

22. Flexible Cash Rents: The Devil's in the Details

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Kevin Dhuyvetter assists farmers, landowners, and others throughout Kansas with risk and return assessment of alternative crop and livestock production and marketing systems. He works extensively with land-related issues such as buying and leasing land. Current research projects are looking at factors impacting land values, economics of no-tillage and other crop-related production technologies, the economics of grazing systems, and factors affecting feeder cattle prices and basis, and the economic returns of alternative dairy systems. One of Kevin's trademarks is his development of decision tools that can be used by clientele for helping them with the myriad of decisions they face in their operations.

Abstract/Summary

Cropshare lease arrangements have been popular in Kansas historically, however the current trend is to replace traditional crop share leases with fixed cash rent leases. While there are many potential benefits of this, the increased volatility of both input and output markets in recent years increases the financial risk associated with fixed cash rents. Flexible cash rents are very appealing conceptually, but they can be very difficult to define. This session will walk through several specific examples showing how a flexible cash rent lease could be designed.



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Flexible Cash Rents: *The Devil's in the Details*

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Flexible Cash Rents – WHAT are they?

- Flexible cash rents simply refer to land rental arrangements where the amount of cash rent paid (received) varies based upon some pre-determined formula (i.e., formalizes bonus rents)
- Methods of “flexing” rental rates, i.e., formulas are based on:
 - Yield (actual for producer, county average, etc.)
 - Price (harvest, season average, actual)
 - Revenue (yield x price, crop insurance, residue)
 - Costs (e.g., fertilizer price)
 - Other...

Flexible Cash Rents – WHAT are they?

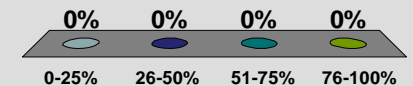
Examples of flexible cash rents...

1. Crop share “after the fact” (not what I’m talking about)
2. Base rent plus bonus/discount based on actual farm yield and local price (base rent could be floor)
3. Base rent (floor) plus bonus based on county or region average yield and price versus historical average
4. Base rent plus an adjustment (+/-) based on county, region, or state average cash rent change from previous year (simply method of indexing rent)

What type of leases do you use?

The percent of acres I rent or manage that are with a crop share lease is...

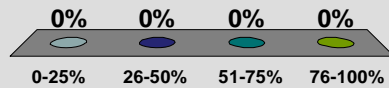
1. 0-25%
2. 26-50%
3. 51-75%
4. 76-100%



What type of leases do you use?

The percent of acres I rent or manage that are with a fixed cash rent is...

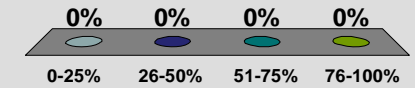
1. 0-25%
2. 26-50%
3. 51-75%
4. 76-100%



What type of leases do you use?

The percent of acres I rent or manage that are with a variable (flexible) cash rent is...

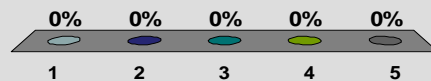
1. 0-25%
2. 26-50%
3. 51-75%
4. 76-100%



Fixed cash leases...

Of land that I rent (manage) on a fixed cash rent, on average, the rental rate is renegotiated...

1. Every year
2. Every 2-3 years
3. Every 4-6 years
4. 7 years or more
5. Does not apply



Flexible Cash Rents – WHY?

