

# Pasture Rental Rates and Cost>Returns for Cow/Calf Operations



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Department of Agricultural Economics  
Kansas State University  
2006-07 Winter Meetings



## Pasture Rental Rates

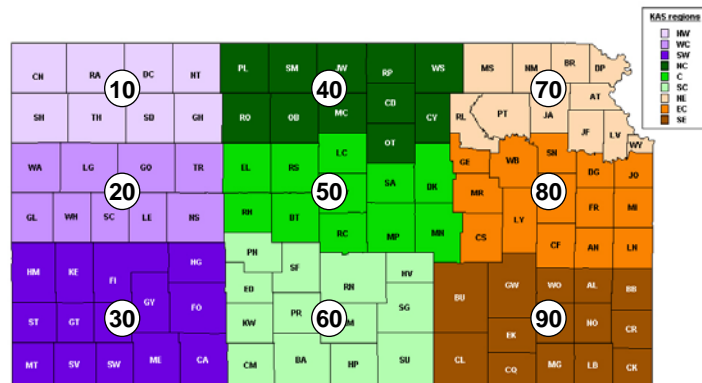
## Market established rates...

- Kansas Agricultural Statistics (KAS) collects data annually from landowners and producers regarding land values and cash rents
  - Agricultural Land Values (SURVEY)
  - Bluestem Pasture (CENSUS)
- Local and regional surveys of leasing practices
- With surveys there is often a trade-off between statistical validity and level of aggregation

4

## Market going rate ...

- Kansas Agricultural Statistics (KAS) reports average cash rent values for non-irrigated, irrigated, and pasture land at the crop reporting district (CRD) level



5

# KAS surveyed market rates ...

## AGRICULTURAL LAND VALUES

Kansas Agricultural Statistics Service  
For Agriculture  
U.S. Department of Agriculture  
P.O. Box 2054  
Topeka, Kansas 66601-0054  
(785) 233-2250

Farm Funding  
Kansas Agricultural Statistics Service  
U.S. Department of Agriculture  
P.O. Box 2054  
Topeka, Kansas 66601-0054  
(785) 233-2250

Released: August 17, 2006

### Kansas Farmland Values and Rents, 2006

Kansas' average value of all farmland and buildings for 2006 is estimated to be \$220 per acre. This compares with \$90 in 2005 and \$145 in 2004. Kansas' average value of all farmland and buildings increased by 9.4 percent from 2005 to 2006. Irrigated cropland values rose 5 percent, nonirrigated was up 10 percent, and pasture land values increased 17 percent. Rental rates for non-irrigated cropland increased by \$ 50 per acre and irrigated cropland was up \$1 00 per acre. Pasture rents for 2006 rose \$.30 per acre to 13.70 per acre.

| Year | Cropland       |               | Pasture and Rangeland |               | All Farmland and Buildings 2/ |               | Mil. Dols. Total Value |     |        |
|------|----------------|---------------|-----------------------|---------------|-------------------------------|---------------|------------------------|-----|--------|
|      | Value Per Acre |               | Rent Per Acre         |               | Value Per Acre                |               |                        |     |        |
|      | Irrigated      | Non-Irrigated | Irrigated             | Non-Irrigated | Irrigated                     | Non-Irrigated |                        |     |        |
| 1995 | 868            | 686           | 629                   | 3/            | 38.80                         | 3.68          | 11,910                 | 538 | 25,486 |
| 1996 | 864            | 607           | 638                   | 4/            | 37.75                         | 3.41          | 11,850                 | 553 | 24,248 |
| 1997 | 890            | 615           | 649                   | 5/            | 38.50                         | 3.65          | 11,650                 | 566 | 24,838 |
| 1998 | 1,010          | 620           | 665                   | 6/            | 37.00                         | 3.67          | 13,000                 | 577 | 27,408 |
| 1999 | 1,020          | 625           | 660                   | 6/            | 35.00                         | 3.70          | 13,300                 | 606 | 28,500 |
| 2000 | 1,040          | 630           | 666                   | 6/            | 35.00                         | 3.80          | 12,800                 | 620 | 29,688 |
| 2001 | 1,060          | 635           | 673                   | 7/            | 35.00                         | 3.90          | 12,800                 | 645 | 30,300 |
| 2002 | 1,080          | 640           | 679                   | 7/            | 35.00                         | 4.00          | 12,800                 | 668 | 31,485 |
| 2003 | 1,080          | 645           | 684                   | 8/            | 35.00                         | 4.10          | 12,800                 | 688 | 32,332 |
| 2004 | 1,110          | 655           | 708                   | 7/            | 37.50                         | 4.30          | 13,200                 | 718 | 33,148 |
| 2005 | 1,240          | 810           | 849                   | 7/            | 39.00                         | 5.30          | 13.45                  | 850 | 45,120 |
| 2006 | 1,300          | 890           | 900                   | 7/            | 44.00                         | 6.70          | 13.70                  | 930 | 49,300 |

1/ Rental rates are for land only. 2/ Values per acre are for land and buildings. 3/ Insufficient data to publish.

**The Land Values Survey-Background**

The Agricultural Land Values Survey was conducted during May/June 2006. Survey respondents were asked to provide information on the value of the land they operate and the rental rates for any land they rent. Additional land value and land data were collected in the June Agricultural Survey.

The Census provides the official base for estimates of all farmland values. However, the Census occurs once every five years and only estimates the value of agricultural land and buildings. The Land Values Survey and Agricultural Survey provide data to make annual estimates of both market values and rental rates for different categories of farmland.

The average values in this report encompass a wide range of soil types and pastures. These data are more appropriate for studying overall trends and should not be used to establish rental rates or market values.

KAS report

## Kansas Land Prices and Cash Rental Rates

Department of Agricultural Economics - www.agricoecon.ksu.edu  
Kansas State University Agricultural Experiment Station and Cooperative Extension Service

Farm Management Guide MF-1100

Kansas C. Elmer  
Agricultural Economist  
Farm Management

Terry L. Kauten  
Agricultural Economist  
Crop Production

This Farm Management Guide reports Kansas land prices and cash rents for 1997-2006. These data are useful for farm managers in determining cash rental rates, in developing approaches to calculating indexes for making the adjustments to land prices, and in determining and inventory who have expectations on future price and cash rental levels for farmland. The average prices in this guide encompass parcels of land that vary widely in productivity. Thus, these data are most appropriate for analyzing trends than for establishing a market value or rental rates for specific tracts of farmland.

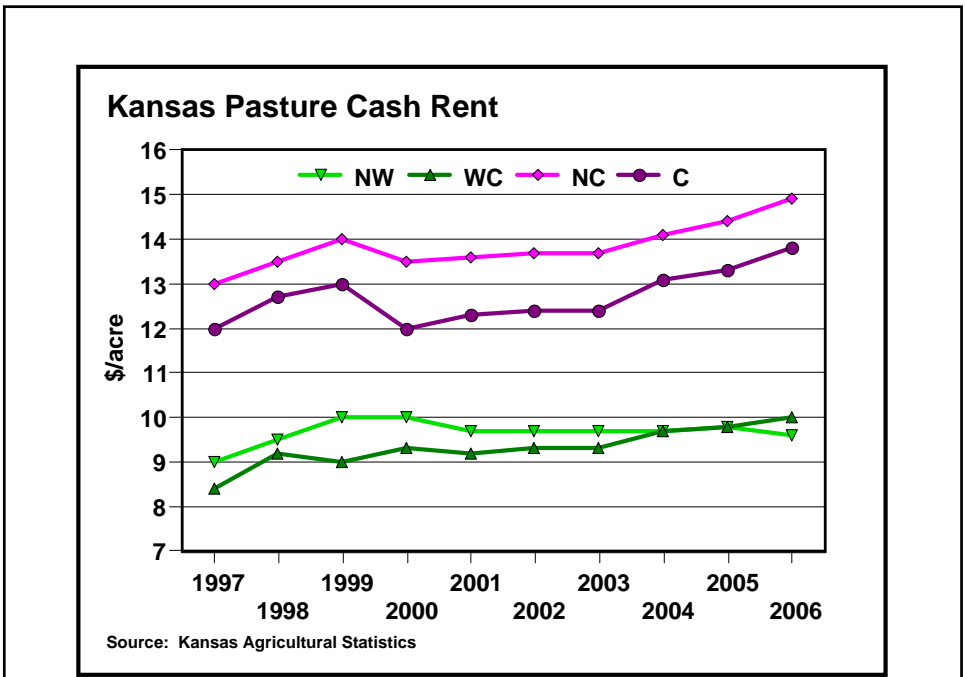
This information is combined in regional and county-level crop and land prices. While these two groupings do not represent particular type of land (e.g., non-irrigated cropland), they provide a broader classification of farmland. The land values reported also include the value of any buildings that may be on the land. The value of the buildings represents a small portion of the total value, on average, and thus this reporting method does not significantly affect the accuracy of land values reported.

