Pasture Rental Rates

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Salina, KS

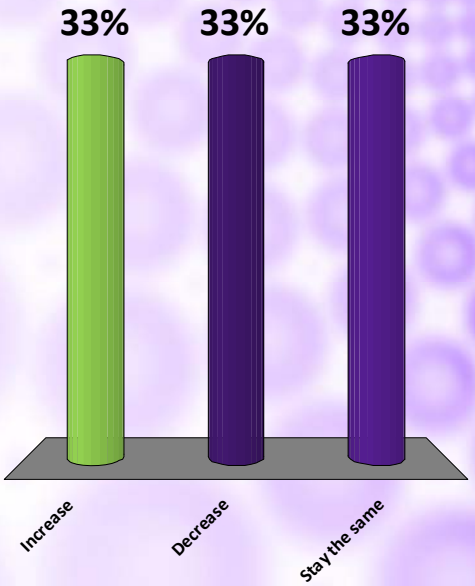
December 16th, 2015

What do you expect pasture rent to do in 2016?

A. Increase

B. Decrease

C. Stay the same



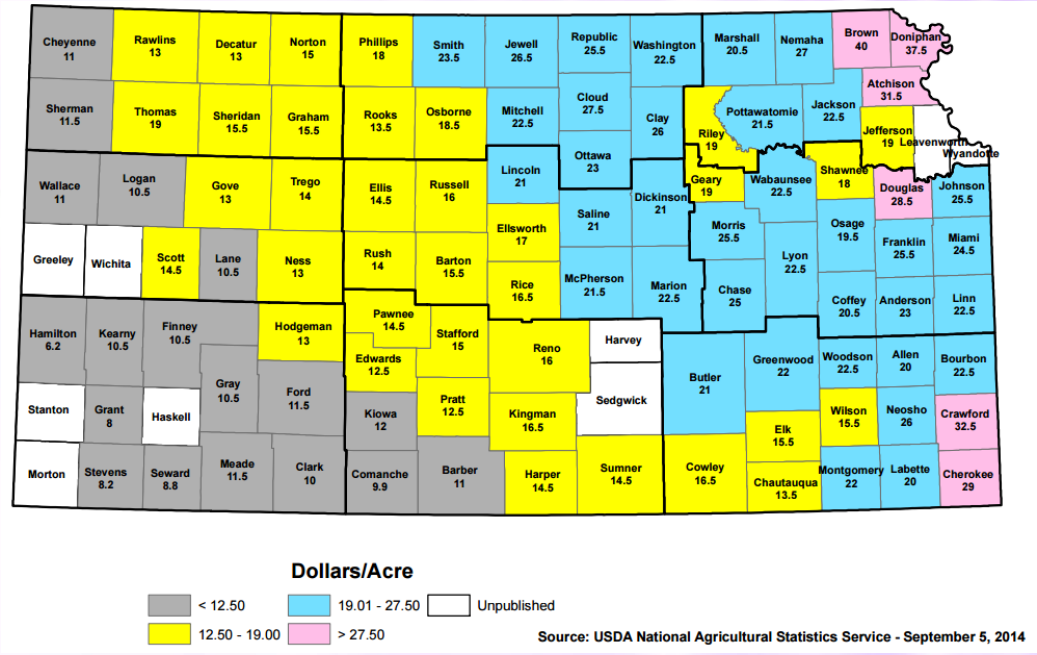
The *"Going Rate"*

- Depends largely on characteristics of the pasture:
  - When the lease was last negotiated
  - Type of cattle
  - Type of soil/grass
  - Availability of water
  - Who maintains fence
  - Who manages weeds/brush
  - Cattle, forage, and grain markets

Pasture Rental Rates

- Most common question for K-State Extension
  - What is the going rate for pasture (cropland) in my area?
- How do we answer this question?
  - Publically available information
  - USDA-NASS pasture rent estimates
  - Bluestem Pasture Report

2014 Pasture Cash Rents



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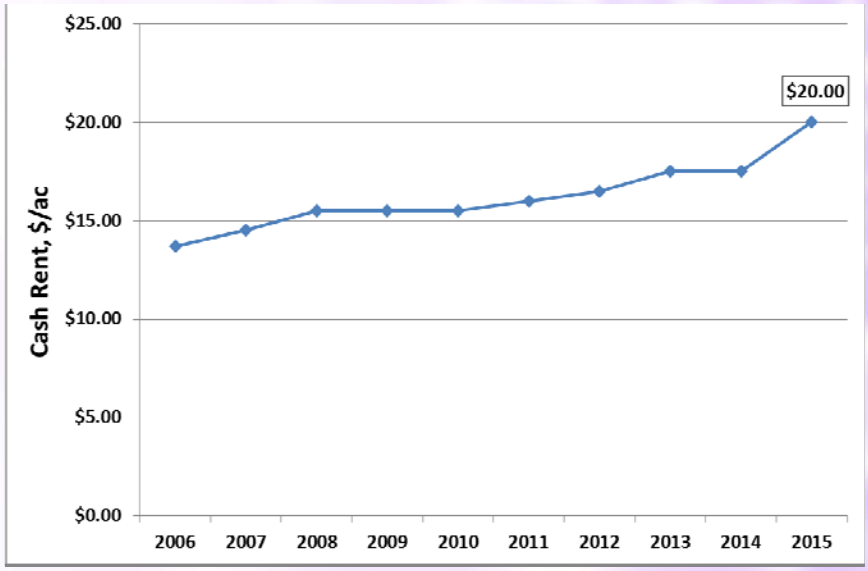
Source: www.nass.usda.gov/Statistics_by_State/Kansas/Publications/County_Estimates/

Historic Pasture Rates for KS



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Source: www.nass.usda.gov/Statistics_by_State/Kansas/Publications/Economics_and_Misc/Landval

Bluestem Pasture Report

Year	$/acre
2015*	19.18
2013	20.10
…	…
2009	18.60
2008	19.00
2007	17.60
2006	17.60

* Includes all native pasture types
**Full summer season (combined with and w/out care)

Source: www.nass.usda.gov/Statistics_by_State/Kansas/Publications/Economics_and_Misc/Bluestem/

Bluestem Pasture Report

Pasture Condition	% of Acres	
	2015	2013
Very Poor	1	16
Poor	7	41
Adequate	28	34
Good	46	8
Excellent	17	1
Total %	100	100

* Includes all native pasture types
**Full summer season (combined with and w/out care)

