



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



Pork Carcass Merit

Pork Carcass Quality Traits
Pork Carcass Cutability Traits

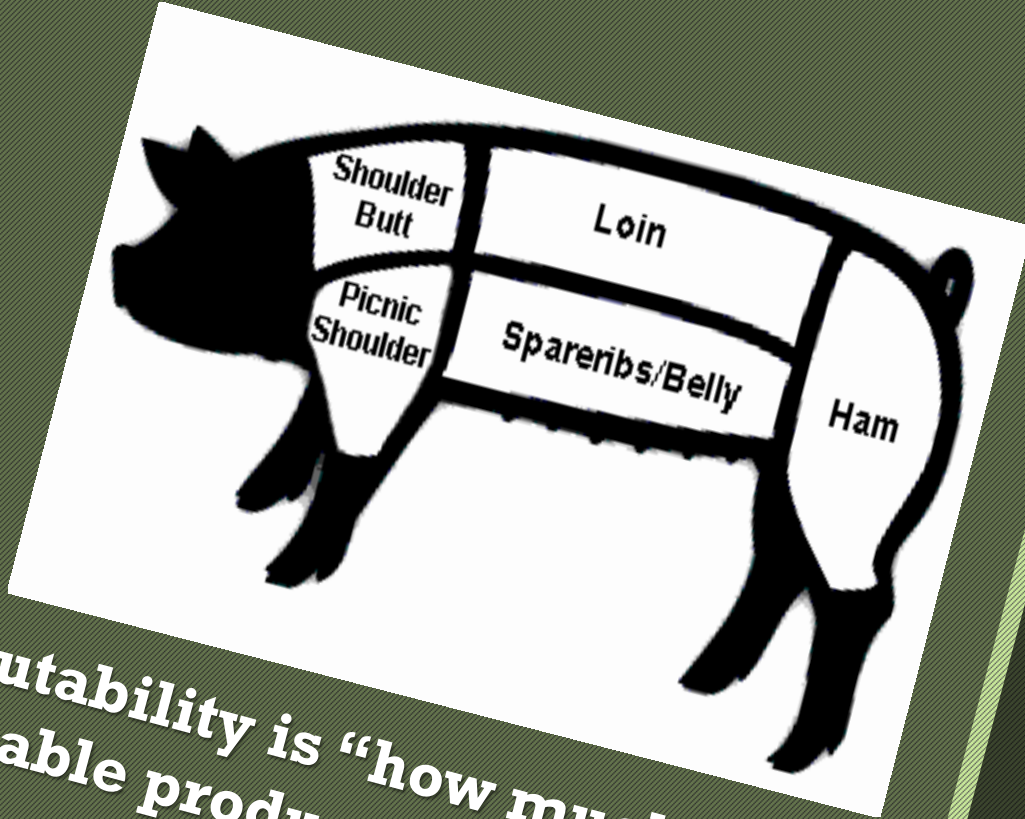




Pork Lean Quality

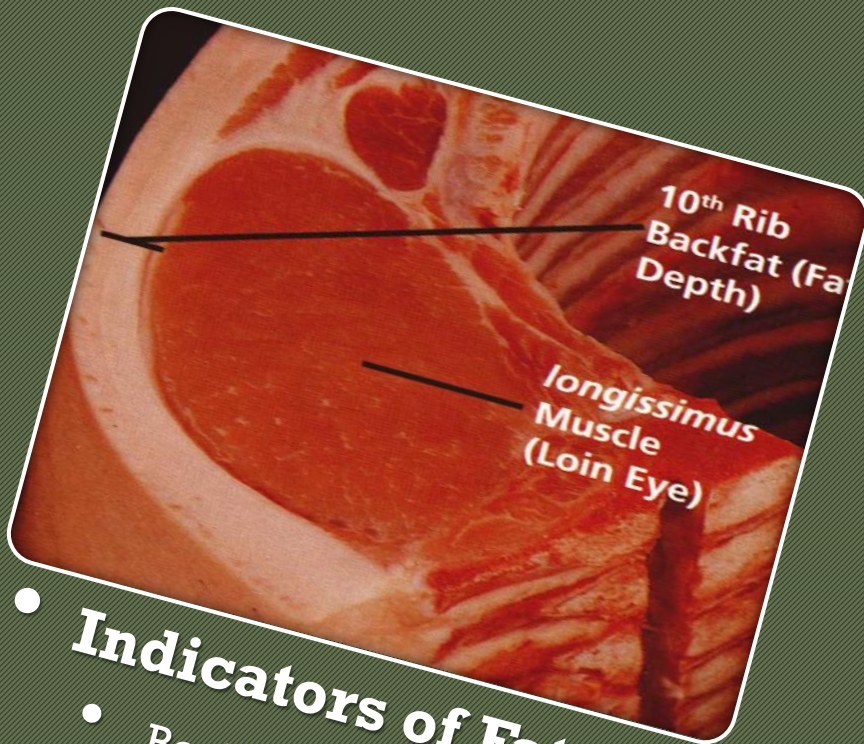
- **Associated with Palatability**
 - Flavor
 - Juiciness
 - Tenderness
- **Salability & Appearance**
 - Color
 - Marbling
 - Firmness
 - Wetness





