1742

1867

1937 comparison to 1825

1965

Source: On Pasture-From big to small to big; Kathy Voth 2016
Model Hereford female

1960

Model Hereford steer

1960

Source: On Pasture-From big to small to big; Kathy Voth 2016
Cow Size Today

Average 1,417 lbs

Average 1,391 lbs

Overall average: 1,390 lbs

Average 1,408 lbs

Average 1,368 lbs
Cow Size Today
Steer Carcass Weights

1980: 707.8
1985: 725.5
1990: 742.0
1995: 769.9
2000: 769.9
2005: 816.3
2010: 835.2
2015: 892.0

Annual Average (pounds)

Source: USDA
Range Management Considerations

Forage resource

Drought Mitigation
• short term
• long term

Find the “right” cow

Photo courtesy of Burnt River Ranch; Durkee, OR
Cow Size Study

Wyoming study

• Compared calf production of different sized cows

• Study covered 4 years

• Production measures
  • weaning weights
  • cow efficiency

JD Scasta et al. 2015
Cow Size Influences...

- Reproduction
- Nutritional requirements
- Herd size
- Production
- Efficiency
Cow Size and Reproduction

Goal:
Produce 1 calf/cow/year

Smaller cows...
Maintain BCS
Reach maturity faster
Show higher calving rates
## Cow Size and Nutritional Requirements

<table>
<thead>
<tr>
<th>1</th>
<th>Basal metabolism</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>Grazing and other physical activities</td>
</tr>
<tr>
<td>3</td>
<td>Growth</td>
</tr>
<tr>
<td>4</td>
<td>Supporting basic energy reserves</td>
</tr>
<tr>
<td>5</td>
<td>Maintaining an existing pregnancy</td>
</tr>
<tr>
<td>6</td>
<td>Milk production</td>
</tr>
<tr>
<td>7</td>
<td>Adding to energy reserves</td>
</tr>
<tr>
<td>8</td>
<td>Estrous cycling and initiating pregnancy</td>
</tr>
<tr>
<td>9</td>
<td>Storing excess energy</td>
</tr>
</tbody>
</table>

*Short et al., 1990*

---

1. Maintenance
2. Growth
3. Lactation
4. Reproduction
Cow Size and Nutritional Requirements

210 day forage intake

1000 lb vs. 1200 lb

3,935 lbs vs. 4,445 lbs

Bigger cows use feed more efficiently

But...

Bigger cows might have higher maintenance costs

Cow size should affect herd size
Cow Size and Nutritional Requirements

210 day forage intake

1000 lb vs. 1200 lb

3,935 lbs vs. 4,445 lbs

Is the additional 200 lbs as productive as the first?
Cow Size and Nutritional Requirements

Metabolizable energy of native grasses in Eastern Oregon
(source: DelCurto 1991)

Figure from B Riggs (2009)
Cow Size and Herd Size

6 month herd size

Cow Size Class

Adapted from JD Scasta et al. (2015)
Cow Size and Production

210-Day Adjusted Weaning Weight (kg)

Standard Precipitation Index (Year)

-2.00 (2012) 0.00 (2011) +0.65 (2013) +1.00 (2014)

Source JD Scasta et al. (2015)
## Cow Size and Production

<table>
<thead>
<tr>
<th>Cow Weight (lb)</th>
<th>Total Season Forage Intake (lb)</th>
<th>Herd Size</th>
<th>Total weaned beef (lb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>3935</td>
<td>237</td>
<td>124,425</td>
</tr>
<tr>
<td>1100</td>
<td>4213</td>
<td>221</td>
<td>116,025</td>
</tr>
<tr>
<td>1200</td>
<td>4445</td>
<td>208</td>
<td>109,200</td>
</tr>
<tr>
<td>1300</td>
<td>4769</td>
<td>196</td>
<td>102,900</td>
</tr>
<tr>
<td>1400</td>
<td>5000</td>
<td>186</td>
<td>97,650</td>
</tr>
</tbody>
</table>

Source JD Scasta et al. (2015)
Cow Size and Efficiency

Data and figure adapted from Scasta et al. (2015)
## Cow Size and Efficiency

<table>
<thead>
<tr>
<th>Cow Size Class</th>
<th>210 day estimated forage intake</th>
<th>Mean adjusted weaning weight</th>
<th>Input : Output ratio</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>3936</td>
<td>517</td>
<td>7.6</td>
</tr>
<tr>
<td>1100</td>
<td>4213</td>
<td>528</td>
<td>8.0</td>
</tr>
<tr>
<td>1200</td>
<td>4445</td>
<td>530</td>
<td>8.4</td>
</tr>
<tr>
<td>1300</td>
<td>4769</td>
<td>524</td>
<td>9.1</td>
</tr>
<tr>
<td>1400</td>
<td>5000</td>
<td>525</td>
<td>9.5</td>
</tr>
</tbody>
</table>

Source: JD Scasta et al. (2015)
## Cow Size and Efficiency

Data and figure adapted from Scasta et al. (2015)

<table>
<thead>
<tr>
<th>Cow size class</th>
<th>2011 Efficiency</th>
<th>2012 Efficiency</th>
<th>2013 Efficiency</th>
<th>2014 Efficiency</th>
<th>Mean Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000 lb</td>
<td>0.45 ± 0.01(a)</td>
<td>0.41 ± 0.02(a)</td>
<td>0.54 ± 0.01(a)</td>
<td>0.58 ± 0.01(a)</td>
<td>0.50 ± 0.04(a)</td>
</tr>
<tr>
<td>1100 lb</td>
<td>0.44 ± 0.01(a)</td>
<td>0.41 ± 0.01(a)</td>
<td>0.49 ± 0.01(b)</td>
<td>0.49 ± 0.01(b)</td>
<td>0.46 ± 0.02(ab)</td>
</tr>
<tr>
<td>1200 lb</td>
<td>0.43 ± 0.01(ab)</td>
<td>0.39 ± 0.01(a)</td>
<td>0.43 ± 0.01(c)</td>
<td>0.46 ± 0.01(bc)</td>
<td>0.43 ± 0.01(bc)</td>
</tr>
<tr>
<td>1300 lb</td>
<td>0.40 ± 0.01(b)</td>
<td>0.35 ± 0.01(b)</td>
<td>0.39 ± 0.01(d)</td>
<td>0.41 ± 0.02(cd)</td>
<td>0.39 ± 0.01(c)</td>
</tr>
<tr>
<td>1400 lb</td>
<td>0.35 ± 0.01(c)</td>
<td>0.35 ± 0.01(b)</td>
<td>0.39 ± 0.01(d)</td>
<td>0.37 ± 0.01(d)</td>
<td>0.37 ± 0.01(c)</td>
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</table>
In limited-resource environments, are large cows able to maximize genetic potential?
Biological Efficiency ≠ Economic Efficiency
Efficiency Across the Beef Industry
Cow Size Considerations...

Assess your feed resources

Consider your consumers

Weigh your cows
Cow Size Considerations...

Assess your feed resources

Consider your consumers

Weigh your cows

Where do you want to be?

How are you going to get there?
“Ned’s fondest dream was to someday own a small cattle ranch.”