

What's **YOUR REAL** Cost of Production?

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Cost of Production




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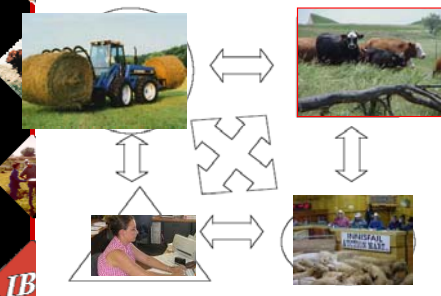
Income Taxes Balance Sheet Cash Flow Net Worth Statement Income Statement

Enterprise Analysis

*All whole farm!
What about the cow herd or the forage base???*

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Complex Interactive System



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Capital Intensive Business!!!

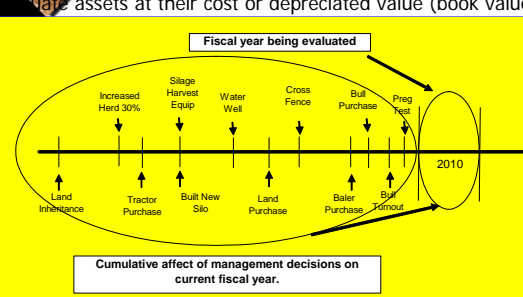
	Assets valued at cost or depreciated value	Assets valued at market value or what they could be sold for	
Feeding Stock	\$604	\$668	
Equipment & Structures	\$152	\$287	Management efficiency
Real Estate	\$677	\$969	Exit strategy
Other Assets	\$133	\$182	
TOTAL	\$1566	\$2106	

Investment in the Business on a per Cow Basis - ISU SPA

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Financial Analysis

Evaluate assets at their cost or depreciated value (book value)



Cumulative affect of management decisions on current fiscal year.

Dunn, BIF 2002

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Economic Analysis

Evaluate assets at their current market value.

The diagram shows a horizontal timeline with a vertical line representing the end of a fiscal year. A circle is drawn around the end of the fiscal year, with arrows pointing to it from the text 'Specific times of asset evaluation'. Below the timeline, the text 'Fiscal year being evaluated' is shown with arrows pointing to the period between two vertical lines, one of which is at the end of the circle.

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Dunn, BIF 2002

Financial vs. Economic Cost Example

Pure Land – Example 1

- 40 acres being purchased with an \$800/acre debt at 8% contract, land taxes of \$12/acre, fertilized at \$10/acre, depreciation on improvements at \$3/acre and a current rental value of \$35/acre

	<u>Financial</u>		<u>Economic</u>
Land cost	\$64	Land cost	\$35
Taxes	\$12	Taxes	\$ 0
Operating	\$10	Operating	\$10
Deprec.	\$ 3	Deprec.	\$ 0
Total	\$89	Total	\$45

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Financial vs. Economic Cost Example

Pure Land – Example 2

- 40 acres purchased 20 years ago with no debt, land taxes of \$12/acre, fertilized at \$10/acre, all improvements are depreciated out and a current rental value of \$35/acre

	<u>Financial</u>		<u>Economic</u>
Land cost	\$ 0	Land cost	\$35
Taxes	\$12	Taxes	\$ 0
Operating	\$10	Operating	\$10
Deprec.	\$ 0	Deprec.	\$ 0
Total	\$22	Total	\$45

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Financial vs. Economic Cost Example

Pasture Land – Example 2

- 40 acres purchased 20 years ago with no debt, land taxes of \$12/acre, fertilized at \$10/acre, all improvements are depreciated out and a current rental value of \$35/acre

	<u>Financial</u>		<u>Economic</u>
Land cost	\$ 0	Land cost	\$35
Taxes	\$12	Taxes	\$ 0
Operating	\$10	Operating	\$10
Deprec.	\$ 0	Deprec.	\$ 0
Total	\$22	Total	\$45

You need to understand BOTH!!

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What is Cost of Production?