- 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

Pork Carcass Cutability



- **Indicators of Fatness**

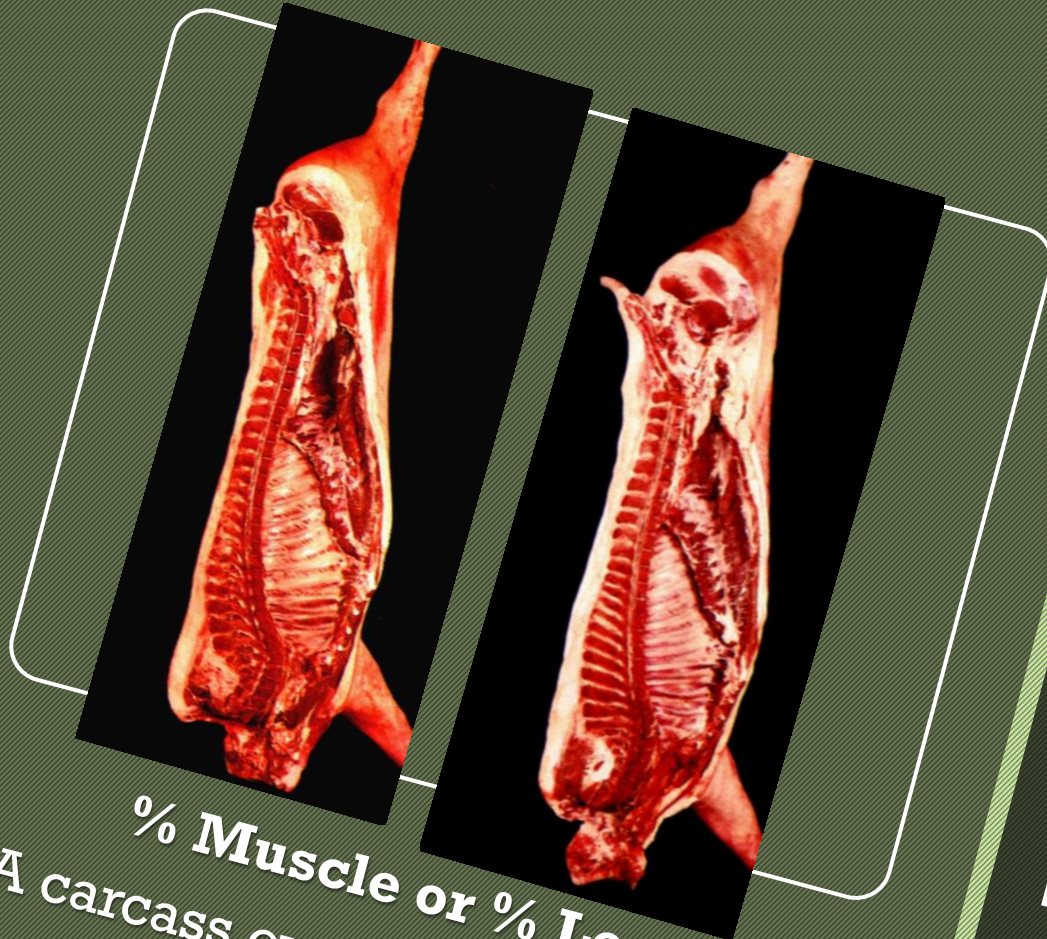
- Backfat thickness
- 10th Rib thickness

- **Indicators of Muscling**

- Loin Muscle Area at 10th rib
- Muscle Thickness Score

Pork Carcass Cutability





% Muscle or % Lean

A carcass evaluation technique used to determine the differences in the lean to fat ratios of market hogs

