

USDA Grades for Market Hogs and Pork Carcasses

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Grading standards for market hogs and pork carcasses have been revised three times since their development in 1952. USDA grades sort animals or carcasses according to their expected yield of the four lean cuts. The latest change took effect January, 1985. It simplified the grading procedure and changed the standards to better differentiate today's leaner market hogs. This fact sheet describes the current grades and how to apply them.

Grade Names

Pork carcasses and market hogs are graded U.S. No. 1, 2, 3, 4 or Utility. The numerical grades are based on expected yield of four lean cuts—ham, loin, blade (Boston) shoulder, and arm (picnic) shoulder. The Utility grade is reserved for carcasses which exhibit unacceptable quality factors.

Table 1. Relationship between USDA Grade and Carcass Yields

Grade	Expected Yield of Four Lean Cuts from Chilled Carcasses
U.S. No. 1	60.4% and over
U.S. No. 2	57.4 to 60.3%
U.S. No. 3	54.4 to 57.3%
U.S. No. 4	less than 54.4%

Grading Factors

Last Rib Backfat Thickness (LRBF). Measured perpendicular to the back line where the last rib attaches to the backbone (Figure 1). LRBF includes both fat layers and skin.

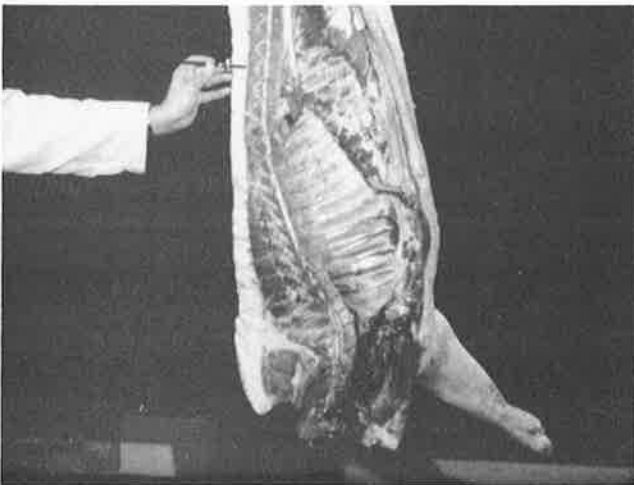


Figure 1. Measurement of LRBF thickness in the pork carcass.

Degree of Muscling. Evaluated by considering the shape, fullness and bulge of the ham. Both the amount of fat and the amount of muscle affect carcass thickness, so carcass fat is taken into account when evaluating degree of muscling. Three degrees of muscling are defined:

Thick (superior) = 3

Average = 2

Thin (inferior) = 1

Most pork carcasses or market hogs will be "average" in muscling.

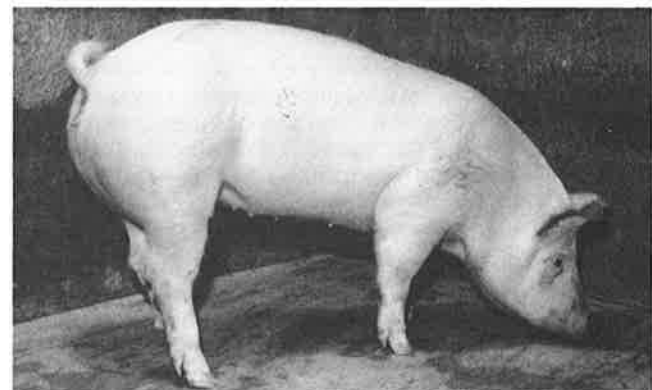
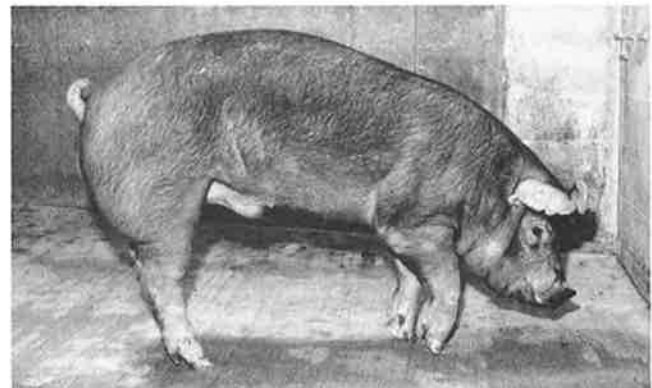
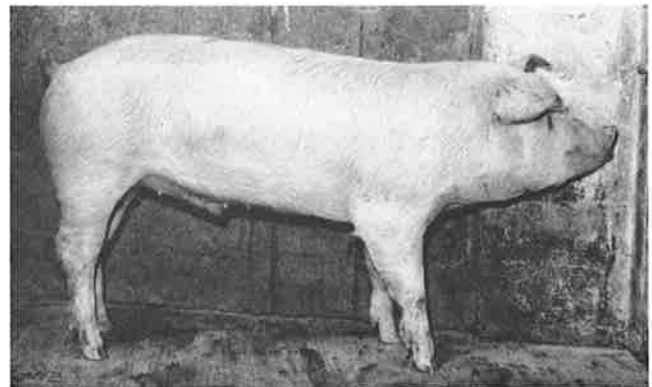