Table 1 through 5 show average prices of land and buildings in each district and an average for the state for the most recent twenty years reported. Data are shown for each of the five land groupings: all land in farms, all cropland, non-irrigated cropland, irrigated cropland, and pasture. The annual data are based on February 1 for 1997-2005, and January 1 for 1996-2006.

| Year | NW  | WC  | SW  | NC  | C   | SE  | State |     |     |
|------|-----|-----|-----|-----|-----|-----|-------|-----|-----|
| 1997 | 811 | 829 | 837 | 821 | 824 | 844 | 826   | 815 | 837 |
| 1998 | 838 | 828 | 821 | 780 | 848 | 819 | 803   | 796 | 813 |
| 1999 | 804 | 839 | 841 | 817 | 841 | 830 | 804   | 805 | 804 |
| 2000 | 870 | 861 | 847 | 808 | 856 | 856 | 827   | 821 | 830 |
| 2001 | 889 | 843 | 819 | 819 | 874 | 815 | 839   | 839 | 849 |
| 2002 | 878 | 866 | 818 | 805 | 862 | 840 | 814   | 802 | 840 |
| 2003 | 879 | 851 | 815 | 827 | 833 | 840 | 806   | 800 | 807 |
| 2004 | 857 | 866 | 825 | 811 | 843 | 829 | 801   | 807 | 807 |
| 2005 | 878 | 846 | 844 | 827 | 843 | 829 | 800   | 803 | 803 |
| 2006 | 890 | 869 | 869 | 826 | 831 | 854 | 811   | 813 | 848 |
| 1997 | 900 | 880 | 880 | 840 | 840 | 870 | 830   | 790 | 871 |
| 1998 | 890 | 890 | 890 | 850 | 850 | 880 | 840   | 800 | 870 |
| 1999 | 890 | 885 | 890 | 850 | 850 | 880 | 840   | 800 | 870 |
| 2000 | 900 | 890 | 890 | 850 | 850 | 880 | 840   | 800 | 870 |
| 2001 | 900 | 890 | 890 | 850 | 850 | 880 | 840   | 800 | 870 |
| 2002 | 900 | 890 | 890 | 850 | 850 | 880 | 840   | 800 | 870 |
| 2003 | 900 | 890 | 890 | 850 | 850 | 880 | 840   | 800 | 870 |
| 2004 | 900 | 890 | 890 | 850 | 850 | 880 | 840   | 800 | 870 |
| 2005 | 900 | 890 | 890 | 850 | 850 | 880 | 840   | 800 | 870 |
| 2006 | 900 | 890 | 890 | 850 | 850 | 880 | 840   | 800 | 870 |

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KSU report



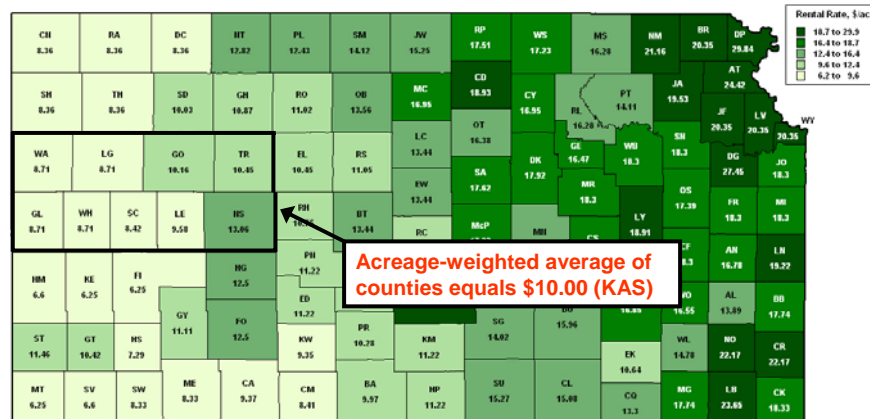
Do regional averages reflect your situation?

## County-level cash rents ...

- County-level cash rents were estimated for non-irrigated crop and pasture land based upon the KAS reported CRD values
- CRD values prorated to individual counties based on 3-year average of county-level rents from FSA and 2002 census acreage data
- Weighted average county-level cash rents are exactly equal to the KAS reported district value
- Similar procedure was done for land values

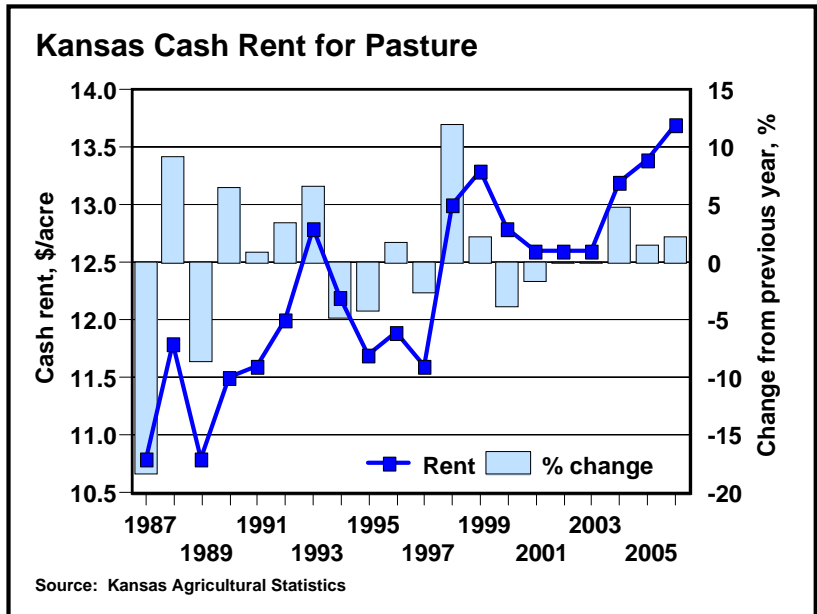
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## Kansas county-level pasture cash rents ...



Based on KAS reported values for January 1, 2006

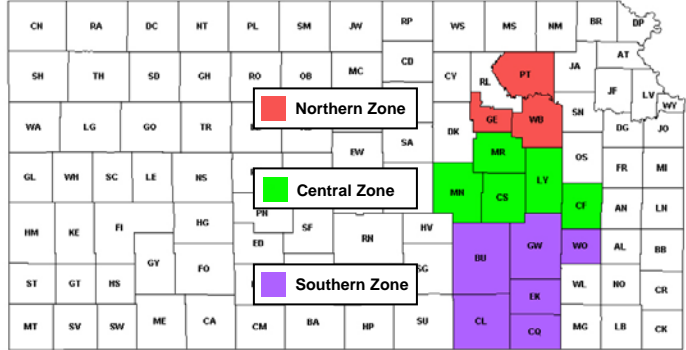
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Use KAS averages as an index for making year-to-year changes?

### Market going rate ...

Kansas Agricultural Statistics (KAS) reports average pasture cash rent values and stocking rates for cow-calf and stockers for the 14-county region of the Flint Hills



## KAS surveyed market rates ...

**BLUESTEM PASTURE**

SPECIAL PRESS RELEASE

April 28, 2006



KANSAS AGRICULTURAL STATISTICS SERVICE  
For Agriculture

Kansas Department of Agriculture  
215 Department of Agriculture  
Topeka, Kansas 66612-0344  
Phone: (785) 532-0218

Bluestem pasture condition in the Flint Hills region is rated at 85 percent of normal, going into the 2006 grazing season. As of April 17, local moisture conditions were rated mostly short to adequate across the bluestem region. Sources of stock water being used are: ponds, 54 percent; streams, 29 percent; wells, 10 percent; and spring developments, 7 percent. Water supplies are rated short to adequate, with 63 percent reporting adequate supplies.

The percentage of available pasture already contracted, as of mid-April, stood at 87 percent. Of the acres contracted, 49 percent are under full summer season contracts, 24 percent under partial-season contracts, and 29 percent leased for the full year. Partial season grazing may include both early intensive grazing and three-quarter length season reports. The average grazing season start date for full summer season contracts is April 26, ranging from an early date of April 19 in several southern counties to May 2 in Pottawatomie County. The average ending date for the grazing season is October 15. The average starting date for partial season or intensive grazing is April 22. The average number of grazing days for steers and heifers under 700 pounds is 37 days.

For 2006, partial season contracts have been broken into two categories: contracts with ninety grazing days or less and contracts with more than ninety grazing days.

