In the face of the challenges and some of the same problems, markets, environments, & policies, some producers in the very same business are able to make substantially more money than others!

Profit is a Set of Relationships

\[
\text{Profit} = \left( \frac{\text{Lbs.}}{\text{cwt.}} \times \$/\text{cwt.} \right) - \text{$ Total\ Annual\ Expenses} - \frac{\text{Net\ Income}}{\text{Gross\ Income}}
\]

Summary of Dunn’s 2000 Thesis Work (n=148 operations)

What are the Characteristics of High Profit Producers?

1. Large operators
2. Older
3. Inherited wealth
4. Operate on Federal land
5. Retain ownership
6. Operated in the western rangelands

Summary

- When compared to Low and/or Medium, High profit enterprises have:
  - Higher weaning %
  - No differences in:
    - Weaning weight
    - Death loss
    - Pregnancy %
    - Replacement rate
    - Calving distribution
  - No differences in size of operation or region.

Summary

- High profit enterprises have:
  - Lower Investment
  - Lower Total costs
    - Lower Vet Medicine
    - Lower Depreciation
    - Lower Inventory Adjustments
  - Lower Breakeven (UCOP)
  - Greater Revenue
  - Greater Net Income
  - Higher Return on Investment
Profit is a Set of Relationships

Investment in assets (Land, Cattle, Equipment) → Production System → Value in the Market Place → Annual Expenses

Profit Function

Inputs → Rational Business Behavior → Outputs

Fitting genetics to your environment

LARGE BREED DIFFERENCES EXIST FOR:
- GROWTH RATE AND SIZE
- COMPOSITION OF GAIN
- CALVING DIFFICULTY
- MILK PRODUCTION
- AGE AT PUBERTY

NO SINGLE BREED EXCELS IN ALL THE TRAITS IMPORTANT TO BEEF PRODUCTION

BREED DIFFERENCES (COMPLEMENTARITY) are an important genetic resource
What drives cow costs?

- Feed accounts for 50-65% of non-fixed cow costs
- Feed costs are driven by:
  - Mature weight
  - Milk production

Relationship Between Cow Size and Milk Production

<table>
<thead>
<tr>
<th>Cow Size</th>
<th>Milking Level</th>
<th>lb of milk/cow/day</th>
<th>lb TDN Needed</th>
<th>lb CP Needed</th>
</tr>
</thead>
<tbody>
<tr>
<td>1000</td>
<td>Average</td>
<td>10</td>
<td>12.4</td>
<td>1.9</td>
</tr>
<tr>
<td>1000</td>
<td>Above Avg</td>
<td>20</td>
<td>14.8</td>
<td>2.6</td>
</tr>
<tr>
<td>1000</td>
<td>Superior</td>
<td>30</td>
<td>17.2</td>
<td>3.5</td>
</tr>
<tr>
<td>1200</td>
<td>Average</td>
<td>10</td>
<td>13.8</td>
<td>2.1</td>
</tr>
<tr>
<td>1200</td>
<td>Above Avg</td>
<td>20</td>
<td>16.2</td>
<td>2.8</td>
</tr>
<tr>
<td>1200</td>
<td>Superior</td>
<td>30</td>
<td>18.7</td>
<td>3.5</td>
</tr>
<tr>
<td>1400</td>
<td>Average</td>
<td>10</td>
<td>15.2</td>
<td>2.3</td>
</tr>
<tr>
<td>1400</td>
<td>Above Avg</td>
<td>20</td>
<td>17.6</td>
<td>3.0</td>
</tr>
<tr>
<td>1400</td>
<td>Superior</td>
<td>30</td>
<td>20.1</td>
<td>3.7</td>
</tr>
</tbody>
</table>


Why do cows with greater milk potential have greater nutrient requirements?

- Cows with greater milk production:
  - A greater percent of their body weight is:
    - Heart
    - Lungs
    - Liver
    - Spleen

Critical Trade-offs when determining breeds that “fit”

- Leanness vs fleshing ability
- Growth vs calving ease
- Growth vs age at puberty
- Growth vs mature size
- Frame vs function

What can cow/calf producers do?

- Avoid extremes in size and milk
  - Will result in less growth and carcass weight
- Cull infertile cows - non-pregnant
- Adjust calving and weaning dates to manage cow body condition
- Use cow maintenance EPD as part of selection
- Source seedstock producers that have developed selection indexes that include residual feed intake
- Stayability in commercial c/c highly related to profit potential
Matching Nutrient Requirements of Lactation with Nutrients in Grazed Forages

Crude protein concentration in cattle diets on Sandhills meadow and range

In vitro organic matter digestibility (IVOMD, % OM) of cattle diets on Sandhills range and meadow

Eastern Nebraska Cow/Calf Producers - March/April Calving Season

Crude protein in cattle diets on Sandhills range

Feed inputs for March and June Calving Cows

<table>
<thead>
<tr>
<th></th>
<th>June</th>
<th>March</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hay fed, lb</td>
<td>227</td>
<td>3947</td>
</tr>
<tr>
<td>Supp. fed, lb</td>
<td>154</td>
<td>96</td>
</tr>
</tbody>
</table>
More grazing for June calving cows

233 days grazing vs. 357 days grazing

Southeast Nebraska Rates for Pasture ($/Cow-Calf Pair, 1986-2010)

