Cattle Finish Weights and the Modern Consumer

Ryan Cox, Extension Meats Specialist
University of Minnesota Beef Team
The Modern Beef Industry

- USDA says that average live weights of cattle for slaughter in August 2009 were up 9 pounds from August 2008 to 1,293 lbs
The Modern Beef Industry

- First 8 months of 2009, commercial red meat production was down 3%
<table>
<thead>
<tr>
<th></th>
<th>1975</th>
<th>2005</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steers</td>
<td>1068</td>
<td>1297</td>
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<tr>
<td>Heifers</td>
<td>869</td>
<td>1172</td>
<td>+303</td>
</tr>
<tr>
<td>Cows</td>
<td>1047</td>
<td>1350</td>
<td>+303</td>
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<tr>
<td>Bulls</td>
<td>1340</td>
<td>1769</td>
<td>+429</td>
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Carcass Weights for Bulls, Cows, Steers and Heifers

Lbs.


Steers Heifers Cows Bulls
<table>
<thead>
<tr>
<th></th>
<th>1975</th>
<th>2005</th>
<th>Difference</th>
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<tbody>
<tr>
<td>Steers</td>
<td>673</td>
<td>817</td>
<td>+144</td>
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<tr>
<td>Heifers</td>
<td>556</td>
<td>750</td>
<td>+194</td>
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<tr>
<td>Cows</td>
<td>475</td>
<td>621</td>
<td>+146</td>
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<tr>
<td>Bulls</td>
<td>682</td>
<td>905</td>
<td>+223</td>
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</tbody>
</table>
The Modern Beef Industry

- Seed stock, cow calf, feeder, feed lot, etc....

- What is the beef industry producing?

- Are we a quality based industry?
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- Prime: 3%
- Choice: 59%
- Select: 31%
- Standard/Other: 7%
The primary drivers of beef carcass prices/returns are:
- Carcass weight;
- Quality grade;
- Yield grade;
- Conformance and freedom from major defects; and
- Hide color.

In today’s beef marketing system, weight trumps grade performance, especially when the Choice/Select spread is under $10/cwt.
Several of the industry goals for 2010 involve reducing nonconforming beef:

- Clarify beef market signals that encourage production of cattle, carcasses, and cuts that conform to industry targets.
- Minimize production of excess fat.
- Strive for uniformity/consistency in cattle production.
- Consider tenderness in genetic and management decisions.
- Target weights that optimize profitability without creating productivity or product-desirability problems.
- Recognize the importance of marbling as a value determining trait.

Non-Conforming Beef Research Summit. 2008, Cattlemen’s Beef Board
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• What is the ideal market animal?

• With quality considered equal...

• Question to you:
  – What is the ideal finished weight of a market beef animal?
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WEEKLY NATIONAL CARLOT MEAT REPORT

USDA, AMS
Livestock & Seed Program
Livestock & Grain Market News
210 Walnut Street, Room 767
Des Moines, Iowa 50309-2106

Des Moines, IA
Ph# 515-284-4460
Fx# 515-284-4231

Washington, DC
Ph# 202-720-6231
Fx# 202-690-3732

WEEK ENDED: October 17, 2009
VOLUME 18, NO. 041

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“Buying on the Grid”
The Modern Beef Industry

- No discounts for carcasses between 600 and 900 pounds
- Minimal discounts for carcasses between 900 and 1,000 pounds

<table>
<thead>
<tr>
<th>Qlty/Yld</th>
<th>400-500#</th>
<th>500-600#</th>
<th>600-900#</th>
<th>900-1000#</th>
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<tr>
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<td>$108.63</td>
</tr>
</tbody>
</table>
The Modern Beef Industry

• The industry “ideal” carcass is currently 600-900 pounds

• Typical dressing percentages for beef are 60-62% (the percentage of live animal that will become a carcass)

• This equates to a live market animal of 967-1,500 pounds
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• A live market animal of 967-1,500 pounds

• Only minimal discounts for an animal up to 1,666 pounds (1,000 pound carcass)

• So what does this do to our beef products?
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- 600-900 pound carcass equates to a ribeye area of 11.0 - 14.6 square inches