IRM/SPA Cost Areas

- Feed
 - Stored (purchased or raised)
 - Grazed (owned or leased)
- Operating
- Depreciation
 - Cattle
 - Equipment
- Labor
 - Hired
 - Family (Only in Economic costs)
- Interest (allocated to cattle)

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What Drives Profit?

Statistical analysis of N. Dakotas 1994 IRM herds revealed that only 20% of the variation in cost of producing cwt of weaning calf could be explained by differences in weaning wt. (Hughes, 1996)

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Iowa BCBR Data

	Correlation to RLM
Herd Size	.04
Calf weaning weight	.28
% Calf crop weaned	.10
Calf weight sold/cow	.23
Weight produced/cow	.18
Cull breeding weight sold/cow	-.06
Cattle value sold/cow	.14
Calf price	.01
Cull breeding stock price	.04

Ability to predict return to labor and management

Production and price are lowly correlated to profit

Siemsen, 1995 ISU Beef Research Report

Table 1. SPA measurements for Low, Medium, and High Profit Herds (Dunn, 2000)

	Low Profit	Medium Profit	High Profit
Income/cow exposed	\$413.00	\$455.00	\$455.00
Income/beginning year female	\$390.75	\$423.08	\$495.35
Income/beginning year breeding female	\$637.68	\$386.87	\$270.23
Income/beginning year female	-\$247.02	\$36.29	\$225.13
Investment/beginning year	\$1,538.00	\$2,308.00	\$1,397.00
ROA	-15.50%	2.88%	18.16%

148 Great Plains Herds

High Profit herds: same output/cow, but lower annual costs. Higher revenue, lower investment and higher ROA.

\$500 per cow

Siemsen, 1995 ISU Beef Research Report

Operation size does not ensure low cost production or profit

Table 3. Southwest Cow-Calf SPA Summary of Key Measures By Size of Herd 1991-2002**

Size of Herd	Weaning Percent	Average Weaning Wt. (Lb.)	Lb. Weaned Per Exposed Cow	Capital Investment \$/Cow	Cost of Production Per Cow**	Gracing & Feed Cost Per Cow	Unit Cost of Production \$/Cwt**	ROA	Net Income \$/Cow**
1-49	83.1	583.3	434.2	\$6,049	\$154	\$144	\$156	-2.82	(\$187)
50-99	83.2	519.3	422.3	\$4,083	\$187	\$201	\$95	2.19	\$4
100-199	82.1	514.4	424.3	\$1,610	\$445	\$194	\$105	-0.08	(\$45)
200-299	81.6	522.2	421.6	\$1,738	\$422	\$139	\$99	-1.24	(\$14)
300-499	83.2	529.0	427.9	\$2,955	\$412	\$142	\$95	-0.43	(\$19)
500-999	82.0	533.7	439.7	\$1,112	\$387	\$133	\$84	1.40	\$16
1000+	79.6	557.6	423.3	\$3,520	\$334	\$124	\$89	1.16	\$29
Average	82.2	521.8	429.3	\$5,891	\$421	\$167	\$102	0.0	(\$53)

Siemsen, 1995 ISU Beef Research Report

What Drives Profit?

	Correlation to RLM
Feed cost / cow	-.41
Operating cost / cow	-.25
Deprec tax & insur / cow	-.30
Total capital charge / cow	-.27
Feed cost / cwt	-.47
Operating cost / cwt	-.49
Deprec tax & insur / cwt	-.42
Total capital charge / cwt	-.40
Feed cost / cow	-.61

Best predictors of profits

Siemsen, 1995 ISU Beef Research Report

Variation in Return to Labor & Management

Dependent Variable	R ²	Notes
Feed Cost	.567	-8 financial measures explain over 82% of farm-to-farm variation
Depreciation Cost	.086	
Operating Cost	.049	-Cost factors were far more influential than production or marketing factors.
Calf weight	.046	
Capital charge	.024	
Calf price	.027	
Weaning percentage	.017	
Herd size	.007	
Total	.823	

Bottom line: Feed cost is the most important factor in determining profit!

Siemsen, 1995 ISU Beef Research Report

What makes up feed cost?

