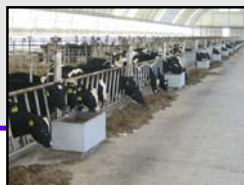




## Dairy Industry Economics:

- Financial tools for decision-making
- Industry trends

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Dec 13, 2005 – Albany, NY  
Dec 14, 2005 – Middlebury, VT  
Dec 15, 2005 – St. Albans, VT



## Business Analysis:

*Which financial tools should I use?*




2

## What are we trying to learn...



- The appropriate financial tools or methods of analysis to use will depend on the questions you are asking. For example,
  - What is my risk-bearing ability?
  - Was I profitable last year?
  - Should I invest \$X in a cooling system?
  - Is 2X or 3X (drylot or freestall) more profitable?

 It is important to use the right tool for the question at hand (the wrong method of analysis can lead to incorrect conclusions).

3

## Purpose of analysis...



- Taxes vs. cash flow vs. profitability
- Different types of analyses require different information and thus you often need “two sets of books” (e.g., tax vs. market depreciation).
- While there is considerable overlap in information required for the different types of analyses, differences do exist.
  - ➔ Tax analyses are generally *NOT* interchangeable with profitability analyses.

4

## Data used for analysis...



- Financial statements/tools can be used with either actual data (*ex-post* analysis) or projected data (*ex-ante* analysis).
- When data allow, analyses based upon actual data are often preferred to those based on projections.
- In many cases, actual data are insufficient to answer the specific question at hand, thus financial analyses based upon projected data may be more appropriate.

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## Analyzing your business...



- Financial statements/tools for business analysis (most commonly used)
  - Balance sheet
  - Income statement
  - Cash flow statement
  - Source and uses of funds statement
  - Financial ratios
  - Partial budget
  - Enterprise / whole-farm budget
  - Net present value (NPV)
  - Data queries/sorts

6

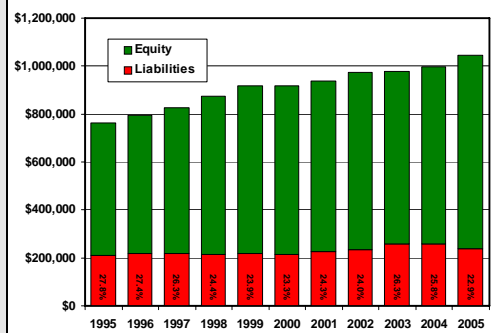
## Balance sheet (net worth statement)



- Primary standard measure of the worth of a business *at a point in time* (e.g., Jan 1)
- An accounting and valuation of all that is owned and owed in business (i.e., assets, liabilities, and owner equity)
- Measures financial strength and risk-bearing ability of business (keystone statement in credit decisions)
- Useful for trend analysis (i.e., analyzing balance sheets over multiple years)

7

## Example balance sheets



8

## Analyzing balance sheets over time



- Return on equity (ROE) – a measure of financial profitability
- Calculating one-year ROE from balance sheets

$$ROE = \frac{\text{ending NW} - \text{beginning NW}}{\text{beginning NW}}$$

$$7.5\% = \frac{1,075,000 - 1,000,000}{1,000,000}$$

9

## Analyzing balance sheets over time



- Return on equity (ROE) – a measure of financial profitability
- Calculating multiple-year ROE from balance sheets

$$ROE = \left( \frac{NW_{\text{end}}}{NW_{\text{beg}}} \right)^{\frac{1}{\text{end-beg}}} - 1$$

$$6.74\% = \left( \frac{1,075,000}{560,000} \right)^{\frac{1}{2005-1995}} - 1$$

10

## Uses of the balance sheet...



- Acquiring debt
- Considering farm business risks
- Measuring financial progress
- Calculating profitability
- Changing ownership

Extremely important tool for business analysis, but cannot tell you why you were (or were not) successful.

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## Income statement (P&L statement)



- Key financial statement for measuring the success (profit) of a business over a period of time (e.g., 2004, 3<sup>rd</sup> qtr of 2005)
- Important to recognize the difference between cash- and accrual-based income statements
  - Cash approach - net cash flow, taxable income. Easy, but does not show true net income.
  - Accrual approach - needed to properly analyze business performance.
- Accrual net income reflects profitability of business, cash net income may or may not

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### Uses of the income statement...



- Analyze profitability of operation
- Identify operation's strengths & weaknesses
- Measuring financial progress (multiple years)

**Key:** Critical for determining the profitability of your business, but often lacks data necessary to isolate the profitability associated with a specific management practice (i.e., additional data often needed to account for "other" factors).

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### Cash flow statement (source and uses)



- Record of the dollars coming in and going out of a business over a time period (e.g., 2004, 3<sup>rd</sup> qtr 2005)
  - Cash inflows – money coming into the business (e.g., sales, loans, gifts)
  - Cash outflows – money leaving the business (e.g., expenses, P&I payments, cash withdrawals)
- Cash flow based on actual data is used to analyze the business. Cash flow based on projected data is for business planning (e.g., how and when borrowed money will be repaid).

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### Uses of the cash flow statement...



- Tracking receipts and expenditures
- Identifying the timing of cash flows
- Identify the ability to meet cash commitments
- Important communication tool with lenders

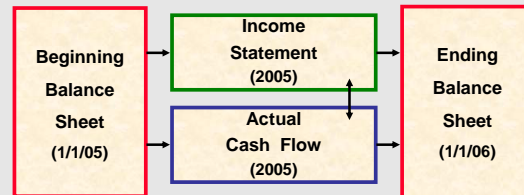
**Key:** Cash flow statements are most useful for communicating with lenders, but they are of limited value for making profit-based management decisions.

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### Three basic financial statements...



The income and cash flow statements link beginning and ending balance sheets together.



If you are profitable (*income statement*), then your net worth should increase (*balance sheet*) unless cash was pulled out of the business (*cash flow*).

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### Partial budget



- Typically used to examine the expected economic returns associated with a particular management intervention.
- Only considers the income and expenses impacted by the intervention (generally, fairly straightforward, but depending on question at hand, can become quite complex).
- Requires assumptions – faith you put into your results depends on accuracy of the assumptions.

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### Partial budget...




Intervention Benefits		Intervention Costs	
Increased revenue	(1)	Decreased revenue	(3)
+ Decreased costs	(2)	+ Increased costs	(4)
= Total benefit	(B)	= Total costs	(C)

Total benefit (B) - Total cost (C) = Profitability of Intervention

Not all four factors will always be relevant.

