



Best Western Ramkota
Sioux Falls, S.D.



Dairy Trends – What you should be planning for long-term



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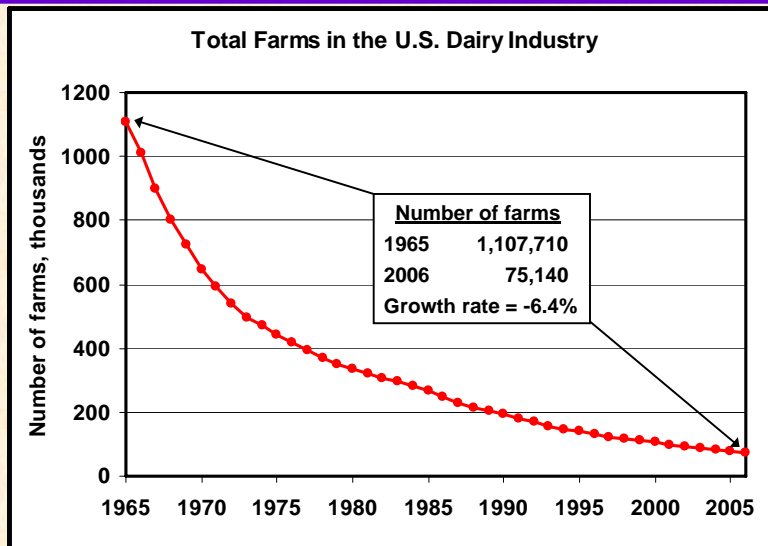
Outline



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

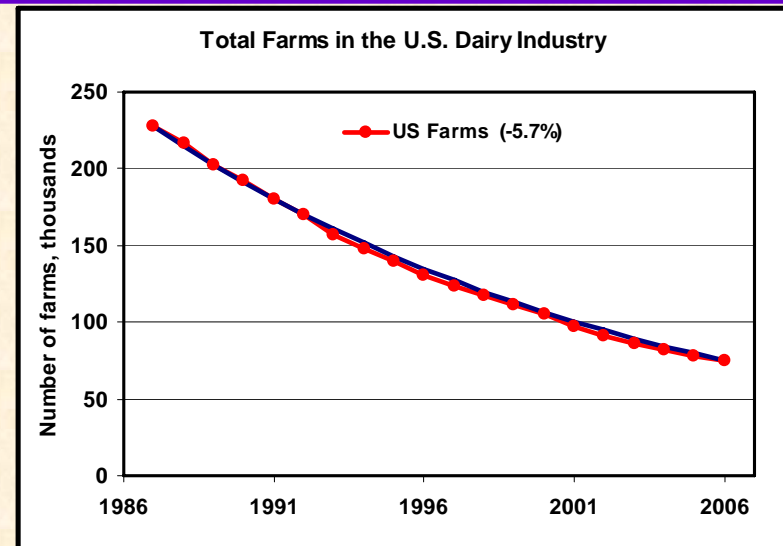


Dairies have been disappearing for 40+ years



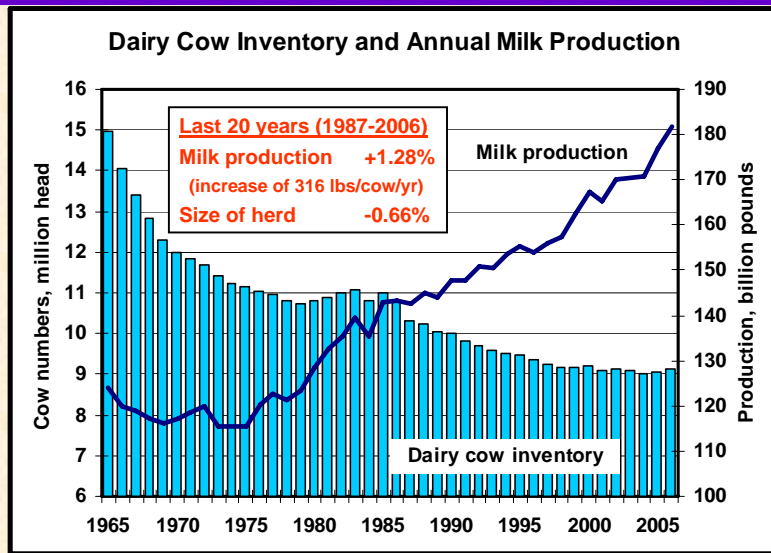
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Current rate of decline < in 60's and 70's



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A slightly different story for cows and milk



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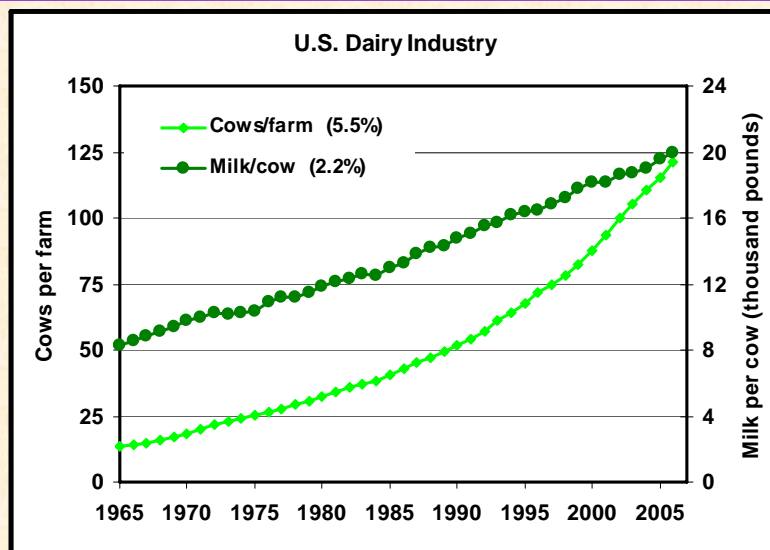
A quick review of the industry...



- Number of farms has been falling for as long as data have been reported
- Recent declines in farm numbers are slower than in the 60's and 70's, but still greater than 5% per year
- Cow inventory has stabilized in last decade after steadily falling from peak in mid 1940's → farm size is increasing
- Production per cow has been increasing allowing total milk produced to increase in spite of reducing number of farms and cows.

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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).

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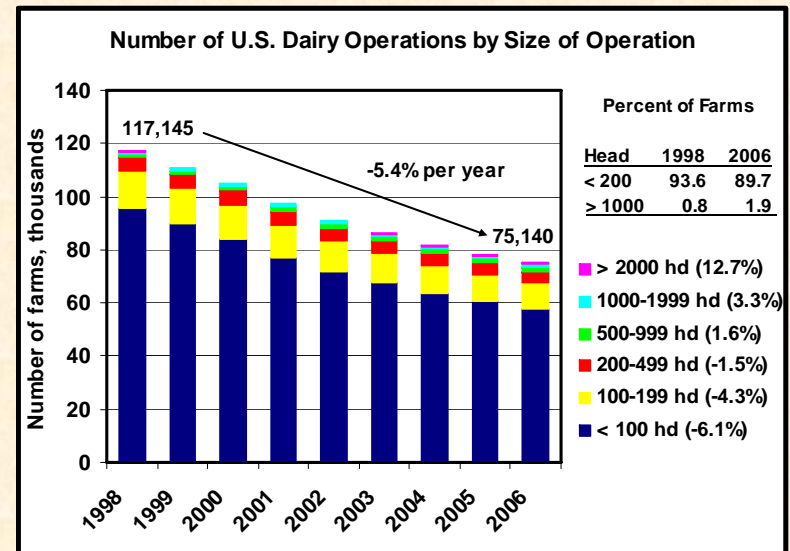
Average numbers...



