

# Managing Price Risk in Cow-calf Operations



**SW Missouri Beef Conference**

*"Management is the Key to Success in Tough Times"*



Tuesday, October 13<sup>th</sup>  
3:30 to 9:00 PM  
Bolivar High School  
Bolivar, MO  
UNIVERSITY OF MISSOURI  
**Extension**

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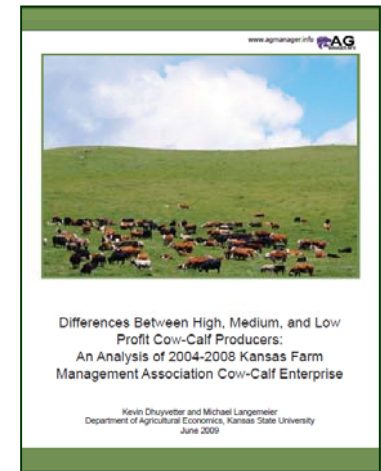


www.agmanager.info



# Cow-calf profitability drivers...

- Analysis of KFMA cow-calf enterprise analysis returns
  - 1979-2008 all operations (examine time effect)
  - 2004-2008 operations with at least three years of data (examine producer effect)
- Paper available on web ([www.agmanager.info](http://www.agmanager.info))

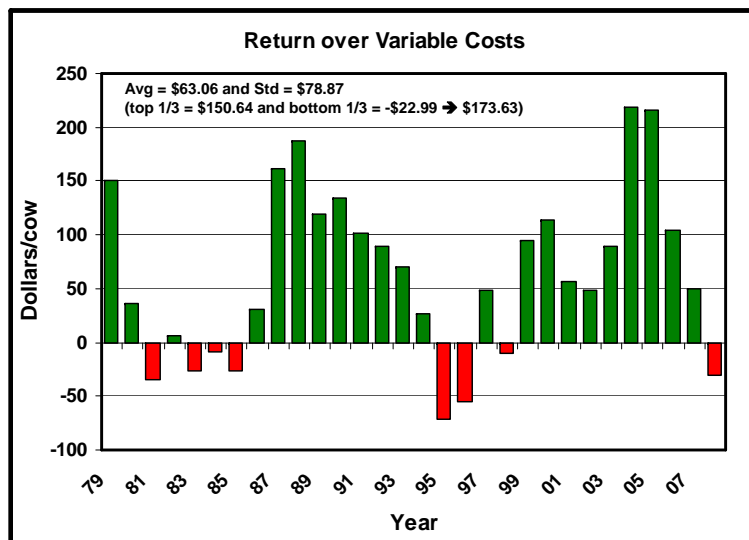


Differences Between High, Medium, and Low Profit Cow-Calf Producers: An Analysis of 2004-2008 Kansas Farm Management Association Cow-Calf Enterprise

Kevin Dhuyvetter and Michael Langemeier  
Department of Agricultural Economics, Kansas State University  
June 2009



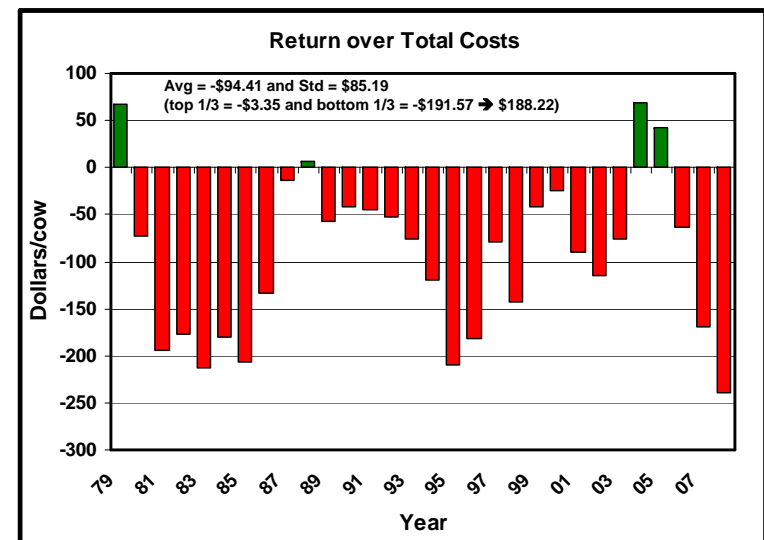
# Avg returns are highly variable over time



Source: Kansas Farm Management Association (KFMA) Annual Enterprise Analysis Reports



# Avg returns are highly variable over time



Source: Kansas Farm Management Association (KFMA) Annual Enterprise Analysis Reports



