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BEEF COW HERD EFFICIENCY

Amy E. Radunz, University of Wisconsin-River Falls

Defining Efficiency

Biological efficiency = economic efficiency?

Biological Efficiency

- Feed efficiency
  - Gain:Feed
  - RFI
  - Residual Gain

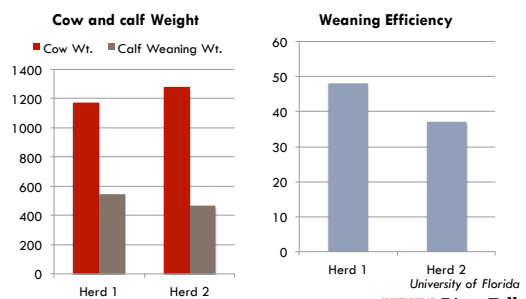UNIVERSITY OF WISCONSIN River Falls
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Cow Weight (Size)

Item	Hereford	Crossbred	Difference
Cow BW, lb	950	1119	169
Conception rate, %	86.9	87.7	0.8
Winter TDN, lb/cow	1796	2654	786
Winter feed cost, $/cow	$103.79	$147.41	$43.62
105-d weaned weight, lb	389	552	163
Weaned calf/cow, lb	341	492	151
Calf value/cow wintered, $	$238.7	$344.4	$105.7
Calf value-TDN cost, $	$-5.72	$17.33	$23.05

Richie et al., 1983

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Measure of Efficiency?

Cow and calf Weight

■ Cow Wt. ■ Calf Weaning Wt.

Weaning Efficiency

University of Florida

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Biological Efficiency

- Reproductive Efficiency

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US Cow Herds

Item	20 yrs 1991-2010	First 10 yrs 1991-2000	Last 10 yrs 2001-2010	First 10 to Last 10 yrs
Beef Cows	33,331	34,047	32,702	-3.95%
Calves Born	38.22	39.25	37.19	-5.24%
Calving Rate	89.65%	90.38%	88.91%	-1.63%

Texas cow/calf SPA 1991-2009	
Pregnancy	88.8%
Calving	84.88%
Weaning	81.9%

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Breed Measures of Efficiency

Breed	Cow Weight lb	Yearly DMI lb	Calving rate %	Survival %	Weaning wt, lb	Efficiency lb/lb*100
Red Poll	1045	8743	96%	100%	427	4.69
Angus	1179	8865	95%	84%	372	3.99
Pinzgauer	1179	9104	86%	94%	443	4.18
Hereford	1261	9052	81%	90%	357	3.19
Gelbvieh	1285	9813	88%	87%	419	3.76
Simmental	1300	9574	81%	80%	417	3.53
Charolais	1488	9907	73%	94%	469	3.46

Jenkins and Ferrell, 1994

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Milk Production

Item	Low	Medium	High
Expenditures, Mcal ME/yr			
Cow	6110	6660	6930
Calf	1040	940	950
Total	7150	7600	7880
Production lb/yr	444	455	480
Biological efficiency, lb/Mcal ME	0.062	0.060	0.061

Montano-Bermudez and Nielsen, 1990

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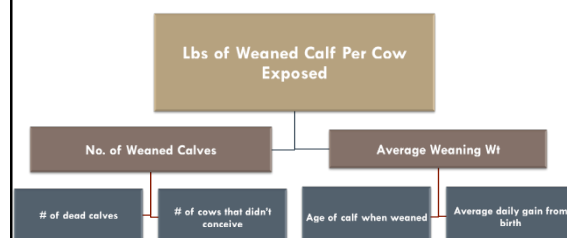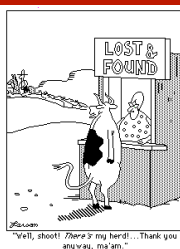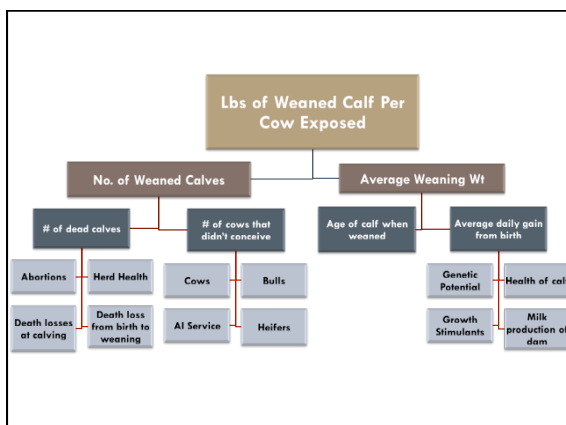GLOBAL. INNOVATIVE. EXCELLENT.

Priority of Energy Use

1. Basal metabolism
2. Physical activity
3. Growth
4. Supporting energy reserves
5. Maintenance of pregnancy
6. Milk production
7. Adding energy reserves
8. Estrous cycle and initiating pregnancy
9. Storing excess energy

Short et al., 1990

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Individual vs. Cow Herd

"Well, shoot! *There's* my herd!...Thank you anyway, ma'am."

