National Market Cow and Bull Beef Quality Audit-2007:
A Survey of Producer Related Defects
Packing Plant Audits
Data Collection Totals

- December '06 - September '07
- Approximately 5,500 live animals surveyed
- Approximately 5,000 carcasses surveyed during harvest
- Approximately 3,000 carcasses surveyed while in the coolers
Receiving
<table>
<thead>
<tr>
<th>Time Traveled (h)</th>
<th>Area Allotted per load for one animal (sq ft)</th>
<th>Number of cattle per load</th>
</tr>
</thead>
<tbody>
<tr>
<td>9</td>
<td>24</td>
<td>38</td>
</tr>
<tr>
<td>5</td>
<td>47</td>
<td>27</td>
</tr>
</tbody>
</table>

- Travel Time and Cattle Loaded on a Truck
- Loads Over 28 Hours: 1%
- All Loads Met AMI Guidelines for Spacing/Head
Dairy Cattle Traveled Shorter Distances

Travel Distance on a Truck

- **Mean:**
  - Beef: 473
  - Dairy: 227

- **Minimum:**
  - Beef: 60
  - Dairy: 25

- **Maximum:**
  - Beef: 1050
  - Dairy: 602
% of Tractor/Trailers Using Jailhouse

No cattle in jailhouse/doghouse
More Dairy Cattle Coming in on Smaller Trailers

- 64% Tractor-trailer
- 37% Gooseneck/bumper pull trailer
- 63% Beef loads
- 36% Dairy loads
Load Sorting Information

73% of Beef Loads WERE NOT Separated by Gender

% Sorted by Gender

Multi-gender loads sorted by gender: 27%
Multi-gender loads not sorted by gender: 73%

Single-gender loads sorted by gender: 90%
Single-gender loads not sorted by gender: 10%
Few Moribund and Dead Animals Arriving on Trucks (Downer Rule 2004)
Hot Shot Usage for Cattle Unloading

Fewer Dairy Loads Driven with a Hot Shot than Beef

![Bar chart showing the usage of Hot Shot for cattle unloading.](chart.png)
Hot Shot Usage for Moving Cattle to Knock Box

17% of plants did not use hot shots at all

65% of Plants Used Hot Shot on >25% of Animals
Key Points

• Big improvement in reduction of downer cattle
• All loads met the AMI Guidelines for spacing
• <1 % of the cattle traveled greater than 28 h
• 65% of the plants used the electric prod on greater than 25% of the animals
Holding Pen - Part 1
Visible Defects

Dairy Cows had More Visible Defects

- Beef Cows: 72
- Dairy Cows: 63

Defect Present

- Beef Cows: 28
- Dairy Cows: 37
Abscesses and Lumpy Jaw

Knee/Hock Abscesses were more Frequent in Dairy Cows than Beef Cows

Fewer Abscesses in Dairy Cattle than in 1999
Udder Defects

Udder Defects were more prevalent in Dairy Cows

- Beef Cows: 11
- Dairy Cows: 24
4% of Bulls had Defects that could prohibit Reproduction.
Predominant Hide Colors - Beef Cows
Predominant Hide Colors - Beef Bulls

- Black: 52.3%
- Red: 28.6%
- White: 10.4%
- Brown: 1%
- Yellow: 1.7%
- Brindle: 1.2%
- Grey: 2.7%
- Roan: 0.2%
Predominant Hide Colors - Dairy
Identification Types

Approximately 68% of All Cattle Had Back Tags
Brands by Location

76% of all Animals were not branded

- Native: 69
- Butt: 20, 7
- Side: 7, 2
- Shoulder: 1, 1
- Multiple: 4, 0

Beef Cows

Dairy Cows
Brands for 1999 vs. 2007

- **Native**: 54 (1999), 76 (2007)
- **Side**: 21 (1999), 5 (2007)
- **Shoulder**: 6 (1999), 1 (2007)
- **Multiple**: 21.2 (1999), 3 (2007)
Horns

83% of Animals were Polled
11% of Beef Cows were >5”
Key Points

• More cattle were polled than in 1999
• More cattle had no brands than in 1999
• 92% of the cattle had an ID (predominantly back tag)
• Prevalent color for beef cattle was black
Cancer Eye Scoring Standards

