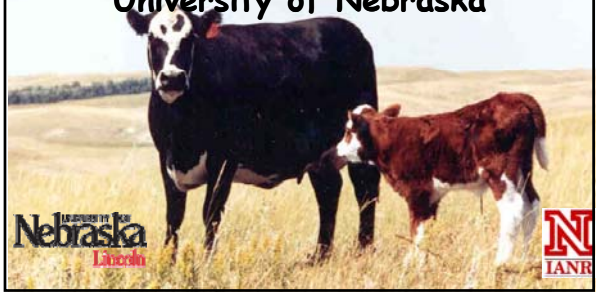
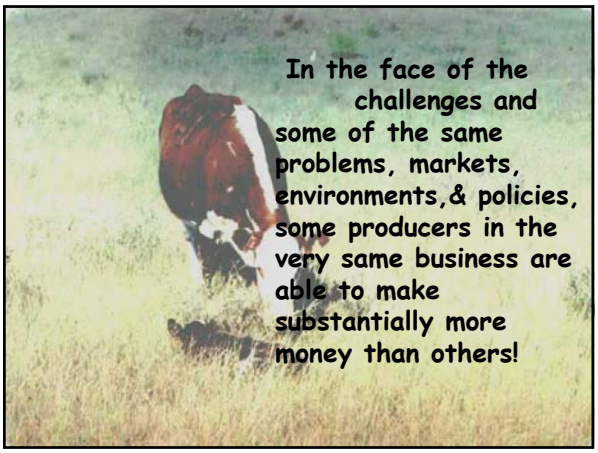
Keys to Profitable Cow-calf Production Systems

Rick Rasby

University of Nebraska





Profit is a Set of Relationships

$ Gross Income

Profit $ (Net Income) = (Lbs. X $/cwt.) - $ Total Annual Expenses

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

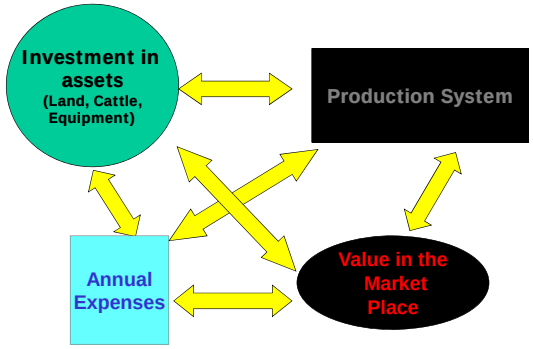
Summary

- 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.

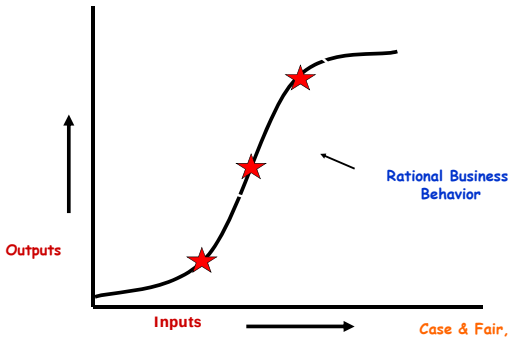
Summary

- 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



Production Function



Fitting genetics to your environment

Nebraska Lincoln

IANR

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

LARGE BREED DIFFERENCES EXIST FOR:

- GROWTH RATE AND SIZE
- COMPOSITION OF GAIN
- CALVING DIFFICULTY
- MILK PRODUCTION
- AGE AT PUBERTY

Nebraska Lincoln

BREED DIFFERENCES (COMPLEMENTARITY) are an important genetic resource

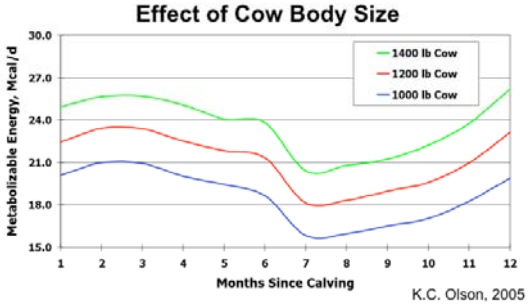
Nebraska Lincoln

IANR

What drives cow costs?

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

Animal Nutrient Requirements



Relationship Between Cow Size and Milk Production

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

Source: Nutrient Requirements of Beef Cattle, 1984 & 1996.

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-off's 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?

