Weber County Jr. Livestock Carcass Contest
Hogs

Scoring Components

Carcass Merit Indicators	Formula
Adj. Back Fat	ADJ Fat = Back Fat + ((270 - End Weight) × Back Fat / (End Weight - BF sex Adj Factor)) Adjusts the back fat measurement to a standard market weight of 270 lbs. to allow fair comparison between hogs of different weights. This adjustment accounts for how back fat changes as the hog grows. The BF sex Adj Factor accounts for differences between barrows and gilts. (Gilts =5, Barrows =30)
Adj. Loin Eye Area	ADJ LEA = Loin Eye + ((270 - End Weight) x Loin Eye / (End Weight + 155)) Adjusts the loin eye area (muscle size) to a standard market weight of 270 lb. This allows fair comparison among pigs of different sizes.
Total Lean	Total Lean = (0.833 x Sex Factor) - (16.498 x Back Fat) + (5.425 x Loin Eye) + (0.291 x End Weight) - 0.534 Estimates how much lean meat a hog is carrying before slaughter. It uses measurable traits (like back fat, loin eye area, and weight) to predict total lean mass, which is a key economic trait. Total Lean Sex Factor - Gilts=2, Barrows=1
% Fat Free Lean (Live Weight)	%FFL (Live) = (Total Lean / End Weight) x 100 Calculates what percentage of the pig's live weight is lean muscle. Higher is better.
% Fat Free Lean (Carcass)	%FFL (Carcass) = %FFL (Live) / 0.74 Adjusts the lean percentage to reflect carcass weight (since carcass is ~74% of live weight).
Adj. Fat-Free Lean	ADJ FFL = IF (Back Fat < 0.5, %FFL Carcass - ((0.5 - Back Fat) x 40), %FFL Carcass) Penalizes pigs with very low back fat (< 0.5 in), since extremely lean pigs may have quality issues. The highest ADJ FFL determines the contest winner.

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 hogs. The goal is to estimate carcass merit and select for lean, high-quality animals. At Weigh in Hogs will be measured for the following; Final Weight, Back Fat thickness, and Loin Eye Area. Hogs will be sorted by Adjusted Fat Free Lean (Highest percentage to Lowest)

Relevant Resources

National Swine Improvement Federation (NSIF): https://www.nsif.com

Pork Checkoff / National Pork Board: https://www.porkcheckoff.org

Iowa State, Oklahoma State, and Purdue University Extension Livestock Publications

Utah State University Extension – 4-H Livestock Programs: https://extension.usu.edu/4h

Livestock Judging Manual – Dan Moser et al.

Swine Ultrasound Handbook – The Ohio State University: https://ohioline.osu.edu

Example Calculation

Hog Data	***Step - By - Step***
Sex: Gilt **Back Fat:** 0.40 In. **Loin Eye Area**: 6.5 in² **End Weight**: 250 lbs.	• **Adjusted Back Fat:** ADJ BF = 0.40 + ((270 - 250) × 0.40 / (250 - 5)) = 0.40 + (20 × 0.40 / 245) ≈ **0.43 in** • **Adjusted Loin Eye:** ADJ LEA = 6.5 + ((270 - 250) × 6.5 / (250 + 155)) = 6.5 + (20 × 6.5 / 405) ≈ **6.82 in²** • **Total Lean:** = (0.833 × 2) - (16.498 × 0.43) + (5.425 × 6.82) + (0.291 × 250) - 0.534 = 1.666 - 7.09 + 37.01 + 72.75 - 0.534 ≈ **103.80 lb** • **%FFL (Live):** = (103.80 / 250) × 100 **≈ 41.52%** • **%FFL (Carcass):** = 41.52 / 0.74 ≈ **56.08%** • **Adjusted FFL:** = 56.08 - ((0.5 - 0.43) × 40) = 56.08 - 2.8 = **53.28%**