- Trend in Kansas has been moving away from crop share leases to more cash leases
- Crop share rents somewhat “adjust” to changing conditions and thus updating crop share lease terms regularly is much less important
- Properly designed flexible rents capture positive features of both cash and crop share leases

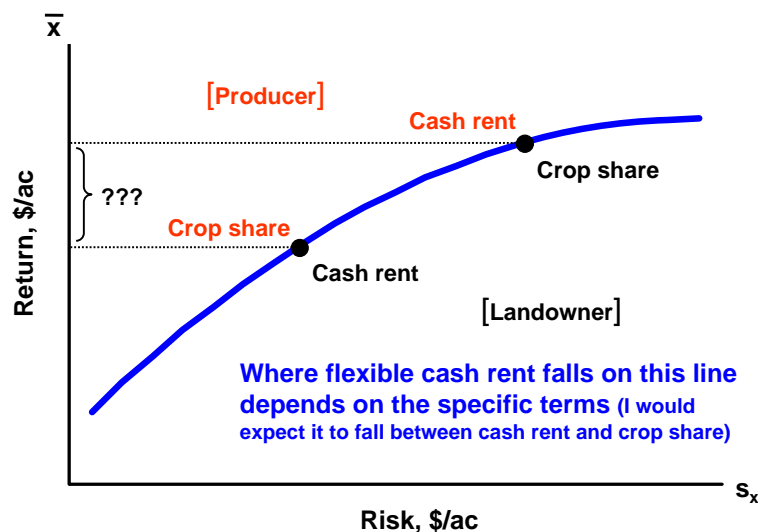
Flexible Cash Rents – WHY?

- Many good reasons to go to cash rent, but there are risks associated with multi-year fixed rents
- Method of allowing rents to vary from year-to-year without having to renegotiate rents annually (avoid mental anguish associated with rental rate negotiation)
- Way of sharing/managing risks associated with volatile markets (without hassles of crop share lease)
- FSA has changed rules allowing flexible leases
- Very appealing for certain situations, but they are not appropriate in all cases (depends on why you are considering cash rent)

Flexible Cash Rents – HOW?

- There is not a single “right” way to do this! (but there are plenty of wrong ways)
- A couple things to keep in mind
 - Risk-return trade-off suggests that higher risk is associated with higher expected returns and vice versa
 - The need for communication increases to ensure that all parties involved understand the flexible arrangement and how it can play out under different scenarios (i.e., have a written lease and include example calculations)
 - Important to remain “flexible” with flexible cash rents (somewhat of a learning process)

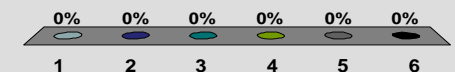
Landowner/producer risk-return tradeoff



Risk premium...

How should cash rent for non-irrigated land compare with expected returns from equitable crop share...

1. 5-10% premium
2. Equal
3. 5-10% discount
4. 10-15% discount
5. 15-25% discount
6. >25% discount



Flexible Cash Rents – HOW?

Steps to determining a flexible cash lease

1. Establish a base cash rent
(often tied to local market and/or costs of production)
2. Determine what base rent will be “flexed” on
 - Price deviation from base (fixed bushel rent)
 - Yield deviation from base
 - Price and yield (revenue) deviation from base
 - Gross revenue deviation from base
 - Cost deviation from base

Flexible Cash Rents – HOW?

1. Establish a base cash rent

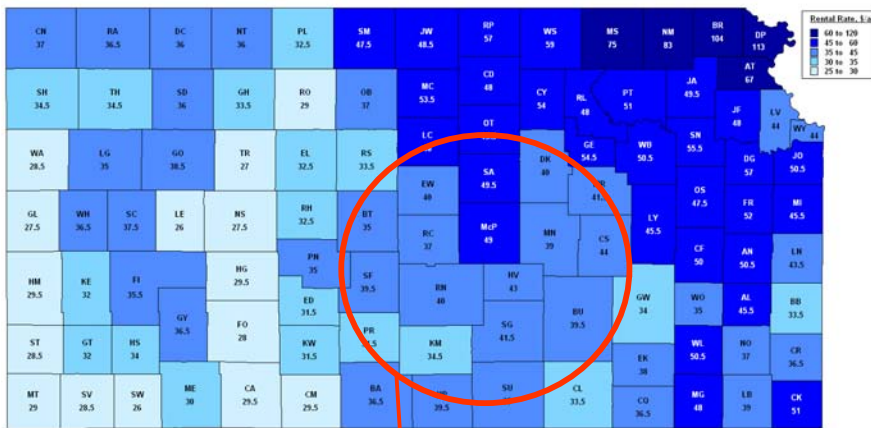
A. USDA NASS survey value

- Advantages – third party reported, county-level data now available, easy/transparent (requires no assumptions)
- Disadvantages – county average may not fit specific situation, year lag in availability, subject to revisions