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## Example partial budget




**Table 7. Partial Budget Analysis for Adding Fans and Sprinklers to a Dairy**

<b>Intervention Benefits:</b>		
(1)	Increased Revenue	10 lb/day x 85 days x \$12/cwt
	- Increased Costs	\$102.00 per cow
(2)	Decreased Costs	
	- None	\$ 0.00
	Total Benefits (B)	\$102.00
<b>Intervention Costs:</b>		
(3)	Decreased Revenue	
	- None	\$ 0.00
(4)	Increased Costs	
	- Fans/sprinklers <sup>1</sup>	\$85/cow x 0.2505
	- Electricity	\$10.65/kWh (demand) \$0.06/kWh (energy)
	- Water	1,360 gallons x \$1.60/1000 gallons
	- Feed	4 lb/day x 85 days x \$0.07/lb
	Total Costs (C)	\$ 56.25 per cow
<b>Profitability of Intervention</b>		
	Benefits minus Costs	\$102.00 - \$56.25
	Benefit-Cost (B/C) ratio	\$102.00 / \$56.25
		\$ 45.75 per cow
		1.81

<sup>1</sup> The \$85/cow represents the amount required to purchase and install fans and sprinklers and the 0.2505 is an amortization factor to reflect the annual depreciation and interest cost (based on 5-year life and 8% interest).

## Example partial budget




**Table 7. Partial Budget Analysis for Adding Fans and Sprinklers to a Dairy**

<b>Profitability of Intervention</b>		
	Benefits minus Costs	\$102.00 - \$56.25
	Benefit-Cost (B/C) ratio	\$102.00 / \$56.25
		\$ 45.75 per cow
		1.81
<b>Breakeven Analysis:</b>		
	Breakeven milk price <sup>2</sup>	\$56.25 / (10 lb x 85 days) x 100
		\$ 6.62 per cwt
<b>Sensitivity Analysis:</b>		
	B/C ratio @ \$9/cwt milk	\$76.50 / \$56.25
	B/C ratio @ 8# milk response	\$81.60 / \$56.25
	B/C ratio @ \$0.09/lb feed	\$102.00 / (21.29 + 8.98 + 2.18 + 30.60)
	B/C ratio @ +20% utilities	\$102.00 / (21.29 + 10.78 + 2.62 + 23.80)
		1.36
		1.45
		1.62
		1.74

<sup>2</sup> This is the breakeven milk price to cover the costs associated with the cooling system (i.e., breakeven price on the incremental milk production). Thus, so long as milk prices are at this level or greater it is economically advantageous to install the cooling system even though the dairy may not be covering total costs.

**B/C ratio reflects the dollars of returns per dollar of cost.**

## Analyzing feed costs...




**Economic Comparison of Alternative Feed Rations**

		Ration A			
Feed cost, \$/lb		\$0.065			
Maintenance, lbs/day		15			
Productive feed, milk/lb of feed		2.3			
Milk price		\$13.50			
Non-feed costs, \$/cow/day		\$6.50			

Daily milk production, lbs	Ration A			
	\$/day	\$/cwt	IOFC	TC/cwt
60.0	\$2.67	\$4.45	\$5.43	\$15.28
62.5	\$2.74	\$4.39	\$5.70	\$14.79
65.0	\$2.81	\$4.33	\$5.96	\$14.33
67.5	\$2.88	\$4.27	\$6.23	\$13.90
70.0	\$2.95	\$4.22	\$6.50	\$13.50
72.5	\$3.02	\$4.17	\$6.76	\$13.14
75.0	\$3.09	\$4.13	\$7.03	\$12.79
77.5	\$3.17	\$4.08	\$7.30	\$12.47
80.0	\$3.24	\$4.04	\$7.56	\$12.17
82.5	\$3.31	\$4.01	\$7.83	\$11.89
85.0	\$3.38	\$3.97	\$8.10	\$11.62

There are a lot of ways to look at feed costs...  
Which measure (\$/lb, \$/day, \$/cwt, IOFC, TC/cwt) is most appropriate?

## Analyzing feed costs...




**Economic Comparison of Alternative Feed Rations**

		Ration A				Ration B			
Feed cost, \$/lb		\$0.065				\$0.070			
Maintenance, lbs/day		15				15			
Productive feed, milk/lb of feed		2.3				2.3			
Milk price		\$13.50				\$13.50			
Non-feed costs, \$/cow/day		\$6.50				\$6.50			

Daily milk production, lbs	Ration A				Ration B			
	\$/day	\$/cwt	IOFC	TC/cwt	\$/day	\$/cwt	IOFC	TC/cwt
60.0	\$2.67	\$4.45	\$5.43	\$15.28	\$2.88	\$4.79	\$5.22	\$15.63
62.5	\$2.74	\$4.39	\$5.70	\$14.79	\$2.95	\$4.72	\$5.49	\$15.12
65.0	\$2.81	\$4.33	\$5.96	\$14.33	\$3.03	\$4.66	\$5.75	\$14.66
67.5	\$2.88	\$4.27	\$6.23	\$13.90	\$3.10	\$4.60	\$6.01	\$14.23
70.0	\$2.95	\$4.22	\$6.50	\$13.50	\$3.18	\$4.54	\$6.27	\$13.83
72.5	\$3.02	\$4.17	\$6.76	\$13.14	\$3.26	\$4.49	\$6.53	\$13.46
75.0	\$3.09	\$4.13	\$7.03	\$12.79	\$3.33	\$4.44	\$6.79	\$13.11
77.5	\$3.17	\$4.08	\$7.30	\$12.47	\$3.41	\$4.40	\$7.05	\$12.79
80.0	\$3.24	\$4.04	\$7.56	\$12.17	\$3.48	\$4.36	\$7.32	\$12.48
82.5	\$3.31	\$4.01	\$7.83	\$11.89	\$3.56	\$4.32	\$7.58	\$12.19
85.0	\$3.38	\$3.97	\$8.10	\$11.62	\$3.64	\$4.28	\$7.84	\$11.93

What is the question we are asking?