- 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.

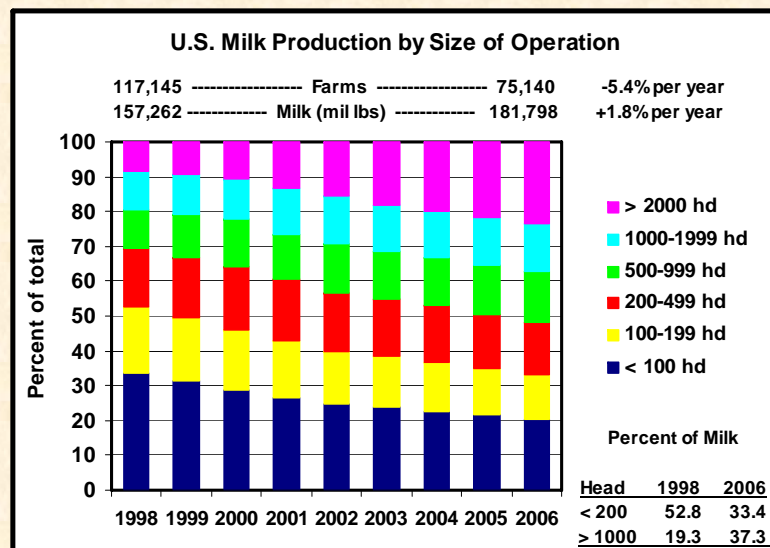
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National Trends – Operations by farm size



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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

Are you keeping up with these trends?

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Regional Trends – What's happening where?

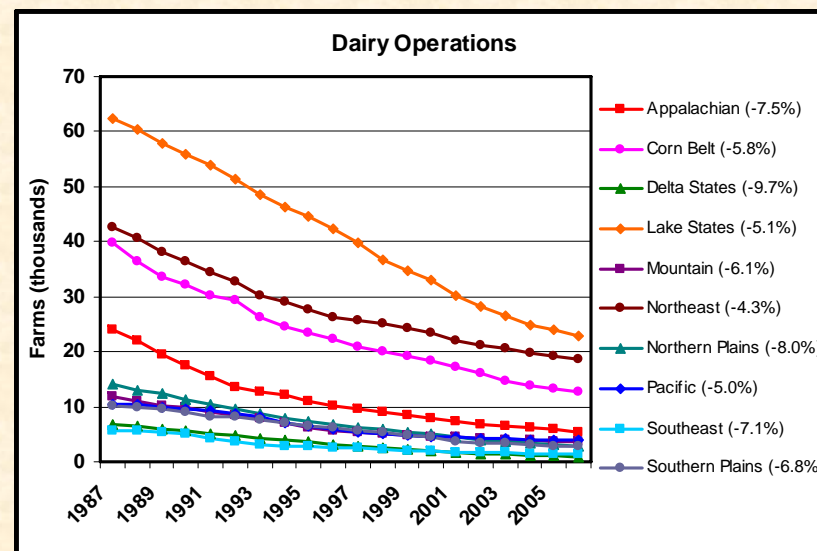


Definitions of regions:

- 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

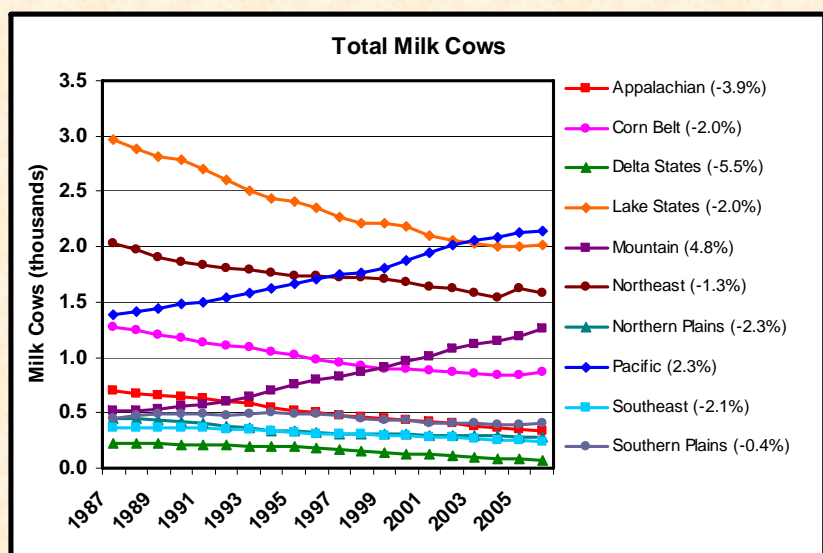
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Regional Trends – Farms



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Regional Trends – Cows



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Regional Trends – Production



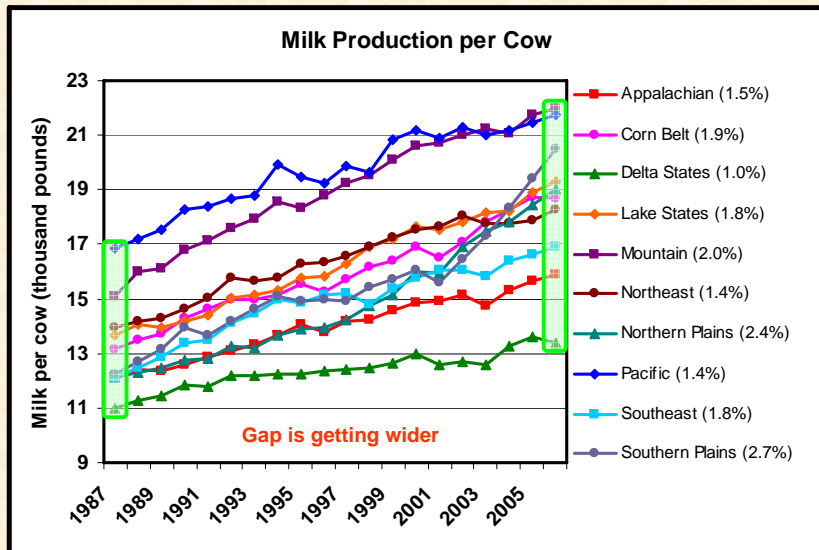
Top 10 Milk Production (million lbs)