- A 14.6 square inch ribeye would need to be cut very thin to accommodate lower portion weights
<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
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</thead>
<tbody>
<tr>
<td>1/2 in. thick:</td>
<td>3.9 oz.</td>
<td>4.8 oz.</td>
<td>5.6 oz.</td>
<td>6.5 oz.</td>
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<td>3/4 in. thick:</td>
<td>5.9 oz.</td>
<td>7.2 oz.</td>
<td>8.4 oz.</td>
<td>9.7 oz.</td>
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<tr>
<td>1 in. thick:</td>
<td>7.9 oz.</td>
<td>9.6 oz.</td>
<td>11.2 oz.</td>
<td>12.9 oz.</td>
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<td>Surface area of face:</td>
<td>11.5 in²</td>
<td>13.1 in²</td>
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<td>Face length:</td>
<td>5.4 in.</td>
<td>5.7 in.</td>
<td>5.9 in.</td>
<td>6.2 in.</td>
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<tr>
<td>Face width:</td>
<td>2.1 in.</td>
<td>2.4 in.</td>
<td>2.6 in.</td>
<td>2.9 in.</td>
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### Table 3. Effect of ribeye size on cooking characteristics and sensory attributes

<table>
<thead>
<tr>
<th>Trait</th>
<th>≤ 70.9</th>
<th>71.0–77.3</th>
<th>77.4–83.8</th>
<th>83.9–90.2</th>
<th>90.3–96.6</th>
<th>96.7–103.1</th>
<th>≥ 103.2</th>
<th>SE*a</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooking time, min</td>
<td>19.54y</td>
<td>17.86y</td>
<td>15.49x</td>
<td>15.87xy</td>
<td>12.64w</td>
<td>13.81w</td>
<td>11.97w</td>
<td>.75</td>
</tr>
<tr>
<td>Cooking rate, Δ°C/min</td>
<td>3.78w</td>
<td>4.12wx</td>
<td>4.89y</td>
<td>4.80y</td>
<td>5.76z</td>
<td>6.03z</td>
<td>5.91z</td>
<td>.25</td>
</tr>
<tr>
<td>Degree of donenessb</td>
<td>4.03</td>
<td>3.97</td>
<td>3.90</td>
<td>4.06</td>
<td>3.95</td>
<td>3.89</td>
<td>4.17</td>
<td>.14</td>
</tr>
<tr>
<td>Thaw loss, %</td>
<td>2.23</td>
<td>2.02</td>
<td>2.07</td>
<td>2.14</td>
<td>2.57</td>
<td>2.54</td>
<td>2.51</td>
<td>.18</td>
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<tr>
<td>Cook loss, %</td>
<td>19.65</td>
<td>18.62</td>
<td>17.29</td>
<td>18.72</td>
<td>17.98</td>
<td>17.59</td>
<td>18.69</td>
<td>.68</td>
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<tr>
<td>Thickness, cm</td>
<td>2.79z</td>
<td>2.74yz</td>
<td>2.62y</td>
<td>2.44x</td>
<td>2.36x</td>
<td>2.34x</td>
<td>2.18w</td>
<td>.05</td>
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<tr>
<td>Surface area, cm²</td>
<td>126.09w</td>
<td>130.10w</td>
<td>137.08x</td>
<td>142.35xy</td>
<td>150.60y</td>
<td>148.42y</td>
<td>160.94z</td>
<td>2.54</td>
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<tr>
<td>Initial tendernessc</td>
<td>5.43xy</td>
<td>5.57xy</td>
<td>5.74y</td>
<td>5.20wx</td>
<td>5.60z</td>
<td>5.19wx</td>
<td>4.98w</td>
<td>.16</td>
</tr>
<tr>
<td>Sustained tendernessc</td>
<td>5.17wx</td>
<td>5.34wx</td>
<td>5.58x</td>
<td>5.04w</td>
<td>5.54z</td>
<td>5.17w</td>
<td>4.85w</td>
<td>.17</td>
</tr>
<tr>
<td>Juicinessd</td>
<td>4.87</td>
<td>5.03</td>
<td>5.13</td>
<td>4.76</td>
<td>4.99</td>
<td>4.76</td>
<td>4.71</td>
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<tr>
<td>Flavor intensitye</td>
<td>5.12yz</td>
<td>5.08xyz</td>
<td>5.03xyz</td>
<td>4.92wxy</td>
<td>4.86wx</td>
<td>4.85wx</td>
<td>4.76w</td>
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</table>

*aSE = Standard error of the mean.
bDegree of doneness (1 = very rare, 3 = medium rare, 6 = very well).
cTenderness (1 = extremely tough, 4 = slightly tough, 8 = extremely tender).
dJuiciness (1 = extremely dry, 4 = slightly dry, 8 = extremely juicy).
eFlavor intensity (1 = extremely bland, 4 = slightly bland, 8 = extremely intense).
w,x,y,z Means within a row and without a common superscript differ (P < .05).