Partial season contracts with ninety grazing days or less reported an average per acre lease rate of \$20.37 where care is provided and \$17.43 where no care is provided. Price per head with care for steers and heifers under 700 pounds averaged \$67.00 with a guarantee of 2.4 acres. Without care, the price per head averaged \$44.30 with 2.4 acres guaranteed.

The average price per acre for partial season contracts of more than ninety days was \$18.15 without care. The average, with care, was \$20.10 per acre. Price per head with care for steers and heifers under 700 pounds averaged \$60.50 with a guarantee of 2.8 acres. Without care, the price per head averaged \$47.40 with 2.8 acres guaranteed.

When the stocking rate is based on pounds of live cattle per acre, for a full summer season the average beginning weight is 507 pounds. The average beginning weight for a partial summer season is 573 pounds. The average live pounds per acre for a full summer season is 296 pounds and for a partial summer season the average is 297 live pounds per acre. For a full summer season, the average price per acre with care is \$24.58 and without care is \$18.60. For a partial summer season, the average price per acre with care is \$24.58 and without care is \$18.60.

Steers reports indicated contracts based on price per pound of gain. Prices varied from 25 to 95 cents per pound of gain and averaged 37 cents.

The average lease rate per cow with calf reported under full year leasing arrangements is \$121.40 with 10.1 acres guaranteed. Lease rates on a per acre basis averaged \$15.40 for the full year.

In winter stocker grazing arrangements, the average reported price is \$7.00 per head per month with 5.0 acres guaranteed. For winter cow grazing arrangements, the average reported price is \$13.32 per head per month with 7.5 acres guaranteed.

Sixty-three percent of the respondents reported burning of pastures, down 8 percentage points from two years ago. The average burning date was April 11.

Services provided by the landlord or caretaker in full summer season leasing arrangements are reported as follows: burning, 62 percent; fence maintenance, 60 percent; guaranteed count, 41 percent; salt, 67 percent; and other miscellaneous services, 10 percent.

Services provided by the landlord or caretaker in partial summer season leasing arrangements are reported as follows: burning, 86 percent; fence maintenance, 91 percent; guaranteed count, 30 percent; salt, 89 percent; and other miscellaneous services, 9 percent.

KAS report

Microsoft Excel - KSU Grazing.xls

**KSU GRAZING RATE SPREADSHEET**

K-STATE RESEARCH AND EXTENSION      Version: 11/27/2005

This spreadsheet is designed to assist producers and landowners in determining equitable rental fees for grazing cattle. The spreadsheet uses two concrete methods to determine an equitable grazing rate: the landlord's cost and livestock owner's return. Landlord's cost simply equates the rental value to the cost of owning the land being grazed. Livestock owner's return bases grazing rate on the return earned by the livestock owner from grazing. These methods can be used as a starting point for grazing rate.

The Market Value sheet uses the Bluestem Pasture Report to estimate grass grazing rates based on stocking capacity and grass quality.

The Landlord's Cost sheet estimates a grazing rate for either a cow-calf or stocker operation based on the landlord's cost of owning the land, facilities, equipment, and contributions of inputs.

The Livestock Owner's Return sheet estimates a grazing rate for stocker operations only based on the livestock owner's net return from grazing.

The Bluestem Pasture Report sheet is a historical database from Kansas Agricultural Statistics of cash grazing rates for the Flint Hills region of Kansas.

Blue numbers and text in the spreadsheet are inputs provided by the user. Black numbers are calculated values based on the inputs. Cells that contain little red diamonds in the upper right corner provide additional information or instructions in the spreadsheet. These comments can be viewed when the mouse pointer is dragged over the diamond. If the red diamonds do not appear in the spreadsheet, it may be necessary to adjust the settings of Excel. To do this, click on "Tools" in the menu bar, then select "Options", then select "View". While in the "View" menu, select the comment option that says "Comment".

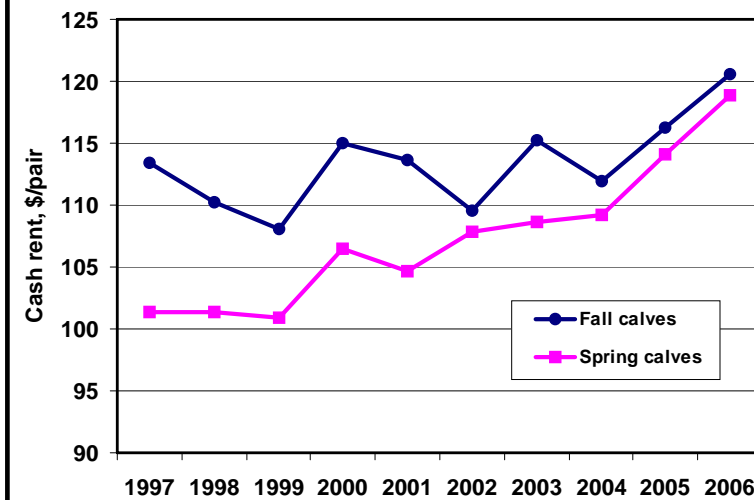
Other relevant sources of information for determining equitable grazing rates are: *Pasture Rental Arrangements for your Farm* (NR-149), *Summer Grazing of Steers in Western Kansas* (MF-1007), *Summer Grazing of Steers in Eastern Kansas* (MF-1008), and *Winter/Winter Grazing* (MF-1009). These publications are available through your local County Extension Office.

Developed by:  
 Troy A. Dondos      Kevin C. Blayvenant  
 Extension Agricultural Economist, SW      Extension Agricultural Economist  
 Kansas State University      Kansas State University

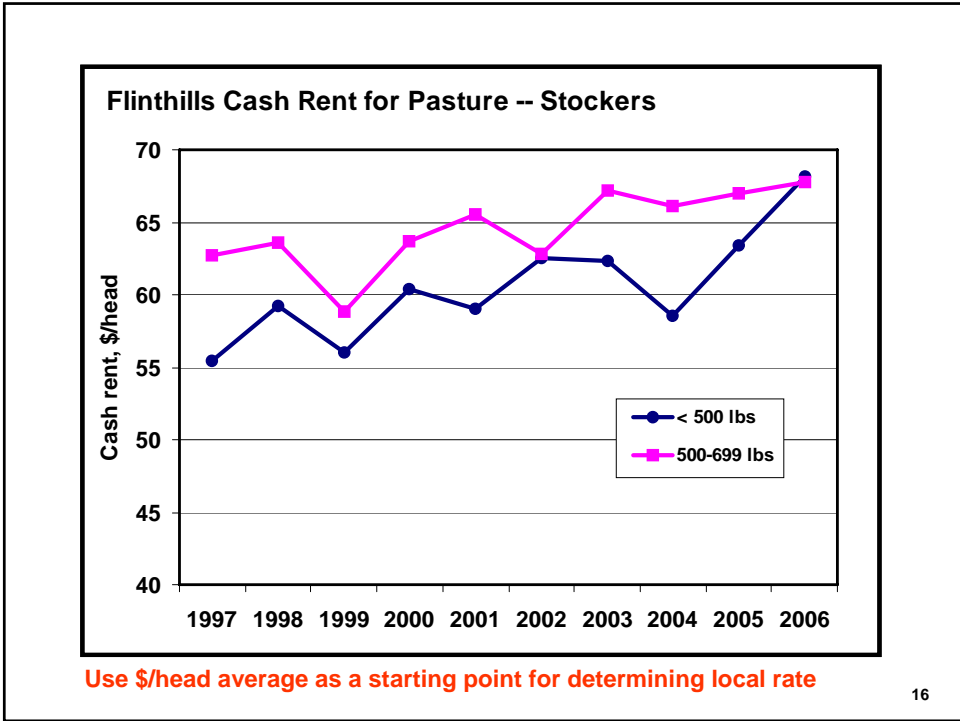
Phone: (620) 275-9164      Phone: (785) 532-2627  
 FAX: (620) 276-6828      FAX: (785) 532-6925  
 email: hblondos@znet.ksu.edu      email: kcb@ksu.edu

KSU spreadsheet

### Flint Hills Cash Rent for Pasture -- Cow-calf pairs



Use \$/pair average as a starting point for determining local rate



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 K-STATE RESEARCH AND EXTENSION Version 11/27/2006

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Excel spreadsheet that can be used to adjust Bluestem Pasture report rental rates.

