



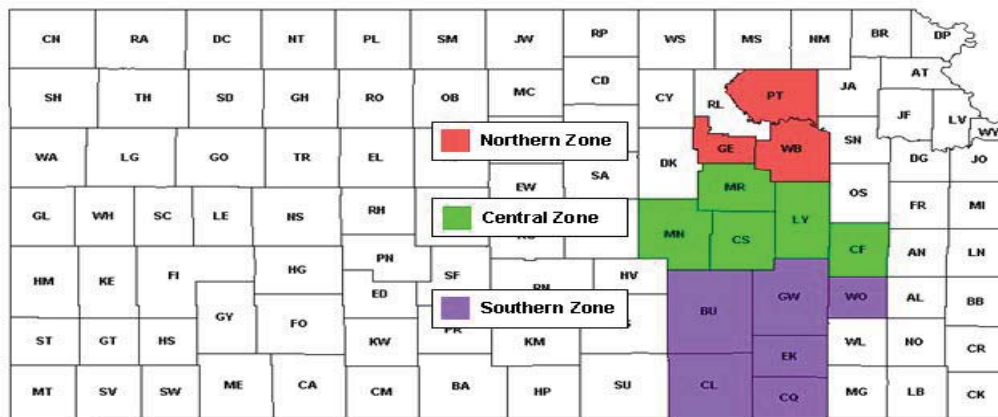
# Determining Pasture Rents in the Flint Hills of Kansas

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The annual *Bluestem Pasture Release* published by the Kansas Agricultural Statistics (KAS) is an important resource for many cattle producers and landowners in the state of Kansas as they negotiate pasture rents each year. The *Bluestem Pasture Release* represents a survey of pasture rents for different livestock classes (e.g., feeder cattle of different weights, cow/calf pairs) in the 14-county area of the Flint Hills region as depicted in figure 1.<sup>1</sup> While the survey only covers this 14-county area, the information contained in the report can be useful statewide for helping to determine pasture rental rates by using the surveyed rates and then making adjustments based on local stocking rates and pasture quality (Dumler; Dumler and Dhuyvetter). In other words, the information contained in this report is not only useful to those located in the Flint Hills region of Kansas, but it can also be used to guide pasture rental rates across the state.

**Kansas Bluestem Pasture – 14 County Area**



**Figure 1**

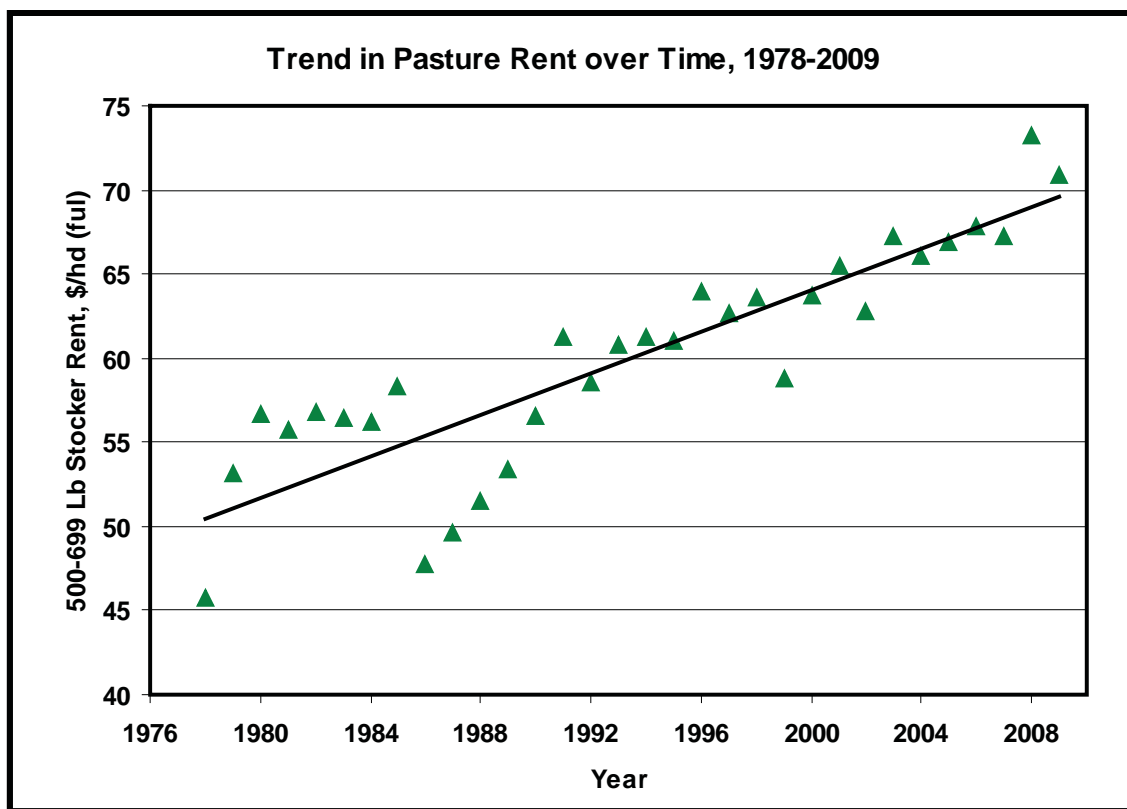
The *Bluestem Pasture Release* is published in late April of each year and includes average rental rates for the upcoming year. For example, the 2009 report was released April 24, 2009 and contained surveyed rental rates for the 2009 grazing season. Producers and landowners developing cash flows and planning for the upcoming year often desire an estimate of rental rates prior to the survey being released. Likewise, producers doing multi-year planning, as might be required for cow-calf operations, need estimates of rental rates for several years into the future. This paper is intended to supplement information contained in the *Bluestem Pasture Release* to help cattle producers and landowners as they negotiate pasture rents by providing historical data and equations that can be used to forecast future rental rates. Specifically, this paper provides historical data (1978-2009) and equations for forecasting pasture rents in the Flint Hills region of Kansas for two weight categories (<500 lbs and 500-699 lbs) of steers and heifers (full- and short-season grazing periods) and cow/calf pairs (full season, spring and fall calving). Full season rents reflect approximately a six-month grazing period from mid April through mid October (approximately 180 days). Short season rents reflect the time period from mid April through mid to late July (90-100 days). Forecasted rents are based on the historical relationship between cash rents and time, feeder cattle prices, and corn prices.

<sup>1</sup> Specific details of the report and additional information can be found in historical reports available on the KAS website ([http://www.nass.usda.gov/Statistics by State/Kansas/Publications/Economics and Misc/Bluestem/index.asp](http://www.nass.usda.gov/Statistics_by_State/Kansas/Publications/Economics_and_Misc/Bluestem/index.asp)).