Pork Carcass Cutability



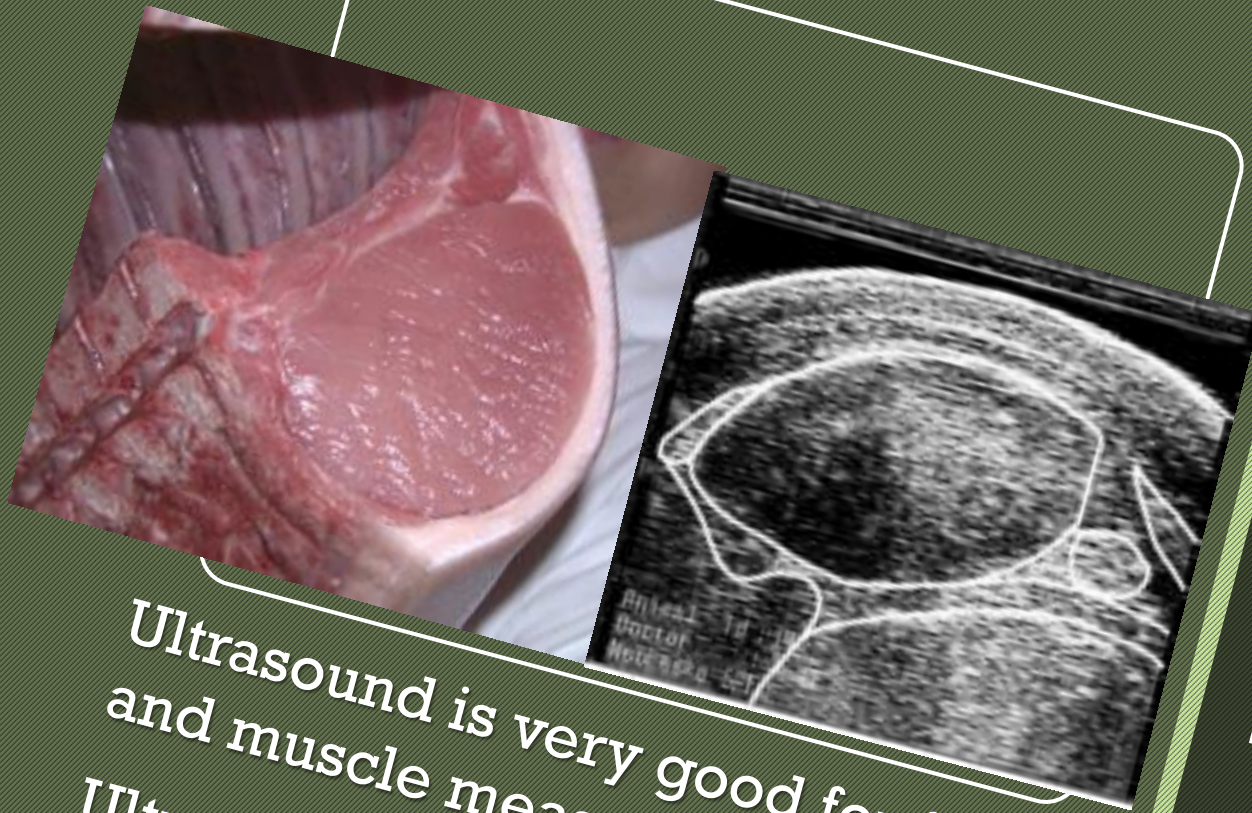


Live Animal Ultrasound

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





Live Animal Ultrasound

Ultrasound is very good for fat
and muscle measurements
Ultrasound not very good at
determining lean quality (except
for marbling)

