance of visitors and personnel
5. Rodent and bird control
6. Location of the farm
INTERNAL BIOSECURITY

✓ Disease management
✓ Cleaning and disinfection
✓ Compartmentalizing, working lines and equipment
RESULTS
the current status of breeding pigs, poultry and required improvement in the future in Vietnam

Pig and poultry production in recent years

Pig population 2012-2017 (million heads)

Chicken population 2012-2017 (million heads)

(LDP, 2018)
Rate of agricultural farms in 2011 (%)

- Pig farms: 16.4%
- Broiler farms: 7.4%
- Other farms cultivation farms, aquaculture farms: 76.2%

Rate of agricultural farms in 2016 (%)

- Pig farms: 43.24%
- Broiler farms: 9.5%
- Other farms cultivation farms, aquaculture farms: 47.26%

The number of pig farms:
- 2011: 3239
- 2016: 14481

The number of broiler farms:
- 2011: 1492
- 2016: 3181

(GSOV, 2017; LDP, 2018)
Antibiotic use in livestock production in Vietnam

Quantity of antibiotics mixed into animal feeds in Vietnam

- Poultry production: 42.2 tons [95% CI = 26.2-58.2]
- Pig production: 981.3 tons [95% CI = 616.5-1,0346.0]
- Total: 1,023.5 tons [95% CI = 642.8-1,404.2]
13 types of antibiotics at 55 farms in Dongnai and Binhduong
Biosecurity situation of pig and chicken farms

Biosecurity scores of pig farms

- Internal and external biosecurity scores in pig farms were similar (55.05% and 53.68%).
External biosecurity of pig farms

External biosecurity Vietnam project - pig

- Purchase
- Transport
- Feed_water
- Personnel
- Vermin
- Environment
Internal biosecurity of pig farms

Internal biosecurity Vietnam project - pig

- Disease
- Farrowing
- Nursery
- Fattening
- Measures
- Cleaning
Biosecurity scores of pig farms compared to the global average scores

Score of External biosecurity (%)

- **External**: 53.68% (pig farm) vs. 70% (global average)
- **Environment**: 45.45% (pig farm) vs. 64% (global average)
- **Vermin**: 40.91% (pig farm) vs. 67% (global average)
- **Personnel**: 28.82% (pig farm) vs. 68% (global average)
- **Feed_water**: 44.95% (pig farm) vs. 50% (global average)
- **Transport**: 54.05% (pig farm) vs. 70% (global average)
- **Purchase**: 83.64% (pig farm) vs. 89% (global average)

Score of Internal biosecurity (%)

- **Internal**: 55.05% (pig farm) vs. 58% (global average)
- **Cleaning**: 36.64% (pig farm) vs. 48% (global average)
- **Measures**: 63.11% (pig farm) vs. 67% (global average)
- **Fattening**: 63.11% (pig farm) vs. 67% (global average)
- **Nursery**: 67.47% (pig farm) vs. 66% (global average)
- **Farrowing**: 62.22% (pig farm) vs. 56% (global average)
- **Disease**: 56.36% (pig farm) vs. 67% (global average)

Legend:
- **Average of pig farm**
- **Global average**
1.3.4. Biosecurity scores of poultry farms

- Internal biosecurity score was higher than external biosecurity score (64.05% vs 58.85%)
External biosecurity of poultry farms

External biosecurity Vietnam project - poultry

- Purchase
- Export
- Feed_water
- Removal
- Entrance
- Supply
- Infrastructure
Internal biosecurity of poultry farms

Internal biosecurity Vietnam project - poultry

Disease  Cleaning  Materials
Biosecurity scores of poultry farms compared to the global average scores

Score of External biosecurity (%)

<table>
<thead>
<tr>
<th>Score Category</th>
<th>Average of poultry farm</th>
<th>Global average</th>
</tr>
</thead>
<tbody>
<tr>
<td>External</td>
<td>58.85</td>
<td>66</td>
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<tr>
<td>Location</td>
<td>55.40</td>
<td>65</td>
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<tr>
<td>Infrastructure</td>
<td>61.65</td>
<td>72</td>
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<tr>
<td>Supply</td>
<td>84.60</td>
<td>74</td>
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<tr>
<td>Entrance</td>
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<td>68</td>
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<tr>
<td>Removal</td>
<td>19.85</td>
<td>58</td>
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<tr>
<td>Feed_water</td>
<td>31.10</td>
<td>61</td>
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<tr>
<td>Export</td>
<td>57</td>
<td>72.70</td>
</tr>
<tr>
<td>Purchase</td>
<td>70</td>
<td>82.45</td>
</tr>
</tbody>
</table>
THANK YOU FOR YOUR ATTENTION

“An ounce of prevention, is worth a pound of cure”

- Benjamin Franklin -