B. Budget-derived value (*KSU-Lease.x/ls*)

- Advantages – tailored to specific situation (rotation, yields, etc.), equitable crop share can be calibrated to local area
- Disadvantages – requires development of crop budgets and associated assumptions

1. Establish a base cash rent – USDA NASS values



* Cash rent values as reported by USDA NASS and Kansas Agricultural Statistics (KAS).

Example that follows is based on central / south central Kansas.

1. Establish a base cash rent – *KSU-Lease.x/ls*

Projected crop budgets for SC KS (based on KSU FM Guides and current 2011 bids)

Crop/System	Wht-R	Wht-C	Sorghum	Soybean	Corn	DC SB	Total	Per
Planted acres of each crop	40.0	20.0	15.0	15.0	10.0	0.0	100.0	Acres
Tillable acres per planted acre	1.00	1.00	1.00	1.00	1.00	0.00	100.0	Tillable
INCOME PER ACRE								
A. Yield per acre	45.0	45.0	80.0	27.0	90.0	20.0	---	---
B. Price per unit	\$5.55	\$5.55	\$3.55	\$9.30	\$3.80	\$9.30	\$26,432	\$264.32
C. Net government payments	\$15.35	\$15.35	\$15.35	\$15.35	\$15.35	\$0.00	\$1,535	\$15.35
D. Indemnity payments	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0	\$0.00
E. Miscellaneous income	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0	\$0.00
F. Returns/acre ((A x B) + C + D + E)	\$265.10	\$265.10	\$299.35	\$266.45	\$357.35	\$186.00	\$27,967	\$279.67
COSTS PER ACRE								
1. Seed	\$13.00	\$9.75	\$9.87	\$41.85	\$52.29	\$49.60	\$2,014	\$20.14
2. Herbicide	3.04	6.38	18.58	15.40	29.26	16.72	1,051	10.51
3. Insecticide / Fungicide	15.60	15.60	0.00	0.00	1.00	0.00	946	9.46
4. Fertilizer and Lime	55.00	43.08	52.08	15.56	58.48	8.80	4,661	46.61
5. Crop Consulting	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00
6. Crop Insurance	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00
7. Drying	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00
8. Miscellaneous	6.00	6.00	6.00	6.00	6.00	6.00	600	6.00
9. Machinery Expense	96.61	96.61	94.81	55.90	96.58	48.80	9,023	90.23
10. Non-machinery Labor	10.40	10.40	10.40	10.40	10.40	6.50	1,040	10.40
11. Irrigation	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00
12. Land Charge / Rent	55.00	55.00	55.00	55.00	55.00	0.00	5,500	55.00
G. SUB TOTAL	\$254.65	\$242.82	\$246.74	\$200.11	\$309.01	\$136.42	\$24,835	\$248.35
13. Interest on 1/2 Nonland Costs	6.16	5.72	6.89	4.68	8.20	4.45	602	6.02
H. TOTAL COSTS	\$260.82	\$248.54	\$252.63	\$204.78	\$317.21	\$140.87	\$25,437	\$254.37
I. RETURNS OVER COSTS (F - H)	\$4.28	\$16.56	\$46.72	\$61.67	\$40.14	\$45.13	\$2,530	\$25.30
J. TOTAL COSTS/UNIT (H/A)	\$5.80	\$5.52	\$3.16	\$7.58	\$3.52	\$7.04	---	---
K. RETURN TO TOTAL COST ((I+13)/G)	4.10%	9.18%	21.32%	33.16%	15.64%	36.34%	9.95%	9.95%

