WEANING

THE BEGINNING

Piglet among piglets, the soft mud caking, our mother's teats, sweet squeal, grunt, her stiff white lashes, the sleepy glint of her precious tiny eyes.

For three days, after the He-human took me from her, I hungered. Nowhere a teat to suck from, no piglet siblings to jostle and nudge.

At last, in the full moon's sacred light, in the room where I'd run in circles till my tapping trotters almost gave way, the He-human, naked and white as my lost mother, bent on all-fours over my untouched bowl, his beard a veil before me, and with musical loud sounds of guzzling showed me eating. Gave me the joy of survival!

Quick learner, soon I could hold my shit. I was rocked in warm human arms. I liked laps, the thighs of humans.

Cuddling! Every pig could be cuddled if there were justice, every human could have its intelligent pig, every pig its dexterous human, our lives would be rich as creamy corn, tasty as acorns!

(Adapted from "Pig Dreams" by Levertov, 1981)

EARLY WEANING

1. Introduction

A. “Traditionally,” producers have been weaning pigs at 5-6 weeks of age or older.
B. In a more “modern” production setting, producers have been weaning pigs at 3-4 weeks of age, but they are weaning much, much earlier in recent years!
C. Provided that they've received colostrum, pigs can be weaned anytime because:

1) Have adequate “know-how” on nutritional, physiological & environmental requirements of young pigs (& other areas).
2) Thus, can prepare appropriate diets for pigs of any age that can replace sow's milk completely, and also can provide other needs.

But, must remember that: a) weaning is very stressful for pigs, and b) to be successful, need management skills, better facilities, and well-trained personnel!

2. Reasons for Early Weaning

A. Can produce more litters/sow/year, consequently more pigs/sow/year, and also may be able to ↓ “death losses” with very early weaning, thus can improve sow productivity!
B. May improve pig’s nutritional status. Can provide “optimum” diets for pigs simply because the sow’s milk may not satisfy their requirements completely.
C. Can expect heavier and uniform pigs at 8 weeks of age! Remember that milk production peaks at 3-4 weeks & then starts to ↓!
D. Can reduce health problems! Perhaps, less transmission of diseases and parasites from the sow to piglets?!
E. Can keep sows in a better condition for rebreeding or selling.
F. Can save some feed during lactation? (Perhaps, offset by more expensive diets for pigs!)
3. **Disadvantages of Early Weaning**

A. “Management” - Sows can cover up for “poor” management practices to a certain extent, thus, if it's not possible to manage young pigs as well as or better than the sow, then pigs should remain with the sow!

B. Must provide nutritionally balanced and palatable diets.

C. Must have better facilities, equipment and sanitary conditions, i.e., must be able to provide a warm, draft-free and sanitary environment.

**FACTORS AFFECTING DECISION MAKING PROCESS**

- Factors to consider? “Health, nutrition, sow Productivity & environment/facility, plus management skills and willingness to spend extra time caring for pigs!”

1. **Health**

A. Protection from colostrum for diseases: 1) high during week to 10 days after birth, and then 2) starts to decline thereafter.

B. Active immunity of pigs is low until 6 to 8 weeks of age, and “Ig production” may not be fully competent until at least 5-week old.

C. Pigs can be weaned after \( \approx \) 10 days if all potential stressors at weaning are minimized.

D. After 5 to 6 weeks, can protect themselves much better.

2. **Nutrition**

A. Enzyme profile of pigs up to 3 or 4 weeks is geared toward digesting milk sugar (lactase) and milk fat (lipase).

B. Enzymes for starches (e.g., amylase & maltase) and plant proteins (proteases) are increasing, but still not adequate.

C. \( \Rightarrow \) complex diets, not corn-soy, must be used.

\( \Rightarrow \) Also, diets must be highly palatable and digestible!

3. **Sow Productivity**

A. **Weaning age and sow productivity**

<table>
<thead>
<tr>
<th>Weaning age, day</th>
<th>Farrowing per yr</th>
<th>Pigs per litter</th>
<th>Pigs per sow/yr</th>
</tr>
</thead>
<tbody>
<tr>
<td>6-10</td>
<td>2.29</td>
<td>7.69</td>
<td>17.6</td>
</tr>
<tr>
<td>11-15</td>
<td>2.26</td>
<td>7.94</td>
<td>18.0</td>
</tr>
<tr>
<td>16-20</td>
<td>2.23</td>
<td>8.12</td>
<td>18.1</td>
</tr>
<tr>
<td>21-25</td>
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<td>8.25</td>
<td>18.2</td>
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<td>26-30</td>
<td>2.14</td>
<td>8.36</td>
<td>18.0</td>
</tr>
<tr>
<td>31-35</td>
<td>2.08</td>
<td>8.45</td>
<td>17.6</td>
</tr>
<tr>
<td>36-40</td>
<td>2.03</td>
<td>8.53</td>
<td>17.3</td>
</tr>
<tr>
<td>41-45</td>
<td>1.97</td>
<td>8.60</td>
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</tr>
<tr>
<td>46-50</td>
<td>1.92</td>
<td>8.66</td>
<td>16.7</td>
</tr>
</tbody>
</table>

\( ^a \) Studies involving several countries (NHF, 1986).
Generally, can not breed sows while they are lactating. ∴ with earlier weaning, can expect more litters/year, thus more pigs/sow/year!