Northern Nebraska Rates for Pasture ($/Cow-Calf pair, 1986-2010)

Summer Feed Costs
- 6 months of grass
  - 6 x $30.00/AUM (pair) = $180.00/cow
- 6 months mineral/salt
  - 180 da x $.05 = $9.00/cow
- Deliver mineral/salt
  - $6.00/cow
- Total summer feed costs
  - Total summer costs = $195/cow
  - $1.07/1200 lb cow/day

Winter Feed Costs
- 106 days stalk grazing
  - 106 da x $.45/da = $47.70/cow
- 77 days of alfalfa/hay
  - Hay @ $80/ton
  - 2310 lb/hd x $.04/lb = $92.40/cow
- Mineral/salt
  - 183 da x $.05 = $9.15/cow
- Deliver costs
  - $15/ton x 1.16/t = $17.40/cow
- Total winter feed costs
  - $166.65/cow
  - $0.91/1200 lb cow/day

Grazing Characteristics of Cows on Corn Stalks
- Cows are "selective" grazers on stalk fields
  - Select the corn first - Diet quality selected = high
  - Select husk and leaves second - Diet quality = medium
  - Select cob and stalk last - Diet quality selected = low
Calculating the value of a nutrient in a feed:

**Calculation:**

\[
\text{Cost per unit of nutrient} = \frac{\text{$/lb of feed}}{\% \text{ of available nutrient (as a decimal)}}
\]

**Assumes:**
- All feeds have equal moisture content
- Doesn’t consider labor to deliver the feed
- Assumes all feeds have similar utilization

Cost per pound of protein

<table>
<thead>
<tr>
<th>Feed</th>
<th>Cost per ton $/ton</th>
<th>Cost per pound of protein, $/lb</th>
</tr>
</thead>
<tbody>
<tr>
<td>20% Crude protein cake</td>
<td>$125/ton</td>
<td>$0.313/lb of protein</td>
</tr>
<tr>
<td>36% Crude protein cake</td>
<td>$220/ton</td>
<td>$0.305/lb of protein</td>
</tr>
<tr>
<td>18% Alfalfa</td>
<td>$65/ton</td>
<td>$0.181/lb of protein</td>
</tr>
</tbody>
</table>

Calculating the value of a nutrient in a feed if moisture contents are different:

**Feeds:**
- Silage @ $25/ton, 70% TDN, 35% DM
- Whole corn @ $72/ton, 90% TDN, 90% DM

**Calculations to determine cost per lb of energy (TDN):**

- **Silage**
  \[
  \frac{$25/ton + ((2000\, \text{lb} \times .35) \times .70)}{0.70} = $.051/\text{lb of TDN}
  \]
- **Corn**
  \[
  \frac{$72/ton + ((2000\, \text{lb} \times .90) \times .90)}{0.90} = $.044/\text{lb of TDN}
  \]

Quality of Forages Vary

- **Test forages:**
  - Moisture
  - % Crude Protein
  - Energy
    - TDN
  - Summer Annuals
    - Nitrates
- Not all forages are average quality

Forage Feeding Systems
Value of Feeding Losses in a Season per 20 Cow Feeder

<table>
<thead>
<tr>
<th>Feeding Waste, %</th>
<th>$70</th>
<th>$80</th>
<th>$90</th>
<th>$100</th>
<th>$110</th>
</tr>
</thead>
<tbody>
<tr>
<td>0%</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
<td>$0</td>
</tr>
<tr>
<td>5%</td>
<td>$200</td>
<td>$229</td>
<td>$257</td>
<td>$286</td>
<td>$314</td>
</tr>
<tr>
<td>10%</td>
<td>$400</td>
<td>$457</td>
<td>$515</td>
<td>$572</td>
<td>$629</td>
</tr>
<tr>
<td>15%</td>
<td>$600</td>
<td>$686</td>
<td>$772</td>
<td>$858</td>
<td>$943</td>
</tr>
<tr>
<td>20%</td>
<td>$800</td>
<td>$915</td>
<td>$1,029</td>
<td>$1,144</td>
<td>$1,258</td>
</tr>
<tr>
<td>25%</td>
<td>$1,001</td>
<td>$1,144</td>
<td>$1,286</td>
<td>$1,429</td>
<td>$1,572</td>
</tr>
</tbody>
</table>

Hay Value, $/ton

Distillers Grains (Nutrients are 3X of corn)
- 30% CP (65% UIP), 8% P, 11% fat, 40% NDF
- High fiber energy source with high digestibility
- Energy content - 125% (wet or dry) of corn
- Fat content may limit amount used in diet
- Sulfur content: .45% - 1.7% variable

Calving Time In Nebraska

- 83% cows calve in the spring
  - Feb, Mar, April, May
- 17% calve some other time
  - Summer
  - Fall

Survey data by Dr. Dick Clark

Profitable cow/calf producers:
- Will balance biological and economical efficiency
- Maximize grazing opportunities
- Minimize the use of harvested forages
- Reduce off-the-farm purchases

Beef website at:
http://beef.unl.edu
Beef Reports at:
http://ianr.unl.edu/pubs/beef/beefrpt.htm
Ag Institute Website:
http://ianrhome.unl.edu