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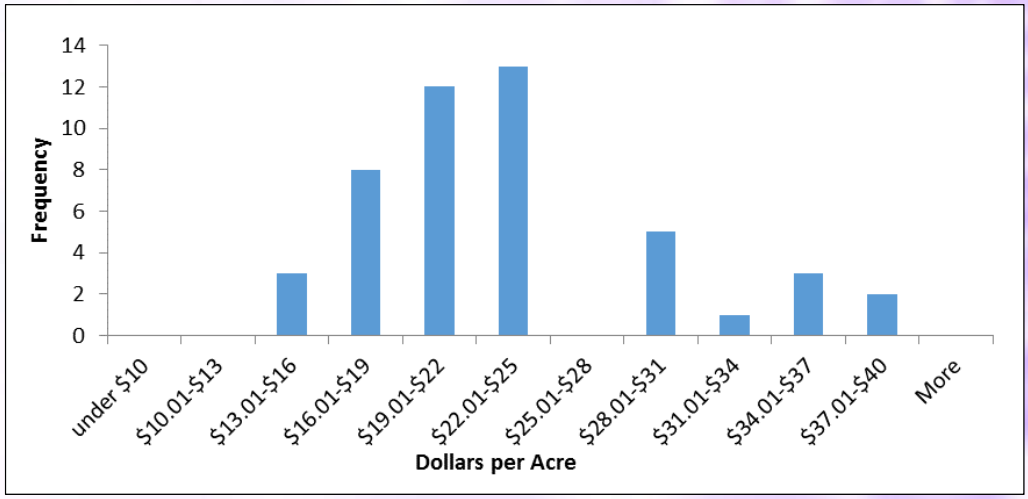
River Valley District Survey, 2013



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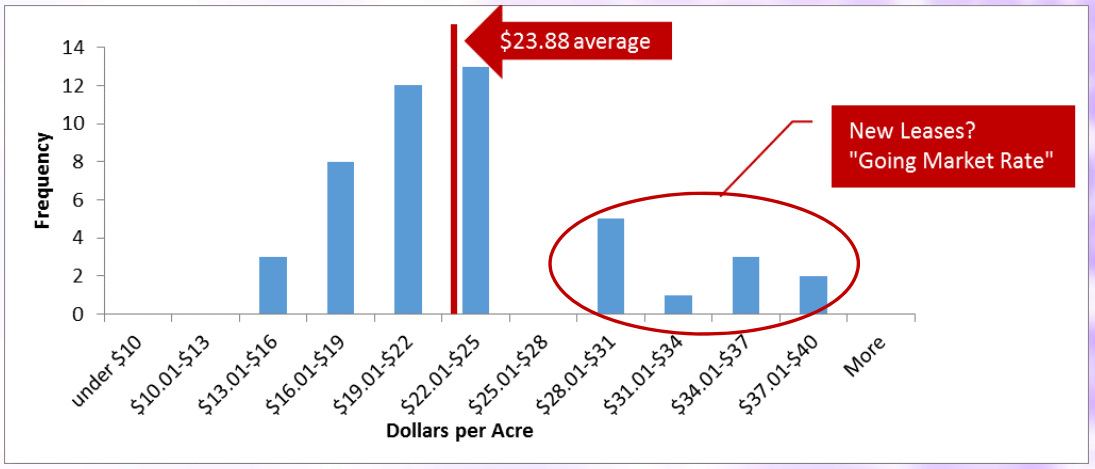
Source: www.rivervalley.k-state.edu/news/kiml-news-releases/2014%20RVED%20Lease%20Survey%20Summary.pdf

River Valley District Survey, 2013



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Source: www.rivervalley.k-state.edu/news/kiml-news-releases/2014%20RVED%20Lease%20Survey%20Summary.pdf

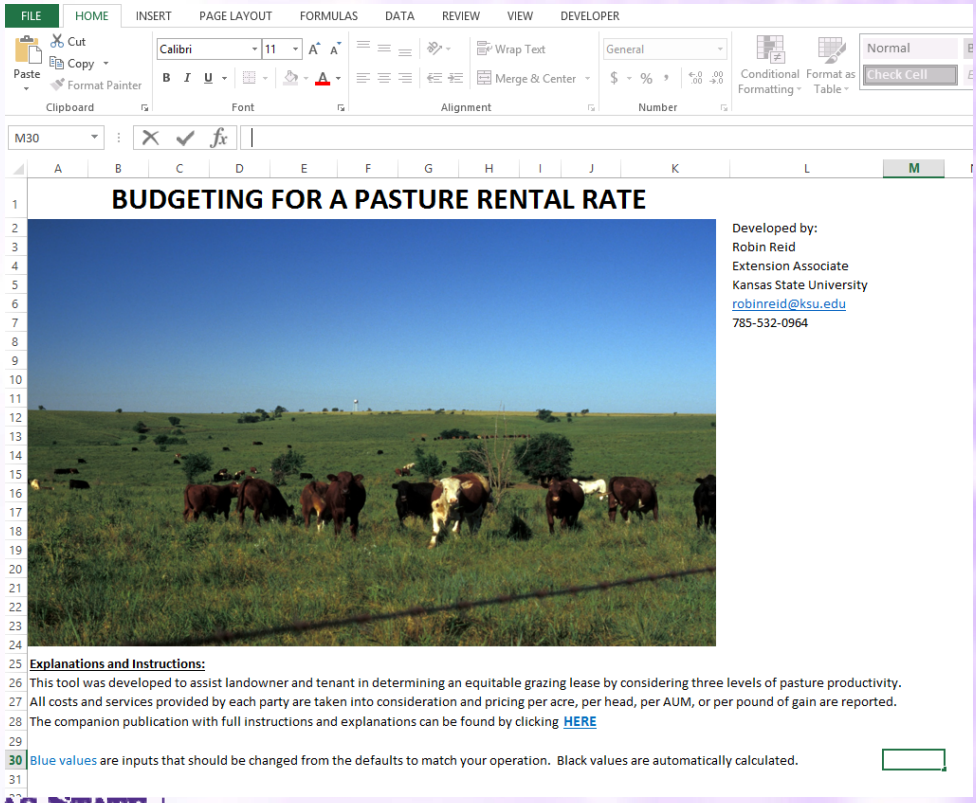
Pasture Rental Rates

- Public data is limited and lagged
  - Next county-level rent estimates will be in 2016?
  - Bluestem pasture report is transitioning
  - County Extension surveys don't cover the state consistently
- Another option we can pursue is to use
  - Pasture-specific information
  - Operation-specific costs and production practices
  - Current and expected cattle market prices
  - Put into a decision tool (spreadsheet) and…

Voila!

