The 4\textsuperscript{th} FAO-APHCA/OIE/DLD Regional Workshop on Brucellosis Diagnosis and Control in Asia-Pacific Region – Proficiency Test and Ways Forward –

Chiang Mai, Thailand, 18-21 March 2014

Country report
THAILAND

Reka Kanitpun
NIAH, DLD
Outline

- DLD Organization
- Brucellosis Diagnosis in Thailand
- Laboratory preparedness
- Situation of Brucellosis in Thailand
- Brucellosis Control Measures in Thailand
- Collaboration in “One Health” concept
Animal Health Laboratories

- NIAH, Bangkok

- 8 Regional Veterinary Research and Development Centers (RVRDCs)

- OIE Regional Reference Laboratory for FMD

- Veterinary Biological Assay Center/ASEAN Assay Lab

Songkhla
## Thailand: Livestock population and farmers

<table>
<thead>
<tr>
<th>Species</th>
<th>Population (heads)</th>
<th>Farmers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dairy cattle</td>
<td>512,205</td>
<td>17,094</td>
</tr>
<tr>
<td>Beef cattle</td>
<td>4,530,915</td>
<td>768.834</td>
</tr>
<tr>
<td>Buffaloes</td>
<td>877,364</td>
<td>194,508</td>
</tr>
<tr>
<td>Pigs</td>
<td>9,511,389</td>
<td>210,978</td>
</tr>
<tr>
<td>Goats</td>
<td>440,277</td>
<td>41,674</td>
</tr>
<tr>
<td>Sheep</td>
<td>42,040</td>
<td>5,170</td>
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</tbody>
</table>

Source: DLD Data and Information Center
1. Isolation and Identification of the agents (NIAH)
   - Isolation of the pathogen/biochemical tests
   - PCR for identification

2. Serological tests
   - Buffered *Brucella* antigen tests: RBT
   - (EDTA-SAT)*
   - CFT
   - I-ELISA
Brucella spp. isolation and identification
Serological Testing
Serological Testing

Ag C S

EDIA-TAT

Department of Livestock Development
2010 - 2013

“OIE Laboratory Twinning Programme: Brucellosis”

Parent Laboratory:
OIE/FAO/EU Reference Laboratory for Brucellosis, ANSES, France

OIE Expert: Dr. Bruno Garin-Bastuji

Laboratory preparedness
Laboratory preparedness

- A complementary activity is supported by FAO-APHCA, OIE Asia-Pacific Office and DLD in order to organize a regional proficiency ring-trial regarding to serological diagnosis of brucellosis

2014
FAO-APHCA/OIE Regional Workshop on Brucellosis Serum Proficiency Test
18-21 March 2014, Thailand
Situation of Brucellosis in Thailand
Brucellosis Laboratory Surveillance at Herd Level

- Dairy cattle: 10.03% (203/1,962)
- Beef: 3.31% (12/362)
- Buffalo: 6.63% (346/5,221)
- Goats: 1.71% (122/7,114)
- Sheep: 14.38% (45/313)
## Brucellosis Laboratory Surveillance at Animal Level

<table>
<thead>
<tr>
<th>Year</th>
<th>Dairy Cattle</th>
<th>Beef</th>
<th>Buffalo</th>
<th>Goats</th>
<th>Sheep</th>
</tr>
</thead>
<tbody>
<tr>
<td>2009</td>
<td>0.95% (1,132/119/594)</td>
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<td></td>
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<tr>
<td>2010</td>
<td></td>
<td>0.13% (232/182,998)</td>
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<td></td>
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<tr>
<td>2011</td>
<td></td>
<td></td>
<td>0.89% (59/6,633)</td>
<td></td>
<td></td>
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<tr>
<td>2012</td>
<td>2.25% (824/36,544)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>1.05% (103/9850)</td>
<td></td>
<td>0.89% (59/6,633)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.95% (1,132/119/594)</td>
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</tbody>
</table>

