



2016 Kansas County-Level Cash Rents for Non-Irrigated Cropland

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Rental Rate Market Overview

The situation in the farm economy facing producers and landowners for 2016 can best be described as bleak, relative to the high profitability years experienced recently. Data from the Kansas Farm Management Association (KFMA), shown in Figure 1, capture the sudden downturn in commodity grain prices that began in late 2013 and shows little sign of letting up for this upcoming crop year. The KFMA data from 2015 will be released later this spring, but expectations are that results will be similar to the 2014 profits.

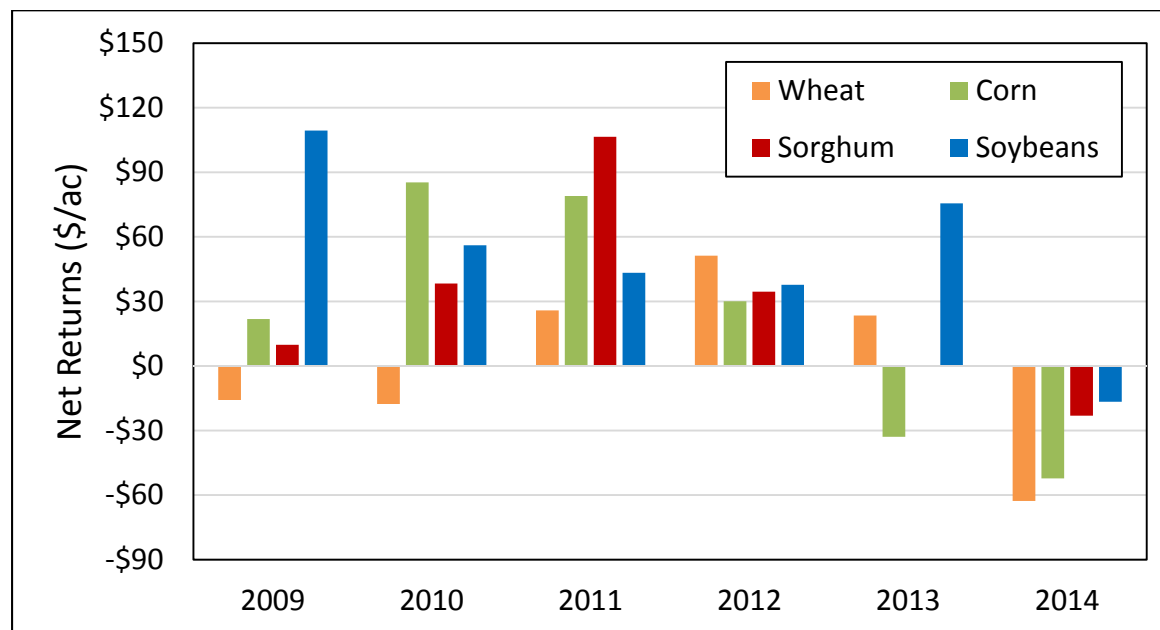


Figure 1. Profitability of wheat, corn, soybean, and grain sorghum enterprises in north-central Kansas, 2009 to 2014.

The sudden decline in profitability of crop farms puts participants in the rental rate market in a difficult situation. On one hand, rental rates should decline relative to estimates from the past two years to align what farmers can afford to pay based on expected profitability. A decline in expected revenues, due to lower commodity prices, with little to no change in costs of production puts downward pressure on rental rates based on farmer profit margins. The flip side

to this argument is that rental rates will likely stay where they are because, despite a decline in expected profitability for 2016, farmers do not want to underbid and lose leased ground. So they will draw from any working capital (i.e. cash on hand) they acquired during the previous high profitability years and pay more than expected profitability suggests they can afford. These countervailing forces are causing 'stickiness' in the rental rate market and leave many people unsure of how to negotiate cash rents to avoid locking in rental rates that will prove to be unsustainable if commodity prices stay low.

Rental Rate Estimates - Yesterday and Today

This is the fourth edition of rental rate estimates for non-irrigated land in Kansas. This process has revealed some interesting aspects of how calculated values line up with peoples' opinions of where rental rates are currently or where they are headed. The first and second years of this report (2013 and 2014), the primary comparison was to rental rates published by the U.S. Department of Agriculture's National Agricultural Statistics Service (USDA-NASS). At that time, rental rates estimated by surveys lagged the market and did not reflect the repeated years of profitability that were driving newly negotiated leases to record rental rates. The K-State estimates were considerably higher than the USDA-NASS values and it forced people to reconsider what was going on in the market and how aggressive bidding for leased land was becoming.