Pasture Rent Tool

- Purpose of the tool
  - Get landowners and ranchers to talk
  - Demonstrate the economic value of good & poor pasture
  - Avoid fixed cash rents that get out of date quickly
  - Give both parties an 'out' if conditions change mid-season
- Have to change our focus from $/acre
  - Move to productivity-based pricing ($/AUM)
  - Reward good land management



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Pasture Rent Tool: Inputs

- Expected returns
  - Cattle prices (purchase and sell price)
- Costs of production
  - Assigned to landowner and tenant
- Productivity measures
  - Stocking rates
  - Productive potential under different rainfall conditions
  - Look to NRCS

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Pasture Productivity

Calculating a Stocking Rate

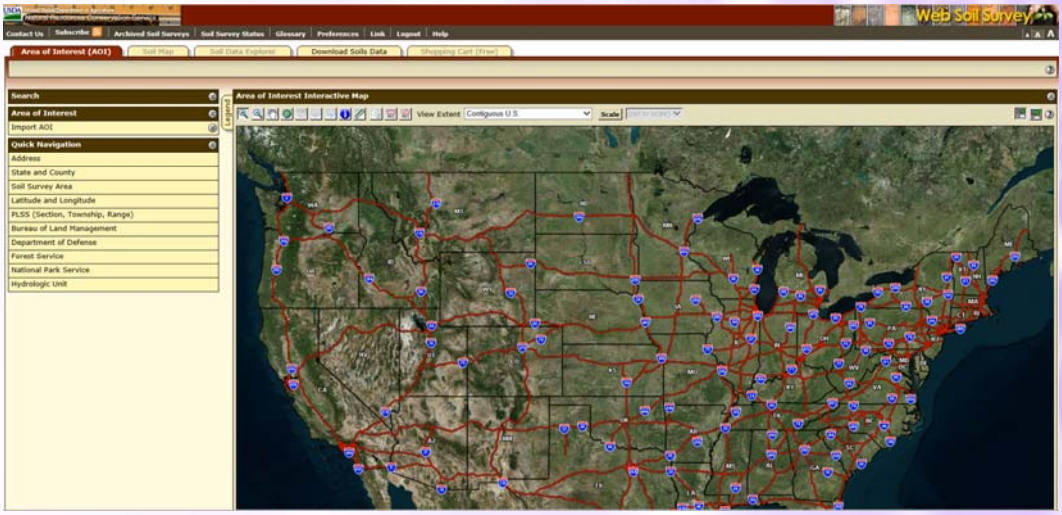
Inputs	
Grazing Period Start	5/1/2015
Grazing Period End	10/31/2015
Grazing Days	183
Total Acres of Pasture	160

	Unfavorable Year	Normal Year	Favorable Year
Pounds of Production per Acre	4500	5500	6500
Pounds of Grazed Forage per Acre	1125	1375	1625
AUM's available/Acre	1.23	1.51	1.78
Total AUM's for pasture	197	241	285
Consumed pounds of forage on pasture	180,000	220,000	260,000

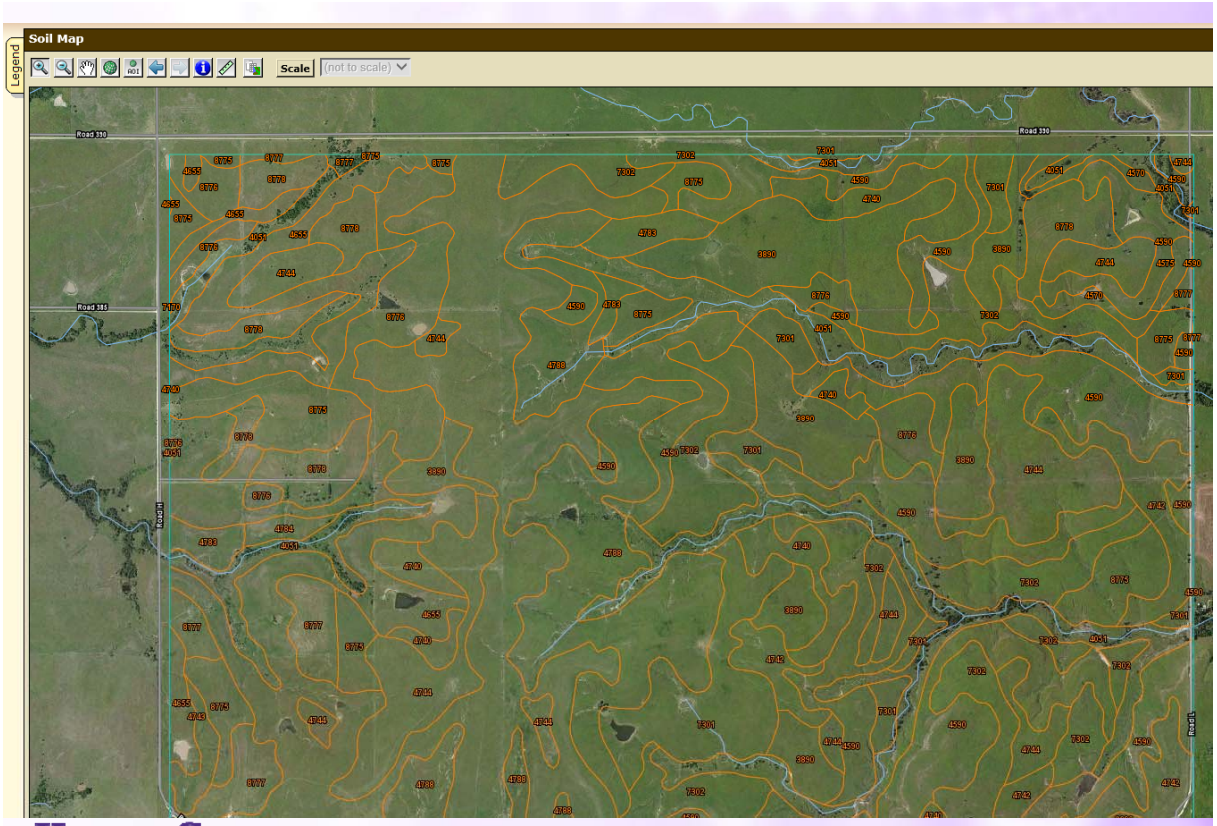
Pasture Productivity

- Convert forage needed to acres per head (pair)
  - How much forage is available?
  - What conditions are we facing? (N, F, U)
  - “Take half, leave half” rule
  - Harvest efficiency = 25% (e.g. trampled, poop)