Grade 1
Small benign tumor producing finger like growth
Precancerous

Grade 3
Growth on the third eyelid or a tumor that is vascular in nature
Cancerous

Grade 2
Small white elevated plaque on the eyeball
Precancerous

Grade 4
Tumors that have metastasized to the bony structure around the eye or exhibit lymphatic involvement of the parotid gland
Cancerous

Grade 2
Small white elevated plaque on the eyeball
Precancerous

Grade 4
Tumors that have metastasized to the bony structure around the eye or exhibit lymphatic involvement of the parotid gland
Cancerous

Grade 2
Papilloma on the eyeball
Precancerous

Grade 5
Cattle in which the eyeball has prolapsed from the orbit and/or exhibits a necrotic condition
Cancerous
97% of all Cattle had no signs of bovine ocular neoplasia
Cattle with No Evidence of Cancer Eye Across All Audits

Bovine Ocular Neoplasia is on a downward trend since 1994
Dairy Cows had more Knots in the Neck and Shoulder than Beef Cows
Lamness/Locomotion Score

1. **Locomotion Score**
   - **Clinical Description:** Normal
   - **Description:** Stands and walks normally. All feet placed with purpose.

2. **Locomotion Score**
   - **Clinical Description:** Mildly Lame
   - **Description:** Stands with flat back, but arches when walks. Gait is slightly abnormal.
Lamness/Locomotion Score

Locomotion Score 3
Clinical Description: Moderately Lame
Description: Stands and walks with an arched back. Short strides with one or more legs.

Locomotion Score 4
Clinical Description: Lame
Description: Arched back standing and walking. One or more limbs favored but at least partially weight bearing.

Locomotion Score 5
Clinical Description: Severely Lame
Description: Arched back, refuses to bear weight on one limb. May refuse or have great difficulty moving from lying position.
Locomotion Scores

Dairy Cows had a greater incidence of lameness

- **Beef Cows**
- **Dairy Cows**
Cattle that were Not Lame - Across all Audits

Fewer Beef Cows were Lame than in 1999

More Dairy Cows were Lame than in 1999 and 1994
What's the defect?
What's the defect?
Body Condition Scores for Beef Animals

Beef Bulls are in Better Condition than Cows
Moderate (Score of 5) Conditioned Beef Cattle Since 1994

Less Moderately Conditioned Beef Cows and Bulls Since 1999
Key Points

• 97% of the cattle had no evidence of cancer eye (better than 1999 and 1994)

• There was a higher incidence of lame dairy cows in 2007 than in 1999 and 1994

• Fewer beef cows were lame

• More beef cows were thinner
Harvest Floor Audit

Carcass
Condemnation
Offal
Condemnation
Dentition
Bruising
Fetuses
Dentition

11.2% Gummer for all cattle in audit
Bruising Severity

All Cattle
1999 - 11.8% No Bruises
2007 - 36.6% No Bruises

![Data Bar Chart showing the percentage distribution of bruising severity from 1994, 1999, and 2007.]
Top Sirloin Cap Defects

9.4% of Caps had Injection Site Blemishes
- Dairy Flats had Twice as Many Defects as Beef
- 30.5% of Flats had Injection Site Blemishes

![Bar chart showing defect frequencies in Beef and Dairy Bottom Rounds](chart.png)
Carcasses with Arthritic Joints Between 1999 and 2007

