Swine Ultrasound Class – Overview

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4-H Youth Development/Food Science & Technology
Swine Ultrasound Class

Purpose of the Swine Ultrasound Class

- Identify hogs with superior carcass merit
- Identify hogs that fit industry standards
- Demonstrate an instrument that aids in determining lean and fat
Associated with Palatability
- Flavor
- Juiciness
- Tenderness

Salability & Appearance
- Color
- Marbling
- Firmness
- Wetness
- Cutability is “how much” usable product
- Cutability is the expected yield of the 4 lean cuts -
  4 lean cuts are the ham, loin, Boston butt and picnic shoulder
**Indicators of Fatness**
- Backfat thickness
- 10\textsuperscript{th} Rib thickness

**Indicators of Muscling**
- Loin Muscle Area at 10\textsuperscript{th} rib
- Muscle Thickness Score
% Muscle or % Lean
A carcass evaluation technique used to determine the differences in the lean to fat ratios of market hogs
Pork carcass traits are best determined by taking carcass measurements. However, ultrasound is a good tool to use when actual carcass measurements are not feasible.
Ultrasound is very good for fat and muscle measurements. Ultrasound is not very good at determining lean quality (except for marbling).
Leaner, heavier muscled pigs will have the highest % Lean
However, the least backfat and the largest loin muscle areas are not always the most desirable!
Production Traits
Carcass Traits
Muscle Quality Traits

http://www.pork.org/filelibrary/resources/04766.pdf
Production Traits
- Live Wt – 270 lbs.

Carcass Traits
- Carcass Wt – 205 lbs.
- 10th rib fat – .70 in.
- LMA – 6.7 sq. in.
- Belly Thickness – 1.0 in.
Example Industry Standards for Barrows

Muscle Quality Traits
- Lean Color Score - 4
- Marbling Score - 3

Dark reddish pink

4.0

3.0
Factors in formula are:

- Live Weight
- 10th Rib Fat Depth
- 10th Rib Loin Muscle Area
- Sex of Pig (Gilts tend to be leaner)
**Live Hog Measurements**

- Live Wt. – 270 lbs.
- 10th Rib Fat - .71 in
- LMA – 8.60 sq. in.
- Sex – Gilt (2); Barrow = 1

**Lbs. Fat Free Lean**

\[
\text{Lbs. Fat Free Lean} = (0.291 \times 270) - (16.498 \times .71) + (5.425 \times 8.60) + (0.833 \times 2) - 0.534
\]

= 114.6 lbs fat free lean

**% Lean (Live wt. basis)**

\[
\text{% Lean (Live wt. basis)} = \left(\frac{114.6}{270}\right) \times 100
\]

= 42.46%
Each animal submitted for ultrasound will be placed in a ribbon grouping (Purple, Blue or Red) based on:

- Live weight
- 10\textsuperscript{th} rib fat depth
- Loin muscle area
Ribbon award for the animal is based on the lowest ribbon trait

Example:

- Live Wt. = Purple
- 10th Rib Fat = Purple
- LMA = Red
- Overall Ribbon Rank = Red
2012 Market Hog Ultrasound Class

Rankings within a ribbon group based on %Lean
<table>
<thead>
<tr>
<th>Trait</th>
<th>Ribbon Ranges</th>
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<tbody>
<tr>
<td>Live Wt.</td>
<td>&lt;239 240-249 250-280 281-299 310+</td>
</tr>
<tr>
<td>10th Rib Fat</td>
<td>&lt;.39 .40-.49 .50-.80 .81-.90 .91+</td>
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What do I need to do to enter the ultrasound class?

1. After weighing your pigs, select one pig for ultrasound measurement.
2. If possible, select a pig between 250 and 280 pounds.
3. Take pig to the ultrasound area.
4. Results will be announced at the end of the live show.
To learn more about pork carcass merit, see Chapter 4.

(Ohio 4-H Circular 134R; http://estore.osu-extension.org/productdetails.cfm?sku=134R)