NRCS Web Soil Survey



Source: http://websoilsurvey.sc.egov.usda.gov/App/WebSoilSurvey.aspx



Productivity in a Normal Year

Tables — Range Production (Normal Year) — Summary By Map Unit

Summary by Map Unit — Lyon County, Kansas (KS111)

Map unit symbol	Map unit name	Rating (pounds per acre per year)	Acres in AOI	Percent of AOI
3890	Ladysmith silty clay loam, 0 to 1 percent slopes	3465	283.5	7.6%
4051	Ivan silt loam, channeled	6800	338.4	9.1%
4570	Clime silty clay, 3 to 7 percent slopes	4050	20.8	0.6%
4575	Clime silty clay, 3 to 7 percent slopes, eroded	4050	6.5	0.2%
4590	Clime-Sogn complex, 3 to 20 percent slopes	2725	548.3	14.8%
4655	Florence-Labette complex, 2 to 12 percent slopes	3193	712.0	19.2%
4740	Labette silty clay loam, 1 to 3 percent slopes	3825	102.0	2.8%
4742	Labette silty clay loam, 3 to 7 percent slopes	3825	114.5	3.1%
4743	Labette silty clay loam, 3 to 7 percent slopes, eroded	4575	15.2	0.4%
4744	Labette-Dwight complex, 0 to 3 percent slopes	3438	251.6	6.8%
4783	Tully silty clay loam, 3 to 7 percent slopes	3600	41.6	1.1%
4784	Tully silty clay loam, 3 to 7 percent slopes, eroded	3825	9.6	0.3%
4788	Tully-Clime complex, 7 to 15 percent slopes	4275	294.8	8.0%
7170	Reading silt loam, rarely flooded	7200	0.2	0.0%
7301	Martin silty clay loam, 1 to 3 percent slopes	4900	155.1	4.2%
7302	Martin silty clay loam, 3 to 7 percent slopes	4830	291.3	7.9%
7306	Martin silty clay, 3 to 7 percent slopes, eroded	4850	0.0	0.0%
8775	Kenoma silt loam, 1 to 3 percent slopes	3888	173.1	4.7%
8776	Kenoma silt loam, 3 to 5 percent slopes	3200	147.6	4.0%
8777	Kenoma silty clay loam, 1 to 3 percent slopes, eroded	3865	74.0	2.0%
8778	Kenoma silty clay loam, 3 to 5 percent slopes, eroded	3875	128.1	3.5%
Totals for Area of Interest			3,708.4	100.0%

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Pasture Productivity

		Forage Consumed per Day (lbs)	Total Forage For Grazing Period (lbs)
COW/CALF PAIRS		49.5	9058.5
Mature Cow Weight	1250		
Calf Starting Weight	250		
Calf Ending Weight	550		
BULLS		54	3294
Average Weight	1800		
Date In	6/1/2015		
Date Out	8/1/2015		
# of Cows per Bull	25		

OR

		Forage Consumed per Day (lbs)	Total Forage For Grazing Period (lbs)
STOCKER CATTLE		23	4255
Starting Weight	600		
Ending Weight	950		
Average Daily Gain	1.91		

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Pasture Productivity

Ideal Stocking Rate			
	Unfavorable Year	Normal Year	Favorable Year
Number of Cow/Calf Pairs	15.2	19.6	23.9
Number of Bulls	0.6	0.8	1.0
Acres per Cow/Calf Pair & Proportion of Bull	10.5	8.2	6.7

OR

Ideal Stocking Rate			
Stocker Cattle	32.9	42.3	51.7
Acres per Stocker	4.9	3.8	3.1

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Expected Returns

Budgetin

Expected Cattle Returns			
			Per Head
Beginning Weight (lbs)	600		
Beginning Cost ($/cwt)	$240.00	$	(1,440.00)
Death Loss	1.00%	$	(14.40)
Ending Weight (lbs)	950		
Expected Ending Price ($/cwt	$185.00	$	1,757.50
Net Income per head		$	303.10

Grazing Period St
Grazing Period En
Grazi
Total Acres of Pa
Growing Season
# of head
Acres per Head

urns

Per Head
$ (1,440.00)
$ (14.40)
$ 1,757.50
$ 303.10

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Production Costs

Livestock Costs

Category:							$/head	Total for Herd Unfavorable	Normal	Favorable	Cost Paid by Producer %	Landowner %
Harvested Forage	$ -	*per ton*	x	0	*total lbs*	=	$0.00	$ -	$ -	$ -	100.00%	0.00%
Grain/Protein Supplements	$ -	*per ton*	x	0	*total lbs*	=	$0.00	$ -	$ -	$ -	100.00%	0.00%
Mineral	$ 550.00	*per ton*	x	45.8	*total lbs*	=	$12.58	$ 415.18	$ 528.41	$ 654.23	100.00%	0.00%
Labor (towards cattle)	$ 20.00	*per hour*	x	1.0	*hours*	=	$20.00	$ 750.00	$ 840.00	$ 940.00	100.00%	0.00%
Vet Medicine/Drugs							$7.00	$ 231.00	$ 294.00	$ 364.00	100.00%	0.00%
Marketing							$11.00	$ 363.00	$ 462.00	$ 572.00	100.00%	0.00%
Utilities,Gas, Fuel, Oil							$6.00	$ 225.00	$ 252.00	$ 282.00	100.00%	0.00%
Machinery charge							$10.00	$ 375.00	$ 420.00	$ 470.00	100.00%	0.00%
Cash Interest on Cattle Investment	$ 1,440.00	*purchased cost*	x	5.0%	*operating interest*		$36.10	$ 1,191.25	$ 1,516.14	$ 1,877.13	100.00%	0.00%
Miscellaneous							$2.00	$ 66.00	$ 84.00	$ 104.00	100.00%	0.00%
Fixed Overhead	Total dollars						--	$ 535.50	$ 535.50	$ 535.50	100.00%	0.00%
Taxes	52.5						**Total Costs**	**$ 4,151.94**	**$ 4,932.05**	**$ 5,798.85**		
Insurance	63						Per Head	$ 125.82	$ 117.43	$ 111.52		
Depreciation	420						Per Head plus beg. Value	$ 1,565.82	$ 1,557.43	$ 1,551.52		

