Pig Reproduction

- Puberty: 6 - 8 months
- Gestation: 115 days
- Lactation: 25 days
- Wean to breed: 5 days
- Total cycle: 145 days
- Maximum possible: 2.5 litters per year
- Pigs per sow per year: 18 to 27
Pigs - the Mortgage Lifters

- Year 1: 1 sow produces 20 pigs
- Year 2: 10 sows produce 200 pigs
- Year 3: 100 sows produce 2,000 pigs
- Year 4: 1,000 sows produce 20,000 pigs
- Year 5: 10,000 sows produce 200,000 pigs
- Year 6: 100,000 sows produce 2,000,000 pigs
Factors Affecting Productivity

Genetics
Environment
Nutrition
Disease
Management
Genetics - Maternal Breeds

- Landrace
- Yorkshire
Genetics - Terminal Breeds

Duroc

Hampshire
Meishan
## Basis for Improving Traits

<table>
<thead>
<tr>
<th>Trait</th>
<th>Heritability</th>
<th>Heterosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carcass</td>
<td>High</td>
<td>Low</td>
</tr>
<tr>
<td>Growth</td>
<td>Medium</td>
<td>Medium</td>
</tr>
<tr>
<td>Reproductive</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>
Heterosis

Superior to Both Parents

Breed A

Crossbred A X B

Breed B

Superior to One Parent

Parental Average
Rotational Crossing

Yorkshire + Landrace

Crossbred Sows & Market Hogs

Hampshire
Terminal Crossing

Yorkshire + Landrace

F1 Cross Sows + Hampshire

Crossbred Market Hogs
Parturition
Farrowing Crate

Source: Pork ‘85
Lactating Sow
Gestation Housing

Stalls or Pens?

Source: Pork, August 2002
Gestation Stalls

Individual feeding according to body condition
No fighting to establish pecking order
Easy to vaccinate, pregnancy test, etc.
Individual observation
Sows cannot turn around
Stereotypical behaviors eg bar biting
Hawaiʻi Pig Pen
Good Nutrition = Good Production

Gee Dad, Maybe you should start feedin' that slop to the cows . . .
Sow Condition Score

Source: Elanco
Mating Types

- Pen Bred
- Hand Mated
- Artificially Inseminated
Artificial Insemination
Use of Artificial Insemination in Hawai`i

Year

1997
1998
1999

Number of Semen Doses

0
100
200
300
400
500

1997
1998
1999

Year
Boar Exposure

“I’m tired of being just another pretty face around here!”
Effect of Boars on Gilt Estrus

Boars

No Boars

Age, days

No. of Gilts

165 175 185 195 205 215 225 235
Timing of Mating

Conception, %

Time from onset of estrus, hr

Ovulation

Litter Size (Y2)

Conception Rate (Y1)
Parturition
Baby Pig Care

- Colostrum
- Needle teeth
- Tails
- Iron
- Ear notch
- Cross-foster
- Castrate
Iron Injection
Preweaning Mortality

Mortality, %

Birthweight, kg

- 0.9
- 0.9-1.1
- 1.2-1.3
- 1.4-1.5
- 1.5-1.6
- 1.7+

- 0
- 10
- 20
- 30
- 40
- 50
- 60
US Pigs Weaned

Source: National Pork Board
Basis of Farming

- Nature: 90% loss, 10% live to breed
- Nurture: 10% loss, 10% needed to breed, and 80% go to market
“Sustainable agriculture would be a food production and distribution system that meets the needs of the present generation without compromising the ability of future generations to meet their needs.”

- Brundtland Commission
# Changes in Pork Production

**Ontario 1951 - 1991**

<table>
<thead>
<tr>
<th>Animal Efficiencies</th>
<th>1951</th>
<th>1991</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pigs/Sow/Year</td>
<td>6.2</td>
<td>12.13</td>
</tr>
<tr>
<td>Market Weight (lb)</td>
<td>190.4</td>
<td>220.4</td>
</tr>
<tr>
<td>% Carcass Yield</td>
<td>78</td>
<td>80</td>
</tr>
<tr>
<td>% Lean</td>
<td>48</td>
<td>50.5</td>
</tr>
</tbody>
</table>

Source: Surgeoner and Dalrymple, 1993
<table>
<thead>
<tr>
<th></th>
<th>1951</th>
<th>1991</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lean Pork Demand</td>
<td>86.9</td>
<td>158.8</td>
</tr>
<tr>
<td>Feed/Lean Pork</td>
<td>16.1</td>
<td>9.8</td>
</tr>
<tr>
<td>Land Base (acres)</td>
<td>1,796,000</td>
<td>916,000</td>
</tr>
</tbody>
</table>

Land Required Using 1951 Methods
3,285,000

Source: Surgeoner and Dalrymple, 1993