B. Weaning before 3 to 4 weeks:

1) Similar farrowings/year and pigs/sow/year.
2) Earlier weaning can ↑ days from weaning to estrus & ↑ conception rate and litter size, i.e., an inverse relationship between weaning age and pregnancy rate!
3) Why? - “Uterus involution!”
   a) After parturition, takes 15 to 16 days for uterus to become normal again!
   b) ∴ in general, no advantage in weaning earlier than 3 weeks.

C. After 4 to 5 weeks, can expect progressive ↓ in the No. of farrowings/year and pigs/sow/year.

4. Environment

A. Must provide clean, warm & draft-free environment!
B. Sanitation - Important to have disinfected facilities & equipment, efficient manure handling system, etc.
C. Early weaned pigs need 85°F during the first week or two, but “optimum” temperatures depend on many factors:

1) Surface area - A 3-week-old pig has 10% more surface area to lose heat than a 4-week-old, and 20% more than a 5-week-old.
2) Drafts increase a pig's heat loss - See a box.
3) Flooring materials affect heat loss - See a figure [McFarlane, 1989. NHF 34(12):28]

To wean pigs early, need facilities to satisfy environmental needs of pigs! (And, obviously, must satisfy other needs!)

**BEST TIME TO WEAN**

1. Survey Results

A. Age of pigs at weaning (% of farms)*: (1989. NHF/Jun. pp 11-16)

<table>
<thead>
<tr>
<th>Head/yr</th>
<th>&lt; 21 d</th>
<th>22-28 d</th>
<th>29-35 d</th>
<th>36-42 d</th>
<th>&gt; 42 d</th>
</tr>
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<tbody>
<tr>
<td>&lt; 999</td>
<td>2.7</td>
<td>25.9</td>
<td>33.5</td>
<td>25.1</td>
<td>12.8</td>
</tr>
<tr>
<td>1,000-2,999</td>
<td>8.6</td>
<td>47.9</td>
<td>29.3</td>
<td>10.2</td>
<td>4.0</td>
</tr>
<tr>
<td>3,000-4,999</td>
<td>37.2</td>
<td>40.7</td>
<td>14.0</td>
<td>7.0</td>
<td>1.7</td>
</tr>
<tr>
<td>5,000-9,999</td>
<td>40.7</td>
<td>47.5</td>
<td>10.2</td>
<td>1.7</td>
<td>0.0</td>
</tr>
<tr>
<td>&gt; 9,999</td>
<td>38.5</td>
<td>57.7</td>
<td>3.8</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Overall</td>
<td>9.0</td>
<td>36.2</td>
<td>29.3</td>
<td>17.4</td>
<td>8.2</td>
</tr>
</tbody>
</table>

* Based on 1,534 producers from 30 states.
B. Thus, larger operations are weaning early! Why?

1) Need a rapid turnover to spread fixed” costs.
2) Likely to have better nurseries.
3) Likely to have adequate labor.
4) Likely to be able to provide better diets for younger pigs.

2. Best Time to Wean Under the Confinement System?

A. Before 3 weeks, no advantage in terms of “sow productivity?”

   - However, many producers are weaning much earlier because of: 1) fixed costs, 2) the use of “early segregated weaning,” 3) availability of means to manage very young piglets, and others!

B. Beyond 4 to 5 weeks, progressive ↓ in the No. of farrowings/year & pigs/sow/year.
C. Weaning at 3 to 4 weeks - Similar sow productivity & also similar enzyme profiles of pigs? (A slightly more management time for a 3-wk weaning vs 4-wk weaning though!)

☞ Consider each of the factors separately, and then make an intelligent decision on the best weaning age for the particular operation!

WEAN PIGS BY WEIGHT AND SOWS BY DATE

- To keep breeding schedule, pigs must be weaned based on the time or date (14, 21, 28 days, etc), but the problem would be the variation in pigs within a litter!

1. What Many European Producers Do?

A. Wean only those weighing > 11 to 11½ lb & never wean lighter pigs!
B. At about 18 days or so (assuming 3-wk weaning!), wean one or two pigs from each litter that reached the target weight (i.e., “split-weaning”).

   1) This approach would be beneficial when: a) Sows nursing large litters, b) “Tail-enders” are in trouble, and c) Sow is losing body condition because of heavy milk production.
   2) But, to succeed, must have: a) A warm, dry, draft-free nursery, and b) Enough pigs of similar weights to make a group of 8-12 pigs for one pen (. . . the numbers obviously would change depending on the situation!).

C. Wean sows on the scheduled time.
D. Move tail-enders to litter(s) a week or so behind.

☞ To avoid savaging:

   1) Consider a docility factor in selecting replacement females.
   2) “Fool” the sow by: a) Mix only one or two just before they start to nurse, b) Smear some milk (from the “foster-sow”) on the newcomer, and c) Introduce pigs during feeding or cleaning time.