**Pasture Rents Over Time**

Figures 1a, 1b, and 1c show average rental rates from 1978-2009 for full-season stocker cattle (500-699 lbs), and short-season stocker cattle (500-699 lbs), and cow-calf pairs (spring calving), respectively.<sup>2</sup> In addition to the historical average rents, each figure also shows a trend line showing the linear relationship between rents and time. As expected, all three figures show an upward sloping trend indicating that rents tend to increase over time. Even though rents do tend to increase over time, it should be pointed out that there have been several year-to-year decreases in rents over this time period.

**Figure 1a. Full-Season Stocker Cattle**



<sup>2</sup> KAS did not conduct surveys in several years during this time period (1987, 1988, and 2005) due to budget issues. Data for these years were “filled in” by extrapolating rents based on previous and following years. Similarly, short season rents were not reported prior to 1993, thus rents for 1978-1992 were estimated based on full season rents during this time period along with relationship between full- and short-season rents from 1993-2009.

Figure 1b. Short Season Stocker Cattle

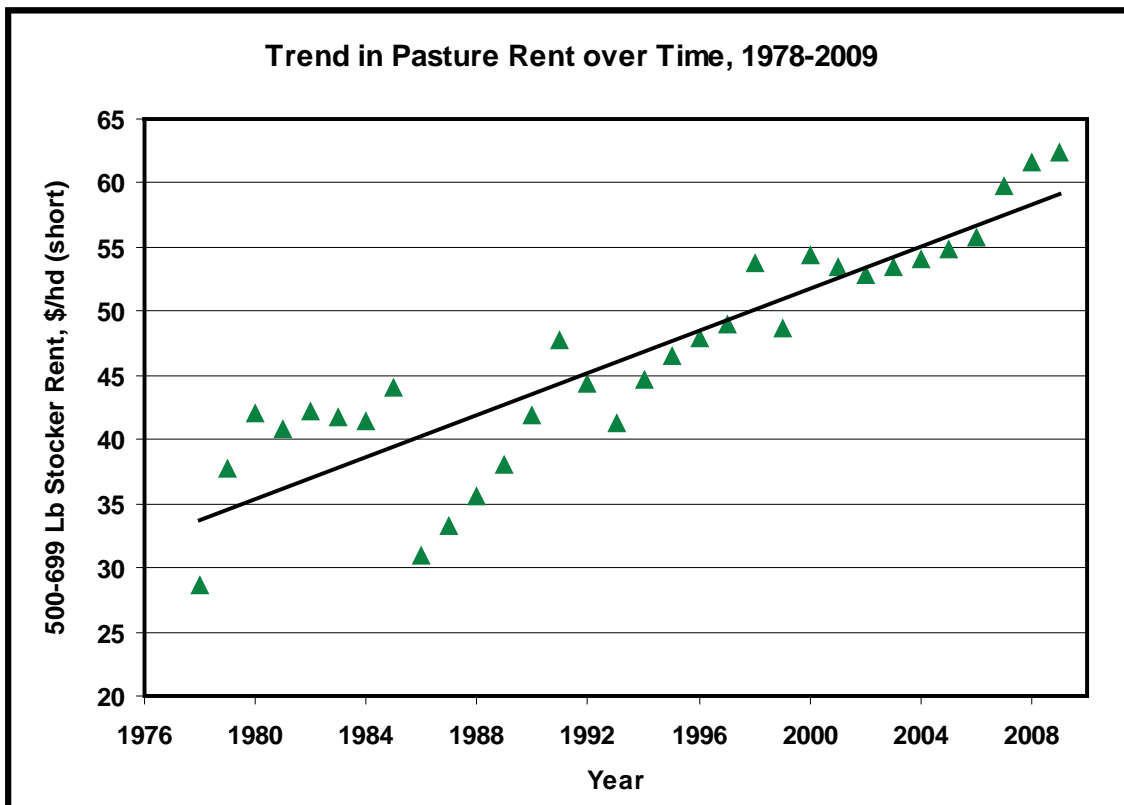
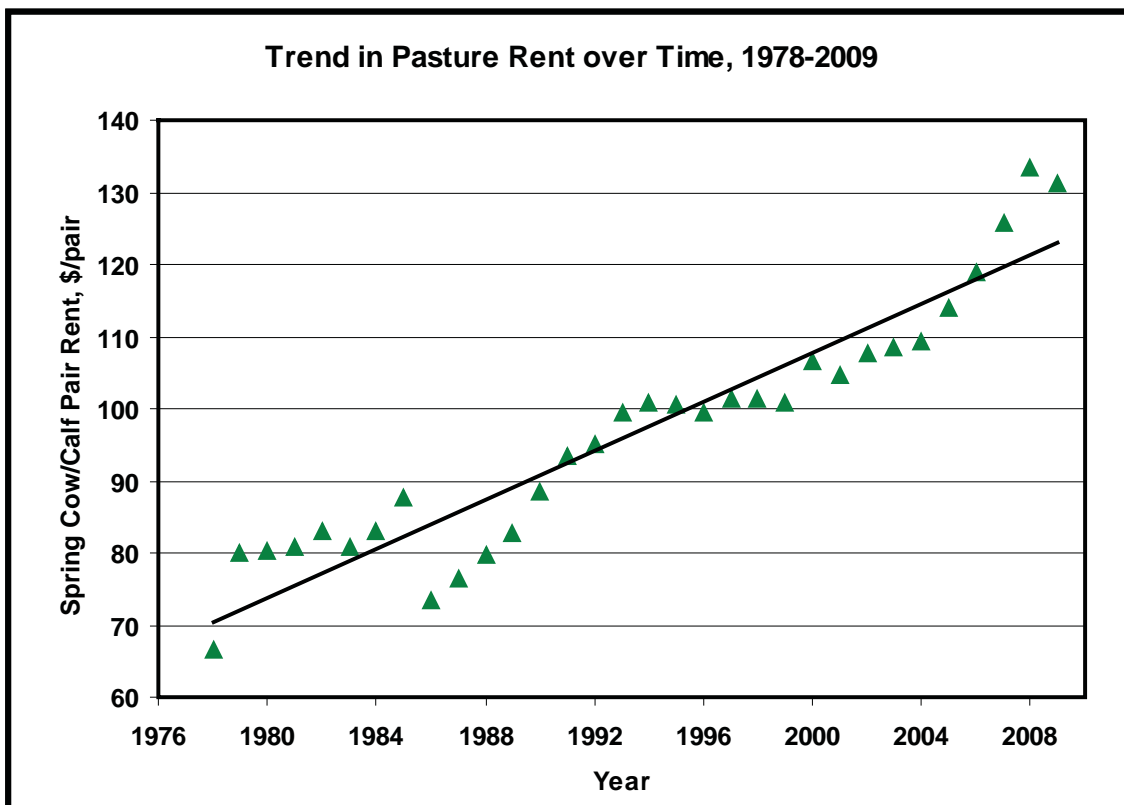