## Analyzing feed costs...




**Economic Comparison of Alternative Feed Rations**

		Ration A				Ration B			
Feed cost, \$/lb		\$0.065				\$0.070			
Maintenance, lbs/day		15				15			
Productive feed, milk/lb of feed		2.3				2.3			
Milk price		\$13.50				\$13.50			
Non-feed costs, \$/cow/day		\$6.50				\$6.50			


Daily milk production, lbs	Ration A				Ration B			
	\$/day	\$/cwt	IOFC	TC/cwt	\$/day	\$/cwt	IOFC	TC/cwt
60.0	\$2.67	\$4.45	\$5.43	\$15.28	\$2.88	\$4.79	\$5.22	\$15.63
62.5	\$2.74	\$4.39	\$5.70	\$14.79	\$2.95	\$4.72	\$5.49	\$15.12
65.0	\$2.81	\$4.33	\$5.96	\$14.33	\$3.03	\$4.66	\$5.75	\$14.66
67.5	\$2.88	\$4.27	\$6.23	\$13.90	\$3.10	\$4.60	\$6.01	\$14.23
70.0	\$2.95	\$4.22	\$6.50	\$13.50	\$3.18	\$4.54	\$6.27	\$13.83
72.5	\$3.02	\$4.17	\$6.76	\$13.14	\$3.26	\$4.49	\$6.53	\$13.46
75.0	\$3.09	\$4.13	\$7.03	\$12.79	\$3.33	\$4.44	\$6.79	\$13.11
77.5	\$3.17	\$4.08	\$7.30	\$12.47	\$3.41	\$4.40	\$7.05	\$12.79
80.0	\$3.24	\$4.04	\$7.56	\$12.17	\$3.48	\$4.36	\$7.32	\$12.48
82.5	\$3.31	\$4.01	\$7.83	\$11.89	\$3.56	\$4.32	\$7.58	\$12.19
85.0	\$3.38	\$3.97	\$8.10	\$11.62	\$3.64	\$4.28	\$7.84	\$11.93

IOFC is a *partial budget* that accounts for income & costs

## Uses of partial budgets...

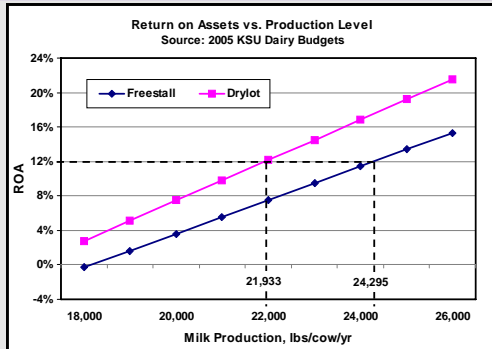


- Estimate the profitability associated with a particular production practice (confounding effects are kept out of the analysis).
- Easy to conduct sensitivity analyses around key factors.

 Very useful for business analysis and often the tool of choice for making profit-based management decisions (they do not identify total profitability of operation which is both good and bad).



### Sensitivity analysis...



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### Economics of 2X vs 3X...



Farm Management Guide MF-2442  
**Dairy Enterprise – 2,400 Lactating Cows (Freestall)**  
Department of Agricultural Economics  
Kansas State University Agricultural Experiment Station and Cooperative Extension Service

Farm Management Guide MF-2540  
**Dairy Enterprise – 2,400 Lactating Cows (Drylot)**  
Department of Agricultural Economics  
Kansas State University Agricultural Experiment Station and Cooperative Extension Service

“Starting point” for analysis is 2,400 head budgets.

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### Key assumptions...

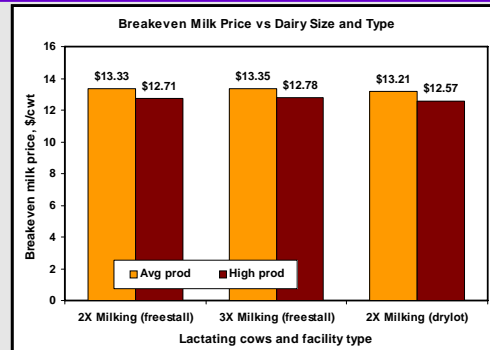


	Freestall (2X)	Freestall (3X)	Drylot (2X)
Lactating cows	3,350	2,400	2,400
Investment*	\$3,500	\$3,500	\$2,500
Milk production	68 / 73	73 / 78	65 / 70
Labor, cows/man	125	95	140

Fuel, utilities, professional fees, miscellaneous are roughly the same for dairy across 2X and 3X (i.e., they are not function of milking frequency)  
\* Excludes land and cows

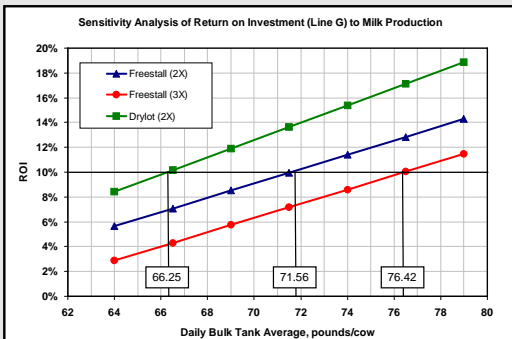
33

### Breakeven prices are similar...



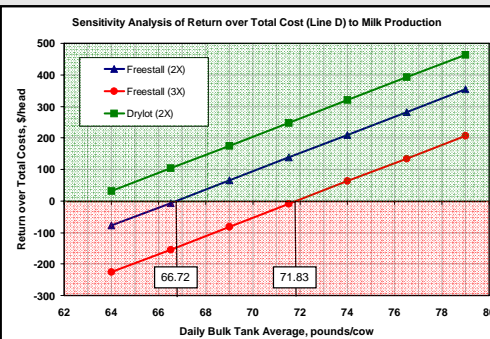
34

### Importance of production...



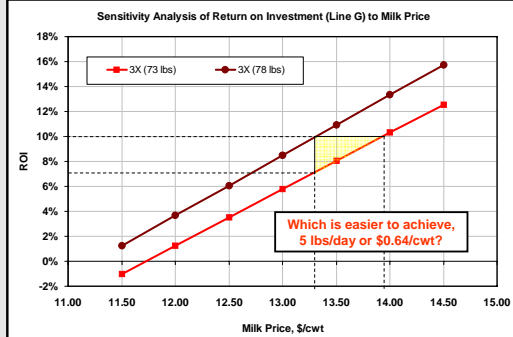
35

### Importance of production...



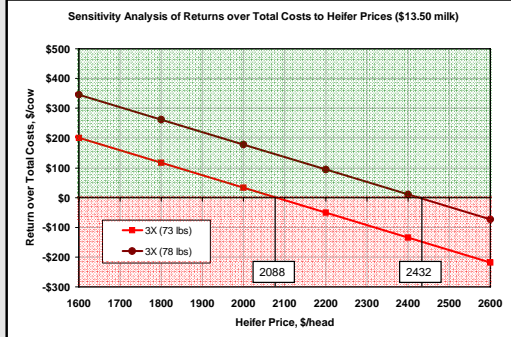
36

## Production vs. price – which is better?



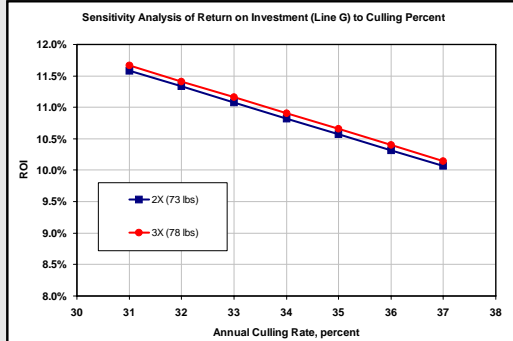
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## Importance of production...