- 1999:
  - None: 89
  - 1: 7
  - 2: 4

- 2007:
  - None: 94
  - 1: 5
  - 2: 1
No Buckshot and No Grubs %

100%

99.95%
Liver Condemnation %

- **Beef**: 48%
- **Dairy**: 40%

**Condemned**
- 12
- 14

**Abscess**
- 5
- 7

**Contamination**
- 8
- 2

**Flukes**
- 7
- 3

**Telangiectasis**
- 15
- 14

**Other**
-
Whole Carcass Condemnation %

> 1% Carcasses Condemned

<table>
<thead>
<tr>
<th>Disease</th>
<th>Antemortem</th>
<th>Postmortem</th>
</tr>
</thead>
<tbody>
<tr>
<td>Malignant lymphoma</td>
<td>25.0</td>
<td>35.8</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>7.1</td>
<td>16.5</td>
</tr>
<tr>
<td>Epithelioma</td>
<td>4.6</td>
<td>10.1</td>
</tr>
<tr>
<td>Pericarditis</td>
<td>3.6</td>
<td>11.0</td>
</tr>
<tr>
<td>Septicemia</td>
<td>1.8</td>
<td>7.1</td>
</tr>
<tr>
<td>Carcinoma</td>
<td>5.5</td>
<td>5.5</td>
</tr>
</tbody>
</table>
Fetal Calf Prevalence

Bar Graph:
- Open:
  - Beef Cows: 90
  - Dairy Cows: 89
- Pregnant:
  - 1994: 28
  - 1999: 12
  - 2007: 11

Legend:
- Orange: 1994
- Cyan: 1999
- Green: 2007

Note: The graph compares the prevalence of fetal calves in open and pregnant cows across different years.
Key Points

• Fewer cattle had bruises than in 1994 and 1999

• Overall 94% of the cattle had no evidence of injection sites

• Dairy cattle had more visible injection site blemishes (11% dairy cows vs 2% beef cows)

• Fewer arthritic joints than in 1999

• No buckshot/bird shot observed during the audit

• Fewer cows were pregnant at harvest than in 1999
<table>
<thead>
<tr>
<th>Carcass Type</th>
<th>Gender</th>
<th>Packer Grade</th>
<th>Yield Grade</th>
<th>Quality Grade</th>
<th>Carcass Weight</th>
<th>Fat Thickness</th>
<th>Ribeye Area</th>
<th>Muscle Score</th>
<th>Lean Maturity</th>
<th>Skeletal Maturity</th>
<th>Marbling</th>
<th>Other Defects</th>
</tr>
</thead>
</table>

*Cooler Audit*

Dwain Johnson, 
University of Florida
Carcass Weight %

Beef Cow 635
Dairy Cows 649
Beef Bulls 873
Dairy Bulls 928
Average fat thickness .22 inches

Fat Thickness %
What's the defect?
Ribeye Area %

Avg. 10.0

- Beef Cows
- Dairy Cows
Quality Grade %

Avg. Utility 44

USDA Quality Grade Chart
Carcass Maturity

Marbling
- Abundant
- Mod. Abund.
- Sl. Abund.
- Moderate
- Modest
- Small
- Slight
- Select
- Standard
- Pract. Dev.

<table>
<thead>
<tr>
<th>Marbling</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prime</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Commercial</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Choice</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Utility</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Grade</th>
<th>Prime</th>
<th>Choice</th>
<th>Select</th>
<th>Standard</th>
<th>Commercial</th>
<th>Utility</th>
<th>Cutter</th>
<th>Canner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percent</td>
<td>33</td>
<td>20</td>
<td>11</td>
<td>4</td>
<td>13</td>
<td>13</td>
<td>4</td>
<td>1</td>
</tr>
</tbody>
</table>

Avg. Utility 44
Fat Color Score %

Avg. 2.7

Beef Cows
Dairy Cows

1 35
2 24 28
3 21 15
4 17 9
5 13 8
6 9 5
**Key Points**

- **Cows and Bulls were heavier than in 1999**
- **Cows and bulls had a lower fat thickness than in 1999**
- **More dairy cows had fat color scores of 1 and 2 (whiter color)**
Fabrication
Retail meat markets, steak cutting companies, family restaurants, airlines and commissaries

Pre-cooked entrees, jerky, marinated fajita meat, corned beef, roast beef, pastrami and other products

National Market Cow and Bull Beef Quality Audit (NCBA/CSU, 1999)
Not All Packing Plants Are Created Equal

- Some packers will market as much as 75% of the carcass as whole muscle cuts
- Other packers will specialize in producing only boneless manufacturing beef