The 2015 report gave the first indications that expectations of profitability were declining. The prices used to calculate the estimates in this report are based on the average of the November trading days for the wheat, corn, and soybean harvest-time futures contracts. So in the fall of 2015, harvest-time contracts were showing weakening prices and the estimated rental rates dropped significantly from the 2014 values. This happened again for the 2016 report. Prices for each of the crops declined and the impact on expected profitability was negative. For the 2016 report, all the estimated rental rates from this report are shown for each Kansas county, as well as an average of these rental rates. The motivation for showing the previous years is to remind people that we have likely experienced both a record high and a record low in profitability over the span of a few short years. While commodity prices will adjust quickly to new market conditions, it may take a year or two for rental rates to fully adjust to the current conditions. This is due to both the stickiness described above and the use of multi-year contracts (typically 3 to 5 years) where the rental rate is fixed across several crop seasons.

Rental Rate Calculations

The first step in the cash rent estimation process is to determine equitable crop share percentages for the landowner and the operator. The decision aid used to guide these calculations is the *KSU-Lease.xls* Excel spreadsheet available at the AgManager.info website (<http://www.agmanager.info/farmmgmt/land/lease>). The basic premise of the approach in *KSU-Lease* is that a lease is considered to be equitable if the income from the lease is shared proportionally to the value of the inputs (costs) contributed by both parties.¹

The *KSU-Lease* spreadsheet requires input of production cost data for a given crop mix, expected yields, and expected commodity prices. Costs of production and farming practices were based on information in the Farm Management Guides (projected crop budgets published annually and available at <http://www.agmanager.info/farmmgmt/fmg/nonirrigated>). The crop enterprise mix for each of six regions (NW, SW, NC, SC, NE, and SE) of the state were determined using average acres estimates from 2010-2012 from the Kansas Farm Management Association (KFMA) database (<http://www.agmanager.info/kfma>). The crop mix was limited to wheat, corn, soybeans, and grain sorghum, where wheat was either summer-fallow or continuous. Expected yields for these same crops were estimated from the KFMA database using a 20-year trend-adjusted yield. Expected commodity prices were based on 2016-2018 harvest futures contracts (July for wheat, December for corn, and November for soybeans) and were the average daily prices during the month of November 2015. To get at expected cash prices for each of the regions, 3-year historical (2013-2015) harvest-time basis levels were added to the average futures prices.

Other inputs required in the *KSU-Lease* spreadsheet are seed, fertilizer, chemical, land, and machinery costs. Prices of seed, fertilizer, and chemicals (herbicide, insecticide, and fungicide) were based on current costs. Machinery costs were based on region-specific projected custom rates for 2016, using a diesel price of \$2.00 per gallon, multiplied by typical farming operations in the region. Custom rates were used to proxy for machinery costs. Land cost in the *KSU-Lease* spreadsheet was set at a level that resulted in an economic profit of \$0 per tillable acre. This is consistent with the economic theory that competitive industries, such as commodity farming, will have average economic profits close to zero in the long run. This happens because when profits are positive across most farmers, they use those profits to bid up the prices of fixed

¹ For a further discussion of the principles behind how leases are determined see publications NCFMEC-01 and NCFMEC-02 also available at www.AgManager.info.

assets like land. Likewise, if profits are negative, there will be economic pressures for land values (and rents) to decline.

Given the completed crop budgets in *KSU-Lease* for each of the six regions, the next step was to identify who provided each of the contributions and calculate the resulting equitable crop share percentages for the landowner and the operator. The equitable shares were calculated based on a net share lease (i.e., no inputs being shared by the landowner) with an adjustment to account for 100% of government payments going to the operator.² It is important to recognize that the calculated equitable crop share percentages are based on the relative contributions of the inputs, which may (or may not) reflect what people have traditionally done in the region. That is, the calculated values reflect what is equitable based on current costs and do not necessarily reflect what people have historically done.