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## Impact of culling percent...



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## Uses of enterprise budget...



- Estimate the overall profitability associated with the operation (also conduct sensitivity analysis to examine relevant risks).
  - Tool of choice when many factors are impacted by a management intervention being considered (e.g., facility type).
- Powerful tool for looking at profitability of alternative management practices assuming assumptions can be made accurately.

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## Answering the questions at hand...



- The appropriate financial tools or methods of analysis to use will depend on the questions you are asking. For example,
  - What is my risk-bearing ability?
  - Was I profitable last year?
  - Should I invest \$X in a cooling system?
  - Is 2X or 3X (drylot or freestall) more profitable?

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## Summary



- It is important that producers understand the differences between the various financial statements/tools available when making business management decisions.
- An analysis done for tax purposes generally should not be considered a profitability analysis and vice versa.
- Question(s) being asked, data availability, and analysis capabilities will often dictate the appropriate tool that should be used.

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## Summary



- Using financial statements based on actual data to identify *why* a business is or is not successful can be difficult because of many confounding factors.
- When confounding effects exist...
  - A uni-variate analysis is inappropriate
  - When using actual data, multi-variate analysis is required (i.e., a more complex analysis method)
  - Partial/enterprise budget that controls for confounding effects can be used

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## Industry Trends:

*Survive or Thrive –  
What factors lead to success?*



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## Outline

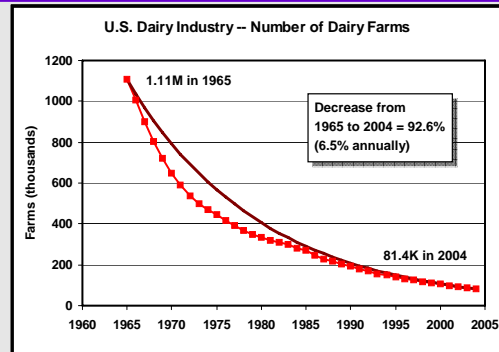


- National trends / U.S. dairy statistics
- Regional / state trends
- Prices
- Costs of production
- Factors impacting profitability
- Miscellaneous thoughts



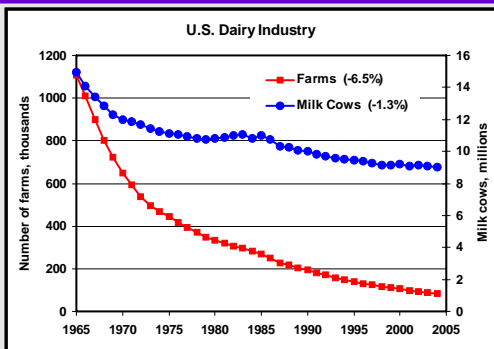
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## National Trends (the big picture) – Operations



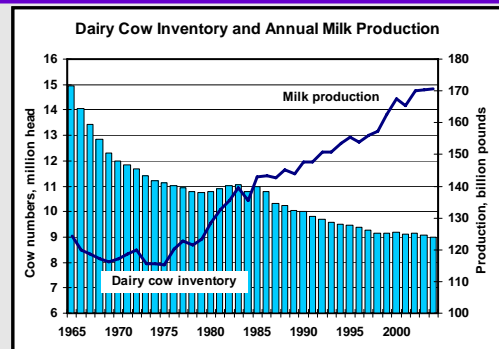
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## National Trends – Operations and cows



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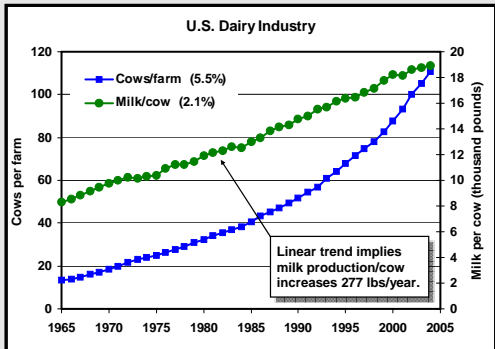
## National Trends – Cows & production



Cows ↓ and milk ↑ → Better genetics and/or management

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### National Trends – Productivity & farm size



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### National Trends – Productivity vs. farm size...



- Production/cow and cows/farm are positively related, but which is causing which (if either)?
- Are highly productive (profitable) farms increasing their size?
- Are large farms adopting technologies that allow them to be more productive?

Both, but likely technology driven (EOS).

50

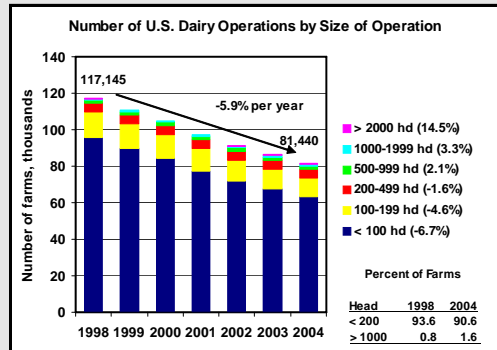
### Average numbers...



- Averages can be deceiving, or at the very least, not tell the whole picture.
- Often it is useful to look at distributions to see what might be driving averages.

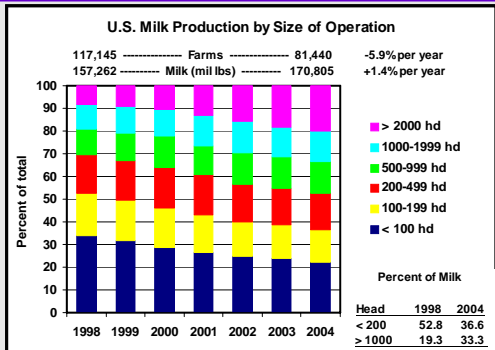
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### National Trends – Operations by farm size



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### National Trends – Production by farm size



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### Farms, cows, and production summary...



- Fewer herds
- Cow numbers declining to flat
- Larger herds
- More total milk
- Higher milk production per cow

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## Regional Trends – What's happening where?



