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Managing Gilt Development Units

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SowBridge
January 4, 2012

OUTLINE
- what is a GDU?
- gilt development
- puberty induction
- feeding/nutrition (next session)

Gilt Developer Unit (GDU)

• What is it?
  – facility dedicated to replacement gilts
  – at what age?
    • the earlier the better
  – until what stage?
    • through weaning of 1st litter and re-mating ideal
• Coordinated with sow farm(s)

Gilt Developer Unit

• Goals
  – set gilt up to be successful sow
  – have and meet targets
    • number in heat/bred
    • max age (30d post boar exposure?)/culling % (5-25%)
  – prepare her immunologically
  – prepare her physiologically

Table 1.

<table>
<thead>
<tr>
<th>Indicator</th>
<th>PIC Target</th>
</tr>
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<tbody>
<tr>
<td>% HNS</td>
<td>&gt;70% by 3 weeks after beginning of boar exposure; &gt;90% after 6 weeks</td>
</tr>
<tr>
<td>Avg total born</td>
<td>&gt;14.0</td>
</tr>
<tr>
<td>Avg born alive</td>
<td>&gt;13.0</td>
</tr>
<tr>
<td>Avg weaned</td>
<td>&gt;12.0</td>
</tr>
<tr>
<td>Consistency</td>
<td>Absence of P2 dip</td>
</tr>
<tr>
<td>Retention rate</td>
<td>&gt;75% gilt gilts retained to P3</td>
</tr>
</tbody>
</table>
Prepare Her Immunologically*

• she is naïve to our endemic pathogen load
• minimum 60 days
• observe health
• vaccinate
• acclimate
  – feedback, culls, etc.
  – sufficient time to recover
• *I am not a veterinarian; you should work with one on this aspect for your site

Prepare Her Physiologically

• she is not a market hog
• she is not a sow

Factors Affecting Puberty

• Genetics
• Boar exposure
• Transportation
• Nutrition (next Sowbridge session)
• Seasonality
  – Temperature/Photoperiod
• Housing/Social
• Exogenous hormones

Genetics

• Breed differences
  – moderate heritability (~.25)
• Larger = later (among)
• Larger = earlier (within)
• Crossbred < Purebred
  – independent of growth

Boar Exposure

• Pheromones
  – submaxillary salivary glands
• Auditory
• Tactile
Estrus in gilts following Boar Exposure at 180 days of Age.

72.5% (n = 700/965) estrus in 80 days...G. Foxcroft AASV, 2002

Knox 12

Mean days from start of treatment to puberty

<table>
<thead>
<tr>
<th>Study</th>
<th>Control</th>
<th>Fenceline</th>
<th>Full</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>56</td>
<td>41</td>
<td>21</td>
</tr>
<tr>
<td>2</td>
<td>37</td>
<td>34</td>
<td>10</td>
</tr>
</tbody>
</table>

Karlbom, 1982, Anim Repro. Sci. 4:313
Deligiorgis, 1984, Anim Prod. 39:165

Singleton 14

Boar Exposure

- Mature boar (10 months or more)
- Neutral area
- Full physical contact, face-to-face
- Minimum 15 minutes/day – detection vs stimulation
- Begin at 160-185 days

Singleton 16

Varying Degrees of Boar Exposure

Hemsworth et al., 1988

Effect of once or twice daily BE on Estrus

Knox 15

Figure 2: Outline of BEAR (Boar Exposure Area) to improve the percentage of gilts available for breeding; (adapted from Foxcroft, 2007).
Transportation

- Helps in combination with
  - mixing
  - moving
  - vaccinating
  - boar exposure

Group size

- **BAD**
  - Individual
  - < 3/pen
  - > 50/pen

- **Optimum**
  - 5-15 gilts/pen
  - (20-25 may be fine)

Housing

- **Bad** (during development)
  - tethers
  - stalls

- **Optimum**
  - pens 18-20 ft²/head development
    - slatted floors
    - 14-30 ft²
    - solid floors
    - 20-48 ft²
    - outdoors

Nutrition and Feeding

- that’s next month…

Estrus Induction/Synchronization

- **Management**
  - Boar exposure, mixing/relocation
  - noncycling gilts and sows
    - prepubertal, stale

- **Hormonal intervention**
  - noncycling gilts and sows
    - PG-600®
  - cycling gilts and sows
    - Matrix™ (approved for gilts)
• PG-600®
  – 400 IU PMSG (Pregnant Mares Serum Gonadotropin)
  - (Follicle Stimulating Hormone; FSH)
  – 200 IU HCG (Human Chorionic Gonadotropin)
  - (Luteinizing Hormone; LH)

**Matrix™ (altrenogest)**
- Matrix™ is a formulation of 0.22% altrenogest (2.2 mg/ml)
- 1st FDA approved product for estrus synchronization in cycling gilts
- Applied to feed 15 mg/hd/day for 14 days
- Supplied in a 1000 mL bottle
- Witholding time is 21 days
- Randomly cycling gilts = > 85% will be in standing heat in 4-9 days

**Estrus Synchronization - Efficacy Studies**

During the next breeding cycle, availability becomes more asynchronous with breeding needs.
Conclusions

- Immunologically prepared and recovered
- Attained target weight (300lbs ‘textbook’ goal)
- Recorded HNS
- Crate broke (if appropriate)
- Mate at 2nd or greater estrus
- Cull those destined to not succeed

Alberta gilt rules online at:  http://www1.agric.gov.ab.ca/$department/deptdocs.nsf/all/pig8701