Equitable crop share = 66.8/33.2 (share fertilizer and chemicals and chemical applications)

ALTERNATIVE METHODS OF ESTIMATING CASH RENT								5:29 AM
Crop/System	Wht-R	Wht-C	Sorghum	Soybean	Corn	DC SB	Total	Per Planted
Total tillable acre	----->						100.0	Planted
Planted acres of each crop	40.0	20.0	15.0	15.0	10.0	0.0	100.0	Acre
A. Landowner's COST								
Land	\$55.00	\$55.00	\$55.00	\$55.00	\$55.00	\$0.00	\$5,500	\$55.00
Irrigation equipment	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0	\$0.00
Total	\$55.00	\$55.00	\$55.00	\$55.00	\$55.00	\$0.00	\$5,500	\$55.00
B. Landowner's EQUITABLE SHARE RENT ---- risk adj factor 0.0%								
Total income	\$265.10	\$265.10	\$299.35	\$266.45	\$357.35	\$186.00	\$27,967	\$279.66
Landowner's share	33.2%	33.2%	33.2%	33.2%	33.2%	33.2%	33.2%	33.2%
Landowner's income	\$88.09	\$88.09	\$99.47	\$88.54	\$118.74	\$61.81	\$9,293	\$92.93
Landowner operating expense	31.37	28.41	32.30	18.61	36.57	13.27	2,952	29.52
Income less operating expense	\$56.72	\$59.68	\$67.17	\$69.92	\$82.17	\$48.53	\$6,341	\$63.41
Less risk adjustment	0.00	0.00	0.00	0.00	0.00	0.00	0	0.00
Cash rent equivalent	\$56.72	\$59.68	\$67.17	\$69.92	\$82.17	\$48.53	\$6,341	\$63.41
C. Amount tenant CAN AFFORD TO PAY								
Total income	\$265.10	\$265.10	\$299.35	\$266.45	\$357.35	\$186.00	\$27,967	\$279.66
Total operating expense	\$205.82	\$193.54	\$197.63	\$149.78	\$262.21	\$140.87	\$19,937	\$199.37
Return to land and irr equip	\$59.28	\$71.56	\$101.72	\$116.67	\$95.14	\$45.13	\$8,030	\$80.30
Comparison of alternative cash rent methods								
Low	\$55.00	\$55.00	\$55.00	\$55.00	\$55.00	\$0.00	\$5,500	\$55.00
Average	\$57.00	\$62.08	\$74.63	\$80.53	\$77.44	\$31.22	\$6,623	\$66.23
High	\$59.28	\$71.56	\$101.72	\$116.67	\$95.14	\$48.53	\$8,030	\$80.30
Returns above all costs (profit)	\$4.28	\$16.56	\$46.72	\$61.67	\$40.14	\$45.13	\$2,530	\$25.30

Flexible Cash Rents – HOW?

Questions to ask

1. Does cash rent flex up and down or only up?
(this should impact base price as it relates to market rate)

If cash rent only flexes up (i.e., base rent is a floor), should base rent be adjusted to reflect risk situation?

Examining the options market might help guide thinking on this issue...

At-the-money call options premiums as % of futures*

Crop (contract)	----- Scenario -----		
	A	B	C
Wheat (Jul 2011)	13.8%	13.0%	7.3%
Corn (Dec 2011)	13.6%	10.6%	7.4%
Soybean (Nov 2011)	10.2%	8.2%	7.2%