### Definitions of regions:

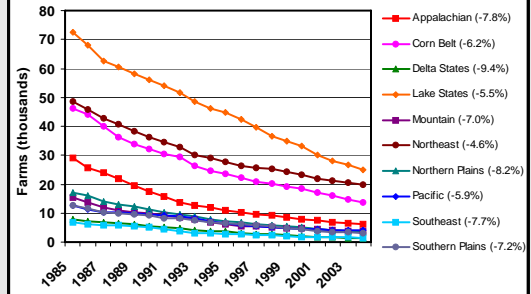
- Northeast – ME, NH, VT, MA, RI, CT, NY, NJ, PA, DE, MD
- Lake States – MI, WI, MN
- Corn Belt – OH, IN, IL, IA, MO
- Northern Plains – ND, SD, NE, KS
- Appalachian – VA, WV, NC, KY, TN
- Southeast – SC, GA, FL, AL
- Delta States – MS, AR, LA
- Southern Plains – OK, TX
- Mountain – MT, ID, WY, CO, NM, AZ, UT, NV
- Pacific – WA, OR, CA, AK, HI

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## Regional Trends – Farms



### Dairy Operations

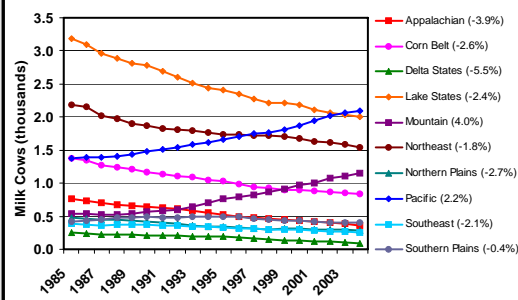


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## Regional Trends – Cows



### Total Milk Cows

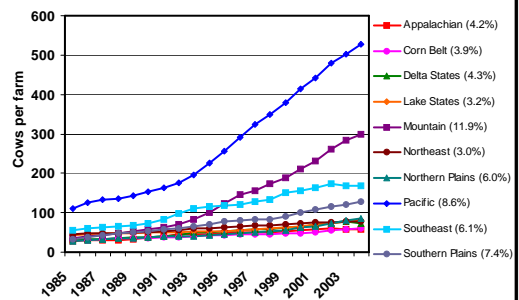


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## Regional Trends – Farm size



### Average Farm Size

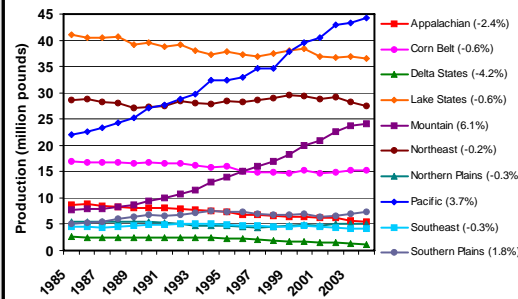


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## Regional Trends – Production



### Total Milk Production

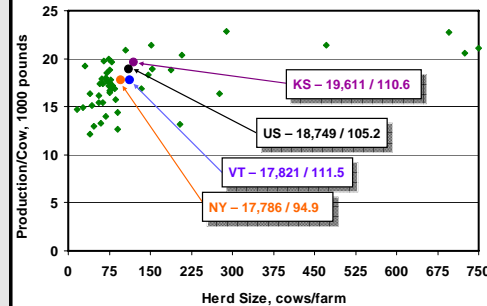


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## Productivity vs. Farm Size ...



### 2004 State Averages: Productivity vs. Herd Size



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## Regional Trends – Production



### Top 10 Milk Production, 2004 (million lbs)

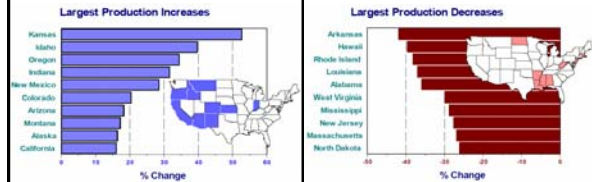
State Rankings of Milk Production						
Rank	2004		1994		1984	
1	CA	36,465	CA	25,234	WI	23,501
2	WI	22,085	WI	22,412	CA	15,292
3	NY	11,650	NY	11,400	NY	11,443
4	PA	10,062	PA	10,230	MN	10,331
5	ID	9,093	MN	9,342	PA	9,423
6	MN	8,102	TX	6,225	MI	5,350
7	NM	6,710	MI	5,545	OH	4,650
8	MI	6,315	WA	5,203	TX	3,848
9	TX	6,009	OH	4,513	IA	3,805
10	WA	5,416	IA	3,960	WA	3,468

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## Regional Trends – Production



January - June Milk Production: 2005 vs 2000  
U.S. Average = +3.56%



Source: Milk Market Administrator – Central Order, Market Service Bulletin, July, 2005.

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## Regional Trends – Productivity



### Top 10 Milk per Cow, 2004 (lbs)

State Rankings of Milk/Cow						
Rank	2004		1994		1984	
1	WA	22,852	CA	20,203	WA	16,206
2	AZ	22,788	NM	20,152	NM	15,719
3	ID	21,446	WA	19,935	CA	15,636
4	CO	21,412	AZ	19,578	AZ	14,723
5	CA	21,139	CO	19,173	OR	13,653
6	MI	20,842	NV	18,356	MI	13,579
7	NM	20,583	ID	18,048	ID	13,273
8	NV	20,360	AK	18,000	NV	13,202
9	IA	19,912	OR	17,140	DE	13,150
10	IN	19,747	MI	16,905	PA	12,926

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## Regional Trends – Productivity



### 2005 First Half Milk Production Per Cow Ranking Top Ten States Highlighted



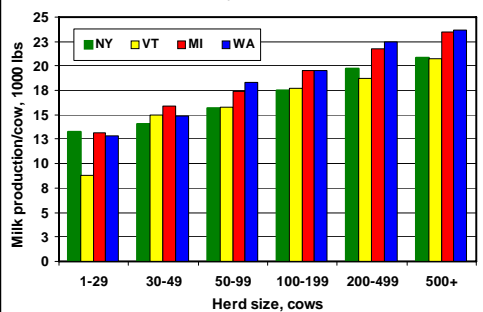
Source: Milk Market Administrator – Central Order, Market Service Bulletin, July, 2005.

64

## Regional Trends – Production by farm size



Milk Production by Herd Size, 2000-2004



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## Regional trends summary...



- Number of operations are declining in all regions
- Cow numbers and milk production are steady to down everywhere except the west
- Production is moving to the west
- Western states appear to have a production per cow advantage

66

## What is behind these trends?



### Climate, soil, land, water...

- Dry climates
  - Easier to manage manure
  - Can build drylot dairies
  - Irrigated forage production
- Cow performance
  - Easier to produce milk (heat, cold, humidity)
- Large tracts of land
- Water resources will determine how many cows we can locate in the west

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## What is behind these trends?



### “Culture” of dairies – East vs. West...

- East
  - Family life
  - Grow own forage
  - Expansion => need crop land
- West
  - Larger operations to serve population ↑
  - Early adoption of bulk tanks
  - Purchase forage

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## What is behind these trends?