**Diagram:**
- Red line: Dairy cattle
- Orange line: Beef
- Green line: Buffalo
- Blue line: Goats
- Purple line: Sheep

- **2009 (2552):**
  - Dairy cattle: 0.95%
  - Beef: 0.13%
  - Buffalo: 0.89%
  - Goats: 2.25%
  - Sheep: 1.05%
- **2010 (2553):**
  - Dairy cattle: 0.0%
  - Beef: 0.13%
  - Buffalo: 0.89%
  - Goats: 1.05%
  - Sheep: 0.95%
- **2011 (2554):**
  - Dairy cattle: 0.0%
  - Beef: 0.0%
  - Buffalo: 0.89%
  - Goats: 2.25%
  - Sheep: 0.89%
- **2012 (2555):**
  - Dairy cattle: 0.0%
  - Beef: 0.0%
  - Buffalo: 0.89%
  - Goats: 1.05%
  - Sheep: 0.95%
- **2013 (2556):**
  - Dairy cattle: 0.0%
  - Beef: 0.0%
  - Buffalo: 0.89%
  - Goats: 0.13%
  - Sheep: 0.13%
Brucellosis Tested Herds 2009-2013

- **2009**: 12,325/20,624 (59.8%)
- **2010**: 2,243/1,035,308 (0.2%)
- **2011**: 653/277,977 (0.2%)
- **2012**: 4,273/47,467 (9%)
- **2013**: 316/6,374 (5%)

**Percentage Distribution**:
- **Dairy Cattle**: 41.62% (7114/17,094)
- **Beef**: 0.26% (1962/768,834)
- **Buffalo**: 0.19% (362/194,508)
- **Goats**: 12.53% (5,221/41,674)
- **Sheep**: 6.05% (9313/5,170)
Human Brucellosis: clinical cases and sero-positive cases

$R^2 = 0.2196$
Human Brucellosis (accumulated 2003 – 2013)

153 cases (64 clinical cases, 89 sero-positives)

Note: this data is under reported
Prevention and Control Brucellosis in Thailand
1. Identification of animals (ID tag/animal number)
2. Surveillance and quarantine for imported animals
3. Animal movement control
4. Animal testing (routine)
5. Laboratory quality control and assurance: ISO/IEC:17025/2005
6. Laboratory network for brucellosis surveillance (animal and human health)
7. Education, awareness campaigns on brucellosis
8. Promotion of and campaign for “Brucellosis-Free Herds”
9. Control measures in infected herds
   - Test and isolation/slaughter policy with compensation in DLD control program
   - Strict animal movement control
   - Negative animals retested every 2 months
10. Evaluation and report
11. Vaccination control program in Thailand

*B. abortus* strain 19 (attenuated)
- cattle and buffalo **female calves** (3-8 months)

*B. melitensis* Rev.1: goats and sheep
- not yet applied in Thailand
Collaboration in “One Health” concept
Collaboration One Health Projects by Epidemiological Teams at the Provincial and district levels in Thailand

Model: 5 projects

1. **Chiang Mai**: Strengthening Survey and Joint Investigation on **Tuberculosis** and **Q fever** among Ruminants, Farmers and Zoo Keepers

2. **Nakorn Ratchsima**: Model Development for **Q Fever**, **Melioidosis** and **Brucellosis** surveillance in Humans and Animals in Nakhonratchasima, 2012

3. **Songkhla**: Development of a surveillance system for **Melioidosis** and **brucellosis** in Songkhla province using the One Health system

4. **Chonburi**: Integrated Surveillance for **Brucellosis** in Humans and Animals under the "One Health" Concept

5. **Kanchanaburi**: Model Development for **West Nile Infection** Surveillance in Humans and Animals
An outbreak of brucellosis among occupational exposure to goats in Borploy subdistrict, borploy district, Kanchanaburi Province, 2012 (Niramon et al., 2012. FETP, Bureau of Epidemiology, MOPH)

- Good example: Brucellosis outbreak at Kanchanaburi were collaborations between physicians, veterinarians, nurses and public health officer to enhance prevention and control of diseases.

**Brucellosis:** Recent developments towards “One Health” concept
Scientific and Technical Review 32(1)
Pleumb et al., 2013
Acknowledgements

- Regional Veterinary Research and Development Centers
  1) Northern (upper zone) VRDC, Lampang Province
  2) Northern (lower zone) VRDC, Pitsanulok Province
  3) Northeastern (upper zone) VRDC, Khon Kaen Province
  4) Northeastern (lower zone) VRDC, Surin Province
  5) Eastern VRDC, Chonburi Province
  6) Western VRDC, Ratchaburi Province
  7) Southern (upper zone) VRDC, Nakhonsritammarat Province
  8) Southern (lower zone) VRDC, Songkhla Province

- Bureau of Disease Control and Veterinary Services, DLD.
- Bureau of Epidemiology, Department of Disease Control, MOPH
- National Institute of Animal Health
- Immuno-serology section, National Institute of Animal Health, DLD
Thank you for your Attention