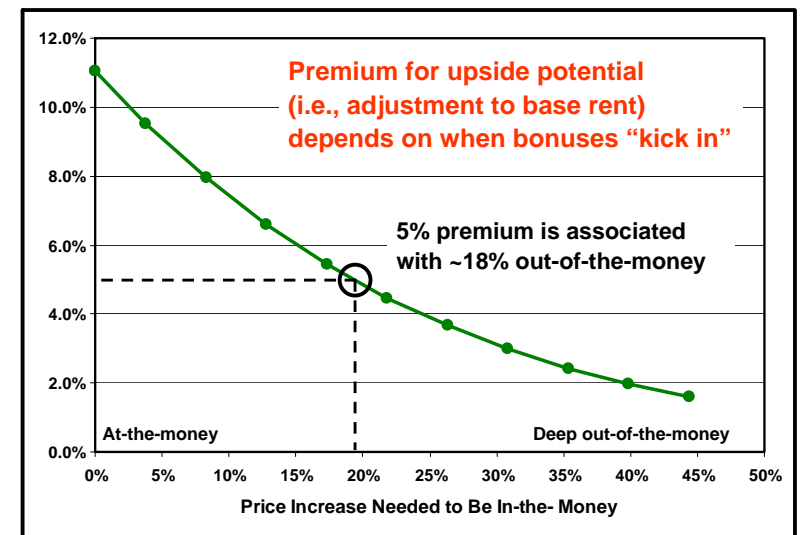
A. Current volatility (39.5, 33.3, 25.5) and current days to expiration (311-465)

B. Current volatility and 274 days to expiration (9 months)

C. Historical volatility (22.3, 23.5, 22.3) and 274 days to expiration

* Based on futures market closing prices on 8/13/2010 and Black-Scholes options model

Call options premiums as percent of current price*



* Based on 8/13/2010 DEC 2011 corn futures volatility, but assuming 274 days to expiration

Flexible Cash Rents – EXAMPLES

- Two simple examples to show ...
 - types of information needed
 - types of terms that need to be agreed upon
 - how price and yield impact rent
- Method 1 – rent flexed on either yield, price, or revenue (yield x price)
- Method 2 – rent flexed based on how gross revenue compares to a base revenue (can make adjustments based on whole farm or crop-by-crop)

Flexible Cash Rents – Method 1 (Flex1 in *KSU-Lease.xls*)

Example of Cash Rent Flexing on Yield, Price, or Revenue

A. Market cash rent, \$/acre									\$55.00
B. Adjustment to market rent, \$/acre									-\$2.75
C. Base cash rent, \$/acre (A+B)									\$52.25
D. Flex direction (Both (up and down) vs Up)									Up
E. Percent of change to factor into flexible rent									100%
F. Adjustments based on Base acres or Actual acres									Base
G. Crop	Wht-R	Wht-C	Sorghum	Soybean	Corn	DC SB	Total		
H. Include crop (Y=1, N=0)	1	1	1	1	1	0			
I. Base acres	40.0	20.0	15.0	15.0	10.0	0.0	100.0		
J. Base yield	48.8	48.8	86.8	29.3	97.7	21.7			
K. Base price	\$6.02	\$6.02	\$3.85	\$10.09	\$4.12	\$10.09			
L. Base revenue	\$293.78	\$293.78	\$334.18	\$295.64	\$402.52	\$218.95	\$31,099		

- 1) Market cash rent is based on projected budgets and equitable crop share
- 2) Base rent is based on market rent with 5% reduction, base yields & prices are increased 8.5% (results in base revenue increasing ~18%)
- 3) All crops in rotation are included (adjustments are based on base vs. actual acres)
- 4) Rent flexes up only (i.e., \$52.25 is a floor)
- 5) Increases above base revenue are shared proportionately (i.e., 100%)

Flexible Cash Rents – Method 2 (Flex2 in *KSU-Lease.xls*)

Example of Cash Rent Flexing on Gross Income (accounting for crop insurance)