### Changes required...

- Decline in milk production in traditional areas
  - Facilities that need to be updated
  - Employee issues (availability, manage, etc.)
  - Better opportunities for young people
  - Population density
  - Social acceptance to change

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## Factors behind regional trends



### Summary...

- Complex!
- Difference in management style
  - Large dairies established in the West
  - Constraint on expansion in the East
- Economies of scale
- Environmental concerns and regulations

70

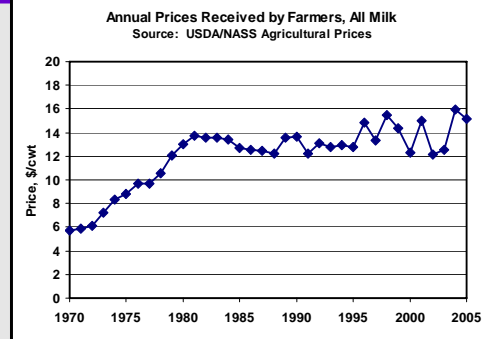
## Prices – Dairy industry is very “data rich”



- Many, many resources available ...
  - <http://www.ams.usda.gov/dairy/>
  - <http://www.dallasma.com/>
  - <http://fmcentral.com/>
  - <http://www.dfamilk.com/>
  - <http://www.aae.wisc.edu/future/>
  - <http://dairyoutlook.aers.psu.edu/>
  - <http://agebb.missouri.edu/dairy/index.htm>
  - Etc.

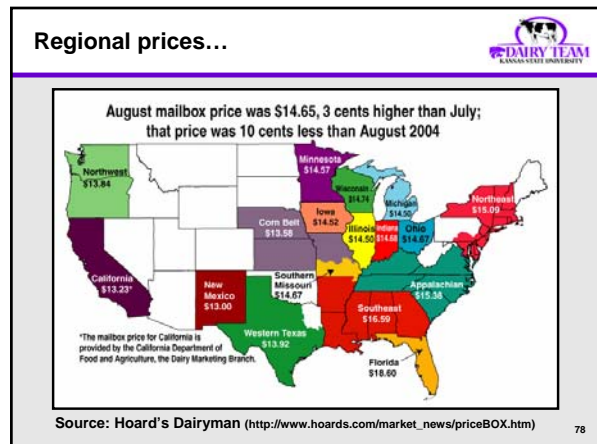
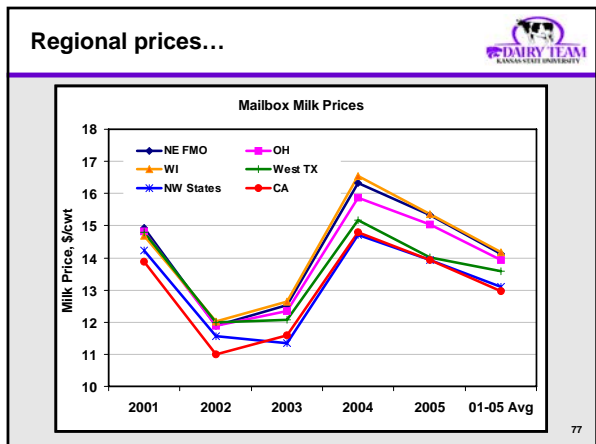
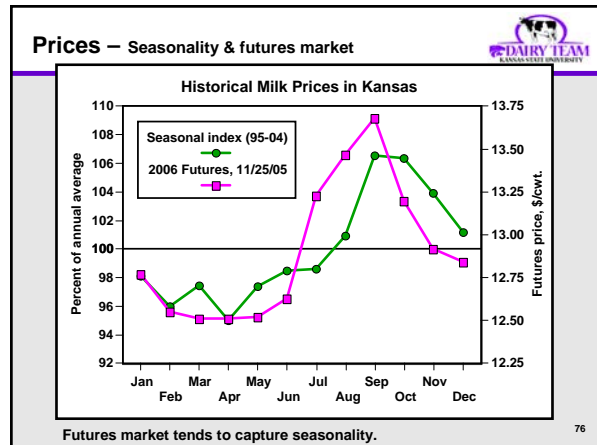
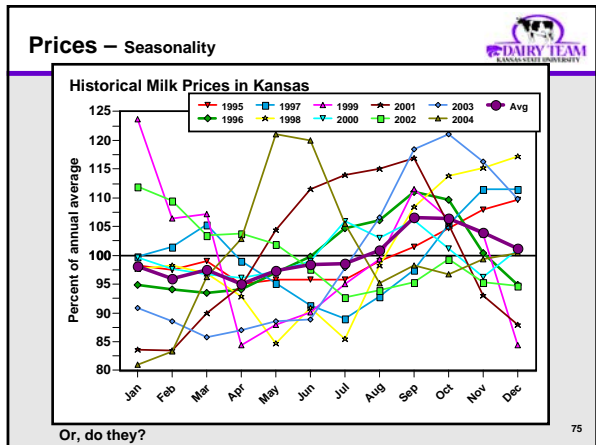
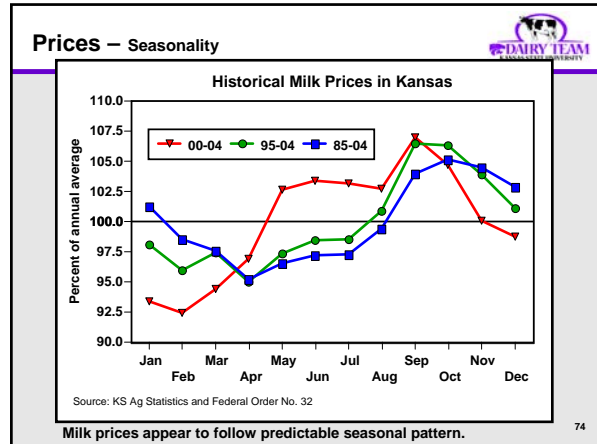
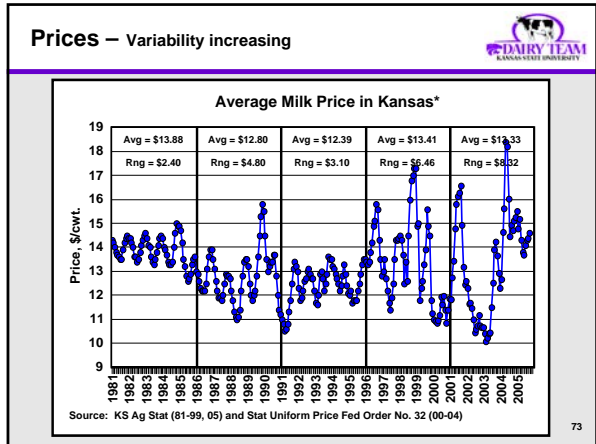
71

## Prices – Price levels constant for 25 years



2005 is not a complete year (Jan through Oct).