Figure 2. Degree of muscling in market hogs

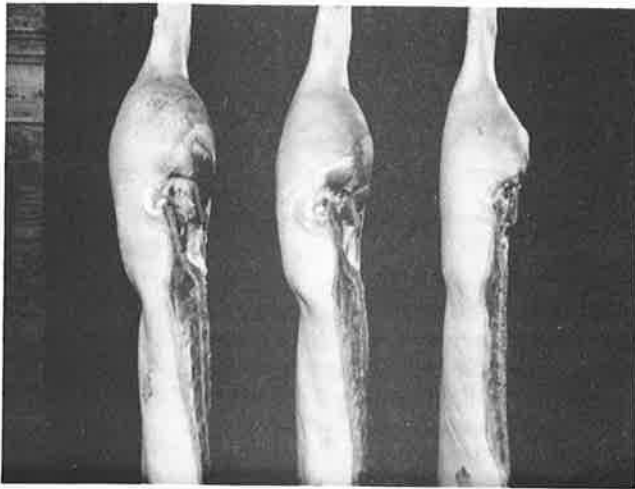


Figure 3. Degree of muscling in pork carcasses

Quality. Carcasses of acceptable quality are graded according to their LRBF thickness and degree of muscling. Carcasses of unacceptable quality are graded U.S. Utility. Indicators of unacceptable quality include:

- a) severe pale, soft and exudative condition (PSE) in exposed lean
- b) very thin bellies (less than 0.6 inch thick)
- c) soft and/or oily fat

Carcasses rarely grade U.S. Utility.

Application of Grades

Tabular Method

1. Assign a preliminary grade based on LRBF:

Preliminary Grade	LRBF Thickness
U.S. No. 1	less than 1.00 inch
U.S. No. 2	1.00 to 1.24 inches
U.S. No. 3	1.25 to 1.49 inches
U.S. No. 4	1.50 inches and over

2. Adjust preliminary grade for degree of muscling:
 - average muscling = no change
 - thick muscling = adjust upward one grade
 - thin muscling = adjust downward one grade

Formula Method

$$\text{Carcass Grade} = (4 \times \text{LRBF}) - (1 \times \text{Muscling})$$

where, thick muscling = (3)
 average muscling = (2)
 thin muscling = (1)

For a carcass with 1.1 inches of LRBF and "average" muscling (2), the formula method gives the following results:

$$\text{Grade} = (4 \times 1.1) - (1 \times 2)$$

$$\text{Grade} = 2.4 \text{ (U.S. No. 2)}$$

Grading Exceptions

1. Carcasses with *thin* muscling (1) cannot grade No. 1. A lean carcass (less than 1.0 inch LRBF) with thin muscling would grade No. 2.
2. Carcasses with LRBF thickness greater than 1.75 inches must grade No. 4, regardless of muscling.
3. Carcasses with *unacceptable* quality must grade U.S. Utility.

Grading Examples

Carcass	LRBF	Muscling	Quality	Tabular Method	Formula Method
A	1.1	ave. (2)	OK	No. 2	2.4 (No. 2)
B	1.1	thick (3)	OK	No. 1	1.4 (No. 1)
C	1.1	thin (1)	OK	No. 3	3.4 (No. 3)
D	0.9	<i>thin</i> (1)	OK	No. 2	—(No. 2)
E	1.8	thick (3)	OK	No. 4	4.2 (No. 4)
F	1.2	ave. (2)	<i>Unacc.</i>	Utility	Utility

Distribution of Grades

A sampling of market hogs by the USDA in the early 1980s predicts the following approximate distribution of carcasses:

U.S. No. 1—28%	U.S. No. 3—23%
U.S. No. 2—39%	U.S. No. 4—10%

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