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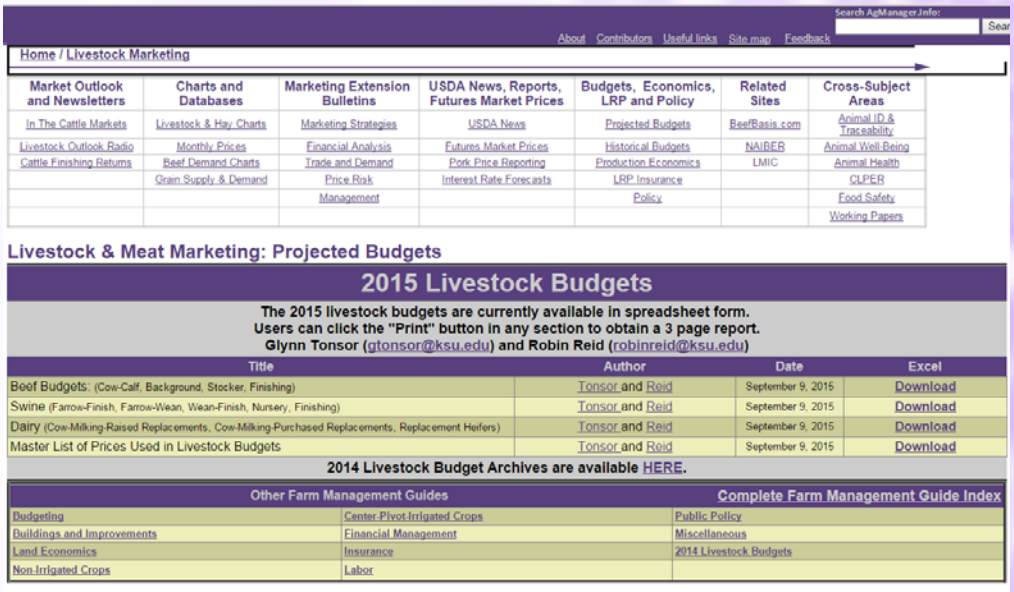
Production Costs



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Source: www.agmanager.info

Landowner Costs

Land Costs										
Category:							$/acre	Total for Pasture	Cost Paid by Producer %	Landowner %
Water Source Maintenance							1.44	$ 230.40	0.00%	100.00%
Spraying Weeds							$ 6.75	$ 1,080.00	100.00%	0.00%
Fertilizer							$ -	$ -	100.00%	0.00%
Burning Pasture	20.00	*per acre*	3	years	=		$ 6.67	$ 1,066.67	100.00%	0.00%
Maintaining Fence							$ 1.50	$ 240.00	100.00%	0.00%
New Fence Construction							$ 3.89	$ 621.76	0.00%	100.00%
Corrals							$ 1.03	$ 165.00	100.00%	0.00%
Other land costs							$ -	$ -	100.00%	0.00%
Total Costs							**$ 21.27**	**$ 3,403.82**		
Interest on Land	1,800.00	*Land Value per acre*	1.0%	*rent/value ratio*	=		$ 18.00	$ 2,880.00		

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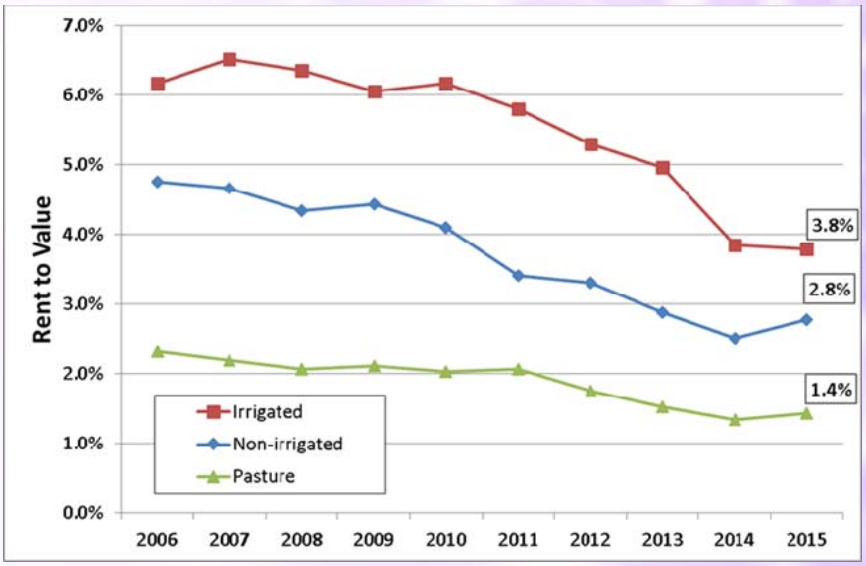
Rent to Value Ratio



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Production Costs

- Budgeting approach
  - Contributions to costs are calculated on shares
  - Simulate impacts from changes in lease agreement
- Start with state-level values & adjust for your area
  - Assign labor costs to landowner if they provide care
  - Add supplemental forage costs
  - Account for fertilizer costs (tame grass)
  - Weed control and/or burning

Estimated Rental Rates

Budgeting a Rental Rate-Stocker Cattle				
		Unfavorable	Normal	Favorable
Producers Share of Cost		$ 6,703.60	$ 7,483.72	$ 8,350.52
Net Income		$ 10,002.30	$ 12,730.20	$ 15,761.20
Return over Producer Cost		$ 3,298.70	$ 5,246.48	$ 7,410.68
	Amount Producer Could Afford to Pay			
	Rent per Acre	$ 20.62	$ 32.79	$ 46.32
	Rent per Head	$ 99.96	$ 124.92	$ 142.51
	Rent per Pound of Gain	$ 0.29	$ 0.36	$ 0.41
	Rent per AUM	$ 21.50	$ 26.60	$ 30.74
Landowner Share of Cost		$ 3,732.16	$ 3,732.16	$ 3,732.16
Net Income		$ 10,002.30	$ 12,730.20	$ 15,761.20
Return over Landowner Cost		$ 6,270.14	$ 8,998.04	$ 12,029.04
	Landowner Cost			
	Rent per Acre	$ 23.33	$ 23.33	$ 23.33
	Rent per Head	$ 113.10	$ 88.86	$ 71.77
	Rent per Pound of Gain	$ 0.32	$ 0.25	$ 0.21
	Rent per AUM	$ 24.33	$ 18.92	$ 15.48