Microsoft Excel - KSU\_Graze (Winter2007).xls

File Edit View Insert Format Tools Data Window Help

100%

Ready

|    | A | B  | C                 | D                 | E       | F        | G | H | I |  |
|----|---|--|-------------------|-------------------|---------|----------|---|---|---|--|
| 1  |   |  |                   |                   |         |          |   |   |   |  |
| 2  |   | <b>Market Value (based on Kansas Ag Statistics Bluestem Pasture Report)</b>      |                   |                   |         |          |   |   |   |  |
| 3  |   |  |                   |                   |         |          |   |   |   |  |
| 4  |   | Year to consider   |                   |                   |         | 2006     |   |   |   |  |
| 5  |   | Service and acreage guarantees included (Y=1, N=0)                               |                   |                   |         | 1        |   |   |   |  |
| 6  |   |  |                   |                   |         |          |   |   |   |  |
| 7  |   |  |                   |                   |         |          |   |   |   |  |
| 8  |   |  | Under             | 500-              | Cows    | Cows     |   |   |   |  |
| 9  |   | 2006 Bluestem Rates  | 500# <sup>3</sup> | 700# <sup>3</sup> | w/fall  | w/spring |   |   |   |  |
| 10 |   | Avg. \$/hd for season  | \$68.20           | \$67.80           | calves  | calves   |   |   |   |  |
| 11 |   | Avg. acres of grass/hd   | 4.0               | 4.2               |         |          |   |   |   |  |
| 12 |   | Cash rent per acre   | \$17.05           | \$16.14           | \$15.27 | \$15.05  |   |   |   |  |
| 13 |   |  |                   |                   |         |          |   |   |   |  |
| 14 |   | Pasture to analyze   |                   |                   |         |          |   |   |   |  |
| 15 |   | Avg. acres of grass/hd   | 8                 | 8.5               | 11.5    | 12       |   |   |   |  |
| 16 |   | Quality adjustment (%) <sup>1</sup>  | 100%              | 100%              | 100%    | 100%     |   |   |   |  |
| 17 |   | "Other" adjustment (\$/ac) <sup>2</sup>  | \$0.00            | \$0.00            | \$0.00  | \$0.00   |   |   |   |  |
| 18 |   | Adjusted cash rent/acre  | \$8.53            | \$7.98            | \$10.49 | \$9.91   |   |   |   |  |
| 19 |   |  |                   |                   |         |          |   |   |   |  |
| 20 |   | <sup>1</sup> Adjustment to reflect differences in gain, etc. (if none enter 1)   |                   |                   |         |          |   |   |   |  |
| 21 |   | <sup>2</sup> Adjustment for water, fence, etc. (if none enter 0)                 |                   |                   |         |          |   |   |   |  |
| 22 |   |  |                   |                   |         |          |   |   |   |  |
| 23 |   | Note: Cash rent per acre is based on season-long (6 months) grazing season. Per  |                   |                   |         |          |   |   |   |  |
| 24 |   | acre rates for early intensive grazing season (3 months) have averaged 0% and 0% |                   |                   |         |          |   |   |   |  |
| 25 |   | higher for Under 500# and 500-700# categories, respectively.                     |                   |                   |         |          |   |   |   |  |
| 26 |   |  |                   |                   |         |          |   |   |   |  |

Intro / Market Value / LandlordCost / LivestockOwnerReturn / Bluestem Pasture Report / Futures / Figures /



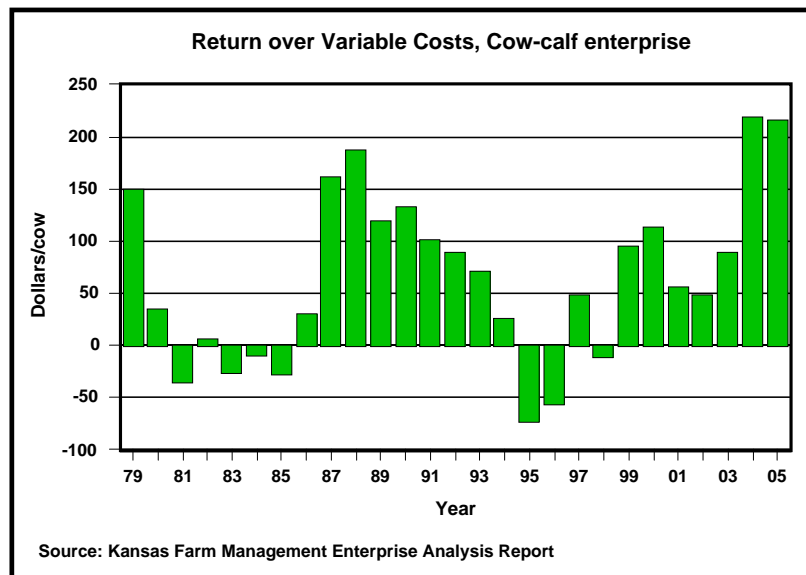
## Cost-return information ...

- **KFMA enterprise analysis**
  - Beef cow-calf averages, 1979-2005 (93 to 258 farms)
  - Dollars/cow and dollars/cwt
- **Variable costs:** hired labor, machinery repair, interest paid, feed purchased, machine hire-lease, farm org. fees/travel/pub, vet medicine/drugs, marketing/breeding, gas/fuel/oil, personal property tax, general farm insurance, utilities, auto expense
- **Fixed costs:** depreciation, real estate tax, unpaid operator labor, interest charge

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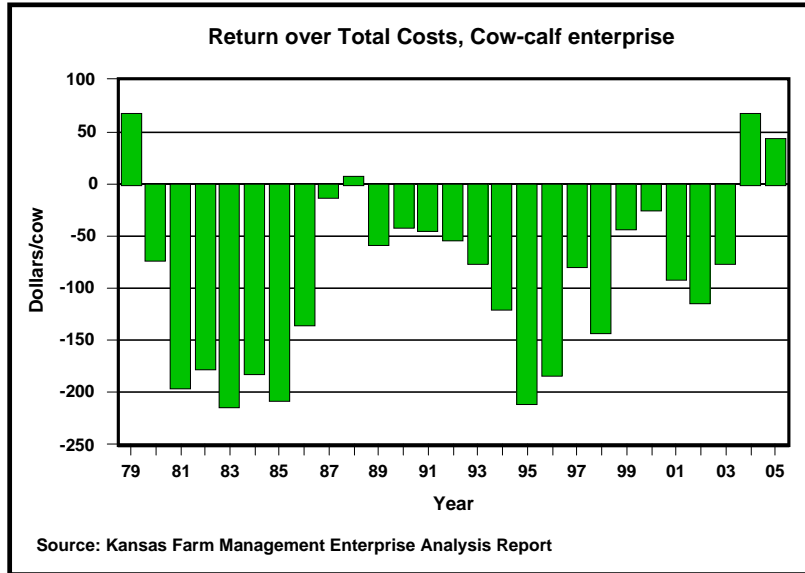


## Cost-return information ...



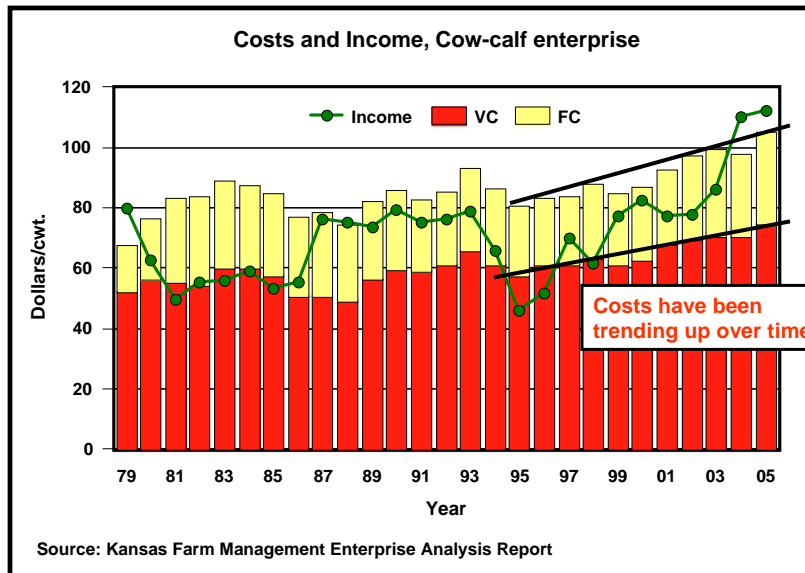
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## Cost-return information ...