## Returns are more variable across producers

	Beef Cow-calf Enterprise, 2004-2008 (min of 3 years)*				Difference between	
	All Farms	Profit Category			High 1/3 and Low 1/3	
		High 1/3 Head / \$	Mid 1/3 Head / \$	Low 1/3 Head / \$	Absolute	%
Number of Farms	65	22	21	22		
Labor allocated to livestock, %	38.1	48.0	35.4	30.7		
Number of Cows in Herd	124	170	137	65	105	161%
Number of Calves Sold	114	156	129	58	97	168%
Weight of Calves Sold	583	591	584	573	18	3%
Calf Sales Price / Cwt	\$109.12	\$108.73	\$109.99	\$108.68	\$0.05	0%
<b>Gross Income</b>	<b>\$539.29</b>	<b>\$573.90</b>	<b>\$555.38</b>	<b>\$489.33</b>	<b>\$84.56</b>	<b>17%</b>
Feed	\$312.02	\$274.36	\$316.05	\$345.83	22.8%	-\$71.47 -21%
Interest	\$117.00	\$94.09	\$117.00	\$139.90		-\$45.81 -33%
Vet Medicine / Drugs	\$15.70	\$15.85	\$15.73	\$15.54		\$0.30 2%
Livestock Marketing / Breeding	\$10.08	\$8.15	\$11.44	\$10.72		-\$2.56 -24%
Depreciation	\$37.23	\$26.36	\$25.28	\$59.51		-\$33.16 -56%
Machinery	\$66.73	\$47.71	\$63.34	\$88.99		-\$41.28 -46%
Labor	\$92.87	\$69.48	\$84.90	\$123.88		77.2% -\$54.41 -44%
Other	\$39.85	\$22.85	\$35.10	\$61.38		-\$38.53 -63%
<b>Total Cost</b>	<b>\$691.49</b>	<b>\$558.84</b>	<b>\$668.84</b>	<b>\$845.75</b>	<b>-\$286.91</b>	<b>-34%</b>
<b>Net Return to Management</b>	<b>-\$152.20</b>	<b>\$15.05</b>	<b>-\$113.46</b>	<b>-\$356.42</b>	<b>\$371.47</b>	

\* Sorted by Net Return to Management (Returns over Total Costs) per Cow

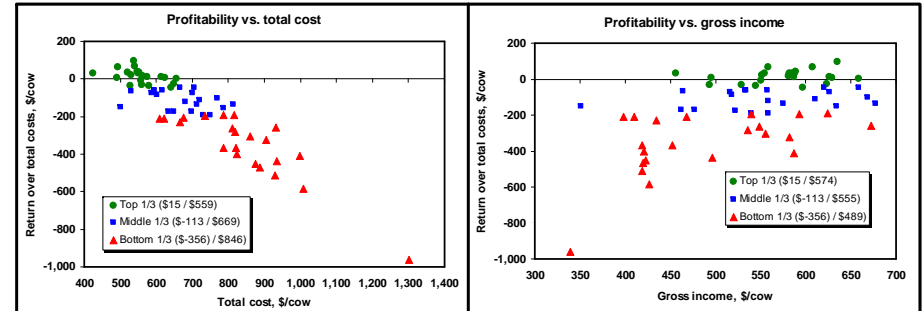
Compared to \$170-\$190 between top and bottom third years.

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## Cow-calf profitability drivers...

- Returns are more variable across producers at a point in time than they are on average over time (i.e., even in "hard times" some producers are profitable)
- Cost differences explain a much bigger portion of profitability differences across producers than does income differences



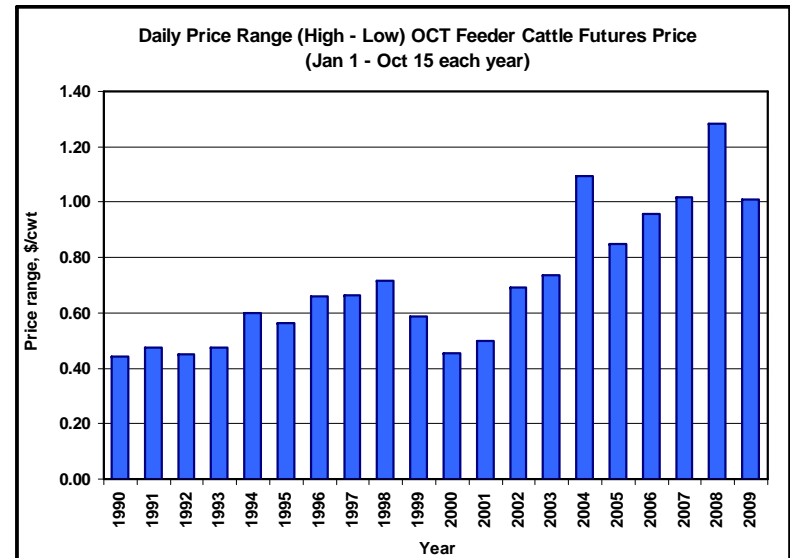
## So, what does this mean?