- Increase in ribeye area results in decreased thickness
- Significant effect on tenderness and flavor
- Also, cooking rate…
<table>
<thead>
<tr>
<th>Trait</th>
<th>67</th>
<th>77</th>
<th>SEa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooking time, min</td>
<td>13.50x</td>
<td>16.49y</td>
<td>.27</td>
</tr>
<tr>
<td>Cooking rate, Δ°C/min</td>
<td>5.00y</td>
<td>4.77x</td>
<td>.08</td>
</tr>
<tr>
<td>Degree of donenessb</td>
<td>3.12x</td>
<td>4.24y</td>
<td>.07</td>
</tr>
<tr>
<td>Thaw loss, %</td>
<td>2.15</td>
<td>2.15</td>
<td>.06</td>
</tr>
<tr>
<td>Cook loss, %</td>
<td>15.39x</td>
<td>19.01y</td>
<td>.40</td>
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<tr>
<td>Thickness, cm</td>
<td>2.51</td>
<td>2.49</td>
<td>.03</td>
</tr>
<tr>
<td>Surface area, cm²</td>
<td>136.57</td>
<td>137.13</td>
<td>.80</td>
</tr>
<tr>
<td>Shear force, kg</td>
<td>2.40x</td>
<td>2.51y</td>
<td>.03</td>
</tr>
</tbody>
</table>

aSE = Standard error of the mean.
bDegree of doneness (1 = very rare, 3 = medium rare, 6 = very well).
x,y Means within a row and without a common superscript differ (P < .05).

Table 7. Effect of end point temperature on cooking characteristics and sensory attributes

<table>
<thead>
<tr>
<th>Trait</th>
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<th>77</th>
<th>SEa</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooking time, min</td>
<td>13.31&lt;sup&gt;x&lt;/sup&gt;</td>
<td>17.32&lt;sup&gt;y&lt;/sup&gt;</td>
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<tr>
<td>Cooking rate, Δ°C/min</td>
<td>5.32&lt;sup&gt;y&lt;/sup&gt;</td>
<td>4.76&lt;sup&gt;x&lt;/sup&gt;</td>
<td>.14</td>
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<tr>
<td>Degree of doneness&lt;sup&gt;b&lt;/sup&gt;</td>
<td>3.41&lt;sup&gt;x&lt;/sup&gt;</td>
<td>4.58&lt;sup&gt;y&lt;/sup&gt;</td>
<td>.06</td>
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<tr>
<td>Thaw loss, %</td>
<td>2.33</td>
<td>2.27</td>
<td>.06</td>
</tr>
<tr>
<td>Cook loss, %</td>
<td>16.22&lt;sup&gt;x&lt;/sup&gt;</td>
<td>20.50&lt;sup&gt;y&lt;/sup&gt;</td>
<td>.29</td>
</tr>
<tr>
<td>Thickness, cm</td>
<td>2.49</td>
<td>2.49</td>
<td>.03</td>
</tr>
<tr>
<td>Surface area, cm&lt;sup&gt;2&lt;/sup&gt;</td>
<td>142.64</td>
<td>141.81</td>
<td>.78</td>
</tr>
<tr>
<td>Initial tenderness&lt;sup&gt;c&lt;/sup&gt;</td>
<td>5.55&lt;sup&gt;y&lt;/sup&gt;</td>
<td>5.23&lt;sup&gt;x&lt;/sup&gt;</td>
<td>.04</td>
</tr>
<tr>
<td>Sustained tenderness&lt;sup&gt;c&lt;/sup&gt;</td>
<td>5.42&lt;sup&gt;y&lt;/sup&gt;</td>
<td>5.07&lt;sup&gt;x&lt;/sup&gt;</td>
<td>.05</td>
</tr>
<tr>
<td>Juiciness&lt;sup&gt;d&lt;/sup&gt;</td>
<td>5.22&lt;sup&gt;y&lt;/sup&gt;</td>
<td>4.56&lt;sup&gt;x&lt;/sup&gt;</td>
<td>.06</td>
</tr>
<tr>
<td>Flavor intensity&lt;sup&gt;e&lt;/sup&gt;</td>
<td>4.98</td>
<td>4.90</td>
<td>.05</td>
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<sup>a</sup>SE = Standard error of the mean.

<sup>b</sup>Degree of doneness (1 = very rare, 3 = medium rare, 6 = very well).

<sup>c</sup>Tenderness (1 = extremely tough, 4 = slightly tough, 8 = extremely tender).

<sup>d</sup>Juiciness (1 = extremely dry, 4 = slightly dry, 8 = extremely juicy).

<sup>e</sup>Flavor intensity (1 = extremely bland, 4 = slightly bland, 8 = extremely intense).