Table 2. Financial and Economic Feed Cost for Iowa and Illinois SPA herds, 1996-2000.

	Financial	% of total	Economic	% of total
Pasture Cost per Cow	\$80.59	39.2%	\$98.26	41.0%
Crop Residues per Cow	\$1.64	0.8%	\$1.64	0.7%
Harvested Forages per Cow	\$61.36	29.9%	\$78.12	32.6%
Non-Purchased Raised Feed Fed per Cow	\$29.45	14.3%	\$29.45	12.3%
Purchased Feed per Cow	\$33.12	16.1%	\$33.12	13.8%
Total Feed Cost per Cow	\$205.37		\$239.94	

~ 60% of feed cost is stored or purchased feeds

~ 40% is pasture cost

Siemsen, 1995 ISU Beef Research Report

The first place to look for inefficiencies in the cow herd is feed resource utilization

	Low Cost 1/3	High Cost 1/3
Suppl Feeds / Cow	\$ 157.96	\$ 225.07
Pasture / Cow	\$ 61.88	\$ 70.36
Suppl alk / Cow	\$ 3.72	\$ 3.18
Suppl Fed / Cow	\$ 91.36	\$ 151.53
Suppl Fed / Cow	3892	5861
Suppl cost / Ac.	\$ 23.91	\$ 28.99
Suppl cost / T.	\$ 45.69	\$ 50.01

Need to analyze by profit centers

Strohbehn, 1995 ISU Beef Research Report

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**Hay Production Cost
Financial vs. Economic**

Average of all herds

Table 3. Financial and Economic Hay Production Cost for Iowa and Illinois SPA herds, 1996-2000.

	Financial	% of total	Economic	% of total
Yield per Acre of Forage Production, Tons	3.6		3.6	
Land Charge per Ton	\$11.35	27.8%	\$20.31	34.1%
Operating Cost per Ton	\$21.25	52.1%	\$21.30	35.7%
Depreciation Cost per Ton	\$6.83	16.7%	\$6.83	11.5%
Non-Real Estate Loan, Principal & Interest per Ton	\$1.39	3.4%	xxxxx	
Family & Operator Labor per Ton	xxxxx		\$11.26	18.9%
Total Cost per Ton of Forage Produced	\$40.83		\$59.59	

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Variation in Financial Hay Production Cost

Table 4. Financial Hay Production Cost by Quartiles for Iowa and Illinois SPA herds, 1996-2000.

	Top 1/4	2nd 1/4	3rd 1/4	Bottom 1/4
Yield per Acre of Forage Production, Tons	4.1	3.5	3.5	3.1
Land Charge per Ton	\$5.41	\$8.51	\$13.81	\$22.31
Operating Cost per Ton	\$9.22	\$16.87	\$24.53	\$44.03
Depreciation Cost per Ton	\$2.25	\$5.70	\$8.77	\$13.37
Non-Real Estate Loan, Principal & Interest per Ton	\$0.50	\$0.55	\$1.22	\$4.69
Family & Operator Labor per Ton	xxxxx	xxxxx	xxxxx	xxxxx
Total Cost per Ton of Forage Produced	\$17.38	\$31.63	\$48.32	\$84.40

2 ton hay cost/cow \$34.76 \$168.80

Top 1/4 vs. Bottom 1/4
Land charge - \$17 difference
Operating - \$35 difference

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Pasture Profit Center

**Pasture Financial Production Costs
Iowa, 1998-99**

	Iowa Ave	IA Std Dev
Acres / Cow-calf Pair	2.6	1.1
Land Charge/acre	\$ 19.03	\$ 10.81
Operating Cost/acre	\$ 9.69	\$ 12.59
Depreciation Cost/acre	\$ 1.05	\$ 1.99
Interest Cost/acre	\$ 0.09	\$ 0.09
Total Cost per Acre	\$ 29.86	\$ 16.39
Cost per AUM	\$ 6.63	\$ 4.44
Cost per Day	\$ 0.24	\$ 0.15

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What Have We Learned?