<table>
<thead>
<tr>
<th>Price/Value</th>
<th>Composition</th>
</tr>
</thead>
<tbody>
<tr>
<td>$160/cwt</td>
<td>100% visual lean</td>
</tr>
<tr>
<td>$105/cwt</td>
<td>90% lean, 10% fat (90/10)</td>
</tr>
<tr>
<td>$100/cwt</td>
<td>85% lean, 15% fat (85/15)</td>
</tr>
<tr>
<td>$75/cwt</td>
<td>75% lean, 25% fat (75/25)</td>
</tr>
<tr>
<td>$67/cwt</td>
<td>65% lean, 35% fat (65/35)</td>
</tr>
<tr>
<td>$44/cwt</td>
<td>50% lean, 50% fat (50/50)</td>
</tr>
</tbody>
</table>

National Market Cow and Bull Beef Quality Audit (NCBA/CSU, 1999)
Percent of Plants Fabricating Subprimals from Cow and Bull

<table>
<thead>
<tr>
<th>Primal Region</th>
<th>% of Plants</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rib</td>
<td>100</td>
</tr>
<tr>
<td>Loin</td>
<td>100</td>
</tr>
<tr>
<td>Round</td>
<td>85.7</td>
</tr>
<tr>
<td>Flank</td>
<td>85.7</td>
</tr>
<tr>
<td>Chuck</td>
<td>57.1</td>
</tr>
<tr>
<td>Brisket</td>
<td>14.3</td>
</tr>
</tbody>
</table>

Reported as % of plants that submitted fabrication information
<table>
<thead>
<tr>
<th>Product</th>
<th>1999 %</th>
<th>2007 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ribeye</td>
<td>74</td>
<td>100</td>
</tr>
<tr>
<td>Tenderloin</td>
<td>79</td>
<td>100</td>
</tr>
<tr>
<td>Knuckle</td>
<td>37</td>
<td>86</td>
</tr>
<tr>
<td>Flank</td>
<td>74</td>
<td>86</td>
</tr>
<tr>
<td>Inside Round</td>
<td>42</td>
<td>79</td>
</tr>
<tr>
<td>Strip Loin</td>
<td>68</td>
<td>71</td>
</tr>
<tr>
<td>Top Sirloin Butt</td>
<td>5</td>
<td>71</td>
</tr>
<tr>
<td>Chuck Tender</td>
<td>16</td>
<td>57</td>
</tr>
<tr>
<td>Eye of Round</td>
<td>42</td>
<td>57</td>
</tr>
<tr>
<td>Bottom Round</td>
<td>37</td>
<td>50</td>
</tr>
<tr>
<td>Chuck Roll</td>
<td>16</td>
<td>28.6</td>
</tr>
<tr>
<td>Bottom Sirloin Flap</td>
<td>21</td>
<td>28.6</td>
</tr>
<tr>
<td>Brisket</td>
<td>21</td>
<td>21</td>
</tr>
<tr>
<td>Shortloin</td>
<td>32</td>
<td>14</td>
</tr>
<tr>
<td>Clod</td>
<td>16</td>
<td>14</td>
</tr>
<tr>
<td>Tri-Tip</td>
<td>11</td>
<td>14</td>
</tr>
</tbody>
</table>
Traceability - Meat Processor to Farm

-2% of Carcasses were selected randomly to determine whether this animal could be traced back to the ranch/farm

-Plant information such as Back Tags, Bangs Tags, Owner Information were used for this process

-Auction Barns, USDA Offices, and Actual Owner were Contacted to Identify the Point of Origin for Each Animal
Traceback Extent for Cattle

64% of All Cattle were Traced back to Original Owner

<table>
<thead>
<tr>
<th></th>
<th>Original Owner</th>
<th>Auction barn</th>
<th>Cattle dealer/trader</th>
<th>Packing plant</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beef Cattle</strong></td>
<td>71</td>
<td>16</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td><strong>Dairy Cattle</strong></td>
<td>56</td>
<td>22</td>
<td>16</td>
<td>7</td>
</tr>
<tr>
<td><strong>All Cattle</strong></td>
<td>64</td>
<td>19</td>
<td>13</td>
<td>5</td>
</tr>
</tbody>
</table>
### Top quality challenges facing the market cow and bull beef industry