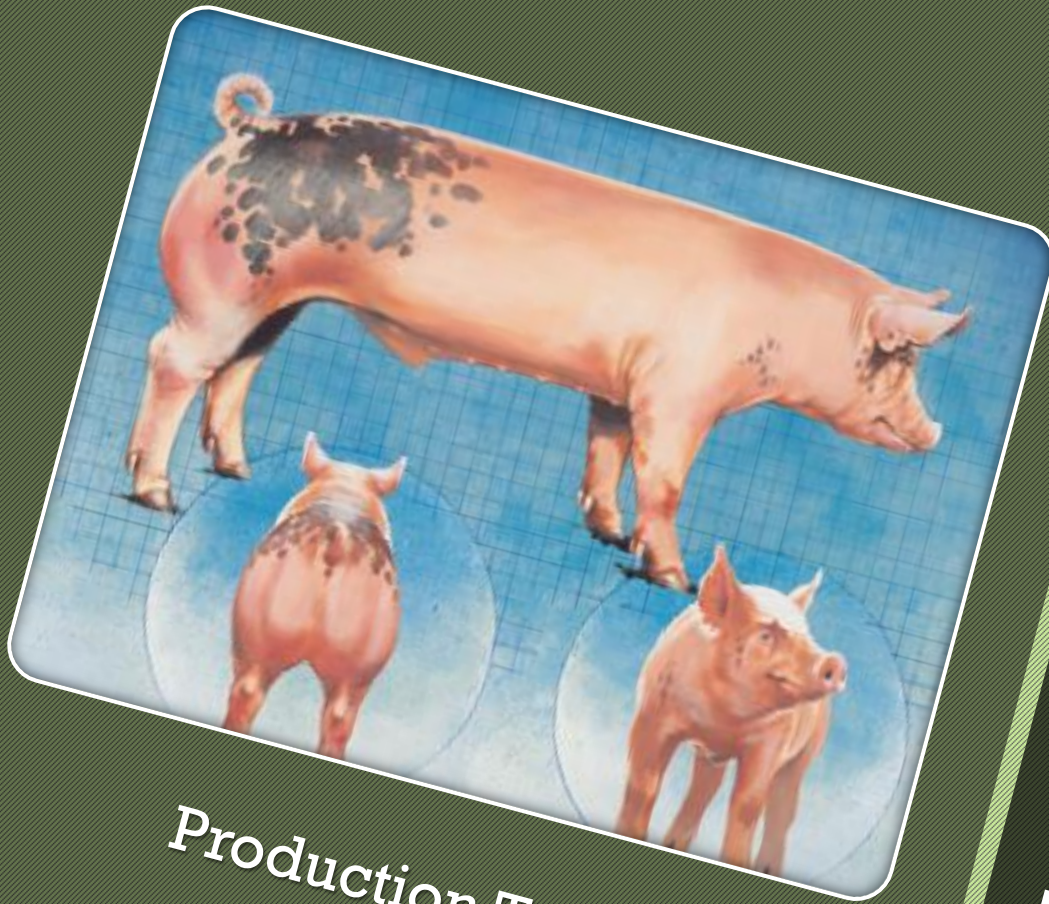




Pork Carcass Standards

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>

Symbol III – Ideal Market Hog





Example Industry Standards for Barrows

Production Traits

- Live Wt – 270 lbs.

Carcass Traits

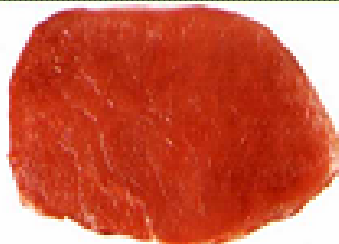
- Carcass Wt – 205 lbs.
- 10th rib fat - .70 in.
- LMA – 6.7 sq. in.
- Belly Thickness – 1.0 in.



Example Industry Standards for Barrows

Muscle Quality Traits

- Lean Color Score - 4
- Marbling Score - 3



4.0

Dark reddish pink



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)

Ultrasound % Lean Calculation





Example: Determining % Lean

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=

$$\begin{aligned} & (0.291*270)-(16.498*.71)+ \\ & (5.425*8.60)+(0.833*2)-0.534 \\ & = 114.6 \text{ lbs fat free lean} \end{aligned}$$

$$\begin{aligned} \% \text{ Lean (Live wt. basis)} &= \\ & (114.6/270)*100 \\ & = 42.46\% \end{aligned}$$

2012 Market Hog Ultrasound Class



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

- Live weight
- 10th rib fat depth
- Loin muscle area

2012 Market Hog Ultrasound Class



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**



Ribbon Criteria

Trait	Ribbon Ranges				
Live Wt.	<239	240-249	250-280	281-299	310+
10 th Rib Fat	<.39	.40-.49	.50-.80	.81-.90	.91+
Loin Muscle Area	<5.99	6.0-6.99	7.0-9.99	10.0-11.99	12.0+

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 end of 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](http://estore.osu-extension.org/productdetails.cfm?sku=134R))

Swine Resource Handbook