State Rankings of Milk Production						
Rank		2006		1996		1986
1	CA	37,564	CA	25,848	WI	24,500
2	WI	22,866	WI	22,376	CA	17,222
3	NY	12,078	NY	11,510	NY	11,718
4	PA	10,503	PA	10,484	MN	10,614
5	ID	10,161	MN	9,440	PA	10,152
6	MN	8,195	TX	6,120	MI	5,404
7	NM	6,951	MI	5,430	OH	4,940
8	MI	6,750	WA	5,279	TX	4,045
9	TX	6,442	ID	4,735	IA	3,879
10	WA	5,608	OH	4,360	WA	3,762

Source: USDA NASS

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Regional Trends – Productivity



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Regional Trends – Productivity



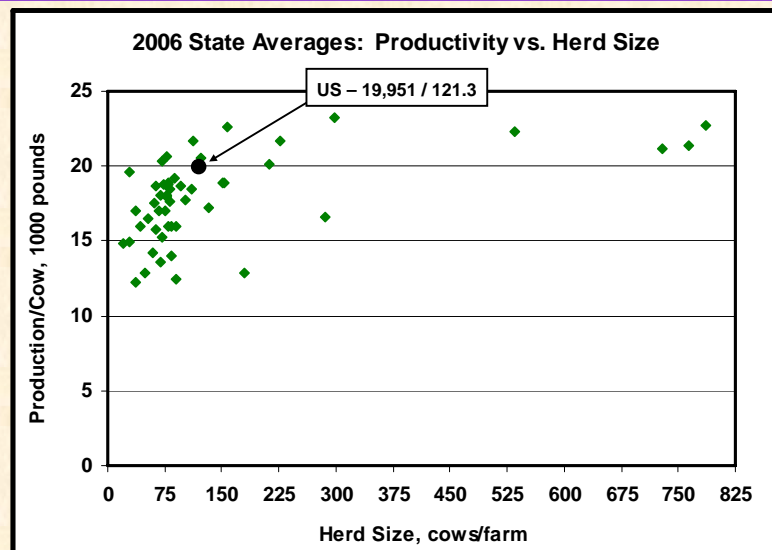
Top 10 Milk per Cow, pounds

State Rankings of Milk/Cow						
Rank		2006		1996	1986	
1	WA	23,270	WA	20,541	WA	17,579
2	AZ	22,679	AZ	20,446	NM	16,545
3	CO	22,577	CO	19,440	CA	16,095
4	ID	22,332	NM	19,246	AZ	15,907
5	NV	21,680	CA	19,161	OR	14,859
6	MI	21,635	NV	18,800	CO	14,850
7	CA	21,404	ID	18,496	DE	14,600
8	NM	21,192	OR	17,290	ID	14,392
9	IA	20,641	UT	17,000	AK	14,318
10	KS	20,505	MI	16,969	MI	14,259

Source: USDA NASS

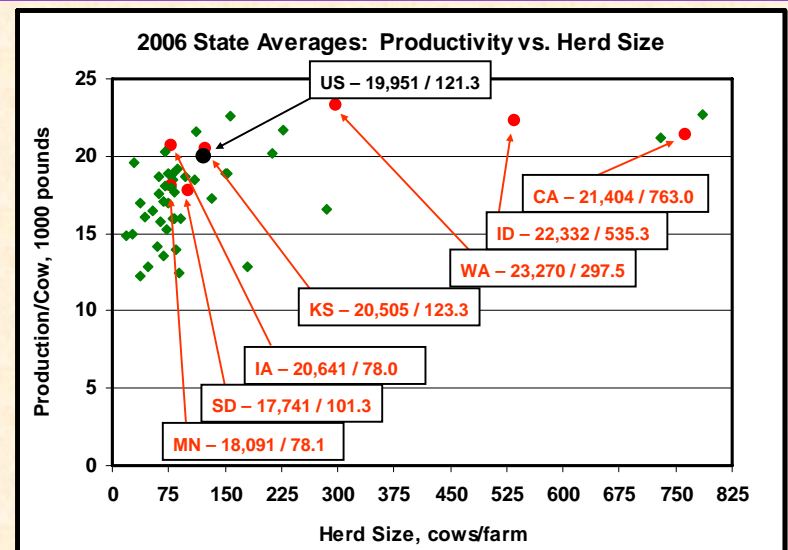
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Productivity vs. Farm Size ...



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Productivity vs. Farm Size ...



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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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Factors behind trends



Summary...

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

How “geographical” are these factors?

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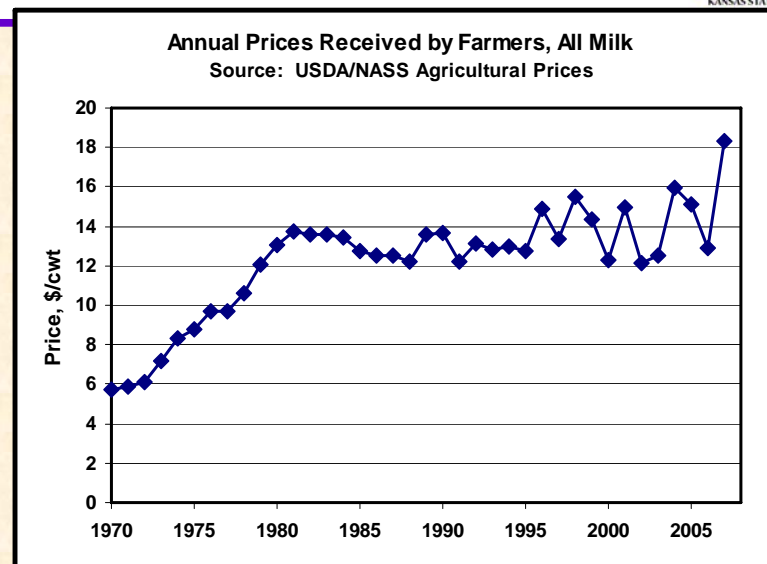
Prices – Dairy industry is very “data rich”



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

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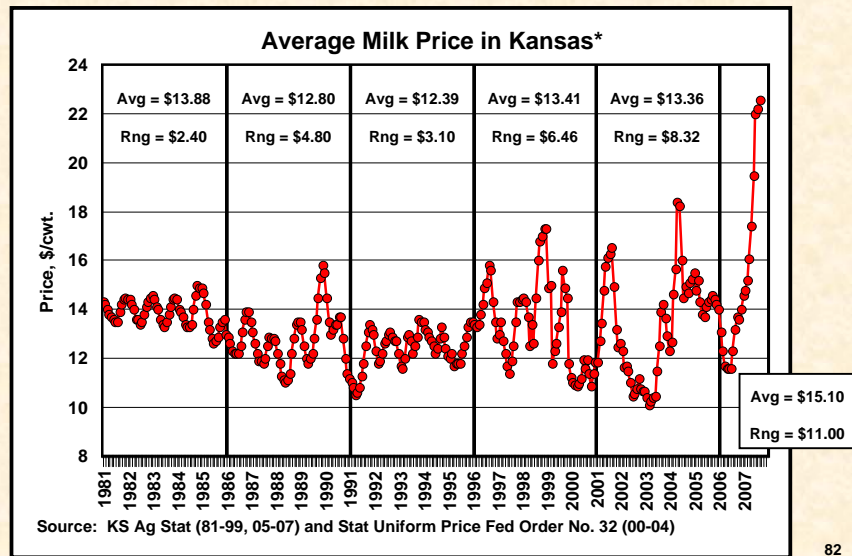
Prices – Price levels relatively constant for 25 years



2007 is not a complete year (Jan through Sep).