Lesson #1
The measure of efficiency that relates best to profitability is total cost / cwt of production.

Remember -Total cost / cwt is a composite measurement. It includes cost control, rate of reproduction, and weight gain up to weaning.

Lesson #2
A data analysis shows producers need to analyze their own records to find weaknesses because no one item appears to be the culprit in all cases.

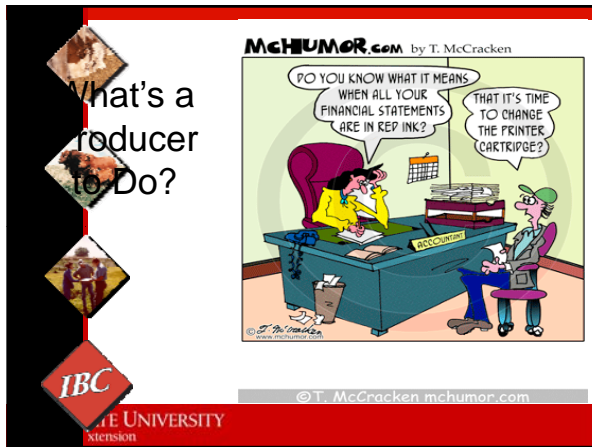
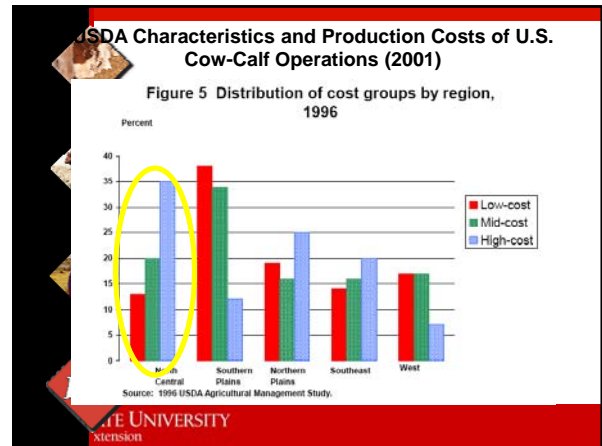
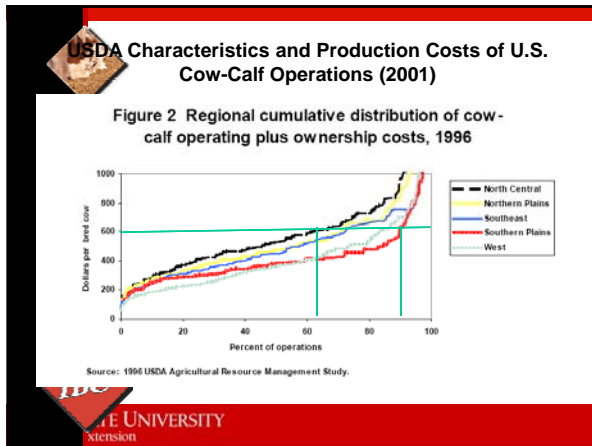
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Total production expenses per cattle farm increased over \$21,000 from 2002 to 2007

	2007	2002	% Change
Total Farms	687,540	725,707	-5
Production Expenses	\$54.8 billion	\$42.2 billion	+30
Cost per Farm	\$79,752	\$58,125	+37
Stock (Purchased or Leased)	\$24.5 billion	\$18.8 billion	+31
Feed Expenses	\$11.5 billion	\$7.90 billion	+45
Repairs & Maintenance	\$2.69 billion	\$2.48 billion	+8
Lease (and Contract)	\$2.34 billion	\$1.95 billion	+20
Interest Expense	\$2.33 billion	\$2.02 billion	+15

* 2007 Census of Agriculture: Cattle Production

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What's a Producer to Do?

- Know your OWN cost of production
- Analyze your operation by enterprise
- Compare to benchmarks!

Benchmarks

- Organic & Grassfed Beef Database
- Beef Cow Business Records SPA
- WebBooks SPA Project

We need your help and inputs!!

Thank You

Are there any questions?

www.iowabeefcenter.org

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