A. Base cash rent, \$/acre									\$55.00
B. Adjustment to market rent, \$/acre									-\$2.75
C. Base cash rent, \$/acre (A+B)									\$52.25
D. Flex direction (Both (up and down) vs Up)									Up
E. Crop	Wht-R	Wht-C	Sorghum	Soybean	Corn	DC SB	Total		
F. Include crop (Y=1, N=0)	1	1	1	1	1	0			
G. Acres	40.0	20.0	15.0	15.0	10.0	0.0	100.0		
H. Expected yield	45	45	80	27	90	20			
I. Expected price	\$5.55	\$5.55	\$3.55	\$9.30	\$3.80	\$9.30			
J. Crop insurance premium	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0		
K. Expected revenue + prem	\$249.75	\$249.75	\$284.00	\$251.10	\$342.00	\$186.00	\$26,432		
L. Base revenue, \$/ac	\$295	\$295	\$335	\$295	\$405	\$220	\$31,200		
M. Bonus above gross, %	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%			

Base rent, crop acres, etc. are the same as before...

- 1) Base rent is based on market rent with 5% reduction, base revenue equals expected revenue x ~118% (rounded to increment of \$5/acre)
- 2) Bonuses are equal to 33.3% of gross income above base revenue and are calculated both for farm total and on a crop-by-crop basis.

Flexible Cash Rents – HOW?

Questions to ask

2. What yields and prices are used to determine actual gross revenue?
 - a. Yields and prices used for determining adjustments to base rent need to be consistent with those used in determining base rent and should be spelled out in lease.
 - b. Suggestions – use actual crop yields as turned in for insurance records and a multi-week or monthly average cash price for a relevant market (if post-harvest prices are used, prices should be net of storage costs). I would not use actual prices received for crop.

Flexible Cash Rents – HOW?

Questions to ask

3. What crops should all be included in calculations?
 - a. Goal is to pay bonuses when income is high and thus it is important that bonuses are tied reasonably close to what is actually done. However, the benefits of additional complexity need to outweigh the associated costs.
 - b. Suggestion – include crops that account for the majority of the production and income and those which data will be readily available. Nothing wrong with applying percentage changes from 80-90% of acres to 100% of acres rented. Remember KISS principle...

Flexible Cash Rents – HOW?

Questions to ask

4. Are crop insurance and government payments (e.g., ACRE, SURE) included / accounted for?
 - a. Typically crop insurance indemnity payments are received when income is low and thus they would not be expected to trigger bonuses. However, if working with gross income for farm they could be included (need to account for premium cost).
 - b. Suggestion – do not factor in crop insurance or government payments to bonuses (i.e., these are handled strictly by tenant), but share information in case things need to be changed in the future.

Flexible Cash Rents – HOW?

Questions to ask

5. What about flexing cash rent based on costs of crop inputs?
 - a. Probably only makes sense for major inputs that have considerable price risk (e.g., fertilizer, irrigation fuel). Establish a \$/acre for each crop (and total for farm) based on quantity and price and then flex on price deviation from base (do not use actual price paid).
 - b. Suggestion – if this is a major concern, consider going back to crop share lease. Focus on yield and price first to keep things slightly less complex.

Flexible Cash Rents – HOW?

Questions to ask

6. What will final rent be under alternative potential outcomes?
 - a. Ask yourself lots of “what if” questions to make sure you know how things “turn out” under various price/yield scenarios.
 - b. Suggestion – take time to create example outcomes as this will help with identifying the terms that need to be included in written lease (include examples showing relevant calculations in written lease).

“What if” scenarios...

- Need to examine how lease arrangement being considered “plays out” under various yield and price scenarios
- Historical yield history and the options market can be used to estimate potential yield and price outcomes with assigned probabilities
- Or, you can simply use a subjective “gut feel” guess at possible outcomes
- Bottom line – while it might be preferred to do something that has statistical validity, that is not near as important as just doing something!