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## Prices summary...



- Average prices have changed very little in the last 25 years
- Price variability has increased significantly
  - MILC support payment not very helpful for large dairies
- Prices tend to follow seasonal pattern, but not a lot can be done about it
- Prices vary regionally – western states prices ~\$1-\$2/cwt lower than eastern states

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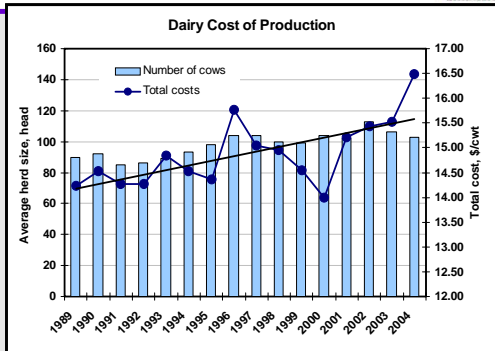
## Costs and Returns



- Issues to think about...
  - Regional differences
  - Actual vs. projected data
  - Factors affecting costs and returns
    - Facility type
    - Farm size (economies of size)
    - Production level

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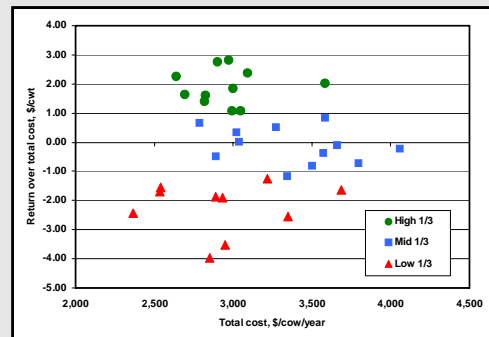
## Costs – Are costs increasing over time?



Source: Kansas Farm Management Enterprise Analysis

81

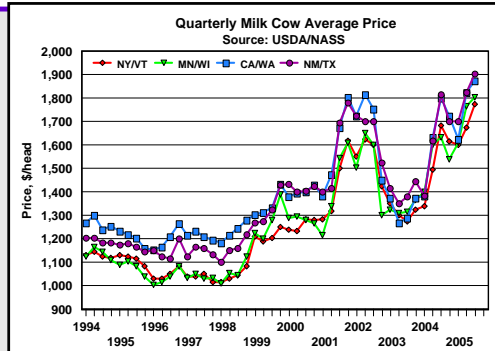
## Costs/cow – Little to no relationship with returns



Source: Kansas Farm Management Enterprise Analysis – 2000-2004 averages

82

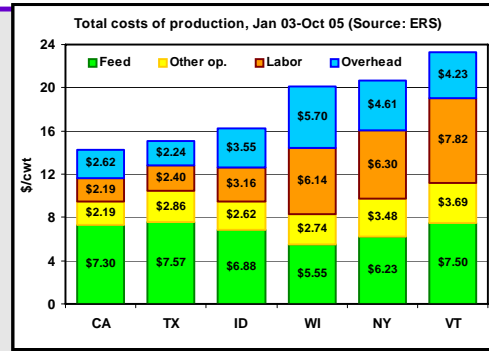
## Costs – Regional differences



Replacements are less expensive in "traditional" dairy states.

83

## Costs – Regional differences



"Traditional" dairy states are not competitive with labor and overhead.

84



## Factors impacting profitability...

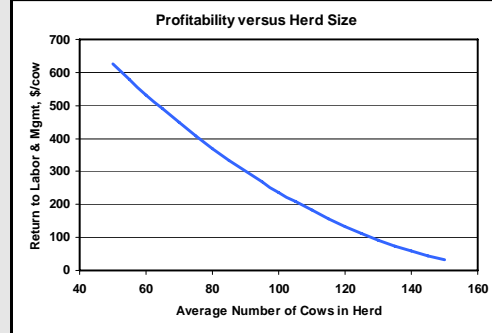


Variable	Coeff	Std Err	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-4745.824	2007.778	-2.364	0.025	-8858.58	-633.07
Milk production	0.143	0.030	4.692	0.000	0.08	0.21
Number of cows	-13.240	6.328	-2.092	0.046	-26.20	-0.28
Number of cows <sup>2</sup>	0.037	0.029	1.273	0.213	-0.02	0.10
Feed cost/cwt	-255.277	82.806	-3.083	0.005	-424.90	-85.66
Culling percent	-9.380	6.639	-1.413	0.169	-22.98	4.22
Lbs milk/lb grain&conc	13.943	97.761	0.143	0.888	-186.31	214.20
Milk price	349.396	87.113	4.011	0.000	170.95	527.84
Labor hours/cow	-14.071	4.355	-3.231	0.003	-22.99	-5.15
1996	510.66	152.342	3.352	0.002	198.60	822.72
1997	736.11	281.437	2.616	0.014	159.61	1312.61
1998	154.34	133.431	1.157	0.257	-118.98	427.66
1999	212.98	202.248	1.053	0.301	-201.31	627.27
2000	658.25	393.995	1.671	0.106	-148.81	1465.32
2001	113.83	154.488	0.737	0.467	-202.62	430.29
2002	658.10	353.139	1.864	0.073	-65.27	1381.47
2003	723.00	313.331	2.307	0.029	81.17	1364.83

Based on analysis of FINBIN data (University of Minnesota)

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## Profitability vs. farm size

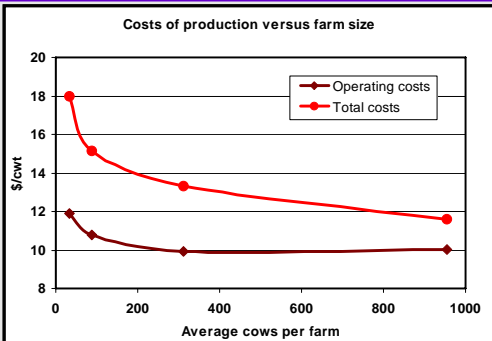


Based on analysis of FINBIN data (University of Minnesota)

92

Item	Small	Medium	Large	Very large	All farms
Value of production less total costs listed	(17.8)	-3.897	-1.01	1.38	6.74
	(13.4)	(12.5)	(148.5)	(15.4)	(49.5)

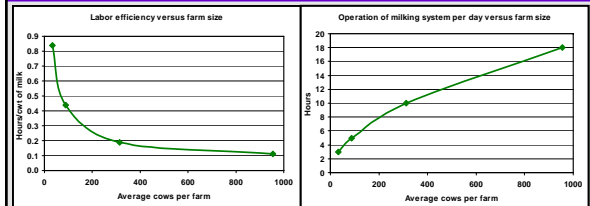
## Farm size effect...