Slide 1

Lbs of Weaned Calf Per Cow Exposed
- No. of Weaned Calves
  - # of dead calves
    - Abortions
    - Herd Health
    - Death losses at calving
    - Death loss from birth to weaning
  - # of cows that didn't conceive
    - Cows
    - Bulls
    - AI Service
    - Heifers
- Average Weaning Wt
  - Age of calf when weaned
  - Average daily gain from birth
    - Genetic Potential
    - Health of calf
    - Growth Stimulants
    - Milk production of dam

Slide 2

Lbs Weaned Per Calf Exposed

% Calf Crop	Average Weaning Weight of All Calves (lbs)			
	450	500	550	600
	Pounds of Calf Weaned per cow Exposed			
75	338	375	412	450
80	360	400	440	480
85	382	425	467	510
90	405	450	495	540
95	427	475	522	570
100	450	500	5550	600

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Slide 3

Feed Inputs for Cowherd

Availability	Requirements
□ Season	□ Genetics
□ Location	□ Stage of Production
□ Management	□ Environment

Need to match biological type and calving to environment!

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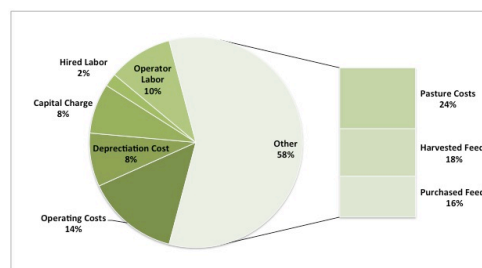## Slide 4

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Slide 5

Great Plains Forages

- □ Native range, corn crop residues, and hay can be low in protein
- □ Protein supplementation needed to meet requirements during gestation

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Slide 6

Costs Per Beef Cow: Before $7.00 Corn, so Feed Management is Even More Important

Hired Labor 2%
Operator Labor 10%
Capital Charge 8%
Depreciation Cost 8%
Operating Costs 14%
Other 58%
Pasture Costs 24%
Harvested Feeds 18%
Purchased Feeds 16%

2000-2004 Iowa SPA Summary

Storage Losses

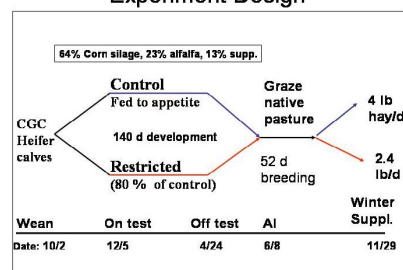## How Much Energy Does it Take to Reduce This?

To This?
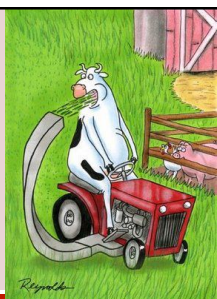
Waste is worst than Loss! ~ Thomas Edison

How can you be sustainable if you are wasting 20-50% of your feed?
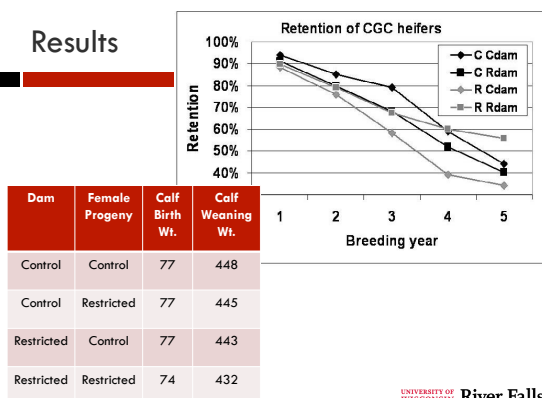*How can you get the cow to harvest more herself?*

Research USDA ARS Fort Keogh

Experiment Design

64% Corn silage, 23% alfalfa, 13% supp.

Results

Dam	Female Progeny	Calf Birth Wt.	Calf Weaning Wt.
Control	Control	77	448
Control	Restricted	77	445
Restricted	Control	77	443
Restricted	Restricted	74	432

Restricted Development

☐ Restricted Heifer Development
 ◻ Improved efficiency
 ◻ Reduced feed per pregnant heifer ($24 savings)
 ◻ Fed 200-300 lbs less feed/winter ($9-12/yr)
 ◻ Female progeny had lighter calves at birth and weaning

Management Driven Opportunities

☐ Improve pregnancy rate

☐ Improve grazing systems

☐ Improve complete herd health

☐ Select and manage longevity in cows

☐ Re-evaluate genetics

☐ Manage feed more efficiently

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SINCE 1975 CATTLE INVENTORY HAS DECLINED 32% WHILE TOTAL US BEEF PRODUCTION HAS INCREASED 18%

PHOTO BY: MICKY WILSON