Boar Libido and Sow Synchronization

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When is the boar needed?:

• Puberty induction
• Detecting Estrus for AI timing
• At AI:
  – When Fertility is compromised
    • Season, Parity, Low dose or low fertility semen

Boar Libido
Is this a new issue?

• Is libido a problem
  – For puberty
  – For estrus stimulation
  – Estrus detection
  – AI stimulation

Boar Libido

What is libido?

– Sexual interest
  • Series of expressive behaviors
  • Frequency of activity
  • ability and willingness to perform
  – Comes from testosterone
  – Learned?

Wild Boar

Male not permanently associated with herd
and will re-enter in season (summer) and
live with groups of females

Boar Natural Mating Behaviors

• approaches female and she runs and herds her to stand still
• noses flanks, vulva, charta, 6-8/s at 90 dcb
• froths and urinates
• Female nuzzles scrotum, flanks, genitals, goes head head
• Immobilization reaction
• Remains immobile until boar dismounts or stimuli ends?
• may remain with boar
• Boars show little preference for an estrus versus anestrus female and is attracted to diestrus females, inanimate objects, or other males
• A boar will mount all females in a pen in heat as to exhaust herself (limit boar:female 1:6-10)
• In hot weather will wait until after dusk
Low libido

- Associated with
  - Hot weather
  - Inadequate diet
  - Old age
  - Overweight
  - Poor feet/legs
  - In humans
    - Libido related to testosterone but small differences between high and low groups in T concentration
    - Low libido bulls tended to have higher estrogen:T ratio
    - Low response rate—should we increase duration?

High libido

- Associated with
  - Aggressiveness
  - Difficulty
  - Injury to females
  - Improved female response
  - Meishan
  - Shorter exposure duration?

Pheromones

- Androgens
  - Converted submaxillary
  - To 3 & 5 α androgen forms
- Boar odor
  - When aerosolized, induces estrus in females

Breed Differences in Libido

- In bulls
  - BSE (breeding soundness exam)
    - Includes scrotal circumference, sperm measures, and libido
    - 60% of Holstein fail BSE while 94% of Belgian blue pass
    - Libido not different between breeds nor ages

Libido Scores

- In 26 yearling bulls 8 times in 2 mo.
  - Large bull effects on all BSE measures
  - Moderate repeatability for libido
  - Bulls with low libido tend to improve with age
    - Suggesting age/learning/environment effect
- In Zebu Yearlings
  - BSE correlated to number of mounts
  - Correlated with age
  - Libido test a good indicator for mating potential

Factors Influencing Percent of Boar Culling

<table>
<thead>
<tr>
<th></th>
<th>1993</th>
<th>1997</th>
<th>1998</th>
</tr>
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<tbody>
<tr>
<td>Genetic reasons</td>
<td>12</td>
<td>13</td>
<td>28</td>
</tr>
<tr>
<td>- Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sperm Production</td>
<td>61</td>
<td>18</td>
<td>28</td>
</tr>
<tr>
<td>- Sperm Quality</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Libido</td>
<td>13</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Feet legs</td>
<td>27</td>
<td>12</td>
<td>10</td>
</tr>
<tr>
<td>- Overweight</td>
<td>47</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Aggressive</td>
<td></td>
<td></td>
<td>3</td>
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</table>

Conbrander et al., 1993
Levis, 1997
Gall, 1998
Boar type does affect estrus

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Estrus</th>
</tr>
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<tbody>
<tr>
<td>Boar</td>
<td>100%</td>
</tr>
<tr>
<td>R</td>
<td>88%</td>
</tr>
<tr>
<td>R + O + A</td>
<td>88%</td>
</tr>
<tr>
<td>R + A</td>
<td>75%</td>
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</tbody>
</table>

*NS

Gerittsen et al., 2005
Theri 64:1518-1525

Effect of Energy and Protein Intake on Boar Mounting Activity

Dietary treatment

- 0
- 20
- 40
- 60
- 80
- 100
- 120

Mounting activity %

Boars

- Effect of:
  - supplemental vitamin C
  - fat soluble vitamins
  - Water soluble vitamins
  - Had no effect on libido after feeding during 6-10 mo. of age

Increasing Libido?