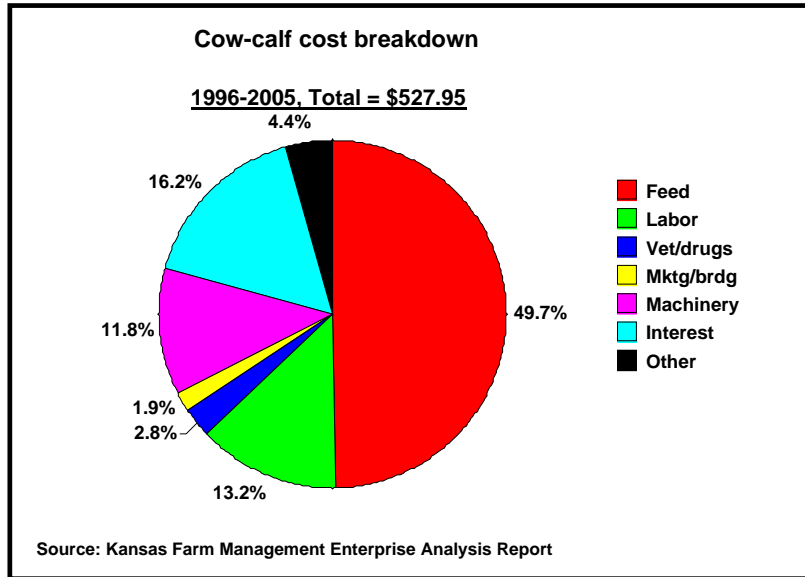
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## Cost-return information ...

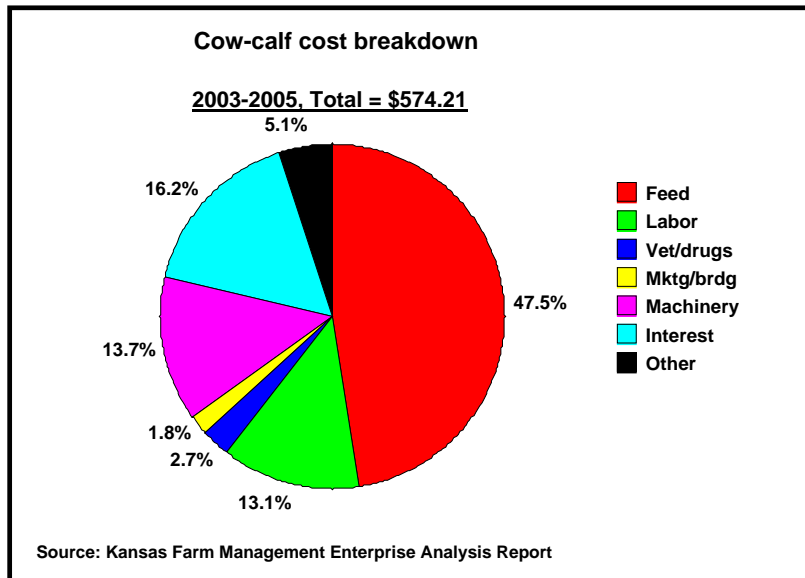


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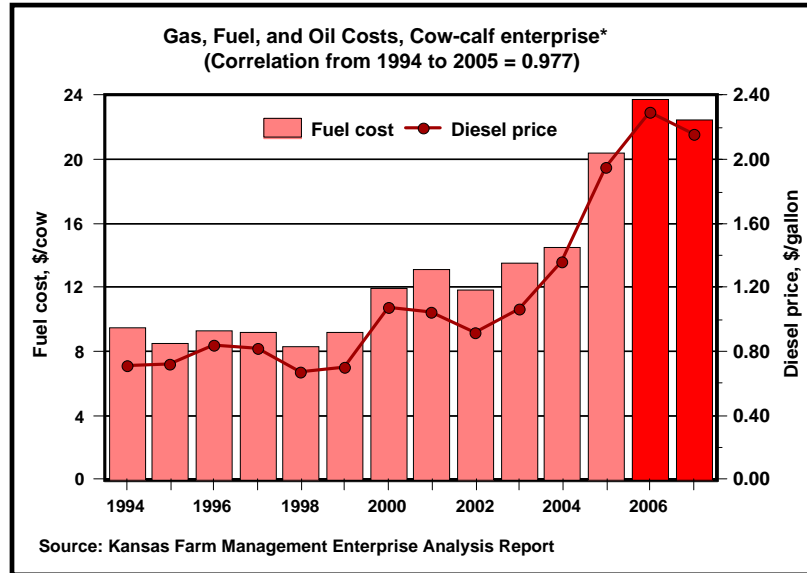
## Cost-return information ...



## Cost-return information ...



## Cost-return information ...



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## Cost-return information ...

### KFMA enterprise analysis

- Beef cow-calf farm-level data
- 3-year average, 2003-2005
- 74 farms with avg weaning weight 450-650 lbs
- Sorted by return to management  
(i.e., return over total costs)

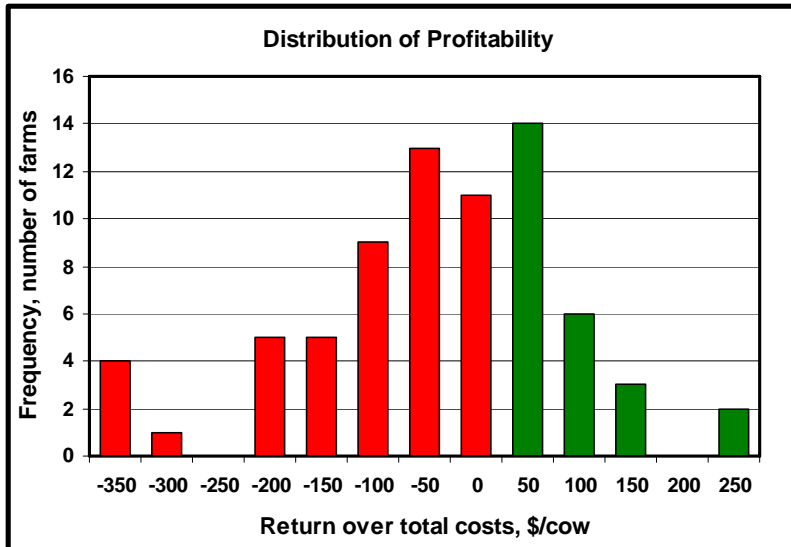


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## Profitability groups ...

| Kansas Farm Management Association, 2003-2005<br>Beef Cow, Sell 450-650# Calves, Sorted by Net Return to Management per Cow |                       |                      |                      |   |             |
|---|-----------------------|----------------------|----------------------|---|-------------|
|   | Profit Category       |                      |                      | Difference between High 1/3 and Low 1/3 |             |
|   | High 1/3<br>Head / \$ | Mid 1/3<br>Head / \$ | Low 1/3<br>Head / \$ | Absolute                                | %           |
| Number of Farms   | 24                    | 25                   | 24                   |   |             |
| Number of Cows in Herd  | 151                   | 117                  | 91                   | 60                                      | 65%         |
| Number of Calves Sold   | 136                   | 107                  | 84                   | 52                                      | 61%         |
| Weight of Calves Sold   | 576                   | 556                  | 562                  | 14                                      | 3%          |
| Calf Sales Price / Cwt  | \$97.70               | \$98.85              | \$95.88              | \$1.82                                  | 2%          |
| <b>Gross Income</b>   | <b>\$540.63</b>       | <b>\$507.48</b>      | <b>\$480.38</b>      | <b>\$60.25</b>                          | <b>13%</b>  |
| Feed  | \$256.94              | \$267.59             | \$298.70             | -\$41.77                                | -14%        |
| Interest  | \$74.15               | \$98.77              | \$105.83             | -\$31.69                                | -30%        |
| Vet Medicine / Drugs  | \$13.18               | \$14.28              | \$12.50              | \$0.68                                  | 5%          |
| Livestock Marketing / Breeding  | \$6.73                | \$10.09              | \$13.60              | -\$6.87                                 | -51%        |
| Depreciation  | \$16.82               | \$29.26              | \$41.27              | -\$24.45                                | -59%        |
| Machinery   | \$37.69               | \$48.73              | \$66.52              | -\$28.83                                | -43%        |
| Labor   | \$59.39               | \$66.68              | \$111.94             | -\$52.55                                | -47%        |
| Other   | \$19.60               | \$27.39              | \$47.38              | -\$27.79                                | -59%        |
| <b>Total Cost</b>   | <b>\$484.49</b>       | <b>\$562.80</b>      | <b>\$697.76</b>      | <b>-\$213.27</b>                        | <b>-31%</b> |
| <b>Net Return to Management</b>   | <b>\$56.14</b>        | <b>-\$55.31</b>      | <b>-\$217.37</b>     | <b>\$273.52</b>                         | <b>78%</b>  |

## 3-YR AVG: Profitability distribution ...



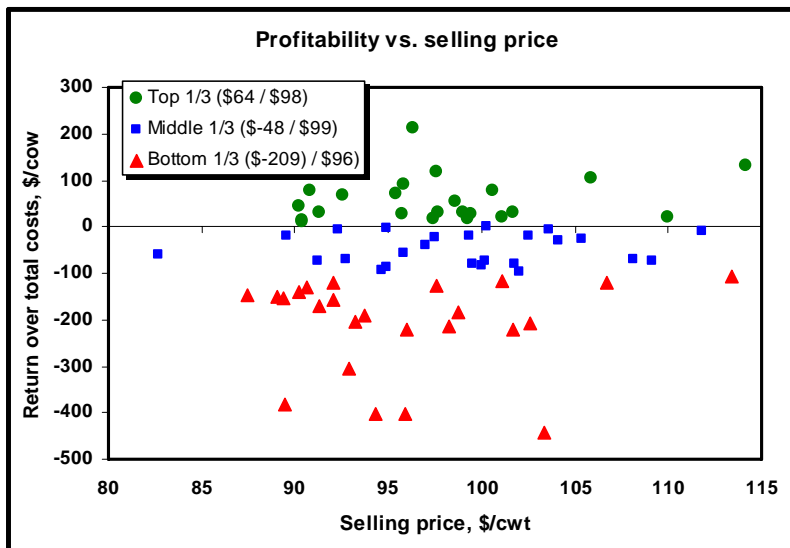
Average returns: 34% positive and 66% negative

## What factors are driving these profitability differences?

- Selling price?
- Selling weight?
- Total cost?
  - Feed costs
  - Labor costs
  - Other costs
- Other factors?

