Informative for making AI station function from CIMCO on Japanese Breeding Company

1M. Tomiyama, 1M. Kimata and 2K. Ishii.

1NARO Institute of Division of Animal Breeding and Reproduction, Institute of Livestock and Grassland Science

What’s CIMCO?

- Ultimate parent company is ITOCHU Corporation.
- We are Breeding company producing own genes.
- Exclusive distributor of Danbred International A/S in Japan.
- Each site has its own AI station.
- An approximately sum of 400 boars are collected semen.
- Stock are produced from approximately 4,000 sows.
- Our herds were operated by Specific Pathogen Free (SPF) system.

Dam Line

- Landrace
- Large White
- PS gilts (LW or WL)

Sales are only PS gilt.
Terminal Sire Line

Sales of Live purebred boars
Semens for AI

Live purebred boars and gilts
Semens for AI

No. of sow in Japan: 839,000 heads
Japan SPF Swine Association grant permission to sell SPF pork.

Sales Performance on 2015
PS gilt 20,068 heads
Boar 544 heads
Semen 144,871 doses

Approved SPF Sow: 80,000頭

Actually
No same characteristics of AI boars.

✓ Distortion of the penis.
✓ The opening of the urethra is in abnormal place.
✓ The membrane does not make stretch the penis.
✓ The trait of being cautious, i.e.
  • no mounting in the presence of humans (recommendation using a Camera).
  • Not leave from pen.
✓ Time to mount depends on boars.
✓ Return soon from the collection place.
✓ Different pressure preferences by hands.
✓ Not clear distinction among white-colored and thick fluid at the ejaculate.
✓ There are considerably a difference on semen volume and quality.

Transport Test

➢ There are some stress for semen qualities.
  • Heat stress
  • Transport stress
  • Stress by human error, etc.
➢ Since we sell semen from AI stations, it is necessary to knowledge for transport stress.
  A northern AI station to a southern AI station on three different occasions.

Temperature logger were used on and in box.
Transport Test

Influence of Heat Stress with Semen Characteristics

This work was supported by a grant from the Ministry of Agriculture, Forestry and Fisheries of Japan (Development of Breeding Technology for Animal Life Production).

We recommend to customers using up to 3 days including arrival date.

Estimates of genetic parameters on Semen Traits

<table>
<thead>
<tr>
<th>Trait</th>
<th>( \sigma_g )</th>
<th>( \text{Vol} )</th>
<th>( \text{Con} )</th>
<th>( \text{Normal} )</th>
<th>( \text{Mo} )</th>
<th>( \text{Ntotal} )</th>
<th>( \text{Nfunc} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \text{Vol} )</td>
<td>43.00</td>
<td>0.17±0.03</td>
<td>-0.56±0.06</td>
<td>0.00±0.11</td>
<td>0.13±0.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \text{Con} )</td>
<td>1.87</td>
<td>0.22±0.02</td>
<td>-0.29±0.08</td>
<td>-0.18±0.07</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \text{Normal} )</td>
<td>6.32</td>
<td>0.23±0.04</td>
<td>0.84±0.05</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \text{Mo} )</td>
<td>4.16</td>
<td></td>
<td>0.17±0.03</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \text{Ntotal} )</td>
<td>203.78</td>
<td></td>
<td>0.20±0.04</td>
<td>0.95±0.01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( \text{Nfunc} )</td>
<td>169.78</td>
<td></td>
<td></td>
<td>0.16±0.04</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Data were used 28,670 of 686 boars records treated from 2000 to 2015. Traits: Semen volume (\( \text{Vol}, \text{ml} \)), Sperm concentration (\( \text{Con}, \text{100 million/ml} \)), Normality (\( \text{Normal}, \% \)), Mobility (\( \text{Mo}, \% \)), Total No. of sperm (\( \text{Ntotal}, \text{hundred million} \)) = \( \text{Vol} \times \text{Con} \), No. of functional sperm (\( \text{Nfunc}, \text{100 million} \)) = \( \text{Ntotal} \times \text{Normal} \times \text{Mo} \).

Effect: Year, Month, Farm, Collection interval, No. of week after an initial collection, Breeding Values, Permanent environmental effect, residual.

REML procedure using four traits or two traits animal model.

Estimates for collection interval

These horizontal axis are days. Approximately seven days were required for a recovery.
First Step For Delicious Pork

These horizontal axis are weeks.

A small variation approximately between 26 and 200 week is a favorable.
Conclusion

• The influences of month effect depend on each farm.
• Farm located in a south area is exposed greater heat stress.
• Because the semen at the ejaculate is made approximately before 6 weeks, measures against heat stress are necessary at that time.

Solution Strategy

Facility  Nutrition  Genetic (Breeding)

Movie of Semen collection

Implements for AI

Pig house on Asia (Fattening section)