- Prostaglandin use in boars
  - Controversial effects
    - On time to mount
    - Number of boars trained to mount
  - No effect on semen production or fertility

The boar components that make a difference on estrus

- Back pressure 48%
- pressure + vocal 70%
- pressure + odor 80%
- pressure + vocal + odor + sight 97%
- physical boar contact 100%

Synchronizing estrus

- Weaning
- BE
- PG600
- Matrix
Boar Exposure Influences The Percent of Sows Showing Estrus Within 10 Days of Weaning

Knox et al; Soede et al; JRF 52

Boar housing can impact sow estrus
Weaned Sows Housed Adjacent To Boars Show Different Wean to estrus intervals

Gonadotropins appear to help weaned SOWS

Control PG600

<table>
<thead>
<tr>
<th>N</th>
<th>148</th>
<th>150</th>
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<tbody>
<tr>
<td>Estrus% (7 d)</td>
<td>79.0</td>
<td>91.0</td>
</tr>
<tr>
<td>WEI</td>
<td>4.8</td>
<td>4.2</td>
</tr>
<tr>
<td>Farrow (%)</td>
<td>88.0</td>
<td>86.1</td>
</tr>
<tr>
<td>N farrowing</td>
<td>107.0</td>
<td>128.0</td>
</tr>
<tr>
<td>Born alive</td>
<td>10.7</td>
<td>10.5</td>
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</tbody>
</table>

% Improvement in pigs +19%

If your females are cycling
How to Synchronize with Matrix

Wean to estrus interval in PG600 treated sows

Non-cyclic Progesterone Estrus early mid Late Day of Cycle

Days of Matrix Feeding

% of sows showing estrus

Wean to estrus interval in PG600 treated sows

Boar Exposure Influences The Percent of Sows Showing Estrus Within 10 Days of Weaning

Knox et al; Soede et al; JRF 52
How Matrix works in cyclic pigs

Matrix Level in blood

0 5 10 14 +0 +2 +5 +7
Days from first feeding Days from last Feeding

Ovary status at Start of Matrix

Ovary status at last Feeding of Matrix

Effect of Matrix (Altrenogest) Feeding

% estrus

-20 -16 -12 -8 -4 0 4 8 12 16 20 24
day of feeding

Matrix in early weaned sows

<table>
<thead>
<tr>
<th>Trt</th>
<th>n</th>
<th>wean</th>
<th>Estrus</th>
<th>PR</th>
</tr>
</thead>
<tbody>
<tr>
<td>CW</td>
<td>30</td>
<td>d 24</td>
<td>30</td>
<td>90%</td>
</tr>
<tr>
<td>EW</td>
<td>30</td>
<td>d 12</td>
<td>28</td>
<td>86%</td>
</tr>
<tr>
<td>EW+M</td>
<td>30</td>
<td>d 12 + 12 d M</td>
<td>30</td>
<td>90%</td>
</tr>
</tbody>
</table>

* A 12 day wean + 12 day feed; Koutsotheodoros et al; ARS 52:71-79; 1998

Estrus in Matrix treated sows

numbers of sows

Day post Matrix

* A 12 day wean + 12 day feed; Koutsotheodoros et al; ARS 52:71-79; 1998

Early weaning and matrix in multiparous sows

<table>
<thead>
<tr>
<th>N</th>
<th>IFAI (d)</th>
<th>WEI</th>
<th>NBA</th>
<th>FR</th>
</tr>
</thead>
<tbody>
<tr>
<td>EW –1&lt;sup&gt;st&lt;/sup&gt; heat AI</td>
<td>34</td>
<td>14.6</td>
<td>4.99</td>
<td>10.3*</td>
</tr>
<tr>
<td>EW–2&lt;sup&gt;nd&lt;/sup&gt; heat AI</td>
<td>35</td>
<td>35.9</td>
<td>5.14</td>
<td>12.7</td>
</tr>
<tr>
<td>EW+ M–7 d M–1&lt;sup&gt;st&lt;/sup&gt; AI</td>
<td>33</td>
<td>22.0</td>
<td>12.32</td>
<td>10.5*</td>
</tr>
</tbody>
</table>

Wean 9-10 days; JM Goncalves dos Santos et al., ARS 2004; 84:407-413.

HNS gilts following Matrix (n = 1511)

Percentage

Days from PG600 to HNS

Sporke et al., 2005
Come visit