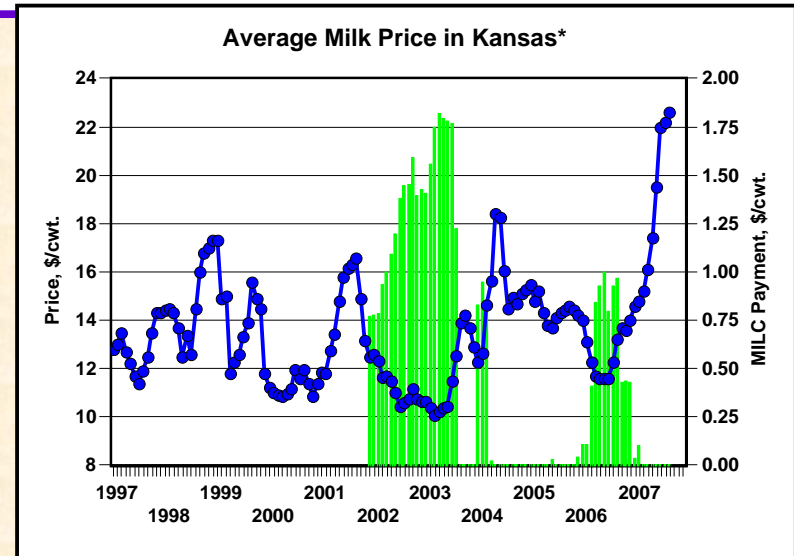
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Prices – Variability is increasing!



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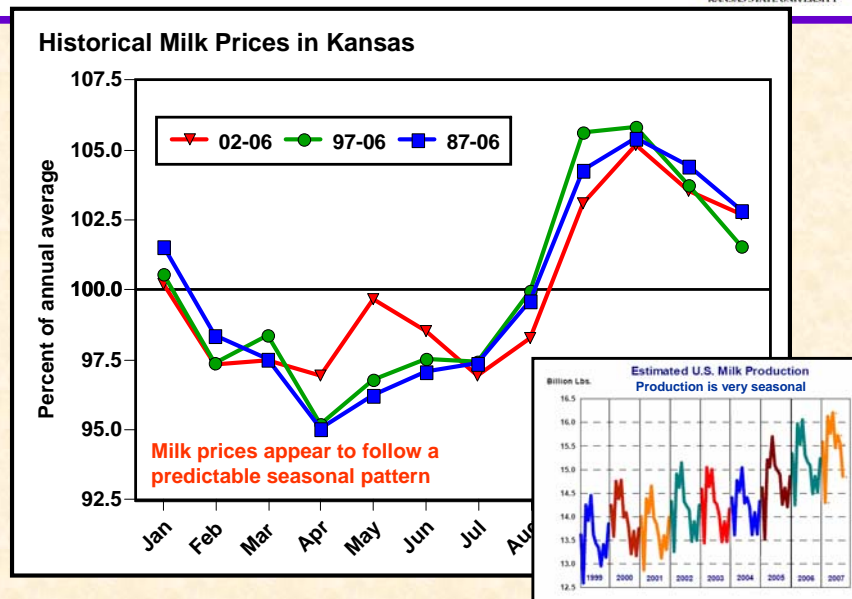
Prices – Milk Income Loss Contract program



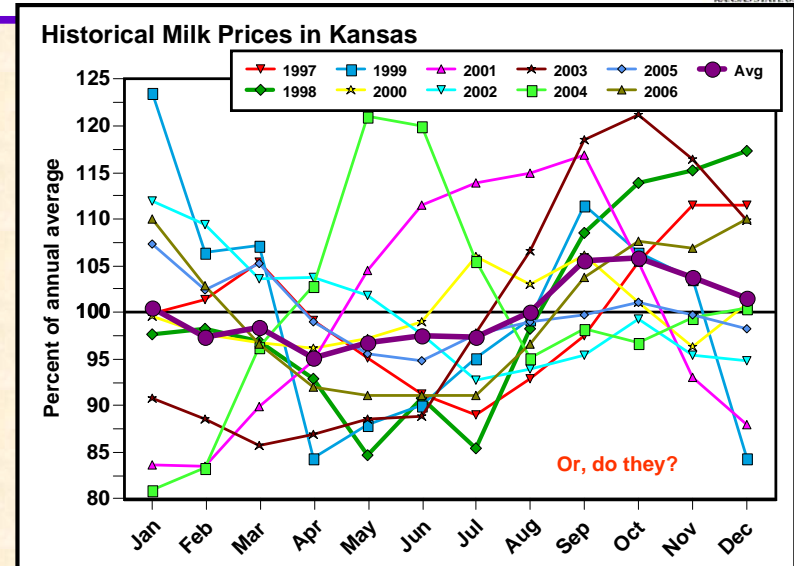
MILC payments help offset risk somewhat, but little benefit to large dairies due to limit.

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Prices – Seasonality

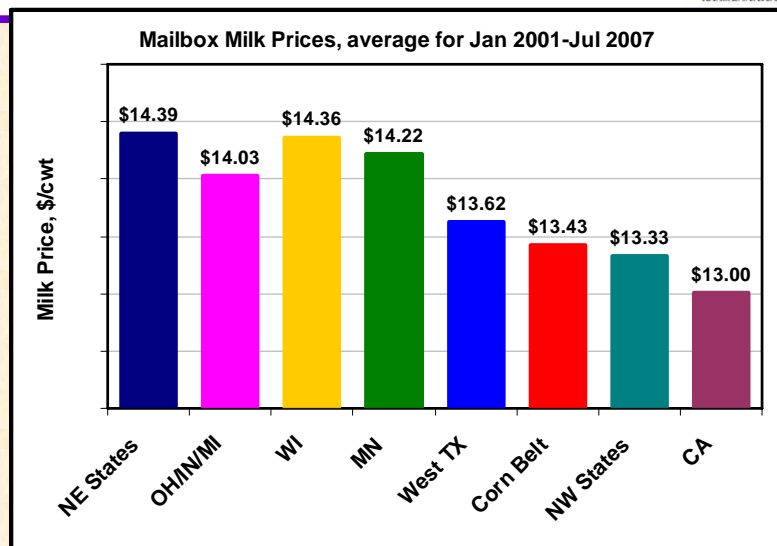


Prices – Seasonality



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Regional prices...



