# Weber County Jr. Livestock Carcass Contest
# Lambs

## Scoring Components

| Carcass Merit Indicators | Formula |
|---|---|
| Yield Grade | Yield Grade = 0.4 + (10 × Back Fat)<br><br>This formula estimates the USDA Yield Grade for lambs. Lower yield grades are better, indicating a leaner carcass with more edible meat. Back fat is measured in inches using ultrasound. |
| Carcass Weight | Carcass Weight = 2.5518 + (0.1963 × Final Weight) + (5.2096 × Loin Area)<br><br>Estimates the lamb's carcass weight based on live (final) weight and loin muscle area. This formula is the result of statistical regression modeling done by animal scientists. Researchers gathered real carcass data from hundreds or thousands of lambs and compared actual carcass weights with ultrasound measurements taken before slaughter. From this data, they developed a formula that predicts carcass weight using two reliable inputs: Final Weight and Loin Area. |
| % Product Live Weight (Dressing Percentage) | % Product Live Weight = (Carcass Weight / Live Weight) × 100<br><br>This calculates what percentage of the lamb's live weight ends up as usable carcass. A higher dressing percentage means better conversion of live animal to product. |
| % Lean Retail | % Lean Retail = % Product Live Weight / 0.5<br><br>Converts dressing percentage into an estimated retail lean percentage. This helps compare carcass lean value across lambs. |
| % Lean Adjusted | IF Back Fat > 0.25 → % Lean Retail × 0.98<br>IF Back Fat < 0.14 → % Lean Retail × 0.98<br>ELSE → % Lean Retail<br><br>This adjustment penalizes lambs that are too fat or too lean by reducing their lean retail percentage slightly. This encourages a balanced carcass with ideal back fat. |

## Contest Overview

The purpose of this contest is to help 4-H and FFA members understand how ultrasound technology and industry-grade formulas are used to evaluate market lambs. The goal is to estimate carcass merit and determine which lamb provides the highest percentage of lean meat. At Weigh in lambs will be measured for the following; Final Weight, Back Fat thickness, and Loin Eye Area. Lambs will be sorted by Percent Lean Adjusted (Highest percentage to Lowest)

## Relevant Resources

National Sheep Improvement Program (NSIP) – Genetic and performance evaluation tools for lamb carcass traits. https://nsip.org

USDA Agricultural Marketing Service – Lamb Yield Grade Standards – Describes grading system and formulas used industry-wide.

University Extension Publications (e.g., Colorado State, Iowa State, and Texas A&M) – Provide validated carcass estimation methods using ultrasound and performance data.

American Lamb Board – Carcass evaluation tools and educational resources for youth and producers. https://www.americanlamb.com

National Junior Livestock Evaluation Guidelines – Used in 4-H/FFA ultrasound-based carcass contests nationally.

## Example Calculation

| **Lamb Data** | ***Step - By - Step*** |
|---|---|
| **Back Fat:** .22 in<br><br>**Loin Eye Area**: 2.6 in²<br><br>**End Weight**: 130 lbs. | • **Yield Grade:**<br>Yield Grade = 0.4 + (10 × 0.22) = 0.4 + 2.2 = **2.6**<br>• **Carcass Weight:**<br>Carcass Weight = 2.5518 + (0.1963 × 130) + (5.2096 × 2.6) = 2.5518 + 25.519 + 13.54496 ≈ **41.62 lb**<br>• **% Product Live Weight:**<br>% Product Live Weight = (41.62 / 130) × 100 ≈ **32.01%**<br>• **% Lean Retail:**<br>% Lean Retail = 32.01 / 0.5 = **64.02%**<br>• **Percent Lean Adjusted:**<br>Back Fat is between 0.14 and 0.25 → No adjustment needed **= 64.02%** |