36

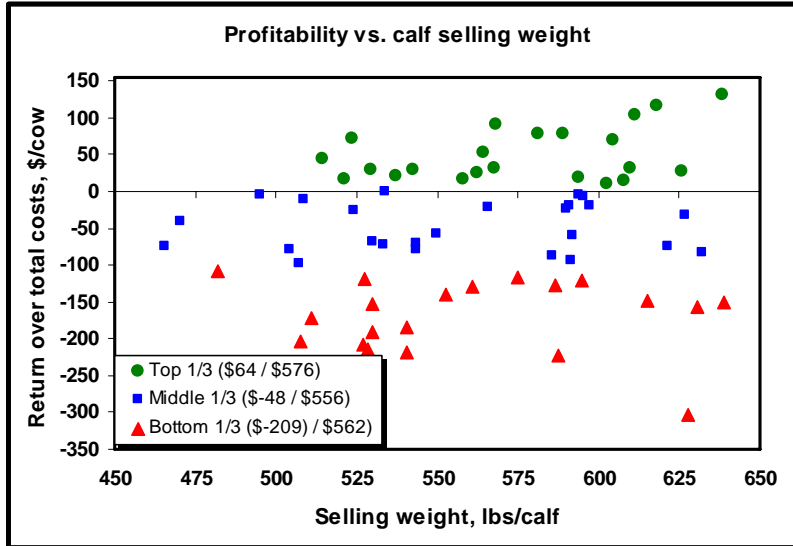
## 3-YR AVG: Profitability versus selling price ...



Correlation: 0.14

37

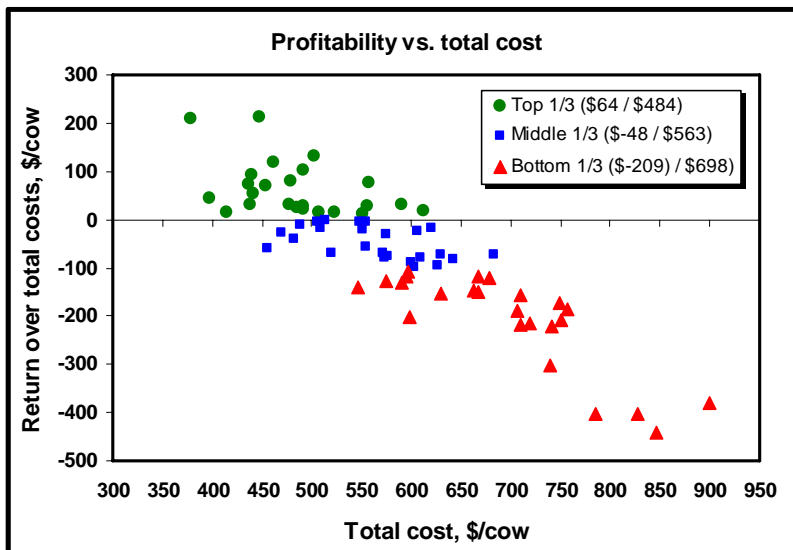
### 3-YR AVG: Profitability versus selling weight ...



Correlation: 0.10

38

### 3-YR AVG: Profitability versus costs ...



Correlation: -0.88

39

## Costs differences are important ...

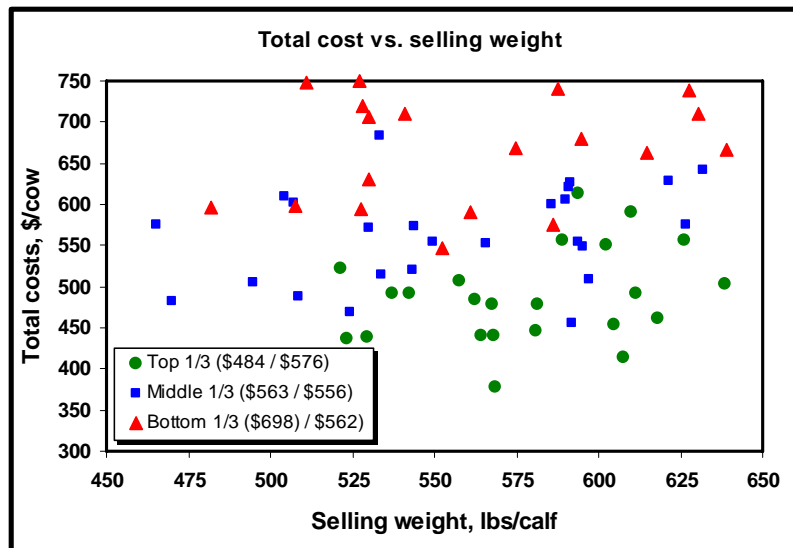
... but what drives these differences?

- Calf selling weight?
- Certain cost categories?
- Size of operation?
- Other factors?



42

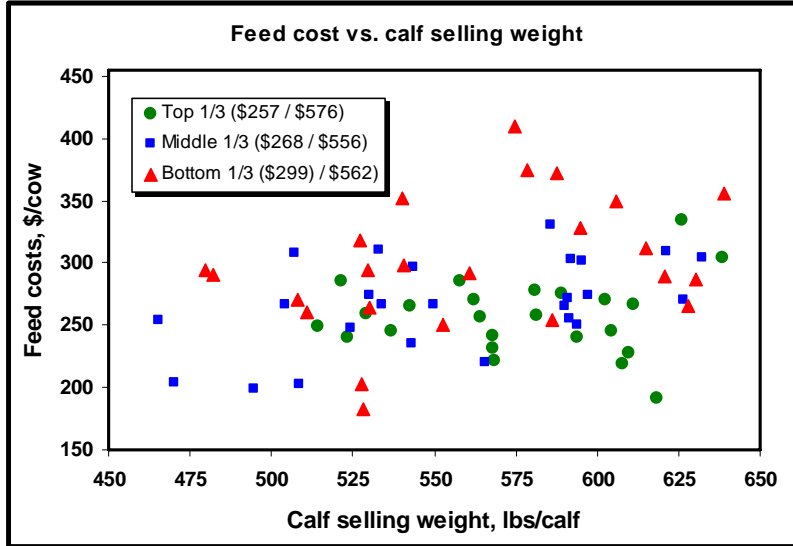
## 3-YR AVG: Total cost versus selling weight ...



Correlation: 0.09

43

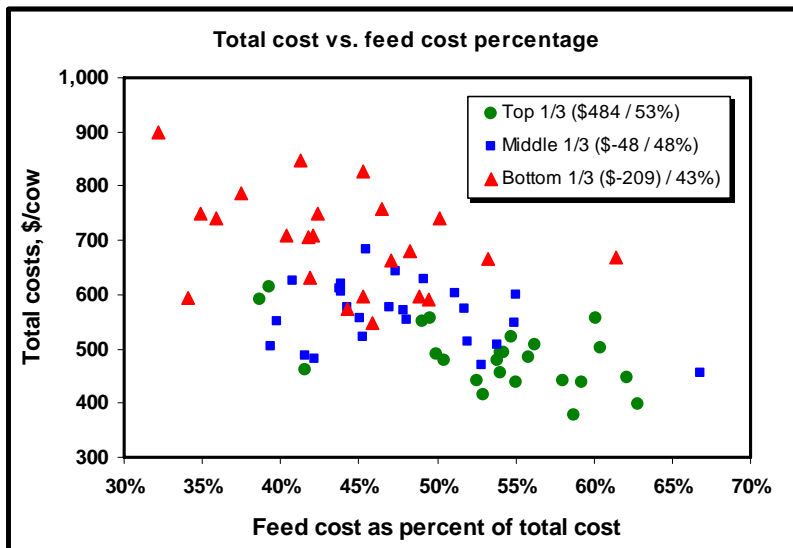
### 3-YR AVG: Feed costs versus calf weight ...