The expected commodity prices, crop acreage mix, historic yields, and landowner's crop share percentage averaged to the regional level are presented in Table 1. The estimated crop share percentages used in the analysis range from 16.4% in the Southeast region of the state to 35.7% in the Northeast region.³ The difference in crop share splits across the regions reflects the relative productivity, costs, and revenue potential of the farmland.

The second step in the cash rent estimation process was to use the equitable crop share percentages determined in step one to calculate the expected return to the landowner, given price and yield expectations for the 2016 crop year for each county.⁴ To do this, the estimated crop share split was applied to 8-year historical county-level yields (2008-2015), as reported by the National Agricultural Statistics Service (USDA-NASS), and the expected commodity price forecasts shown in Table 1 to determine an estimate of expected landowner crop share revenue at the county level. The crop rotation (i.e., crop mix) was based on county level data from the 2002 and 2007 Census of Agriculture.

² The completed versions of the six *KSU-Lease* files include numerous details that are not presented here to save space. However, the files are available from the authors upon request.

³ These values will deviate from what might be "typical" in a region for two primary reasons. First, these values reflect what is equitable based on current land values and farming practices. Second, these values have been adjusted to account for the operator receiving 100% of government payments.

⁴ For counties in the West Central, Central, and East Central regions, the average crop share percentage for the corresponding northern and southern regions was used.

Table 1. Prices and Acreages Used to Estimate Cash Rental Rates

Region	Price, \$/bu	Crop Enterprise Mix, % of acres*	20-Year Adjusted Trend Yields*	Landowner's Crop Share
Northwest				19.7%
Wheat	5.07	35.3	48.0	
Corn	3.92	18.3	77.5	
Soybeans	7.97	3.2	28.5	
Grain Sorghum	3.74	8.0	71.5	
Southwest				10.0%
Wheat	5.11	41.0	38.5	
Corn	4.03	1.7	63.5	
Soybeans	7.96	0.5	25.5	
Grain Sorghum	3.79	15.9	70.0	
North Central				20.5%
Wheat	5.20	44.2	51.5	
Corn	4.21	10.2	98.0	
Soybeans	7.99	31.5	33.0	
Grain Sorghum	3.80	14.1	85.0	
South Central				18.4%
Wheat	5.23	64.7	51.5	
Corn	3.65	7.5	86.5	
Soybeans	8.12	15.9	28.5	
Grain Sorghum	3.68	11.9	74.0	
Northeast				28.7%
Wheat	5.19	6.8	51.5	
Corn	3.81	41.6	125.5	
Soybeans	8.20	50.7	43.0	
Grain Sorghum	3.80	0.9	76.5	
Southeast				13.1%
Wheat	5.26	15.3	47.5	
Corn	3.91	31.8	107.0	
Soybeans	8.27	63.3	32.5	
Grain Sorghum	3.79	2.3	73.0	

* Crop enterprise mix and trend yields presented here are averaged across the KFMA region. However, county-level values for both of these variables were used to calculate the county-level rental rates. Crop enterprise mix values do not necessarily add to 100% due to fallow or double cropping, depending on the region.

The K-State estimates for the 2016 crop year are down from those estimated for the 2015 crop year (publication available at <http://www.agmanager.info/farmmgmt/land/lease>). The biggest difference in the calculations between these two estimates is the significant drop in futures prices between November 2015 and November 2016. The volatility of crop prices translates back to volatility in ability to pay for leased land and may affect the length of leases landowners and tenants are willing to negotiate. More volatile prices will give the incentive to negotiate rental

rates more often to avoid situations where farmers are overpaying or landowners are receiving less than market value for their cropland.

Remember, the K-State rental rate estimates reflects what might be expected for a newly negotiated rent for 2016 between two parties negotiating an equitable lease and reflecting what a producer could afford to pay, given expected profitability. They do not necessarily reflect what all people are paying for leased land or where the rates the market will ultimately adjust to if farm profitability remains low.