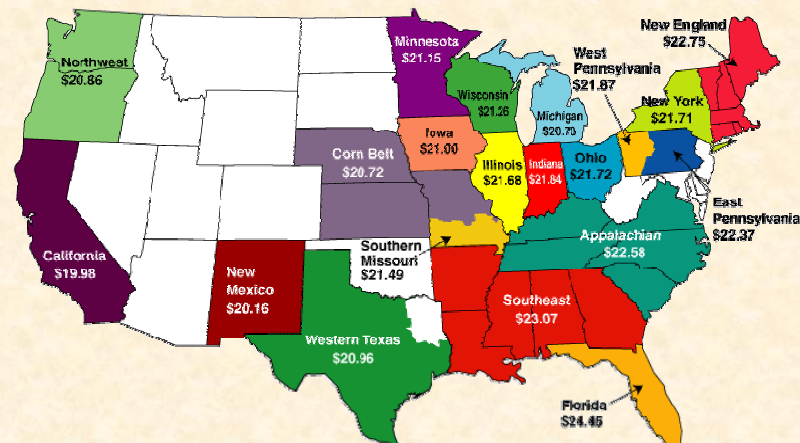
Source: USDA AMS Dairy Market News

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Regional prices...



July mailbox price was \$21.49, \$1.69 more than June;
that price was \$9.83 higher than July 2006



Source: Hoard's Dairyman (http://www.hoards.com/market_news/priceBOX.htm)

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Prices summary...



- Average prices have changed very little in the last 25 years – is that about to change?
- 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 (i.e., pattern is not particularly predictable)
- Prices vary regionally – western states prices ~\$1-\$1.50/cwt lower than eastern states

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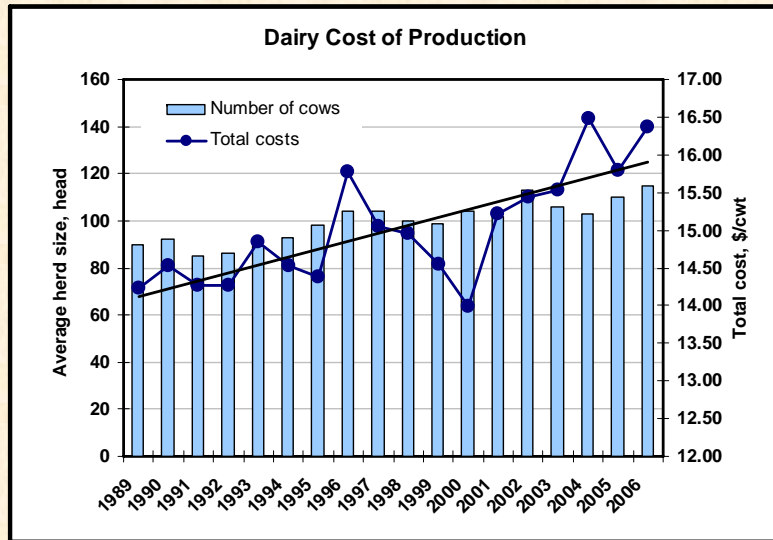
Costs and Returns...



- Do high prices equate to high profitability?
- Cost and return 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

ERS website with monthly projected costs of production for 23 different states...

Effects of Government Programs on Costs and Returns

Estimates including the effects of Government programs on commodity costs and returns were reported for selected commodities in various years from 1988 through 1995. These estimates were discontinued in 1996 due to changes in the farm program that eliminated income support payments tied to commodity prices in favor of flexibility contract payments.

Commodity: Corn, Cotton, Rice, Grain sorghum
Region: U.S., Northeast, North Central, Great Plains

Monthly Milk Costs of Production

Methods of estimating the monthly milk costs of production (COP) in each State use the most recent annual estimate as the baseline, along with indexes that reflect price and production differences between months and the baseline.

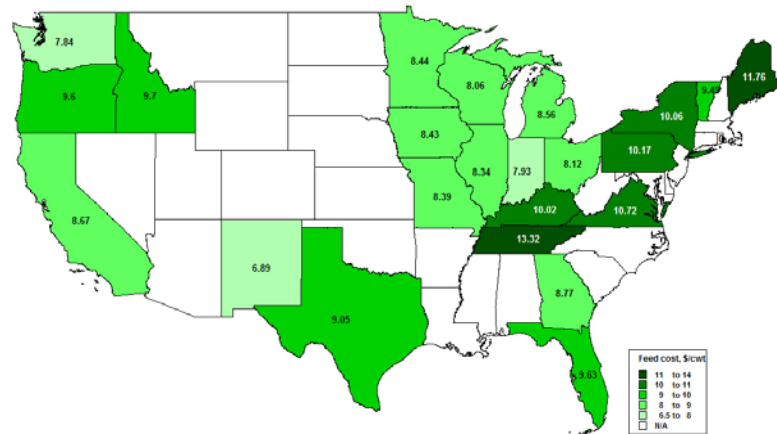
State: California, Florida, Georgia, Idaho

For more information, contact: William McBride
Web administration: webadmin@ers.usda.gov
Updated date: October 30, 2007

Regional Costs – Feed costs (\$/cwt)



Over \$6/cwt difference in feed costs between states, Corn Belt states tend to have lowest feed cost (NM and WA are exceptions).