2. Useful?
A. May have to spend little more time swapping pigs around, but can produce more pigs/year by saving smaller pigs, and also it will have less stress on the sow, which can improve the reproductive efficiency, i.e., early return to estrus, better subsequent litter size, etc.!

B. In one example: 1) Produced 61 more pigs to finishing unit/100 sows/yr, 2) All pigs reached 66 lb about 3 days sooner, which resulted in saving of 5 tons of feed/100 sow/yr, 3) Sows produced 0.05 more litter/yr, which translate into 0.5 more pig/sow/yr, and 4) “Extra 100 hr spent per 100 sows/yr” was more than offset by the saving on feed costs up to 66 lb (100 hr = ½ of feed saved!).

**ISOLATED WEANING**

1. **Introduction**
   A. Isowean™ or Medicated Early Weaning (MEW) developed by Pig Improvement Company (PIC) in the late 1970s.
   B. Has evolved & modified over the years & known as “Modified MEW” or “MMEW,” and today, it’s commonly referred to as “Segregated Early Weaning or SEW.”
   C. Can be an alternative to “total” depopulation/repopulation?

   ◦ Traditional approach to eliminate diseases [and(or) to alleviate other problems]:
     a) Depopulate completely, b) Clean-up facilities completely (& leave the unit “empty” for a while), and c) Repopulate with pigs having high-health status.

2. **What Is It?**
   A. Super vaccination of sows:

      1) Vaccinate for disease(s) trying to eliminate several times - e.g., 5 and 2 weeks before parturition.
      2) Treat sows for parasites ≈ week before farrowing - e.g., Administration of Ivomec for both internal & external parasites.

      ∎ pigs can receive maximum protection from colostrum, and also they have less chance of being exposed to parasites!

   B. Clean up pigs: 1) Vaccinate, 2) Give a small dose of Ivomec (on day 1), and 3) Treat with drugs (antibiotics) various times before weaning.

   C. Then, wean pigs between 5 and 21 days of age, i.e., get pigs away from the sow before colostral immunity runs out! (See a box on “Maximum Weaning Age!”)

   D. Pig are weaned into the isolated nursery that is designed to accommodate pigs weaned as young as 5 days old.

   E. “2- & 3-site production:” [See a diagram (Harris, 1990)]

      1) Isolated sites can ↓ a chance of vertical and horizontal transmission of diseases.
2) In a commercial operation, 2 sites may be adequate to enhance production performance, but in a seedstock operation, may need 3 well-isolated facilities for “disease elimination” purpose.

“All-in, all-out & disinfection” between groups are essential component of this program!

3. Effectiveness & Cost of Isowean

A. Effectiveness - See a figure [NHF 39(10):37 (1994)]

B. Comparison of program costs: [Muirhead, 1994. Feedstuffs 66(40):10]

<table>
<thead>
<tr>
<th>Item</th>
<th>Control</th>
<th>MEW</th>
<th>MMEW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sow vaccination</td>
<td>0.21</td>
<td>0.79</td>
<td>0.73</td>
</tr>
<tr>
<td>Sow medication</td>
<td>-</td>
<td>0.11</td>
<td>-</td>
</tr>
<tr>
<td>Piglet injection</td>
<td>-</td>
<td>3.59</td>
<td>-</td>
</tr>
<tr>
<td>Water medication</td>
<td>-</td>
<td>-</td>
<td>0.23</td>
</tr>
<tr>
<td>Nursery medication: Feed</td>
<td>0.50</td>
<td>-</td>
<td>0.30</td>
</tr>
<tr>
<td>Nursery medication: Water</td>
<td>-</td>
<td>0.25</td>
<td>0.20</td>
</tr>
<tr>
<td>Total/pig weaned</td>
<td>$0.71</td>
<td>$4.63</td>
<td>$1.57</td>
</tr>
</tbody>
</table>

C. An example (a 300-sow, farrow-to-finish operation): [1994. NHF 39(40):54]

1) Increase in annual costs (site acquisition/rental, nursery building, transportation, increased labor, etc.) - $55,470.

2) Increase in revenue (added sale weights, reduced mortality, ↓ medication costs, ↓ total feed from ↑ feed efficiency, etc.) - $69,470.

$14,000 net change in annual income!

4. Usefulness of Isowean

A. “Existing operations” - Can improve pig performance by ↓ disease levels by separating breeding herd from pigs.

B. “Expansion of the herd with mediocre performance” - Can increase health status of herd, ↑ the performance, without depopulation/repopulation.

C. “Co-mingling” - Able to co-mingle pigs from multiple sources (at 10-21 d of age, pigs still have high levels of protection received from colostrum).

5. Any Shortcomings?

- “Early weaning” can be beneficial, but likely to see reductions in the efficiency of rebreeding sows as we wean litters early because the follicles on the ovary may not be capable of normal growth and ovulation and(or) inadequate hormonal status.

- Thus, to minimize problems, may have to pay extra attentions to sows - e.g., heat detection (visual signs may not be apparent in sows weaned early), health & body condition (placing a greater demand on sows by weaning early), etc.