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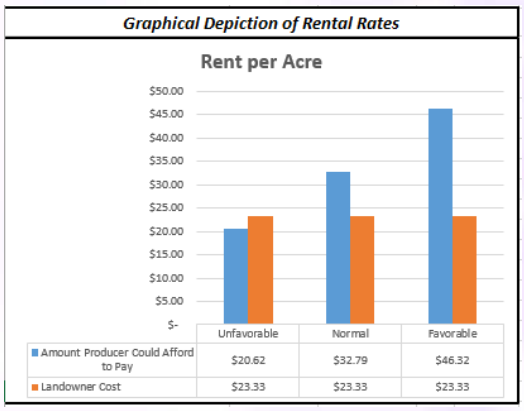

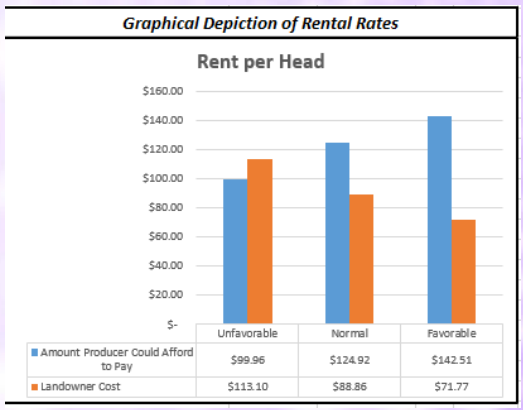

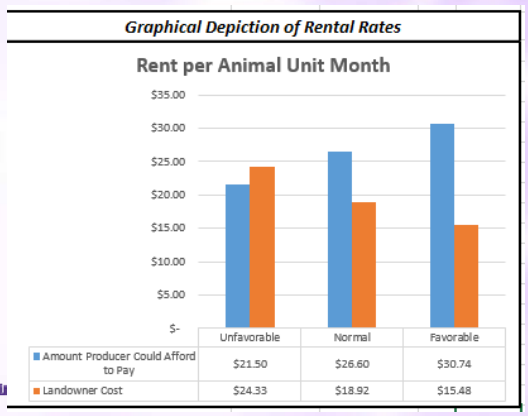

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Estimated Rental Rates

Favorable (71% increase)

Normal conditions

Unfavorable (63% decrease)

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Production Risk

Budgeting for Stocker Cattle Grazing -Production Risk

Production Variables		
Death Loss	Normal	1.00%
Stocker Ending Weight	1% lower	940.50
Stocker Selling Price	1% lower	$183.15

Print all Pages

Print Production Risk Table

Stocker Cattle Production Risk	Unfavorable	Normal	Favorable
Producers Share of Cost	$ 6,703.60	$ 7,483.72	$ 8,350.52
Net Income	$ 8,848.15	$ 11,261.28	$ 13,942.54
Return over Producer Cost	$ 2,144.55	$ 3,777.56	$ 5,592.02
Amount Producer Could Afford to Pay			
Rent per Acre	$ 13.40	$ 23.61	$ 34.95
Rent per Head	$ 64.99	$ 89.94	$ 107.54
Rent per Pound of Gain	$ 0.19	$ 0.26	$ 0.31
Rent per AUM	$ 92.24	$ 19.15	$ 23.19
Landowner Share of Cost	$ 3,732.16	$ 3,732.16	$ 3,732.16
Net Income	$ 8,848.15	$ 11,261.28	$ 13,942.54
Return over Landowner Cost	$ 5,115.99	$ 7,529.13	$ 10,210.38
Landowner Cost			
Rent per Acre	$ 23.33	$ 23.33	$ 23.33
Rent per Head	$ 113.10	$ 88.86	$ 71.77
Rent per Pound of Gain	$ 0.32	$ 0.25	$ 0.21
Rent per AUM	$ 24.33	$ 18.92	$ 15.48

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Cow/Calf

Grazing Period	
Grazing Period	
Gra	
Total Acres of P	
Growing Seaso	
# of head	
Acres per Head	

Budgeting a Rental Rate-Cow/Calf Pairs	Unfavorable	Normal	Favorable
Producers Share of Cost	$ 2,551.67	$ 2,551.67	$ 2,551.67
Net Income	$ 6,020.63	$ 8,027.50	$ 9,633.00
Return over Producer Cost	$ 3,468.96	$ 5,475.83	$ 7,081.33
Amount Producer Could Afford to Pay			
Rent per Acre	$ 21.68	$ 34.22	$ 44.26
Rent per Pair	$ 231.26	$ 273.79	$ 295.06
Rent per AUM	$ 22.61	$ 27.76	$ 29.37
Landowner Share of Cost	$ 4,052.16	$ 4,052.16	$ 4,052.16
Net Income	$ 6,020.63	$ 8,027.50	$ 9,633.00
Return over Landowner Cost	$ 1,968.47	$ 3,975.34	$ 5,580.84
Landowner Cost			
Rent per Acre	$ 25.33	$ 25.33	$ 25.33
Rent per Pair	$ 270.14	$ 202.61	$ 168.84
Rent per AUM	$ 26.41	$ 20.54	$ 16.81

Per Head
700.00
1,101.38
401.38

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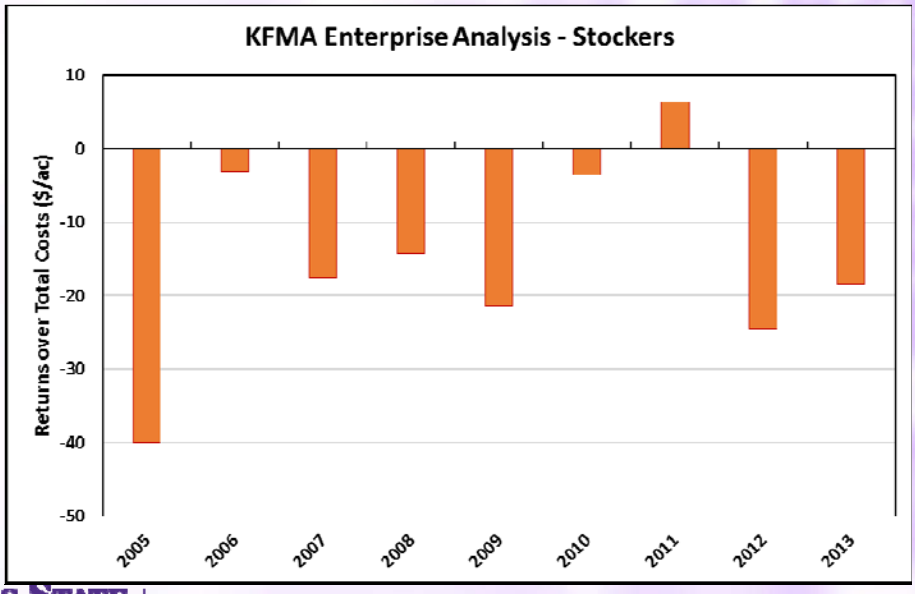
Important Points