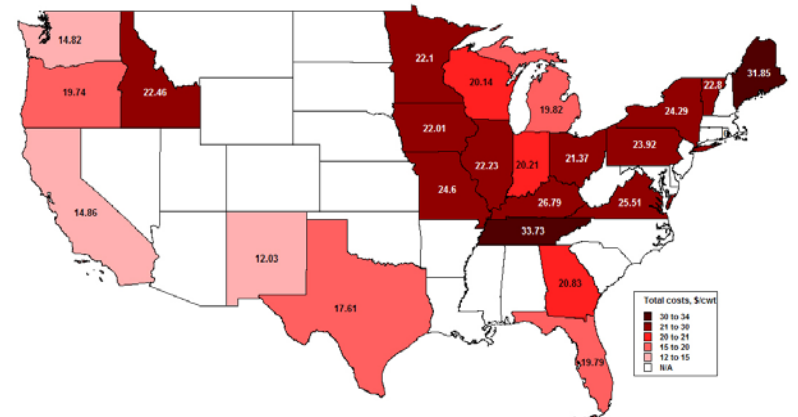


Source: ERS, Jan 06-Sep 07 average and KSU

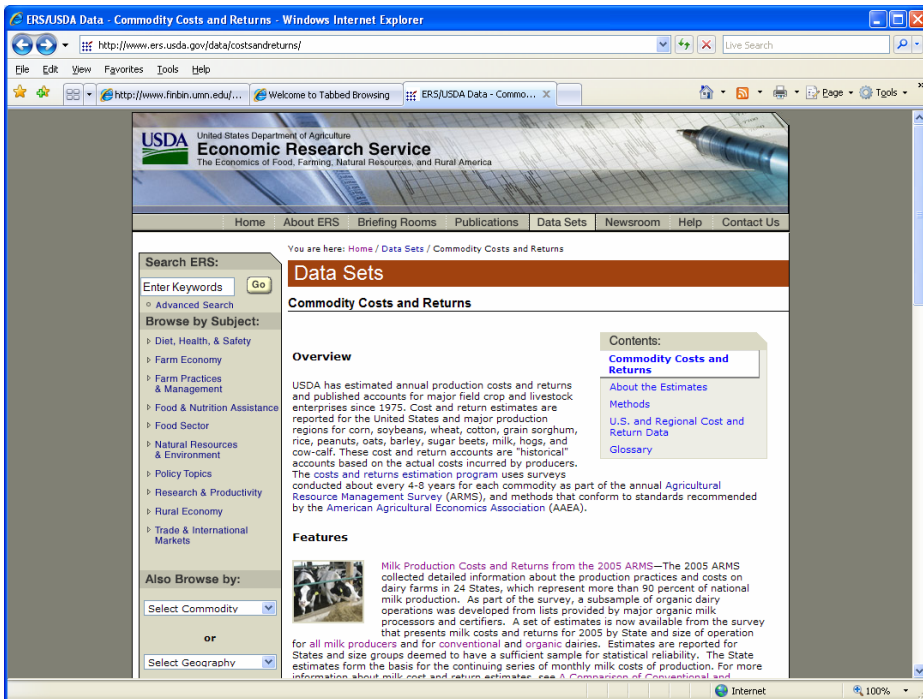
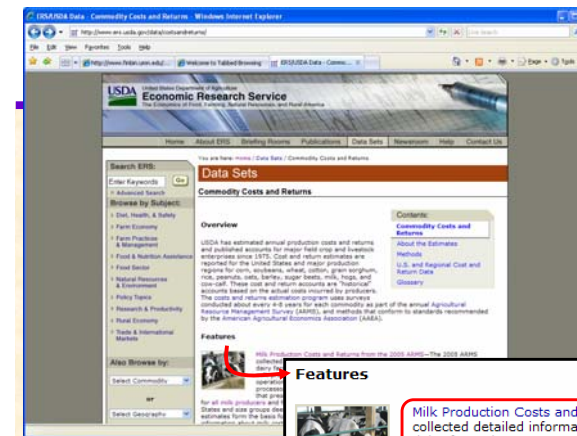
Regional Costs – Total costs (\$/cwt)



Over \$20/cwt difference between states -- driven primarily by differences in labor and overhead costs due to farm size.



Source: ERS, Jan 06-Sep 07 average and KSU

Features

Milk Production Costs and Returns from the 2005 ARMS—The 2005 ARMS collected detailed information about the production practices and costs on dairy farms in 24 States, which represent more than 90 percent of national milk production. As part of the survey, a subsample of organic dairy operations was developed from lists provided by major organic milk processors and certifiers. A set of estimates is now available from the survey that presents milk costs and returns for 2005 by State and size of operation for all milk producers and for conventional and organic dairies. Estimates are reported for States and size groups deemed to have a sufficient sample for statistical reliability. The State estimates form the basis for the continuing series of monthly milk costs of production. For more information about milk cost and return estimates, see [A Comparison of Conventional and Organic Milk Production Systems in the U.S.](#)

Monthly Milk Cost of Production Estimates—Congress included language in USDA's FY 2003 appropriation that strongly urged USDA to make available monthly milk costs of production (COP) in various areas of the United States. To comply with this request, ERS reports monthly milk COP by State, where sufficient data support a State estimate. Estimates are available starting from January 2003.



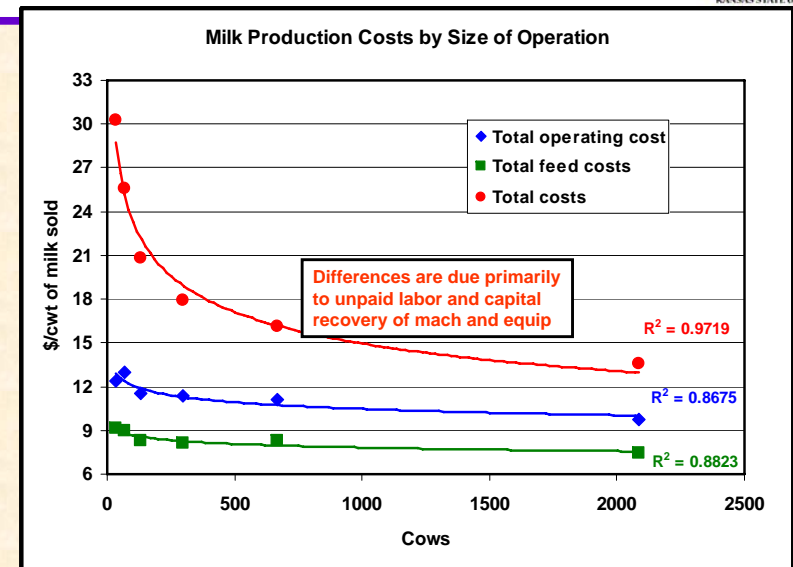
Costs and returns by size of operation



Milk production costs and returns per hundredweight (cwt) sold, by size of operation, 2005 1/							
Item	Fewer than 50 cows	50-99 cows	100-199 cows	200-499 cows	500-999 cows	1,000 cows or more	All farms
Dollars per cwt sold							
Gross value of production:							
Milk sold	15.52	15.58	15.33	15.69	15.14	14.76	15.23
Cattle	1.90	1.52	1.38	1.10	0.98	1.33	1.30
Other income 2/	0.60	0.55	0.52	0.50	0.48	0.47	0.50
Total, gross value of production	18.02	17.65	17.23	17.29	16.60	16.56	17.03
Operating costs:							
Total, feed costs	9.12	9.01	8.30	8.14	8.26	7.48	8.14
Total, operating cost	12.42	13.00	11.52	11.34	11.10	9.76	11.10
Allocated overhead:							
Hired labor	0.51	0.81	1.34	1.84	1.80	1.62	1.47
Opportunity cost of unpaid labor	10.66	6.11	3.13	1.34	0.54	0.17	2.30
Capital recovery of machinery and equipment 4/	5.27	4.58	3.89	2.55	2.03	1.66	2.83
Total, allocated overhead	17.87	12.61	9.31	6.61	5.00	3.86	7.36
Total costs listed	30.29	25.61	20.83	17.95	16.10	13.62	18.46
Supporting information:							
Milk cows (head per farm)	35	69	133	295	666	2,086	155
Output per cow (pounds)	14,976	17,075	18,185	19,455	20,707	20,191	18,951
Milking frequency more than twice per day (% of farms)	0.20	3.58	6.25	23.25	44.24	43.24	7.02
Milk cows injected with bST (head per farm)	0	5	16	56	140	412	24
Organic milk sold (percent of sales)	1.85	1.29	0.42	0.54	0.38	0.26	0.59

1/ Developed from the 2005 Agricultural Resource Management Survey of dairy operations.