Correlation: 0.27

44

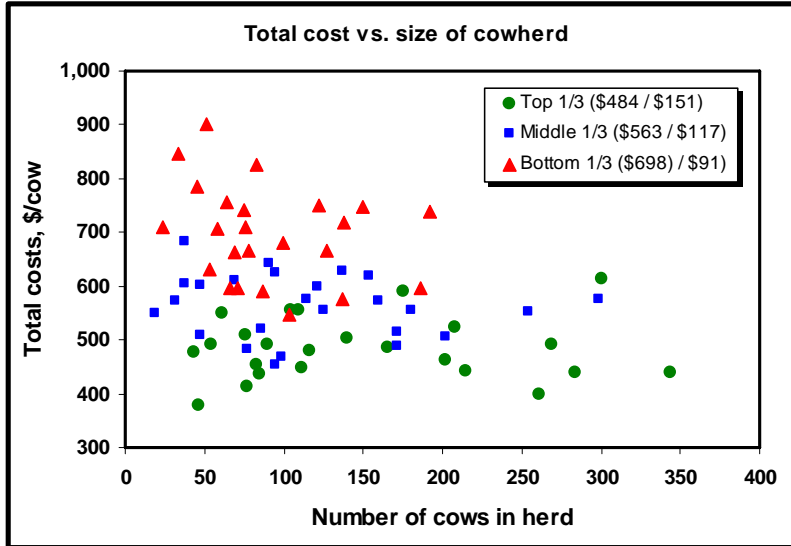
### 3-YR AVG: Total cost versus feed cost % ...



Correlation: -0.61

46

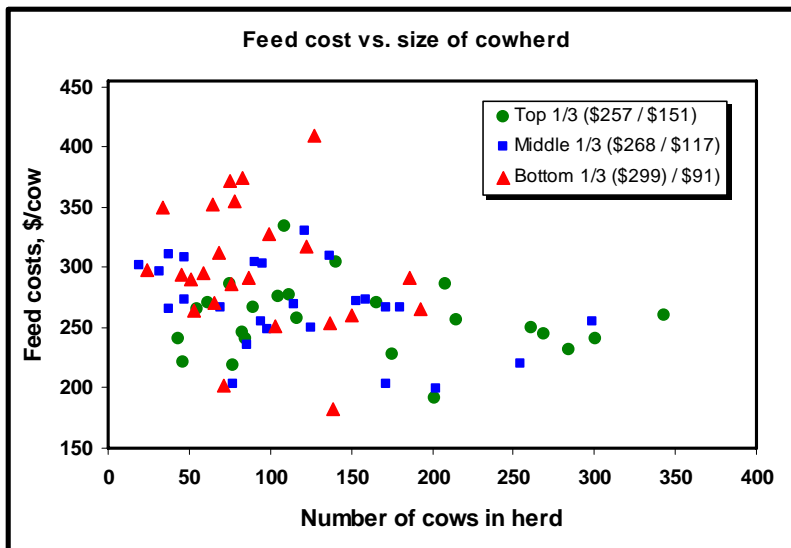
### 3-YR AVG: Costs versus herd size ...



Correlation: -0.31

47

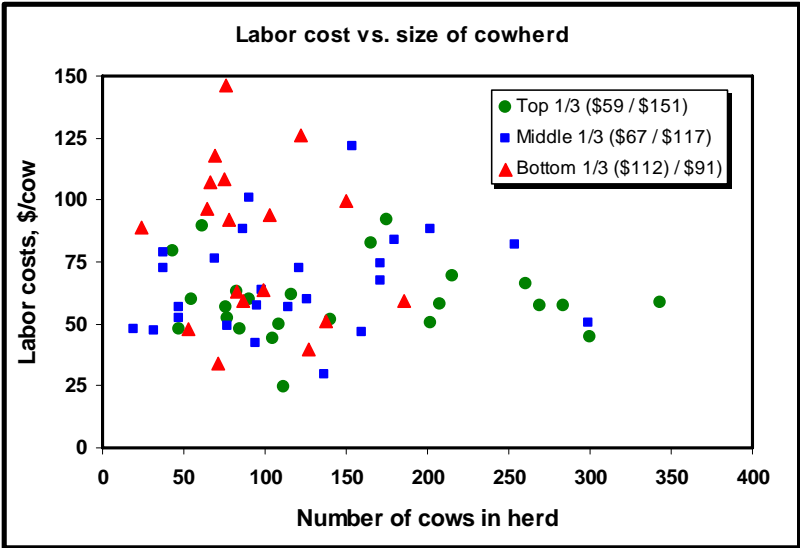
### 3-YR AVG: Feed costs versus herd size ...



Correlation: -0.33

48

### 3-YR AVG: Labor costs versus herd size ...



Correlation: -0.17



# K-State cow-calf and heifer budgets ...

## Beef Cow-Calf Enterprise

Department of Agricultural Economics — [www.aggmanager.org](http://www.aggmanager.org)

Kansas State University Agricultural Experiment Station and Cooperative Extension Service

Sarah L. Fockman  
Agricultural Economist, SE

Robley Jones  
Agricultural Economist  
Livestock Production

The beef cow-calf enterprise plays an important role in the livestock economy of the state. Cows produce more on poor quality forage, such as corn or sorghum stalks and other crop residues, which properly supplemented after calving. Commercial cows are especially adapted to areas where there is an abundance of native grass, along with crop residues and waste forage.

This budget uses projected 2007 input and output prices for livestock purposes. The budget is based on a typical springing cow herd. Individual producers should use their own prices and cow production factors to match their individual situation. For example, a dry lot fattening herd would have a higher feed cost than a herd that grazes grass some time that depends on the situation.

**Feed**  
A beef cow-calf enterprise requires about 3 tons of forage or dry matter basis or 3.7 tons of hay equivalent per cow per year. This feed level includes loss for the cow, wean, replacement stock, and calves to weaning (Table 1). Crop residues and wastes that can be used in the diet to provide part of the feed requirement.

In eastern Kansas, your normal pasture practice can be used with some supplementation protein or alfalfa hay in the winter. In western Kansas, hays and forage can be used for wintering grazing. However, good management dictates that 1 to 1.5 tons of hay or waste forage be available during the winter months.

**Labor**  
Labor requirements for a beef cow-calf enterprise vary considerably depending upon the size of the herd and how they are managed (Table 2). Labor assigned to produce beef or pasture for the livestock is not included in the management requirement to manage the cow-calf enterprise.

**Capital**  
Land required to produce a year-round feed supply varies from 1 to 5 acres in eastern Kansas, between 7 and 10 acres in the Flint Hills, and 10 to 15 acres in western Kansas. Land costs are accounted for in the price of feed charged to the livestock.

Capital requirements for livestock equipment and facilities can vary greatly. The budget assumes key is used for winter feed. The required facilities include livestock buildings, feed storage, corrals, and working facilities. Required equipment includes feed handling and feeding equipment, weaning equipment, culling handling equipment, and transportation equipment. The estimated net capital investments for a 200-cow enterprise are shown in Table 3.

**Production Levels and Costs**  
Costs per unit and net returns in livestock production are highly dependent on production levels. The following estimated budget includes these production levels. Production levels vary for a number of reasons including livestock quality of genetics, weather, agent levels, and management. The three production levels included in the estimated budget reflect production variability due to weather and management as opposed to the quality of the livestock, since livestock values are held constant. Budgeting at multiple production levels can help producers evaluate the financial risk that is directly related to production risk of a livestock enterprise. The production levels in the cow-calf budget are assumed to vary due to differences in wean-to-calf percentages. Varying the wean-to-calf percentage affects the number of calves available for sale (Table 3).

The budget for each production level includes a charge or opportunity cost for all resources used by the beef cow enterprise. Interest on facilities and equipment is assumed on a cost-of-the-original-cost. This budget assumes these values are sold at 50 percent and heifer calves at 50 percent.

## Raising Beef Replacement Heifers

Department of Agricultural Economics — [www.aggmanager.org](http://www.aggmanager.org)

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Animal Sciences

Sandy Johnson  
Animal Sciences, NW

Acquiring high quality replacement heifers for cows that leave the beef herd, or to train beef heifers, is essential to making a high-quality, high-yield cow-calf enterprise. A key decision facing cow-calf producers is whether to raise or purchase replacement heifers, stock heifers, or mature cows. Purchasing mature cows as replacements may be an option for some operations. However, the focus of this guide is strictly on heifers. Producers need to evaluate the options and make a decision that is separate from the rest of the cow-calf enterprise and identify its economic strengths and weaknesses. Raising replacement heifers requires equipment, labor, facilities, feed, and other resources. Therefore, for the average producer the total cost of raising replacement heifer can be quite high. Producers must be carefully weigh the advantages of home raised heifers (genetics, etc.) against their costs. The estimated net return budget for a cow-calf producer is making more informed decisions.