Figure 1c. Full Season Spring Calving Cow-calf Pair



**Pasture Rents versus Feeder Cattle Price**

Figures 2a, 2b, and 2c show average rental rates from 1978-2009 for full-season stocker cattle (500-699 lbs), and short-season stocker cattle (500-699 lbs), and cow-calf pairs (spring calving), respectively, on the y-axis versus the feeder cattle futures price (\$/cwt) on the x-axis. Feeder cattle prices are considered as they represent what calves will be worth when they come off grass. The feeder cattle futures price is the average of the April and October contracts the during the month of March. An average of the April and October contracts is used as this reflects an estimate of what the average price of feeder cattle will be over the summer grazing period. The March time horizon is used as this reflects a time period when lease rates for the upcoming year might be negotiated. In addition to the historical average rents, each figure also shows a trend line showing the linear relationship between rents and feeder cattle prices. While the relationship is not as strong as the time trend, there is a positive relationship between feeder cattle prices and pasture rental rates. That is, as cattle prices increase, pasture rents tend to increase as well.

**Figure 2a. Full-Season Stocker Cattle**

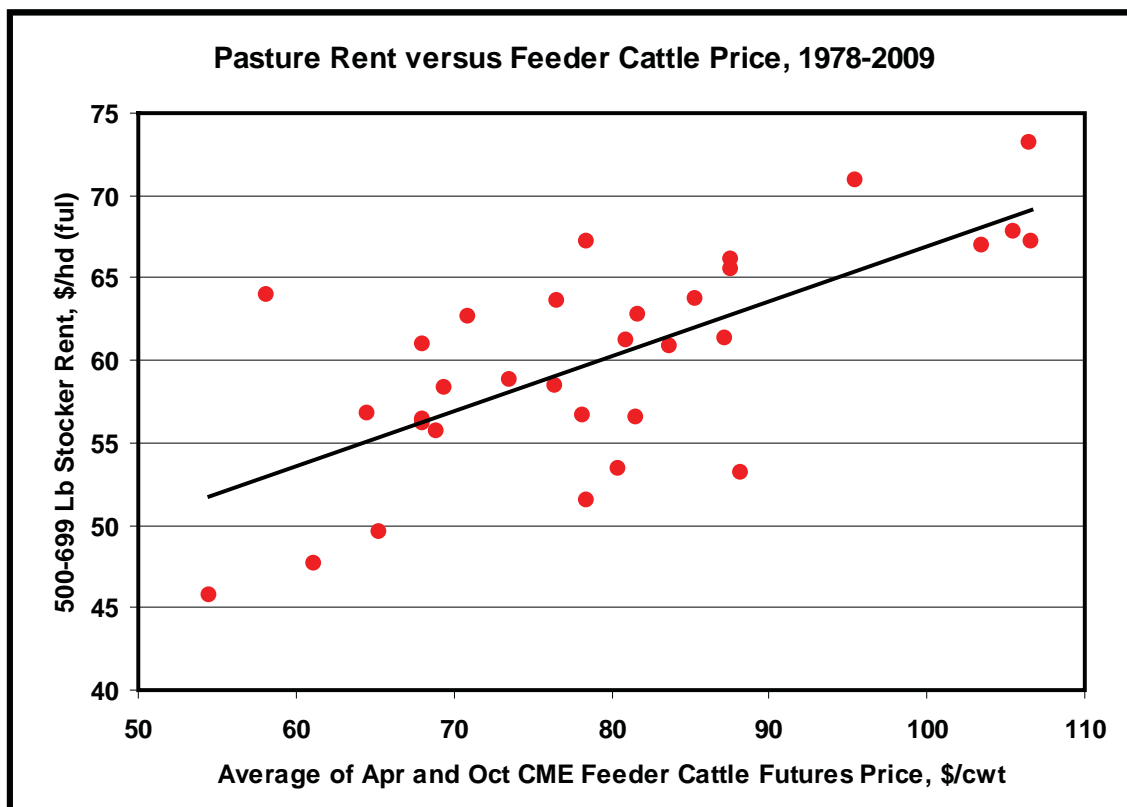


Figure 2b. Short Season Stocker Cattle

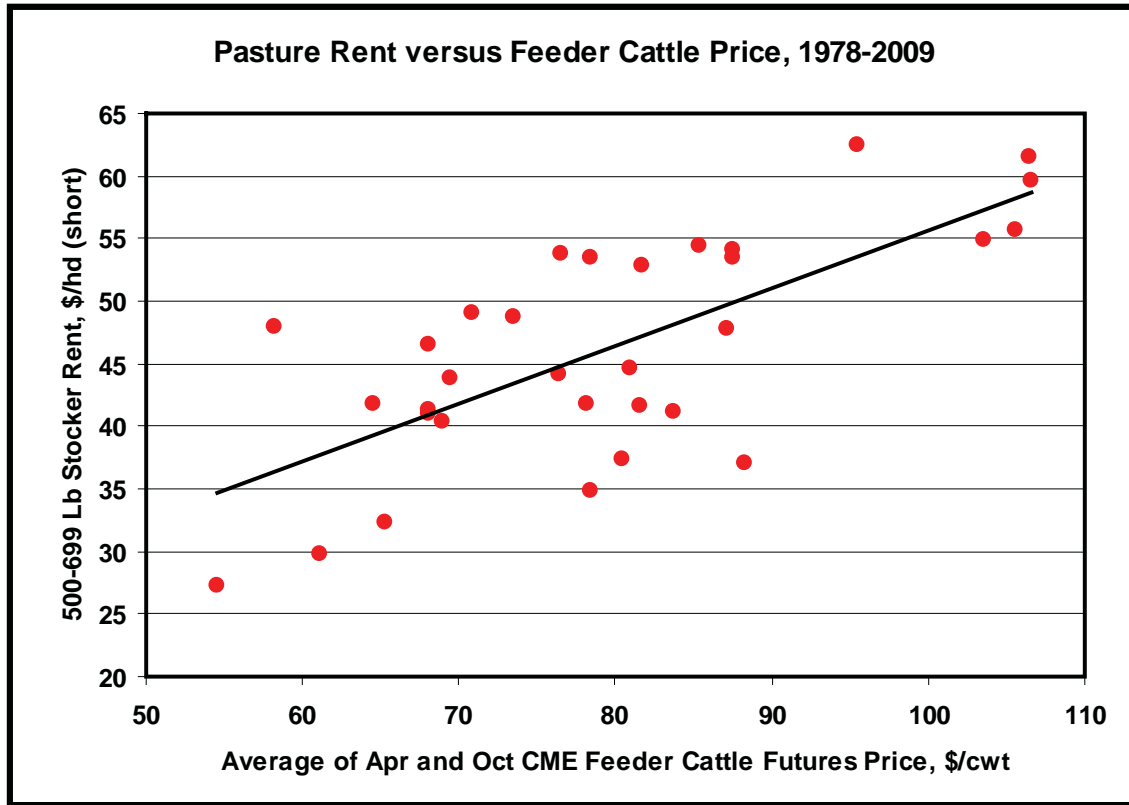
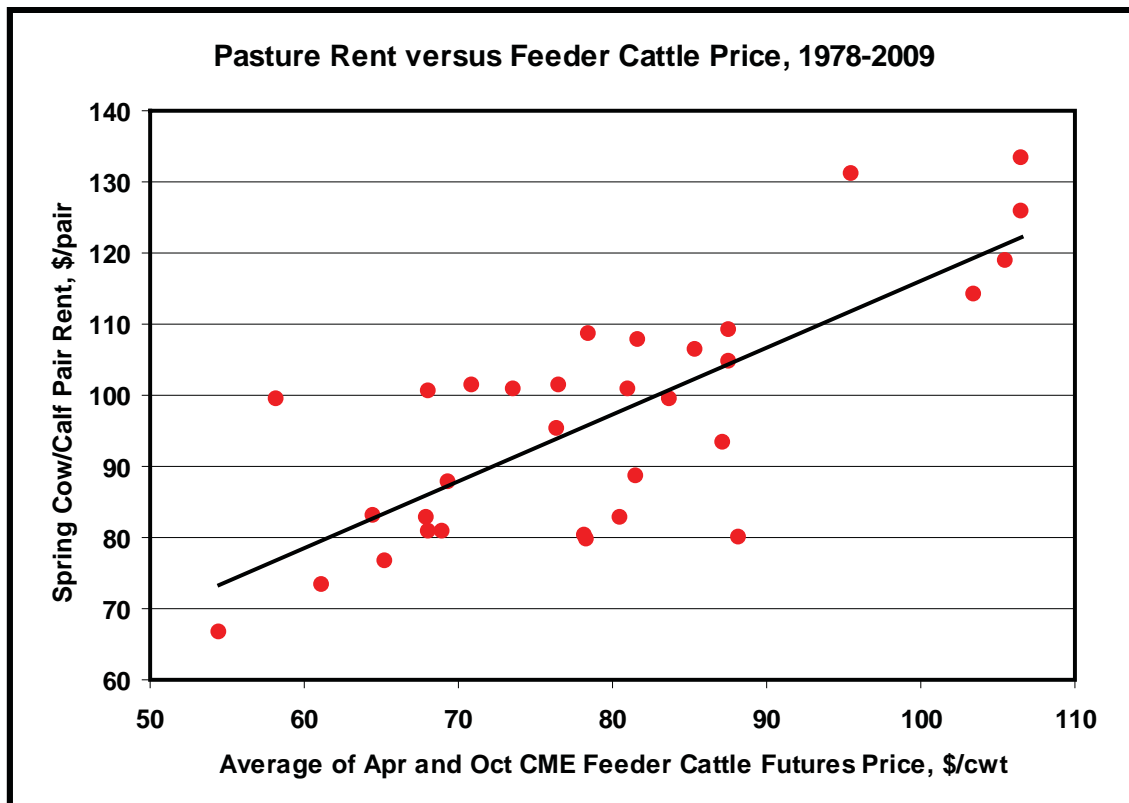


Figure 2c. Full Season Spring Calving Cow-calf Pair



**Pasture Rents versus Corn Price**

Figures 3a, 3b, and 3c show average rental rates from 1978-2009 for full-season stocker cattle (500-699 lbs), and short-season stocker cattle (500-699 lbs), and cow-calf pairs (spring calving), respectively, on the y-axis versus the corn futures price (\$/bu) on the x-axis. Corn price is considered as this is a proxy for feed costs, which is a substitute for pasture (i.e., cattle could be fed rather than grazed). The corn futures price is the average of the May and December contracts the during the month of March. An average of the May and December contracts is used as this reflects an estimate of what the average price of corn will be over the summer grazing period. The March time horizon is used as this reflects a time period when lease rates for the upcoming year might be negotiated. In addition to the historical average rents, each figure also shows a trend line showing the linear relationship between rents and corn prices. While the relationship between corn prices and pasture rents is not as strong as either time (year) or feeder cattle prices, there is a positive relationship between corn prices and pasture rental rates. It is anticipated that if the volatility of corn prices continues into the future as it has been the last several years, the strength of the relationship between pasture rental rates and corn price will likely increase. That is, corn prices will have a bigger impact on pasture rental rates in the future than they have had in the past.