- Landowner costs
  - Do not always cover costs, especially when rent is low
  - Tradeoff of higher management costs and better pasture productivity
- Amount tenant can afford to pay
  - Determined by their costs and revenues
  - Higher when value of gain and amount of gain high
  - Pasture productivity is valuable

"Afford to Pay"

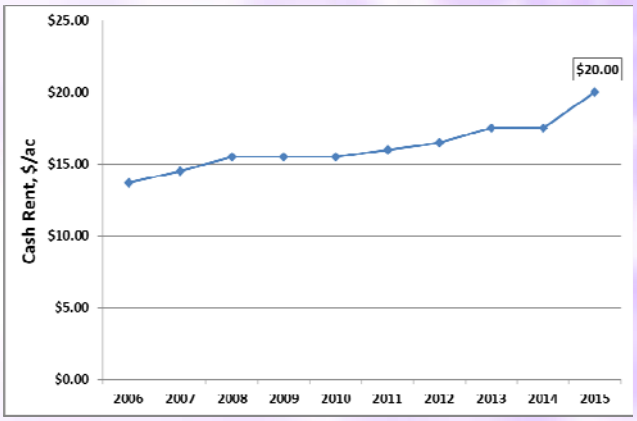
- What does this term mean and why do we use it?
  - Why not build in a profit margin?
  - Already paying all costs of production, including labor, interest on capital
- If the remainder is pure profit then what happens?
  - Producers will bid away profit in the long run

Returns to Cattle

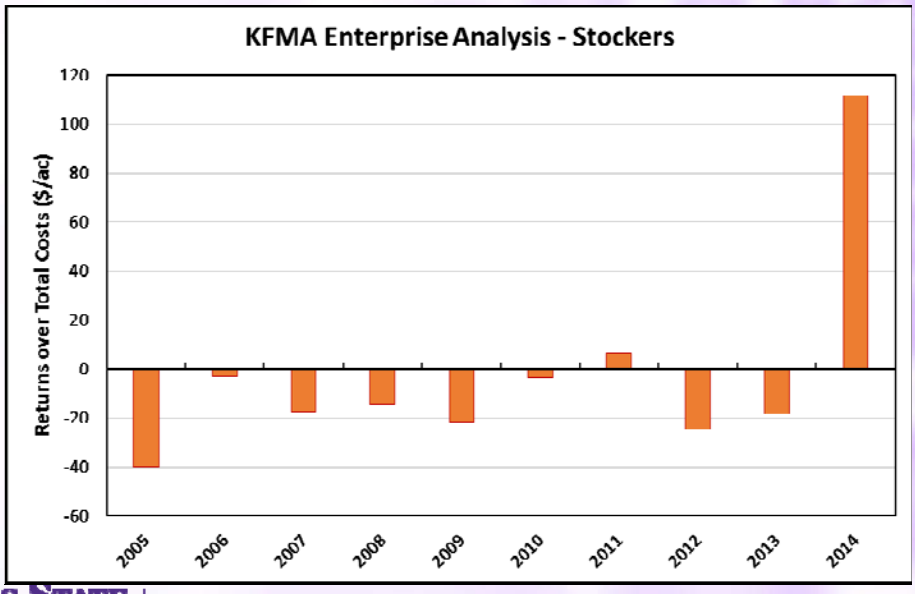


"Afford to Pay"

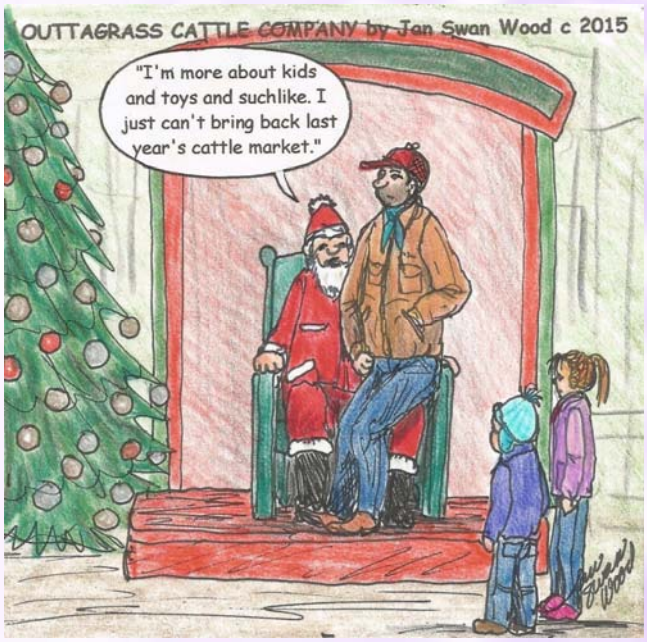
- Profitability is near zero in the long run (stockers)
  - Land rents were stable to slightly increasing for many years