Costs and returns by size of operation



Source: ERS, 2005 ARMS

Microsoft Excel - MilkAll.xls

Milk production costs and returns per hundredweight (cwt) sold, by State, 2005 1/

Item	California	Florida	Georgia	Idaho	Illinois	Indiana	Iowa	Kentucky	Maine	Michigan
Gross value of production:										
Milk sold	13.99	18.00	16.94	14.82	15.39	15.48	15.13	15.41	17.71	15
Cattle	1.15	1.09	0.95	1.29	1.25	1.36	1.14	1.98	1.00	1
Other income 2/	0.50	0.56	0.48	0.46	0.84	0.61	0.39	0.54	0.54	0
Total, gross value of production	15.64	19.64	18.37	16.57	17.48	17.35	16.66	17.93	19.25	12
Operating costs:										
Total, feed costs	8.17	9.06	7.59	8.94	7.59	7.29	7.58	9.29	10.35	7
Total, operating cost	10.25	12.42	11.06	11.98	11.24	10.98	10.83	11.86	13.88	11
Allocated overhead:										
Hired labor	1.41	3.05	2.19	1.53	1.31	1.22	1.13	0.96	2.98	1
Opportunity cost of unpaid labor	0.39	0.42	1.56	3.17	3.59	2.92	3.11	5.79	5.80	1
Capital recovery of machinery and equipment 4/	1.74	2.21	3.11	3.50	3.07	3.20	4.35	6.34	5.18	3
Total, allocated overhead	3.51	6.42	7.42	8.98	9.59	8.09	9.63	14.00	15.54	2
Total costs listed	14.16	18.84	18.48	20.96	20.83	19.07	20.46	25.86	29.42	18
Value of production less total costs listed	1.48	0.80	-0.11	-4.39	-3.35	-1.72	-3.80	-7.93	-10.17	-6
Value of production less operating costs	5.39	7.22	7.31	4.59	6.24	6.37	5.83	6.07	5.37	0
Supporting information:										
Milk cows (head per farm)	980	1,012	272	134	126	130	104	77	89	1
Output per cow (pounds)	19,973	17,572	17,294	17,989	18,362	17,750	18,403	13,534	18,152	20
Milking frequency more than twice per day (% of farms)	9.15	38.16	8.80	1.26	2.07	4.49	1.30	0.72	2.15	20
Milk cows injected with bST (head per farm)	84	167	58	10	17	45	23	2	6	6
Organic milk sold (percent of sales)	0.32	0.00	0.00	1.88	0.13	0.05	0	7.49	0	0

1/ Developed from the 2005 Agricultural Resource Management Survey of dairy operations. The sample of dairies included farms in the States shown plus Arizona.
 2/ Income from renting or leasing dairy stock to other operations, renting space to other dairy operations, co-op patronage dividends associated with the dairy, assessment rebates, refunds, and other dairy-related resources, and the fertilizer value of manure production.
 3/ Costs for most partly organic certification.
 4/ Machinery and equipment and housing, manure handling, and feed storage structures, and dairy breeding herd.
 Notes: Coefficients of variation (CVs) were checked for the category totals: gross value of production, and feed, operating, allocated overhead, and total costs.

Production factors impacting profitability...



Return over Total Costs

SUMMARY OUTPUT

Regression Statistics

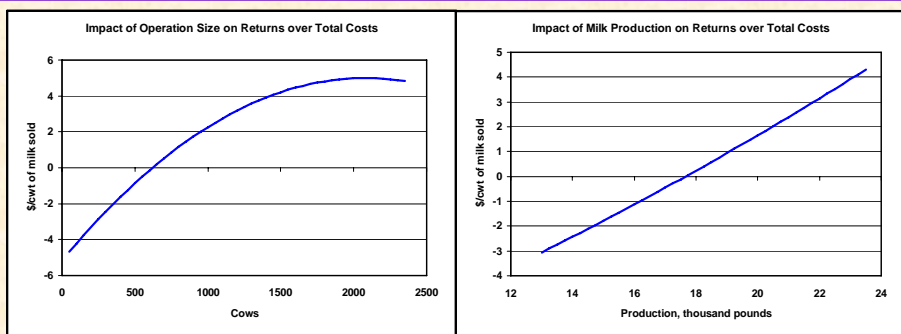
Multiple R	0.8696
R Square	0.7562
Adjusted R Square	0.6647
Standard Error	2.1052
Observations	23

Much of the variability in profits across the 23 states is explained by only production variables in the model.

	Coefficients	Std Err	t Stat	P-value	Lower 95%	Upper 95%
Intercept	-13.576511	4.7026	-2.8870	0.0107	-23.5456	-3.6074
Milk cows	0.009783	0.0037	2.6411	0.0178	0.0019	0.0176
Milk cows ²	-0.000002	0.0000	-1.6469	0.1191	0.0000	0.0000
Production	0.415647	0.2988	1.3911	0.1832	-0.2177	1.0490
% >2X	0.007798	0.0736	0.1059	0.9170	-0.1483	0.1639
% bST	0.072208	0.0682	1.0583	0.3056	-0.0724	0.2169
% organic	-0.284280	0.2895	-0.9821	0.3407	-0.8979	0.3293

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Farm size and production effects...

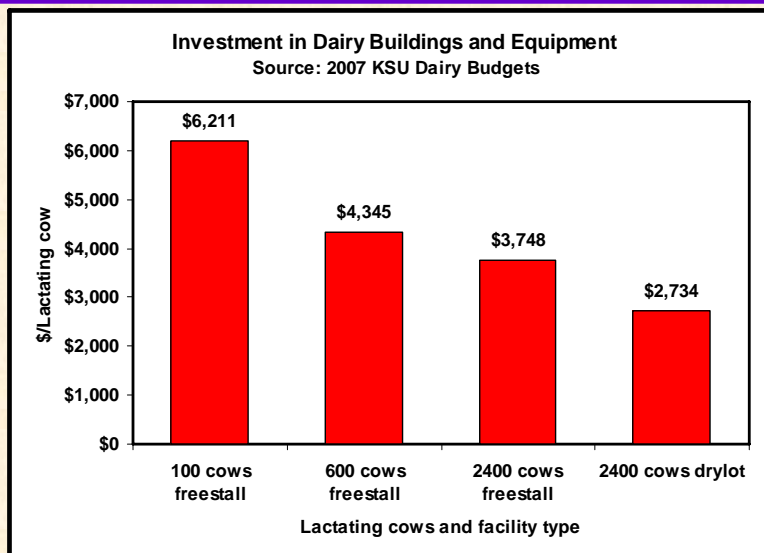


Source: ERS 2005 ARMS and KSU

Based on this analysis (one year of data only from 23 states), economies of size exist up to about 200 cows. Likewise, returns increase as production increases but this variable is less significant statistically (i.e., p-value 0.18). It is important to recognize that this is based on only one year of data (2005) and thus is conditional upon prevailing costs and milk prices at that time.