**Figure 3a. Full-Season Stocker Cattle**

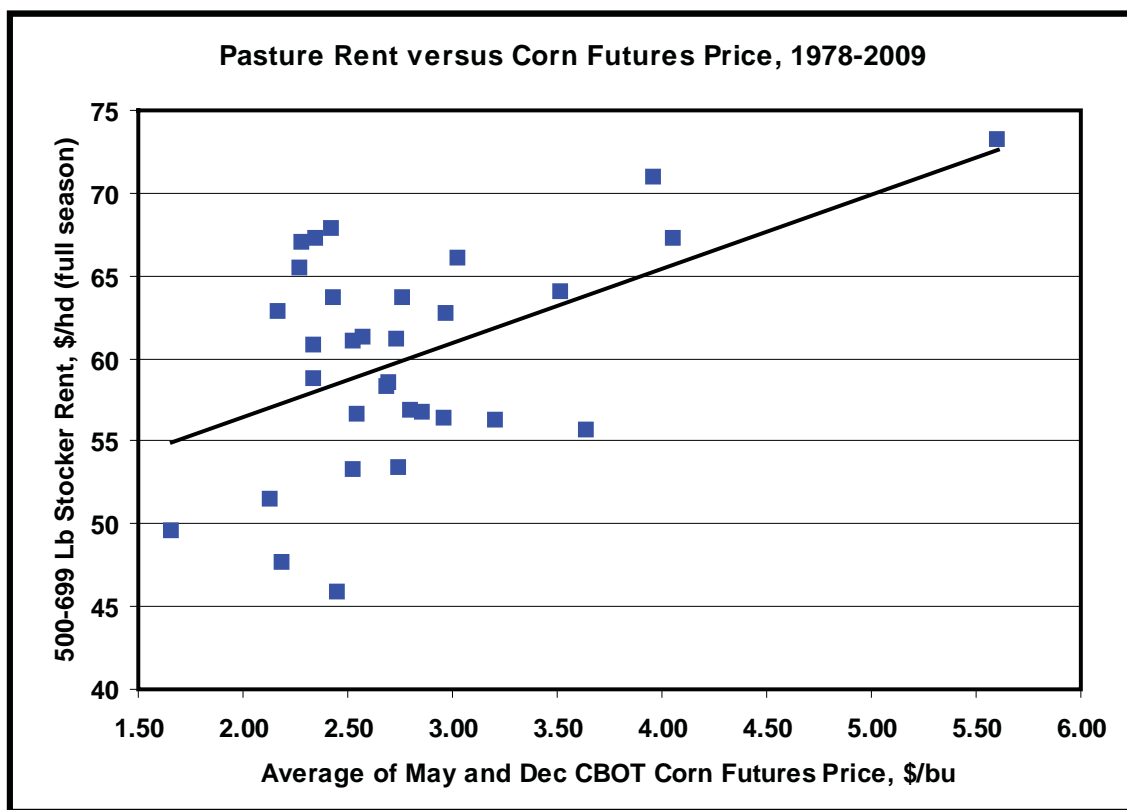
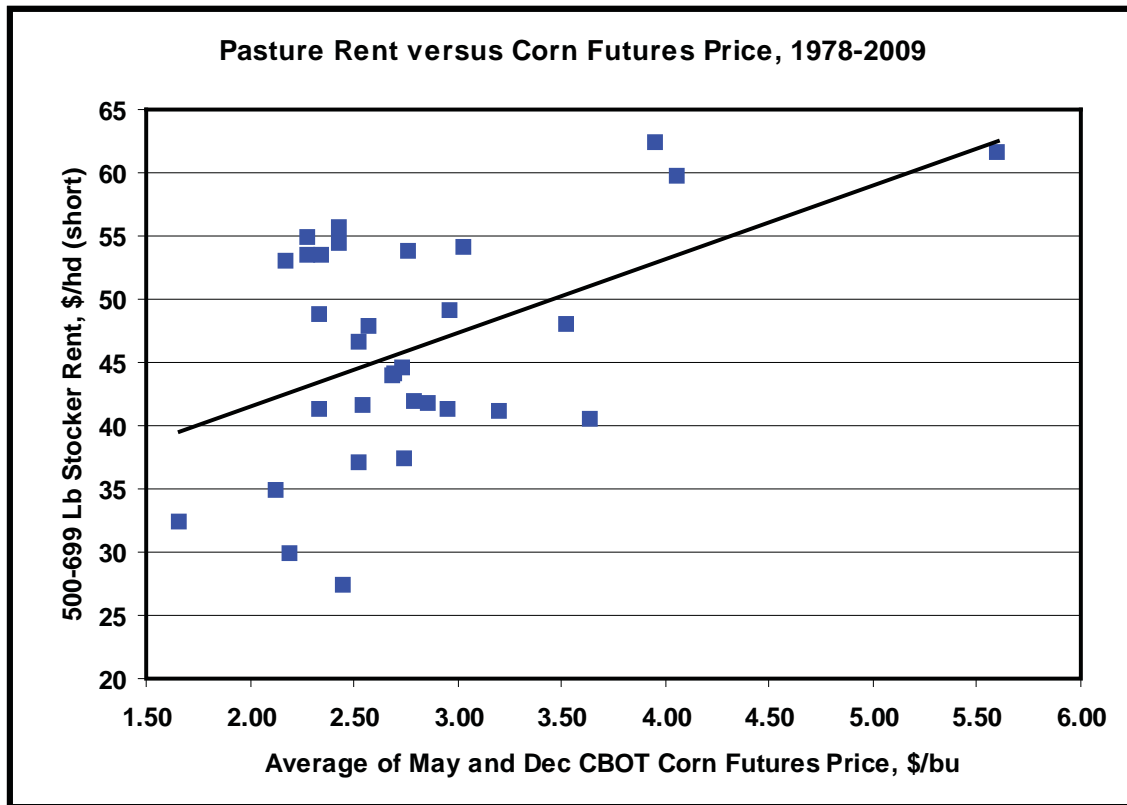


Figure 3b. Short Season Stocker Cattle



### Forecasting Pasture Rents

Based on the previous figures it appears that pasture rental rates are a function of time, feeder cattle prices, and corn prices. While the figures showed trend lines in them only considering one of these variables at a time, it is important to account for all three of these factors simultaneously. That is, when thinking about how rents might change over time, it is also important to account for feeder cattle and corn prices. The following equation was estimated using multiple regression

$$[1] \quad \text{Cash rent}_t = A_0 + A_1(\text{Year}_t) + A_2(\text{FCFP}_t) + A_3(\text{CNP}_t) + A_4(\text{FCFP}_t \times \text{CNP}_t),$$

where  $\text{Cash rent}_t$  is the survey-reported cash rent (\$/head or \$/pair) in year  $t$ ,  $\text{FCFP}_t$  refers to the feeder cattle futures price (\$/cwt) in year  $t$  (average of April and October contracts during the month of March),  $\text{CNP}_t$  refers to the corn futures price (\$/bu) in year  $t$  (average of May and December contracts during the month of March), and  $A_0$  through  $A_4$  are parameters to be estimated. An interaction term between feeder cattle and corn prices ( $\text{FCFP}_t \times \text{CNP}_t$ ) is included to allow the impact of corn (feeder cattle) price to vary as feeder cattle (corn) prices vary.<sup>3</sup> Given the trend lines depicted in the previous figures, it is expected that the values for  $A_1$ ,  $A_2$ , and  $A_3$ . There is no a priori expectation as to the sign on  $A_4$ .

The data used to estimate equation [1] for the different classes of cattle are reported in Tables A1-A4 in the Appendix. Tables A1-A3 report the historical pasture rents per head (stocker cattle) and per pair (cow/calf) and guaranteed acres and a calculated rent per acre for full-season stocker cattle, short-season stocker cattle, and cow-calf pairs, respectively. In the case of stockers, rents are reported for both steers and heifers weighing less than 500 pounds and for those weighing 500-699 pounds. In the case of cow/calf pairs, rents are reported for both spring- and fall-calving herds. Table A4 reports the March monthly average feeder cattle futures prices (April and October contracts and their average) by year and the March monthly average corn futures prices (May and December contracts and their average).

Table 1 reports the results of estimating equation [1] for the different classes of cattle (two different weights of stocker cattle with full- and short-season grazing season and spring- and fall-calving cow/calf pairs). As expected, the coefficients on  $\text{Year}$ ,  $\text{FCFP}$ , and  $\text{CNP}$  are all positive. The interaction between feeder cattle and corn prices ( $\text{FCFP} \times \text{CNP}$ ) is negative in all cases indicating that when both feeder cattle and corn prices are high rents are tempered somewhat. With a few exceptions most all variables are highly statistically significant and the models explained the majority of the variability in pasture rental rates (i.e., R-square values ranged from 0.8746 to 0.9219).