Flexible Cash Rents – “What if” scenarios (KSU-Lease.xls)

Yield scenarios to consider

	Wht-R	Wht-C	Sorghum	Soybean	Corn	DC SB	Use
Used in analysis above	45	45	80	27	90	20	1
Budget yields	45	45	80	27	90	20	1
High yield scenario	57	57	115	40	135	35	0
Low yield scenario	33	33	60	20	70	12	0
Slightly above budget	48	48	85	33	100	25	0
Slightly below budget	42	42	73	25	85	15	0

Price scenarios to consider

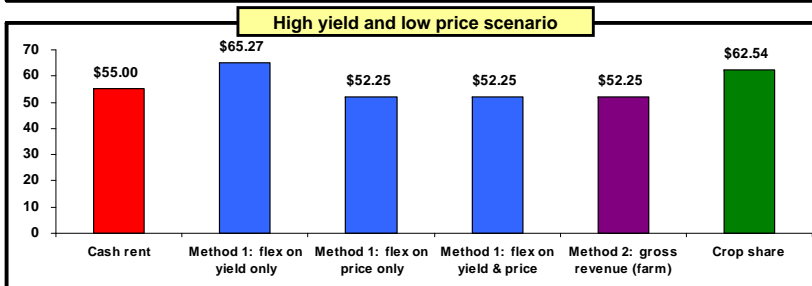
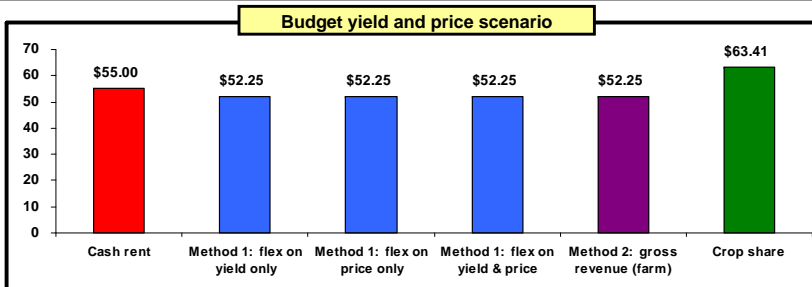
	Wht-R	Wht-C	Sorghum	Soybean	Corn	DC SB	Use
Used in analysis above	\$5.55	\$5.55	\$3.55	\$9.30	\$3.80	\$9.30	1
Budget prices	\$5.55	\$5.55	\$3.55	\$9.30	\$3.80	\$9.30	1
High price scenario	\$6.25	\$6.25	\$4.00	\$11.00	\$4.50	\$11.00	0
Low price scenario	\$4.00	\$4.00	\$2.75	\$7.50	\$3.00	\$7.50	0
Slightly above budget	\$5.75	\$5.75	\$3.65	\$9.50	\$4.00	\$9.50	0
Slightly below budget	\$5.25	\$5.25	\$3.35	\$8.50	\$3.60	\$8.50	0

Base yield as % of budget 108.5% 108.5% 108.5% 108.5% 108.5% 108.5%

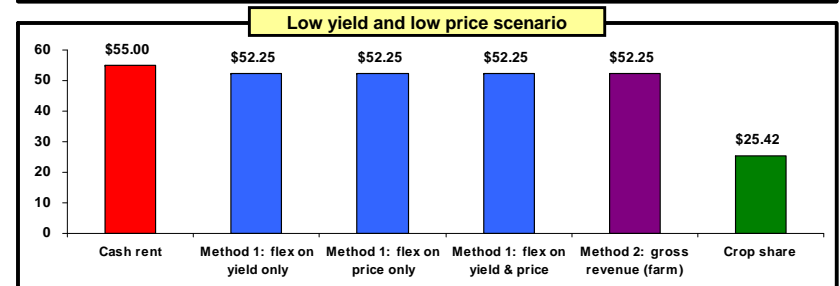
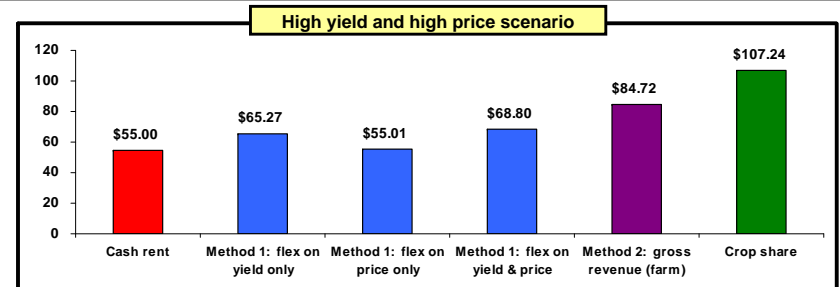
Base price as % of budget 108.5% 108.5% 108.5% 108.5% 108.5% 108.5%