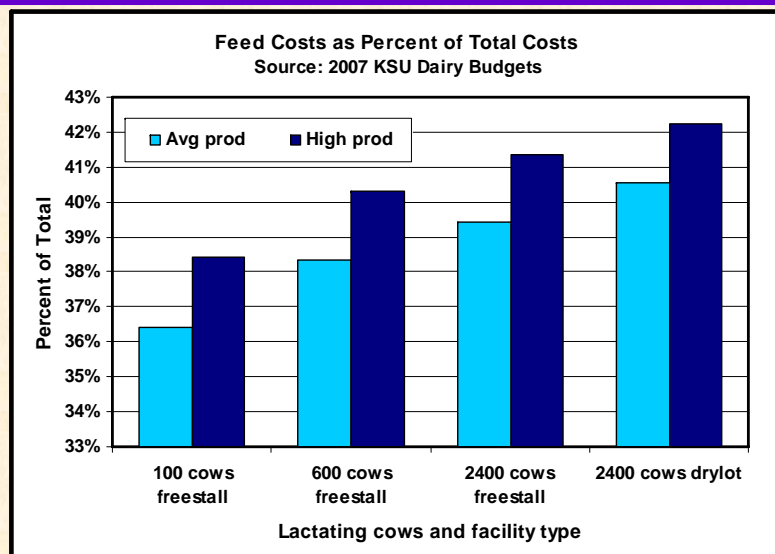
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Costs – Facility investment vs. herd size



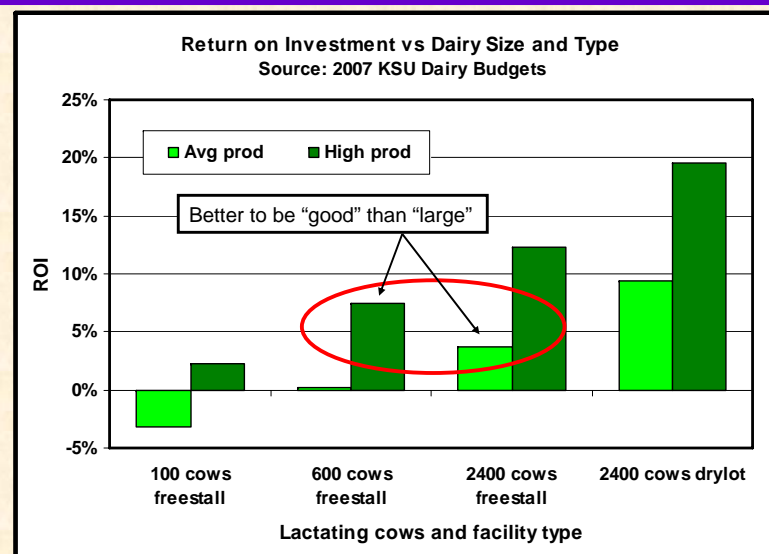
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Larger dairies and higher production levels dilute fixed costs...



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Production more important than size...



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Returns – Production vs. investment



Freestall Dairy (2400 lactating cows)

Sensitivity of Return on Assets to Production and Investment					
Production level (lbs/cow)	Investment per cow*				
	\$3,175	\$3,675	\$4,175	\$4,675	\$5,175
23,000	10.0%	8.3%	6.8%	5.6%	4.5%
24,000	12.2%	10.3%	8.7%	7.3%	6.1%
25,000	14.4%	12.3%	10.6%	9.1%	7.8%
26,000	16.6%	14.3%	12.4%	10.8%	9.4%
27,000	18.8%	16.4%	14.3%	12.5%	11.0%

* Investment per cow in herd equals investment per lactating cow divided by 1.18.
** Costs vary by production level due to varying feed and hauling and promotion costs

Source: 2007 KSU Dairy Budgets

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Costs and returns summary...



- “Western” states appear to have a cost advantage over “traditional” states due primarily to lower labor and overhead costs
- Economies of size have big impact on profitability and future of the dairy industry
- As a general rule, minimizing fixed costs is done by maximizing cows and production per cow (i.e., dilute fixed costs)
- Geographical location and dairy size are important, but management is more important

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Management –

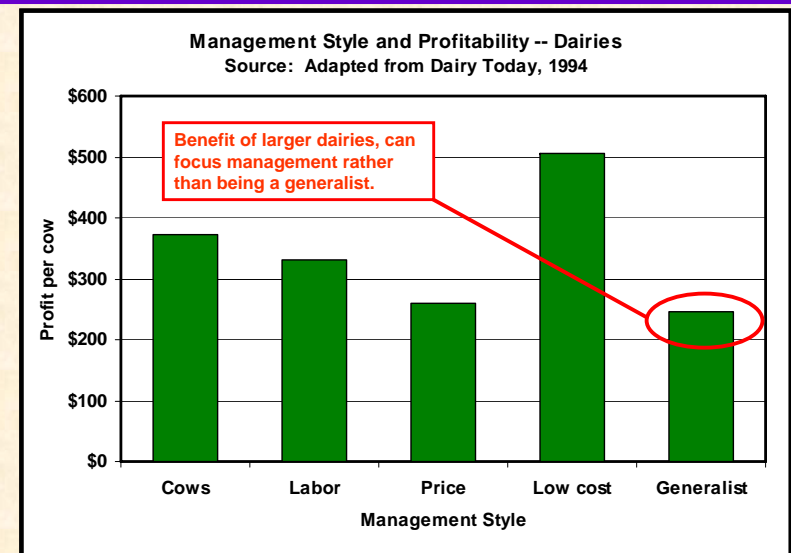


What should a dairy manager focus on?

- Production
- Costs
- Marketing

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Management...



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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

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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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www.agmanager.info

Questions?

2007 Insurance Workshop
November 8, 2007
Marriott City Center
Lincoln, Kansas

2007 Kansas Income Tax Institute
Click here for 2007 locations

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Site Updates

Grain Outlook Radio Program
November 2, 2007 by Mike Woolverton

Kansas Grain Price Differentials
November 1, 2007 by Daniel O'Brien

Updated Crop Basis Tool
November 1, 2007 by Kevin Dhuyvetter

In The Cattle Markets
October 29, 2007 by Jim MinterLLMIC

Livestock Outlook Radio Program
October 29, 2007 by Jim MinterLLMIC

KFMA Monthly Newsletter
October 26, 2007 by KFMA NE Economists (Althaus, Simons & Hennigan)

Current Grain Outlook Newsletter
October 26, 2007 by Mike Woolverton

Livestock and Hay Charts
October 19, 2007 by Jim Minter

Crop Basis Maps
October 18, 2007 by Kevin Dhuyvetter

KSU-Vegetative Buffer Excel Tool
October 15, 2007 by Craig Smith and Jeff Williams

KSU-Streambank Stabilization Excel Tool
October 15, 2007 by Craig Smith and Jeff Williams

KSU-Tillage Excel Tool
October 15, 2007 by Craig Smith, Kevin Dhuyvetter and Jeff Williams

World Grain Supply and Demand Estimates (WASDE)
October 12, 2007 by Jim Minter and Mike Woolverton

Seasonal Grain and Cattle Price Spreadsheets (Excel)
October 3, 2007 by Kevin Dhuyvetter

Futures-Based Price Forecasts for Diesel Fuel
October 2, 2007 by Kevin Dhuyvetter

Water Quality Indices and Net Returns for Crop

Done Internet 100%

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