Source: USDA ERS Statistical Bulletin Number 975-6, Feb 2004 (based on 2004 ARMS)

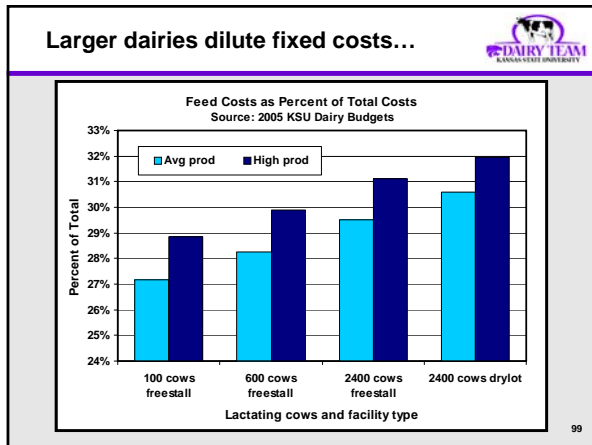
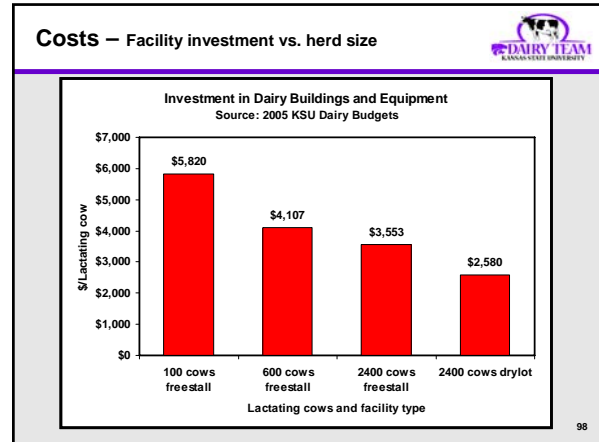
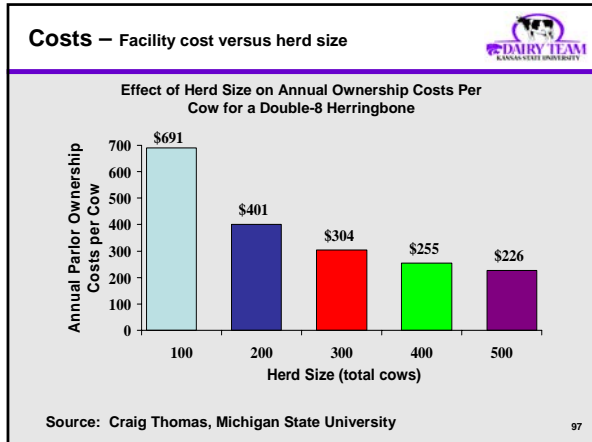
95

## Farm size effect...



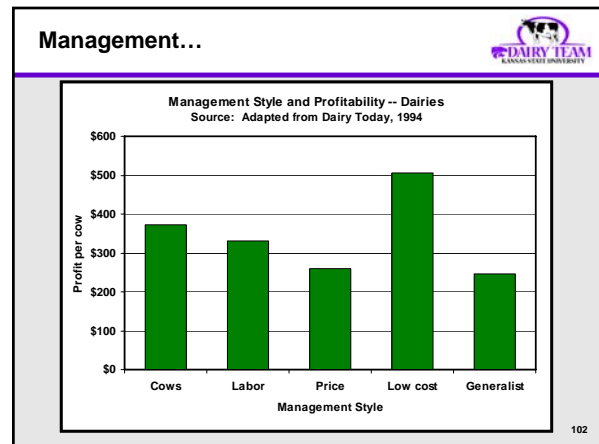
Source: USDA ERS Statistical Bulletin Number 975-6, Feb 2004 (based on 2004 ARMS)

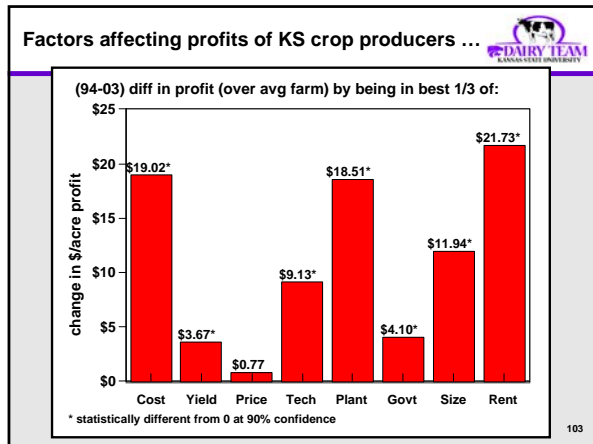
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- ### Costs summary...
- “Western” states appear to have a cost advantage over “traditional” states due primarily to lower labor and overhead costs
  - While data are somewhat conflicting, hard to argue that economies of size do not exist
  - As a general rule, minimizing fixed costs is done by maximizing cows and production per cow (i.e., dilute fixed costs)

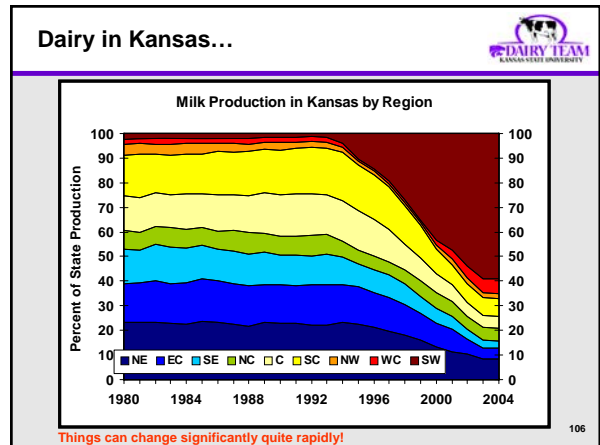
- ### Management –
- What should a dairy manager focus on?
- Production
  - Costs
  - Marketing





- ### Important economic principles...
- Average profits equal zero
  - Very difficult to “beat the market”
  - Risk-return trade-off
- What does this mean?**
- **Be a low cost (\$/unit) producer**
  - **Marketing efforts should focus on the things you can control (quality, quantity, etc.)**
  - **Early adopters of technology realize profits in the short run**

- ### Future...
- The dairy industry will change drastically
  - The trends will continue and may accelerate
    - Consolidation and structural change
    - Shifts in regional milk production
  - Change is always a challenge
  - Change can occur very rapidly



### Industry is changing...

... these trends increase the need for dairy managers to better understand the **relative strengths and weaknesses** of their businesses if they are going to be economically competitive in the future.

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kcd@ksu.edu

## Questions ?