<sup>x,y</sup>Means within a row and without a common superscript differ (P < .05).

- **End point temperature effects:**
  - Tenderness
    - Initial
    - Sustained
  - Juiciness

The Modern Beef Consumer
The Modern Beef Consumer

Exercise
- Adults should be physically active for at least 30 minutes most days of the week, children for 60 minutes.
- Sixty to 90 minutes of daily physical activity may be needed to prevent weight gain or sustain weight loss.

Old food pyramid
- Presented food groups as a hierarchy, with grains as the base of a healthy diet, and each group having a suggested number of servings.

- Emphasized limits on fats, oils and sweets, which were represented as the tip of the pyramid.

- Most fat should be from fish, nuts and vegetable oils.
- Limit solid fats, such as butter, margarine or lard.
- Keep consumption of saturated fats, trans fats and sodium low.
- Choose foods low in added sugar.

Recommended nutrient intakes at 12-calorie levels can be found on mypyramid.gov.

Categories:
- Grains
  - Half of all grains consumed should be whole grains.
  - 6 oz.

- Vegetables
  - Vary the types of vegetables you eat.
  - 2.5 cups

- Fruits
  - Eat a variety of fruits. Go easy on juices.
  - 2 cups

- Milk
  - Eat low-fat or fat-free dairy products.
  - 3 cups

- Meat and beans
  - Eat lean cuts, seafood and beans. Avoid frying.
  - 5.5 oz.
The Modern Beef Consumer

- CONVENIENCE

- “The 4:30 Meal Problem”

- Increased scrutiny on portion size
The cattle finishing industry is seeing an increase in animal finish weights.

Translates to a larger animal, thus a larger ribeye and related muscles used for whole-muscle steaks.
The Beef Processor’s Dilemma
The Beef Processor’s Dilemma

• Ribeye steaks and New York strips have gotten bigger

• Customers frustrated with middle meat cuts because of:
  – larger portion sizes
  – higher prices
  – thinner cuts
The Beef Processor’s Dilemma

• Economic crunch
  – Fewer people eating out
  – Restaurants purchasing less of these cuts

• Retailers have abundance middle meats including top loin, ribeye and sirloin
The Beef Processor’s Dilemma

• Beef Alternative Merchandising (BAM)
  – funded by the Beef Checkoff
  – the result of extensive testing throughout 2008 with consumer surveys and focus groups
  – enthusiastic response to this alternative merchandising technique
The Beef Processor’s Dilemma

• Consumers indicated an assumption that middle meat cuts will cost more to purchase.

• Consumers were receptive to the proposed package pricing, particularly for a two-steak package (4 oz. each).
The Beef Processor’s Dilemma

- While price per pound is more expensive, package price is less expensive.

<table>
<thead>
<tr>
<th>Beef Loin Steak</th>
<th>Beef Loin Steak</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net wt.</td>
<td>Price/lb.</td>
</tr>
<tr>
<td>1.50lb.</td>
<td>$9.99</td>
</tr>
<tr>
<td>0.50lb.</td>
<td>$12.99</td>
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</table>
112A Beef Rib, Ribeye, Lip-on

Traditional Merchandising: Beef Rib Ribeye Steak

Beef Alternative Merchandising: Beef Ribeye (complexus muscle), Beef Ribeye Cap Steak, Beef Ribeye Filet, Beef Ribeye Petite Roast

Whole Beef Rib Ribeye

Cut ribeye steaks 3/4” to 1” thick

Beef Rib Ribeye Steak

Grill/Broil

Remove ribeye tail and intercostal meat or rib fingers

Trim fat from ribeye roll

Locate ribeye cap and follow natural seam to remove

2009 Cattlemen's Beef Board and National Cattlemen's Beef Association
112A Beef Rib, Ribeye, Lip-on

Traditional Merchandising: Beef Ribeye Steak

Beef Alternative Merchandising: Beef Ribeye (complexus muscle), Beef Ribeye Cap Steak, Beef Ribeye Filet, Beef Ribeye Petite Roast

Separated Ribeye Roll: Ribeye Center (A), Complexus Muscle (B), Ribeye Cap (C)

Beef Ribeye complexus muscle
Grill/Broil

Beef Ribeye complexus muscle Medallions
Grill/Broil/Pan-broil

Remove fat and connective tissue. Leave whole, cut into smaller portions, or roll for pinwheel steak

Beef Ribeye Cap Steak
Grill/Broil

Beef Ribeye for Satay
Grill/Broil

2009 Cattlemen's Beef Board and National Cattlemen's Beef Association
Thank You

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