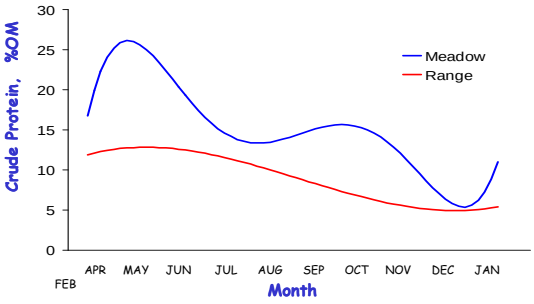
- Avoid extremes in size and milk
  - Will result in less growth and carcass weight
- Cull infertile cows – non-pregnant
- Adjust calving and weaning dates to manage cow body condition
- Use cow maintenance EPD as part of selection
- Source seedstock producers that have developed selection indexes that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

Matching Nutrient Requirements of Lactation with Nutrients in Grazed Forages

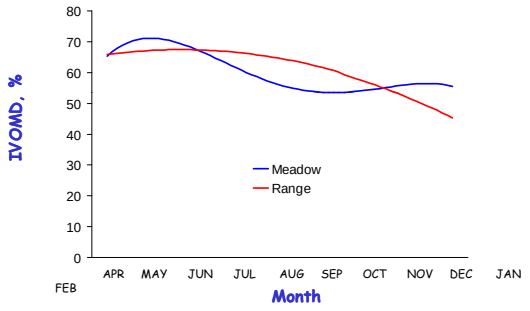
Nebraska Lincoln

IANR

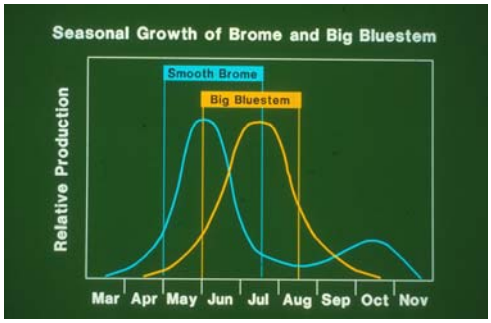
Crude protein concentration in cattle diets on Sandhills meadow and range



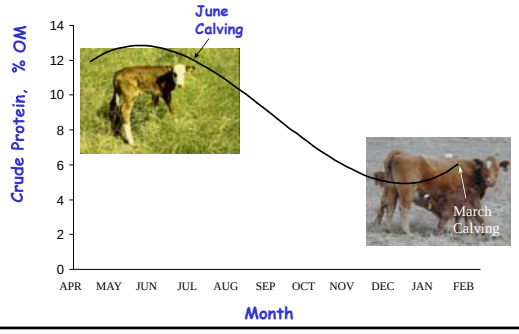
In vitro organic matter digestibility(IVOMD, % OM) of cattle diets on Sandhills range and meadow



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

	March	June
Hay fed, lb	3947	227
Supp. fed, lb	96	154

Nebraska Lincoln

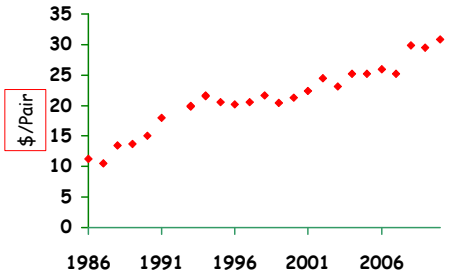
IANR

More hay for March calving cows

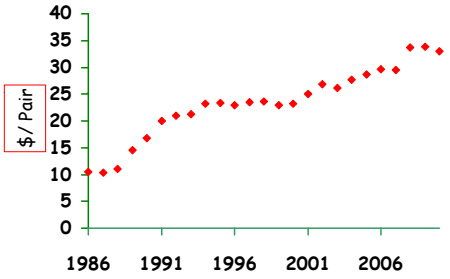
More grazing for June calving cows

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 cow/day

Nebraska Lincoln

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

Feed	Cost per ton $/ton	Cost per pound of protein, $/lb
20% Crude protein cake	$125/ton	$0.313/lb of protein
36% Crude protein cake	$220/ton	$0.305/lb of protein
18% Alfalfa	$65/ton	$0.181/lb of protein

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
  - $25/ton ÷ ((2000lb x .35) x .70) =$.051/lb of TDN
  - Corn
  - $72/ton ÷ ((2000lb x .90) x .90) = $.044/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

Forage Feeding Systems

Value of Feeding Losses in a Season per 20 Cow Feeder

Hay Value, $/ton

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

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

IANR

Profitable cow/calf producers:

- Will balance biological and economical efficiency
- Maximize grazing opportunities
- Minimize the use of harvested forages
- Reduce off-the-farm purchases

Nebraska

University of Nebraska Lincoln

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