By changing the “1”s and “0”s in the “Use” column, we can easily see the impact of various yield and price scenarios.

Flexible Cash Rents – “What if” scenarios...



Flexible Cash Rents – “What if” scenarios...




Let's look at *KSU-Lease.xls*...

Tools for analyzing leases on [agmanager.info](http://www.agmanager.info)

www.agmanager.info/farmmgmt/land/lease (click on Lease Decision-Making Tools)

Decision-Making Tools

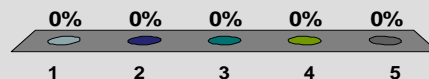
Some of these files require the Adobe Flash Player.  To download or to update your Flash software, please click [HERE](#), or go to: <http://get.adobe.com/flashplayer/>

File Name	Spreadsheet	Excel	View in Web Dashboard	Corresponding Paper	PDF
PastureRent	Web tool for determining pasture rents in the Flint Hills of Kansas		View	Determining Pasture Rents in the Flint Hills of Kansas	Download
KSU-Lease		Download		Explanation of the inputs and concepts associated with the KSU-Lease spreadsheet	Download
KSU-Lease: Flex rent dashboard	Web tool for evaluating flexible rent leases, based on the Flex1 tab of the KSU-Lease spreadsheet.		View		
FlexRent	Tool for determining the terms of a flexible cash rent lease	Download		Explanation of the inputs and output associated with the FlexRent spreadsheet	Download
KSU-Graze	Tool for determining cattle grazing lease agreements	Download		Grazing Leases	Download
BeefCow-Lease	Tool for determining beef cow lease agreements	Download		Developing Equitable Arrangements for Leasing Beef Cows	Download

Crop land cash rents for 2011...

My estimate as to what cash rents for crop land in 2011 will be, relative to 2010, is...

1. Down >3%
2. Down 1-3%
3. No change
4. Up 1-3%
5. Up >3%



Flexible Cash Rents – SUMMARY

- Flexible cash leases are simply a way of sharing risks of unpredictable markets (and yields?) without the hassles of crop ownership
- Why not simply give landowner ad hoc “bonuses” when times are good?
- There are many types of flex leases – no one method is right or best in all cases
- Important to think about risk-return tradeoff when establishing the base and trigger point where bonuses are earned (e.g., does lease flex both ways?)

Flexible Cash Rents – SUMMARY

WARNING

We do not have good theory and research to quantify the following:

- a) How should base rent be adjusted when flexing up only?
- b) When should bonuses “kick in”?
- c) When revenue exceeds some target (i.e., bonuses kick in), how should the parties share this revenue?


Flexible Cash Rents – SUMMARY

- Prices used should be a market average (publicly reported) as opposed to actual price received (typically recommend using a harvest time price – identify dates and locations in advance)
- Yields can be either county or farm averages, but need to be spelled out how/source for determining
- It is important that both parties know and understand what they are agreeing to!
- **Communication, communication, communication!** (remember it likely is a learning process for both parties)



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Importance of communication

“We have decided that we do not need to include  as a farm manager with your lease. We have complete confidence in your operation and always appreciate your open communication and response to any questions and or concerns.”

Information sent from landowner to tenant
(sent prior to signing of second lease contract).



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Questions ???



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