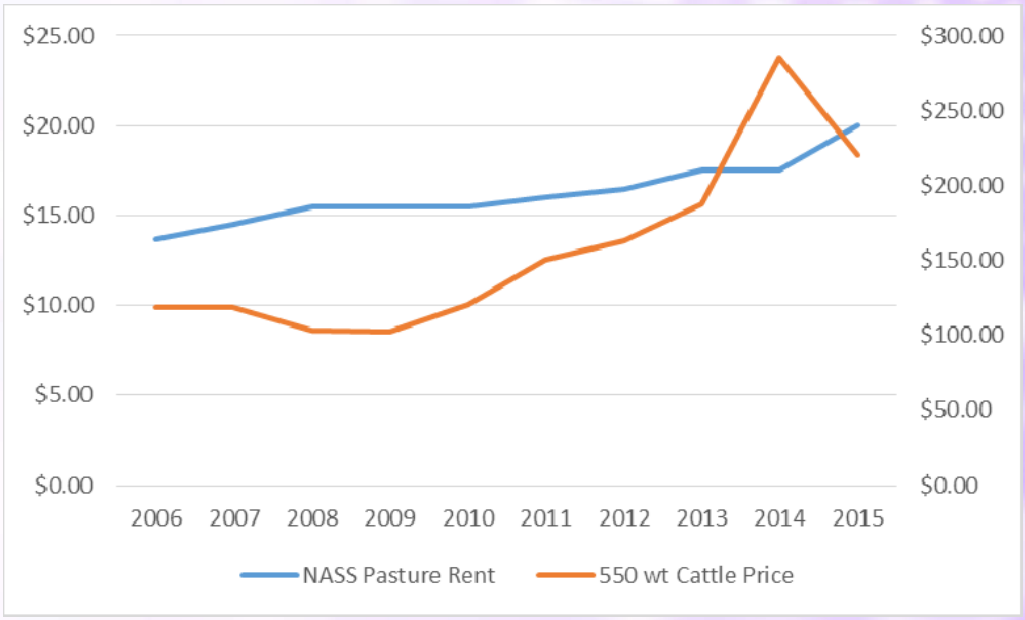
Returns to Cattle



What about 2016?



Cash rent vs. Cattle Market



What about 2016?

Expected Cattle Returns			
			Per Head
Beginning Weight (lbs)	600		
Beginning Cost ($/cwt)	$160.00	$	(960.00)
Death Loss	1.00%	$	(9.60)
Ending Weight (lbs)	950		
Expected Ending Price ($/cwt	$125.00	$	1,187.50
Net Income per head		$	217.90

Budgeting a Rental Rate-Stocker Cattle				
	Unfavorable	Normal	Favorable
Producers Share of Cost	$ 6,306.52	$ 6,978.34	$ 7,724.81
Net Income	$ 7,190.70	$ 9,151.80	$ 11,330.80
Return over Producer Cost	$ 884.18	$ 2,173.46	$ 3,605.99
Amount Producer Could Afford to Pay			
Rent per Acre	$ 5.53	$ 13.58	$ 22.54
Rent per Head	$ 26.79	$ 51.75	$ 69.35
Rent per Pound of Gain	$ 0.08	$ 0.15	$ 0.20
Rent per AUM	$ 5.76	$ 11.02	$ 14.96
Landowner Share of Cost	$ 3,732.16	$ 3,732.16	$ 3,732.16
Net Income	$ 7,190.70	$ 9,151.80	$ 11,330.80
Return over Landowner Cost	$ 3,458.54	$ 5,419.64	$ 7,598.64
Landowner Cost			
Rent per Acre	$ 23.33	$ 23.33	$ 23.33
Rent per Head	$ 113.10	$ 88.86	$ 71.77
Rent per Pound of Gain	$ 0.32	$ 0.25	$ 0.21
Rent per AUM	$ 24.33	$ 18.92	$ 15.48

Pasture Rents

- Different way to approach pasture rent questions
  - Start with assumption that not all pasture is created equal
  - Gain flexibility from changing range conditions and market prices
  - Give landowners and tenants a way to estimate the value of good pasture
- Push back
  - But what is the going rate!?!
  - Training for Extension agents, lease workshops

Resources

- www.AgManager.info
  - Farm Management
  - Livestock Marketing
- NRCS
  - Local offices can help you determine your stocking rate
  - Will also assist with a grazing plan
- Contact information
  - Mykel Taylor: mtaylor@ksu.edu
  - Robin Reid: robinreid@ksu.edu

Let's do an example…

- You have an opportunity to rent a quarter-section of native pasture (160 acres) to graze cow/calf pairs on. You plan to turning cattle in on May 1st, 2016 and taking them out on Sept. 30th, 2016.
- Your cows weigh 1400 pounds on average and calves should be about 550 pounds when weaned off the pasture.

Let's do an example…

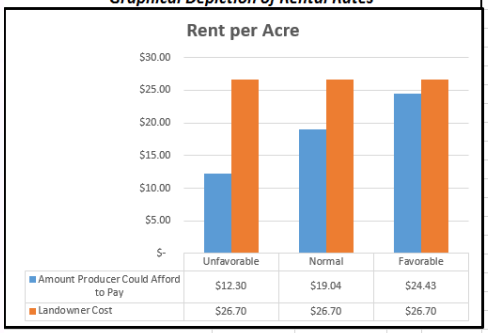
- You have a 90% weaning percentage and hope to sell your calves for $185.00.
- You plan to spray weeds in the pasture but the landlord will pay for the chemical (share expense 50/50)
- You will have to maintain the fence and existing corrals, which you estimate will take you 3 days at 8 hours per day. You value your time at $15 per hour. ($2.25 per acre)

Let's do an example…

- The landlord is in charge of burning the pasture which he estimates about $15 per acre every 3 years.
- He maintains the water and does any new fence construction.
- The pasture is valued at $1800 per acre.

Budgeting for Cow/Calf Grazing -Results

Graphical Depiction of Rental Rates



	Unfavorable	Normal	Favorable
Amount Producer Could Afford to Pay	$12.30	$19.04	$24.43
Landowner Cost	$26.70	$26.70	$26.70

PER ACRE | PER PAIR | PER AUM

Budgeting a Rental Rate-Cow/Calf Pairs

	Unfavorable	Normal	Favorable
Producers Share of Cost	$ 1,700.00	$ 1,700.00	$ 1,700.00
Net Income	$ 3,667.75	$ 4,746.50	$ 5,609.50
Return over Producer Cost	$ 1,967.75	$ 3,046.50	$ 3,909.50
Amount Producer Could Afford to Pay			
Rent per Acre	$ 12.30	$ 19.04	$ 24.43
Rent per Pair	$ 115.75	$ 138.48	$ 150.37
Rent per AUM	$ 12.83	$ 15.44	$ 16.22
Landowner Share of Cost	$ 4,272.16	$ 4,272.16	$ 4,272.16
Net Income	$ 3,667.75	$ 4,746.50	$ 5,609.50
Return over Landowner Cost	$ (604.41)	$ 474.34	$ 1,337.34
Landowner Cost			
Rent per Acre	$ 26.70	$ 26.70	$ 26.70
Rent per Pair	$ 251.30	$ 194.19	$ 164.31
Rent per AUM	$ 27.85	$ 21.66	$ 17.72

KANSAS STATE UNIVERSITY | Department of Agricultural Economics