<sup>3</sup> Squared terms for both feeder cattle and corn futures prices were also analyzed to determine if price impacts were nonlinear, however, in almost all cases they were not statistically significant and thus have been excluded from the final models reported.

**Table 1. Regression Results for Pastoral Rental Rate Model (Equation [1])**

Variable*	Stocker Cattle				Cow/calf Pairs	
	Full Season		Short Season		Spring	Fall
	< 500 lbs	500-699 lbs	< 500 lbs	500-699 lbs	calves	calves
Intercept (A0)	-1264.29 (0.000)	-1010.40 (0.000)	-985.25 (0.000)	-1424.39 (0.000)	-2729.52 (0.000)	-2457.53 (0.000)
Year (A1)	0.6414 (0.000)	0.5144 (0.000)	0.5066 (0.000)	0.7107 (0.000)	1.3937 (0.000)	1.2572 (0.000)
FCFP (A2)	0.4193 (0.004)	0.4332 (0.001)	0.1597 (0.092)	0.5194 (0.003)	0.4008 (0.025)	0.4994 (0.034)
CNP (A3)	12.9082 (0.003)	14.0729 (0.000)	6.3172 (0.028)	16.3438 (0.002)	11.3510 (0.031)	17.0647 (0.016)
FCFPxCNP (A4)	-0.1285 (0.005)	-0.1276 (0.001)	-0.0394 (0.182)	-0.1471 (0.006)	-0.0694 (0.201)	-0.1423 (0.053)
R-square**	0.8746	0.8916	0.9219	0.8860	0.9626	0.9099

\* Values in parenthesis below the estimated coefficients are p-values associated with hypothesis test that coefficient is significantly different from zero. A value of 0.05 would imply we are 95% confident that value is significantly different from zero (0.01 implies 99% confidence, and so on).

\* R-square represents the proportion of variability in the dependent variable (pasture cash rent) that is explained by variability in the independent variables (i.e., year, feeder cattle price, and corn price).

By replacing  $A_0$  through  $A_4$  with the corresponding coefficient values from Table 1 in Equation [1] and then plugging in appropriate values for *Year*, *FCFP*, *CNP*, and *FCFP<sub>t</sub>xCNP*, an estimate of cash rental rate can be calculated. For example, assume you wanted to forecast what pasture rental rates might be for cow-calf pairs (spring calves) in 2010 during the summer of 2009 and the following prices were available:

Apr 2010 feeder cattle futures price	\$95.75
Oct 2010 feeder cattle futures price	\$98.00
Average feeder cattle futures price	\$96.88
May 2010 corn futures price	\$4.45
Dec 2010 corn futures price	\$4.35
Average corn futures price	\$4.40

Plugging these values into Equation [1] with the corresponding coefficients for cow-calf pairs (spring calves) gives:

$$\$131.01 = -2729.52 + 1.3937(2010) + 0.4008(96.88) + 11.3510(4.40) - 0.0694(96.88)(4.40).$$

Similarly, if you wanted an estimate of rental rates for full-season 500-699 pound stockers, plugging in the appropriate coefficients from Table 1 gives:

$$\$73.04 = -1010.40 + 0.5144(2010) + 0.4332(96.88) + 14.0729(4.40) - 0.1276(96.88)(4.40).$$

### ***Absolute Values versus Percent Changes***

The predicted values of \$131.01 (spring calving cow/calf pairs) and \$73.04 (full-season stocker weighing 500-699 lbs) reflect average rental rates for the Bluestem Region. However, there is often considerable variability around averages. For example, while the average cow/calf rental rate was \$131.10 per pair in 2009, this value might easily have ranged +/- \$30 depending on numerous factors (e.g., size of pasture, location, water availability, fence condition, etc.). Thus, a prediction for 2010 of \$131.01 might not mean much to somebody currently paying \$110 or \$150 per pair. In cases such as these, it is more appropriate to calculate a percent change in model-predicted rents from one year to the next and then apply that value to the current rent. Table 2 reports the model-estimated yields for the last five years for each of the different livestock classes.

**Table 2. Model-Predicted Pasture Rental Rates by Cattle Class\***

Year	Stocker Cattle				Cow/calf Pairs	
	Full Season		Short Season		Spring calves	Fall calves
	< 500 lbs	500-699 lbs	< 500 lbs	500-699 lbs		
2005	\$64.22	\$67.79	\$52.12	\$56.88	\$115.84	\$120.18
2006	\$65.02	\$68.68	\$53.09	\$58.08	\$118.32	\$122.09
2007	\$64.49	\$70.09	\$57.11	\$60.04	\$126.40	\$126.60
2008	\$63.95	\$71.36	\$60.89	\$61.81	\$133.89	\$130.81
2009	\$66.85	\$71.87	\$57.87	\$62.10	\$127.39	\$129.64

\* Predicted rates are calculated using Equation [1] with coefficient values reported in Table 1 and average feeder cattle and corn futures prices reported in Table A4.

The model-predicted rent for spring calving cow/calf pairs in 2009 was \$127.39 (slightly below the actual value of \$131.10 – Table A3) and for full-season 500-699 pound stockers was \$71.87 (slightly above the actual value of \$70.90 – Table A1). The model-predicted values for 2010 of \$131.01 and \$73.04 represent increases of 2.8% and 1.6% for cow/calf pairs and stockers, respectively. Thus, a cow/calf producer that actually paid \$110.00 per pair in 2009 might expect to pay about \$113.08 (\$110 x 1.028) in 2010. Likewise, a stocker operator that might have paid \$75.00 per head in 2009 might expect to pay \$76.20 (\$75 x 1.016) in 2010. Thus, even though actual rent might deviate considerably from what is reported in the *Bluestem Pasture Release* in some cases, the prediction models reported here can still be useful in helping landowners and producers negotiate future rental rates.

### **Summary**

The *Bluestem Pasture Release* published by Kansas Agricultural Statistics has provided some of the most useful information for Kansas cattle producers and landowners as they negotiate pasture rents each year. However, in some instances producers and landowners want to negotiate rental rates prior to the report being released, or want to think about multi-year rates for future planning. In these cases, pasture rental rates need to be predicted in some manner. This paper provides an overview of historical pasture rental rates for various livestock classes as well as models that can be used to predict future rental rates. Using multiple regression, prediction models were developed for the different classes of cattle where pasture rental rates are a function of year (time trend), feeder cattle prices, and corn prices. These models provide producers and landowners with an alternative method of determining pasture rents that is tied to observed rates in the past.

### **References**

Dumler, T. "Agricultural Leasing 2003 -- Grazing Leases." White paper available at <http://www.agmanager.info/livestock/budgets/production/default.asp>.