Table 2. Estimated Cash Rental Rates for Non-Irrigated Cropland (\$/ac)¹

Region ²	County	2013 Rent (\$/ac)	2014 Rent (\$/ac)	2015 Rent (\$/ac)	2016 Rent (\$/ac)	Average (\$/ac)
NW	Cheyenne	66.00	45.30	30.50	19.80	40.40
	Decatur	88.20	67.80	46.00	30.70	58.18
	Graham	71.60	54.10	36.90	24.60	46.80
	Norton	81.50	69.30	47.10	31.50	57.35
	Rawlins	73.40	57.60	39.10	25.80	48.98
	Sheridan	78.70	62.10	42.20	28.20	52.80
	Sherman	64.80	44.70	30.20	19.90	39.90
	Thomas	70.00	56.00	38.00	25.20	47.30
Average:		74.28	57.11	38.75	25.71	48.96
WC	Gove	75.20	54.40	35.40	22.80	46.95
	Greeley	59.80	40.70	26.40	16.90	35.95
	Lane	60.60	41.30	26.80	17.00	36.43
	Logan	70.90	46.20	30.00	19.20	41.58
	Ness	63.50	39.30	25.50	16.10	36.10
	Scott	79.80	60.00	39.10	25.10	51.00
	Trego	65.30	46.30	30.20	19.30	40.28
	Wallace	64.20	41.60	26.90	17.10	37.45
Wichita	74.50	48.00	31.30	20.00	43.45	
Average:		68.20	46.42	30.18	19.28	41.02
SW	Clark	54.10	38.50	23.60	14.00	32.55
	Finney	70.50	40.40	24.90	15.10	37.73
	Ford	72.20	44.00	27.00	16.30	39.88
	Grant	48.60	29.30	18.00	10.90	26.70
	Gray	73.00	46.10	28.40	17.20	41.18
	Hamilton	51.70	31.10	19.10	11.50	28.35
	Haskell	57.00	37.90	23.30	14.10	33.08
	Hodgeman	65.00	35.70	21.90	13.10	33.93
	Kearny	61.60	34.60	21.30	12.80	32.58
	Meade	56.60	30.90	19.00	11.40	29.48
	Morton	46.90	28.20	17.40	10.60	25.78
	Seward	56.50	34.60	21.30	12.90	31.33
	Stanton	59.30	36.90	22.70	13.70	33.15
	Stevens	53.50	33.20	20.50	12.50	29.93
	Average:		59.04	35.81	22.03	13.29

¹ K-State Rental Rate is based on using *KSU-Lease* and a risk-adjusted equitable crop share approach. *KSU-Lease.xls* is available at <http://www.agmanager.info/farmmg/land/lease/default.asp>

² Region refers to the Kansas Ag Statistics Service Crop Reporting Districts (CRD), where NW=Northwest, WC=West Central, SW=Southwest, NC=North Central, C=Central, SC= South Central, NE=Northeast, EC=East Central, SE=Southeast

Table 2. Estimated Cash Rental Rates for Non-Irrigated Cropland (\$/ac), cont.

Region	County	2013 Rent (\$/ac)	2014 Rent (\$/ac)	2015 Rent (\$/ac)	2016 Rent (\$/ac)	Average (\$/ac)
NC	Clay	94.60	115.80	79.90	56.30	86.65
	Cloud	89.20	108.80	75.10	53.40	81.63
	Jewell	92.40	109.10	75.40	53.70	82.65
	Mitchell	87.30	105.40	72.80	51.70	79.30
	Osborne	76.90	86.00	59.50	42.40	66.20
	Ottawa	74.70	92.50	63.70	45.10	69.00
	Phillips	77.70	84.00	57.90	41.40	65.25
	Republic	95.50	115.60	79.50	56.40	86.75
	Rooks	66.80	66.20	45.70	32.60	52.83
	Smith	87.20	98.60	68.10	48.60	75.63
	Washington	102.30	123.00	84.80	59.90	92.50
	Average:	85.87	100.45	69.31	49.23	76.22
C	Barton	60.40	72.20	48.20	34.10	53.73
	Dickinson	79.70	98.50	65.70	46.00	72.48
	Ellis	63.70	55.00	36.70	25.90	45.33
	Ellsworth	70.80	80.00	53.40	37.60	60.45
	Lincoln	75.60	86.90	58.00	40.90	65.35
	Marion	64.10	88.40	58.90	41.50	63.23
	McPherson	67.80	91.80	61.30	43.10	66.00
	Rice	69.50	90.20	60.10	42.50	65.58
	Rush	58.70	63.10	42.20	30.00	48.50
	Russell	70.70	69.40	46.40	32.90	54.85
	Saline	72.60	91.30	60.80	42.50	66.80
	Average:	68.51	80.62	53.79	37.91	60.21
SC	Barber	44.50	59.40	38.70	26.60	42.30
	Comanche	39.90	48.20	31.40	21.80	35.33
	Edwards	53.00	56.50	36.80	25.80	43.03
	Harper	42.40	57.90	37.70	26.00	41.00
	Harvey	66.90	90.50	59.00	41.40	64.45
	Kingman	45.90	62.30	40.60	27.90	44.18
	Kiowa	52.00	51.30	33.50	23.40	40.05
	Pawnee	61.80	63.70	41.50	29.20	49.05
	Pratt	55.20	69.30	45.20	31.40	50.28
	Reno	56.40	75.90	49.50	34.50	54.08
	Sedgwick	56.00	76.10	49.60	34.70	54.10
	Stafford	56.50	70.20	45.80	32.00	51.13
	Sumner	50.70	68.40	44.60	31.00	48.68
	Average:	52.40	65.36	42.61	29.67	47.51