**Budget Information**  
The costs and returns in the budget are on a per heifer production basis. Costs are total economic costs and therefore include both right-of-cows such as purchased feed, veterinary, utilities, etc., and right-of-cows such as the opportunity cost of operator labor and covered feed resources. Returns are based on 90 percent of the heifer value as a weanling and empty cow, 2.5% value as a non-breeding cull, and 7.5% value as a producer. There has to be assumed to be 1% of the value stated in the replacement program.

Production prices, feed requirements, and assumed values are shown in Table 1. Labor is assumed at 5 hours per head of heifer raised 12 months of age (wean to finish). Other operating costs are included based on observed averages. Interest is charged on the average assumed facility and equipment investment for 12 months, and on half of the operating costs and the value of the heifer calf for 10 months. Depreciation on facilities and equipment is based on a 15% salvage value. Amortized facility and equipment cost (depreciation, interest, and taxes) is multiplied by 1.2 because the budget covers an 18-month time period.

Returns cover total cost for the cow-calf producer can be interpreted as the total economic opportunity cost associated with raising one's own replacement heifer rather than purchasing heavy springer heifers at the assumed market price. The breakeven price per heifer is the dollar value per

head that would be required to cover all economic costs, or can be interpreted as the market value at which purchased heifers would be able to "replace" their raised replacement. Actual interest and return on investment are based on total investment capital (depreciation and borrowed). These revenues have been converted to an annual basis to enable comparisons to other enterprises and other investment alternatives.

Table 2. Factors Used for Raising Beef Replacement Heifer Cow-Return Budget

|                                      | May to Oct | May to Oct | Oct to Mar |
|--------------------------------------|------------|------------|------------|
| Birth                                |            |            |            |
| Beginning Weight                     | 550        | 550        | 550        |
| Ending Weight                        | 750        | 650        | 4,000      |
| Days                                 | 185        | 185        | 185        |
| Cow (lb.)                            | 900        | 900        | 900        |
| Prairie Hay (lb.)                    | 1,800      | 2,000      | 2,000      |
| Cost (lb.)                           | 240        | 240        | 240        |
| Feed (lb.)                           | 240        | 240        | 240        |
| Mineral & Salt                       | 20         | 20         | 20         |
| Supplies (Value \$/head)             | 123.76     | 123.76     | 123.76     |
| Cull (lb. Value \$/head)             | 30         | 30         | 30         |
| Trucking (lb. Value \$/head)         | 100.00     | 100.00     | 100.00     |
| Springer (lb. Value \$/head)         | 113.69     | 113.69     | 113.69     |
| Investment in facilities             | \$14,000   |            |            |
| Lab of facilities                    | 20         |            |            |
| Investment in equipment              | \$10,000   |            |            |
| Lab of equipment                     | 10         |            |            |
| Interest on facilities and equipment | 100        |            |            |
| Interest on facilities and equipment | 6,250      |            |            |
| The cost on facilities and equipment | 1,500      |            |            |
| Interest on available costs          | 1,500      |            |            |
| Lab and value                        | 9,000      |            |            |
| Labor hours                          | 2          |            |            |
| Labor price per hour                 | \$10.00    |            |            |

**Microsoft Excel - KSU Beef (Winter 2007).xls**

INPUT ASSUMPTIONS - Inputs are "blue values" (black values are calculated)

**COW-RETURN PROJECTION --- BEEF COW-CALF ENTERPRISE (PER COW)**

|                                      |         |                    |           |         |                     |
|--------------------------------------|---------|--------------------|-----------|---------|---------------------|
| Number of cows in herd               |         |                    |           |         | 200                 |
| Heifers retained for replacement, %  |         |                    |           |         | 16%                 |
| Cow-to-bull ratio (cows per bull)    |         |                    |           |         | 25                  |
| Value of breeding cow, \$/head       |         |                    |           |         | \$700               |
| Value of replacement heifer, \$/head |         |                    |           |         | \$600               |
| Value of bull, \$/head               |         |                    |           |         | \$2,200             |
| Value of breeding stock/cow unit     |         |                    |           |         | \$884               |
| Interest on breeding herd, %         |         |                    |           |         | 9.00%               |
| Insurance on breeding herd, %        |         |                    |           |         | 1.00%               |
|                                      |         |                    | Low       | Average | High                |
| Weaning percentage                   |         |                    | 82%       | 88%     | 94%                 |
| <b>RETURNS PER COW:</b>              |         |                    |           |         |                     |
|                                      | Percent | Weight             | Price/cwt |         | \$/Head \$/Cow Unit |
| Steers                               | 50%     | 560                | \$131.54  |         | \$736.62 \$368.31   |
| Heifers                              | 50%     | 540                | \$123.76  |         | \$668.30 \$334.15   |
| Cull cows                            | 16%     | 1,050              | \$61.12   |         | \$641.76 \$102.68   |
| Other income                         |         |                    |           |         | \$0.00              |
| <b>COSTS PER COW:</b>                |         |                    |           |         |                     |
| <b>Feed costs</b>                    |         |                    |           |         |                     |
| Pasture                              |         | Cow and Calf       | xxx       | xxx     | 6.0                 |
|                                      |         | Replacement Heifer | xxx       | xxx     | 4.0                 |
|                                      |         | Bull               | xxx       | xxx     | 6.1                 |
| Harvested forage                     |         | Cow (Drv)          | 18.0      | 60      | xxx                 |

Excel spreadsheet [KSU-Beef(2007).xls] that can be used to develop projected budgets for beef enterprises.

Microsoft Excel - KSJ Beef(Winter2007).xls

|     | A | B   | C | D | E | F | G | H | I | J | K | L      | M | N | O |
|-----|---|---|---|---|---|---|---|---|---|---|---|--------|---|---|---|
| 68  |   | COW-RETURN PROJECTION -- BEEF COW-CALF ENTERPRISE (PER COW) |   |   |   |   |   |   |   |   |   | MF-266 |   |   |   |
| 70  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 71  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 72  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 73  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 74  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 75  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 76  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 77  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 78  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 79  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 80  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 81  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 82  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 83  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 84  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 85  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 86  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 87  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 88  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 89  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 90  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 91  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 92  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 93  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 94  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 95  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 96  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 97  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 98  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 99  |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 100 |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 101 |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 102 |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 103 |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 104 |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 105 |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 106 |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 107 |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 108 |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 109 |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 110 |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |
| 111 |   |   |   |   |   |   |   |   |   |   |   |        |   |   |   |

Projected returns for 2007 are very good, but will still vary considerably between producers based on many factors.

## Budgeting using a spreadsheet...



- **Advantages**
  - Math is correct
  - Easy to do “what ifs”
  - Easy to update
  - Easy to figure \$/head and \$/cwt
  - Information is regarded as true
- **Disadvantages**
  - Computers are dumb
  - Requires know how
  - Easy to “bury ourselves”
  - Easier to forget to “think”
  - Information is regarded as true

Whether you use a computer or paper, what is especially important is knowing what your costs are relative to others.

## Conclusions/summary ...

- On average, beef cow-calf operations seldom cover “full economics” costs ...
  - Economists may incorrectly value resources
  - Cow-calf enterprise may not be critical to overall business
  - Some producers are better than average and do cover costs
- Cow-calf returns are cyclical due to prices as costs are “relatively fixed” over time
- Feed costs and interest costs are main costs that vary over time (in recent times also fuel)
- Labor costs have been increasing in nominal terms

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## Conclusions/summary ...

- Some producers are consistently more profitable
  - Differences are primarily cost driven (will prices become more important in future?)
  - Profitable farms generally have lower costs in all categories
  - Profitable farms tend to be larger than less profitable farms
- Feed costs are single largest expense and thus need to be managed, however, non-feed costs are also critical
- Smaller operations can compete in terms of cost
- No “silver bullet” with regards to cost control
  - Requires “good management” – know where you stand!

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AgManager: Crops, Livestock, Marketing and Outlook, Tax Law, Human Resources, and Agricultural - Windows Internet Explorer

http://www.agmanager.info/

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A Working Guide to Success and Survival  
Farmers  
March 29-30, 2007  
Session 2  
April 27-28, 2007  
Enid, Oklahoma

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March 16, 2007 by Jim Mintert
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- In The Cattle Markets**  
March 12, 2007 by Jim Mintert/LABC
- Livestock Outlook Radio Program**  
March 12, 2007 by Jim Mintert/LABC
- 2007 Farm Bill Forums Issues and Options Booklet (7 Papers)**  
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**Questions?**

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