Dumler, T. and K.C. Dhuyvetter. "KSU-Graze.xls" Excel spreadsheet available at <http://www.agmanager.info/livestock/budgets/production/default.asp>.

Kansas Agricultural Statistics. *Bluestem Pasture Release*. Various reports available at [http://www.nass.usda.gov/Statistics by State/Kansas/Publications/Economics and Misc/Bluestem/index.asp](http://www.nass.usda.gov/Statistics_by_State/Kansas/Publications/Economics_and_Misc/Bluestem/index.asp).

## Appendix – Data used in estimating regression models (Equation [1]).

**Table A1. Bluestem Pasture Lease Rates and Acreage Guarantees -- Full Summer Season**

Year*	Steers and Heifers -- Under 500 lbs			Steers and Heifers -- 500 - 699 lbs		
	\$/head	acres	\$/acre	\$/head	acres	\$/acre
1978	\$39.60	3.7	\$10.70	\$45.80	4.4	\$10.41
1979	\$46.10	3.8	\$12.13	\$53.20	4.5	\$11.82
1980	\$48.30	3.8	\$12.71	\$56.70	4.6	\$12.33
1981	\$49.10	4.0	\$12.28	\$55.70	4.5	\$12.38
1982	\$51.20	3.9	\$13.13	\$56.80	4.4	\$12.91
1983	\$49.20	3.7	\$13.30	\$56.40	4.4	\$12.82
1984	\$50.30	3.8	\$13.24	\$56.20	4.4	\$12.77
1985	\$51.60	3.9	\$13.23	\$58.30	4.5	\$12.96
1986	\$42.90	3.9	\$11.00	\$47.70	4.4	\$10.84
1987	\$44.40	3.9	\$11.38	\$49.60	4.4	\$11.36
1988	\$45.90	3.9	\$11.77	\$51.50	4.3	\$11.88
1989	\$47.40	3.9	\$12.15	\$53.40	4.3	\$12.42
1990	\$51.50	3.8	\$13.55	\$56.60	4.3	\$13.16
1991	\$54.20	3.8	\$14.26	\$61.30	4.2	\$14.60
1992	\$54.70	3.9	\$14.03	\$58.50	4.2	\$13.93
1993	\$54.80	3.8	\$14.42	\$60.80	4.1	\$14.83
1994	\$57.80	3.9	\$14.82	\$61.20	4.1	\$14.93
1995	\$57.60	3.9	\$14.77	\$61.00	4.5	\$13.56
1996	\$58.40	3.7	\$15.78	\$64.00	4.2	\$15.24
1997	\$55.40	3.5	\$15.83	\$62.70	3.9	\$16.08
1998	\$59.20	3.8	\$15.58	\$63.60	3.9	\$16.31
1999	\$56.00	3.7	\$15.14	\$58.80	3.9	\$15.08
2000	\$60.40	3.6	\$16.78	\$63.70	3.9	\$16.33
2001	\$59.00	3.8	\$15.53	\$65.50	4.0	\$16.38
2002	\$62.50	3.8	\$16.45	\$62.80	4.1	\$15.32
2003	\$62.30	3.8	\$16.39	\$67.20	3.9	\$17.23
2004	\$58.50	3.8	\$15.39	\$66.10	4.1	\$16.12
2005	\$63.35	3.9	\$16.24	\$66.95	4.2	\$16.13
2006	\$68.20	4.0	\$17.05	\$67.80	4.2	\$16.14
2007	\$59.20	3.7	\$16.00	\$67.20	4.4	\$15.27
2008	\$67.60	3.6	\$18.78	\$73.20	3.8	\$19.26
2009	\$65.10	4.3	\$15.14	\$70.90	3.9	\$18.18

\* Surveys were not conducted in 1987, 1988, and 2005. Values for these years were extrapolated from surrounding years.

**Table A2. Bluestem Pasture Lease Rates and Acreage Guarantees -- Short Season**

Year*	Steers and Heifers -- Under 500 lbs			Steers and Heifers -- 500 - 699 lbs		
	\$/head	acres	\$/acre	\$/head	acres	\$/acre
1978	\$33.86	2.5	\$13.75	\$27.27	2.5	\$10.79
1979	\$39.09	2.5	\$15.65	\$37.08	2.5	\$14.91
1980	\$40.86	2.5	\$16.36	\$41.72	2.4	\$17.05
1981	\$41.50	2.6	\$16.17	\$40.40	2.5	\$16.25
1982	\$43.19	2.5	\$17.05	\$41.86	2.5	\$16.57
1983	\$41.58	2.5	\$16.88	\$41.33	2.5	\$16.36
1984	\$42.47	2.5	\$17.00	\$41.06	2.5	\$16.25
1985	\$43.51	2.5	\$17.18	\$43.84	2.5	\$17.63
1986	\$36.52	2.5	\$14.42	\$29.79	2.5	\$11.79
1987	\$37.72	2.5	\$14.90	\$32.31	2.5	\$12.72
1988	\$38.93	2.5	\$15.37	\$34.83	2.6	\$13.64
1989	\$40.14	2.5	\$15.85	\$37.35	2.6	\$14.55
1990	\$43.43	2.5	\$17.39	\$41.59	2.6	\$16.20
1991	\$45.60	2.5	\$18.26	\$47.82	2.6	\$18.35
1992	\$46.00	2.5	\$18.17	\$44.11	2.6	\$16.92
1993	\$43.00	2.4	\$17.92	\$41.20	2.4	\$17.17
1994	\$43.90	2.2	\$19.95	\$44.60	2.4	\$18.58
1995	\$45.60	2.5	\$18.24	\$46.50	2.6	\$17.88
1996	\$47.60	2.5	\$19.04	\$47.90	2.5	\$19.16
1997	\$48.10	2.3	\$20.91	\$49.00	3.0	\$16.33
1998	\$51.50	2.6	\$19.81	\$53.80	2.9	\$18.55
1999	\$47.10	2.4	\$19.63	\$48.70	2.6	\$18.73
2000	\$50.90	2.4	\$21.21	\$54.40	2.7	\$20.15
2001	\$51.40	2.6	\$19.77	\$53.40	2.7	\$19.78
2002	\$50.50	2.9	\$17.41	\$52.90	2.8	\$18.89
2003	\$49.20	2.5	\$19.68	\$53.50	2.6	\$20.58
2004	\$52.60	2.5	\$21.04	\$54.10	2.8	\$19.32
2005	\$51.80	2.8	\$18.84	\$54.90	2.8	\$19.61
2006	\$51.00	3.0	\$17.00	\$55.70	2.8	\$19.89
2007	\$56.60	3.0	\$18.87	\$59.70	2.9	\$20.59
2008	\$61.40	2.8	\$21.93	\$61.60	2.7	\$22.81
2009	\$56.60	2.8	\$20.21	\$62.40	2.7	\$23.11

\* Survey was not conducted in 2005, value for this year was extrapolated from surrounding years. Short season rents were not reported prior to 1993, thus rents for 1978-1992 were estimated based on full season rents during this time period along with relationship between full- and short-season rents from 1993-2009.