<table>
<thead>
<tr>
<th>1999 Quality Challenge</th>
<th>2007 Quality challenges</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Bruises</td>
<td>1 Food safety</td>
</tr>
<tr>
<td>2 Antibiotic Residues</td>
<td>2 Market availability/Economic issues</td>
</tr>
<tr>
<td>3 Birdshot/Buckshot</td>
<td>3 Animal welfare and handling issues</td>
</tr>
<tr>
<td>4 Arthritic Joints</td>
<td>4 Poor conditioning/nutrition</td>
</tr>
<tr>
<td>5 Yield</td>
<td>5 Antibiotic residues</td>
</tr>
<tr>
<td>6 Condition/Leanness</td>
<td>6 Bruises</td>
</tr>
<tr>
<td>7 Condemnation Rate</td>
<td>7 Hide damage</td>
</tr>
<tr>
<td></td>
<td>8 Lameness/soundness</td>
</tr>
<tr>
<td></td>
<td>9 Condemnation rates/downers</td>
</tr>
<tr>
<td></td>
<td>10 Injection site prevalence and location</td>
</tr>
</tbody>
</table>

**Highlighted = Present in 1999 and 2007 Interviews**
### Impact of Market Cow and Bull Defects

<table>
<thead>
<tr>
<th>Quality Defect</th>
<th>Incidence rate</th>
<th># hd affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cancer eye score 4</td>
<td>0.2 %</td>
<td>12,000</td>
</tr>
<tr>
<td>Cancer eye score 5</td>
<td>0.3 %</td>
<td>18,000</td>
</tr>
<tr>
<td>Large horns</td>
<td>7.1 %</td>
<td>426,000</td>
</tr>
<tr>
<td>Rib brands</td>
<td>4.8 %</td>
<td>288,000</td>
</tr>
<tr>
<td>Lame beef cow</td>
<td>1.1 %</td>
<td>36,960</td>
</tr>
<tr>
<td>Lame beef bull</td>
<td>6.3 %</td>
<td>39,690</td>
</tr>
<tr>
<td>Lame dairy cow</td>
<td>8.1 %</td>
<td>136,080</td>
</tr>
<tr>
<td>Quality Defect</td>
<td>Incidence rate</td>
<td># hd affected</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>----------------</td>
<td>---------------</td>
</tr>
<tr>
<td>Arthritic joint (one)</td>
<td>5.2 %</td>
<td>312,000</td>
</tr>
<tr>
<td>Arthritic joint (two)</td>
<td>1.0 %</td>
<td>60,000</td>
</tr>
<tr>
<td>Too thin beef cows (1-2)</td>
<td>10 %</td>
<td>336,000</td>
</tr>
<tr>
<td>Too thin dairy cows (1-2)</td>
<td>22.2 %</td>
<td>372,960</td>
</tr>
<tr>
<td>Too fat beef cows (1-2)</td>
<td>4.2%</td>
<td>141,120</td>
</tr>
<tr>
<td>Too fat dairy cows (1-2)</td>
<td>2.6 %</td>
<td>43,680</td>
</tr>
<tr>
<td>Extreme bruises (15lbs)</td>
<td>5.6 %</td>
<td>336,000</td>
</tr>
</tbody>
</table>
## Impact of Market Cow and Bull Defects

<table>
<thead>
<tr>
<th>Quality Defect</th>
<th>Incidence rate</th>
<th># hd affected</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole carcass condemned prior to slaughter</td>
<td>0.25 %</td>
<td>15,000</td>
</tr>
<tr>
<td>Whole carcass condemned after slaughter</td>
<td>0.83 %</td>
<td>49,800</td>
</tr>
<tr>
<td>Liver condemned</td>
<td>45.3 %</td>
<td>2,718,000</td>
</tr>
<tr>
<td>Beef cow carcasses under 500 lb</td>
<td>29.2 %</td>
<td>1,016,160</td>
</tr>
<tr>
<td>Beef cow carcasses under 400 lb</td>
<td>9.8 %</td>
<td>341,040</td>
</tr>
<tr>
<td>Beef cow carcasses under 300 lb</td>
<td>1.2 %</td>
<td>41,760</td>
</tr>
</tbody>
</table>
If you wouldn’t want your kids or grandkids to eat it, don’t sell it!