Table 2. Estimated Cash Rental Rates for Non-Irrigated Cropland (\$/ac), cont.

Region	County	2013 Rent (\$/ac)	2014 Rent (\$/ac)	2015 Rent (\$/ac)	2016 Rent (\$/ac)	Average (\$/ac)
NE	Atchison	172.50	180.50	125.80	109.30	147.03
	Brown	202.90	213.20	148.50	129.30	173.48
	Doniphan	229.60	239.60	166.70	145.90	195.45
	Jackson	150.20	157.30	109.80	94.90	128.05
	Jefferson	161.80	170.10	118.60	102.90	138.35
	Leavenworth	149.20	157.20	109.80	94.50	127.68
	Marshall	143.20	152.20	106.60	91.80	123.45
	Nemaha	164.00	172.00	120.00	104.10	140.03
	Pottawatomie	147.40	155.70	108.80	94.00	126.48
	Riley	125.80	134.30	94.20	80.90	108.80
	Wyandotte	141.50	151.30	105.70	90.70	122.30
	Average:	162.55	171.22	119.50	103.48	139.19
EC	Anderson	72.90	92.60	58.30	50.10	68.48
	Chase	70.80	91.50	57.80	49.20	67.33
	Coffey	71.30	91.30	57.60	49.10	67.33
	Douglas	138.10	122.00	76.60	66.10	100.70
	Franklin	114.90	102.80	64.80	55.30	84.45
	Geary	117.90	104.60	66.20	56.70	86.35
	Johnson	123.20	109.30	68.80	58.90	90.05
	Linn	69.10	89.10	56.30	47.70	65.55
	Lyon	70.20	89.90	56.80	48.30	66.30
	Miami	125.20	110.00	69.20	59.40	90.95
	Morris	94.40	83.70	53.00	45.40	69.13
	Osage	113.70	98.40	62.00	53.10	81.80
	Shawnee	142.80	125.80	79.00	68.20	103.95
	Wabaunsee	122.30	106.90	67.30	58.10	88.65
		Average:	103.34	101.28	63.84	54.69
SE	Allen	64.70	63.00	32.60	27.80	47.03
	Bourbon	64.80	61.90	32.10	27.20	46.50
	Butler	70.30	67.10	34.70	30.00	50.53
	Chautauqua	51.20	46.90	24.30	20.80	35.80
	Cherokee	69.20	67.20	34.80	29.60	50.20
	Cowley	55.40	53.60	27.90	23.80	40.18
	Crawford	71.50	68.80	35.60	30.50	51.60
	Elk	63.60	60.40	31.30	26.70	45.50
	Greenwood	72.70	70.40	36.40	31.10	52.65
	Labette	59.00	56.50	29.20	25.10	42.45
	Mongtomery	61.20	57.90	29.90	25.70	43.68
	Neosho	60.10	57.50	29.70	25.40	43.18
	Wilson	64.30	61.60	31.90	27.40	46.30
	Woodson	65.40	63.10	32.60	28.00	47.28
		Average:	63.81	61.14	31.64	27.08