**Table A3. Bluestem Pasture Lease Rates and Acreage Guarantees -- Full Summer Season**

Year*	Cow/calf pairs -- Spring calves			Cow/calf pairs -- Fall calves		
	\$/head	acres	\$/acre	\$/head	acres	\$/acre
1978	\$66.60	6.6	\$10.09	\$75.20	7.3	\$10.30
1979	\$79.90	6.9	\$11.58	\$87.50	7.6	\$11.51
1980	\$80.30	6.9	\$11.64	\$91.00	7.7	\$11.82
1981	\$80.80	7.0	\$11.54	\$90.20	7.8	\$11.56
1982	\$83.00	6.7	\$12.39	\$93.70	7.2	\$13.01
1983	\$80.70	6.7	\$12.04	\$91.10	7.4	\$12.31
1984	\$82.90	6.7	\$12.37	\$90.00	7.5	\$12.00
1985	\$87.80	7.2	\$12.19	\$96.00	8.0	\$12.00
1986	\$73.40	6.9	\$10.64	\$80.40	7.5	\$10.72
1987	\$76.53	7.0	\$10.99	\$83.80	7.6	\$11.07
1988	\$79.67	7.0	\$11.33	\$87.20	7.6	\$11.42
1989	\$82.80	7.1	\$11.66	\$90.60	7.7	\$11.77
1990	\$88.50	7.3	\$12.12	\$99.10	8.0	\$12.39
1991	\$93.40	7.1	\$13.15	\$104.60	7.8	\$13.41
1992	\$95.20	7.1	\$13.41	\$106.90	8.0	\$13.36
1993	\$99.50	7.1	\$14.01	\$106.90	8.1	\$13.20
1994	\$100.90	7.2	\$14.01	\$110.50	8.1	\$13.64
1995	\$100.60	7.4	\$13.59	\$112.20	8.1	\$13.85
1996	\$99.40	7.1	\$14.00	\$109.80	7.6	\$14.45
1997	\$101.40	6.9	\$14.70	\$113.40	7.6	\$14.92
1998	\$101.40	6.8	\$14.91	\$110.20	7.6	\$14.50
1999	\$100.90	7.0	\$14.41	\$108.10	7.5	\$14.41
2000	\$106.50	7.1	\$15.00	\$115.00	7.6	\$15.13
2001	\$104.70	7.2	\$14.54	\$113.60	7.8	\$14.56
2002	\$107.80	7.4	\$14.57	\$109.50	7.6	\$14.41
2003	\$108.60	7.3	\$14.88	\$115.20	7.5	\$15.36
2004	\$109.20	7.2	\$15.17	\$111.90	7.2	\$15.54
2005	\$114.05	7.6	\$15.11	\$116.25	7.6	\$15.40
2006	\$118.90	7.9	\$15.05	\$120.60	7.9	\$15.27
2007	\$125.80	8.0	\$15.73	\$125.50	8.0	\$15.69
2008	\$133.30	7.6	\$17.54	\$132.10	8.0	\$16.51
2009	\$131.10	7.4	\$17.72	\$127.60	8.3	\$15.37

\* Surveys were not conducted in 1987, 1988, and 2005. Values for these years were extrapolated from surrounding years.

**Table A4. Feeder Cattle and Corn Futures Prices\***

Year	Feeder Cattle, \$/cwt			May	Corn, \$/bu	
	April	October	Average		December	Average
1978	\$55.31	\$53.69	\$54.50	\$2.44	\$2.47	\$2.45
1979	\$91.06	\$85.41	\$88.23	\$2.47	\$2.59	\$2.53
1980	\$78.62	\$77.71	\$78.16	\$2.70	\$3.01	\$2.86
1981	\$68.59	\$69.32	\$68.96	\$3.60	\$3.69	\$3.65
1982	\$66.23	\$62.80	\$64.51	\$2.71	\$2.89	\$2.80
1983	\$70.16	\$65.91	\$68.04	\$2.96	\$2.96	\$2.96
1984	\$69.57	\$66.43	\$68.00	\$3.47	\$2.94	\$3.20
1985	\$68.77	\$70.07	\$69.42	\$2.75	\$2.63	\$2.69
1986	\$61.44	\$60.77	\$61.11	\$2.32	\$2.07	\$2.19
1987	\$66.94	\$63.62	\$65.28	\$1.60	\$1.73	\$1.66
1988	\$80.40	\$76.35	\$78.38	\$2.07	\$2.19	\$2.13
1989	\$81.27	\$79.67	\$80.47	\$2.79	\$2.70	\$2.75
1990	\$81.69	\$81.35	\$81.52	\$2.55	\$2.55	\$2.55
1991	\$88.37	\$85.96	\$87.16	\$2.54	\$2.62	\$2.58
1992	\$78.37	\$74.43	\$76.40	\$2.72	\$2.67	\$2.70
1993	\$85.38	\$82.11	\$83.75	\$2.24	\$2.43	\$2.34
1994	\$81.11	\$80.83	\$80.97	\$2.85	\$2.63	\$2.74
1995	\$67.64	\$68.41	\$68.02	\$2.46	\$2.60	\$2.53
1996	\$57.23	\$59.09	\$58.16	\$3.90	\$3.15	\$3.52
1997	\$67.91	\$73.83	\$70.87	\$3.03	\$2.90	\$2.97
1998	\$75.22	\$77.92	\$76.57	\$2.71	\$2.81	\$2.76
1999	\$72.23	\$74.83	\$73.53	\$2.24	\$2.44	\$2.34
2000	\$84.09	\$86.62	\$85.36	\$2.31	\$2.55	\$2.43
2001	\$87.02	\$88.11	\$87.56	\$2.14	\$2.41	\$2.28
2002	\$80.32	\$83.05	\$81.68	\$2.07	\$2.28	\$2.17
2003	\$76.42	\$80.40	\$78.41	\$2.33	\$2.37	\$2.35
2004	\$87.39	\$87.73	\$87.56	\$3.05	\$3.00	\$3.03
2005	\$104.00	\$103.01	\$103.51	\$2.17	\$2.39	\$2.28
2006	\$105.17	\$105.88	\$105.53	\$2.28	\$2.58	\$2.43
2007	\$106.00	\$107.17	\$106.58	\$4.07	\$4.05	\$4.06
2008	\$102.66	\$110.31	\$106.49	\$5.53	\$5.67	\$5.60
2009	\$92.69	\$98.24	\$95.47	\$3.80	\$4.11	\$3.96

\* Monthly average prices during the month of March of each year.