- In order to increase returns (relative to average), producers should focus their management efforts on being a low-cost producer.
- Managing price risk should be viewed as something to do to reduce variability in income NOT as a way of getting higher prices.
- Most price risk-management tools available allow us to manage short-term price fluctuations, but not multi-year price risk.
- What price risk are we most concerned about in cow-calf operations?

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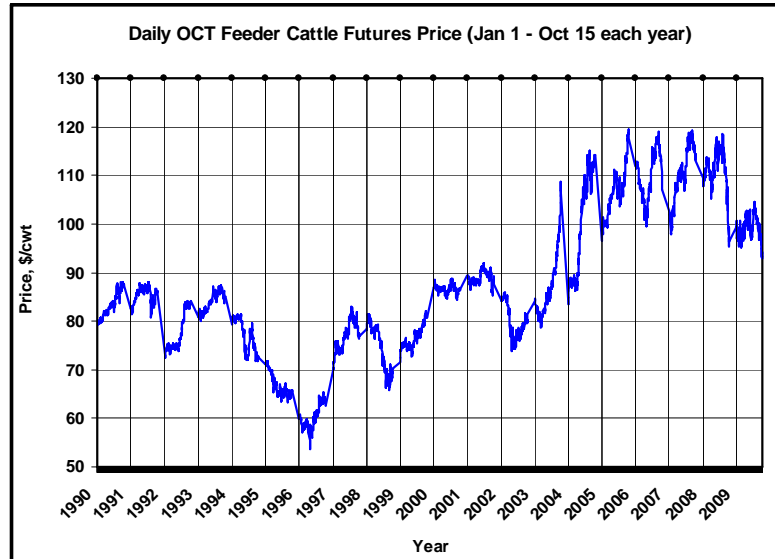
## Daily price volatility has increased...



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## Short-term vs long-term price variability...



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## Marketing issues to think about...

- Production issues related to marketing
- Marketing alternatives available
- Pricing tools available



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## Selling vs. Marketing vs. Pricing...

### Selling:

- Quality or grade that is easiest to produce
- Most convenient time and place
- Whatever price is offered

### Marketing:

- Identifying quality or grade that is most profitable
- Most profitable time and place
- As a result, retain some control over price and profitability

### Pricing:

- Use of specific tool(s) to set price and/or basis
- Method of managing short-term price risk

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## Methods of pricing feeder calves...

- Cash sales
- Forward contract
- Hedge with futures contract (i.e., sell futures)
- Buy put option
- Livestock Risk Protection (LRP)
- Other option market strategies
- Retain ownership  
(more "marketing" than pricing, but pricing alternatives can play a role in decision whether or not to retain calves)

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## Cash sales...

- Characteristics –
  - easy to understand
  - retain price and basis\* risk
  - no quantity or quality obligations (within reason)
  - no futures broker or margin calls
  - financial risk (i.e., risk of not getting paid) depends on financial strength/integrity of buyer

\* basis = cash price – futures price

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## Forward contract...

- Characteristics –
  - locks in a “fixed” price
  - basis risk is eliminated
  - pay a premium for transferring basis risk
  - no margin account or maintenance required
  - may or may not involve broker / brokerage commission
  - contract specifications and size flexible (within reason)
  - obligated to deliver
  - low quality cattle might be excluded/refused
  - weight price slide risk
  - risk of other party not honoring contract
  - not always available
  - prices are not very transparent

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## Hedge with futures contract...

- Characteristics –
  - locks in a “fixed” price (CME futures price)
  - subject to basis risk
  - fixed contract specifications and size
  - deal with broker / brokerage commission
  - margin account and maintenance required
  - easy to enter and liquidate
  - transparent price quotes
  - no risk of other party “backing out”
  - no risk of low quality cattle being “refused”
  - cash settled contract (no delivery ability / obligation)

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## Buy put option contract...

- Characteristics –
  - locks in a “floor” price (CME strike price)
  - subject to basis risk
  - fixed contract specifications and size
  - deal with broker / brokerage commission
  - pay premium for option
  - easy to enter and liquidate
  - transparent price quotes
  - no risk of other party “backing out”
  - no risk of low quality cattle being “refused”
  - cash settled contract (no delivery ability / obligation)

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## Buy LRP insurance policy...

- Characteristics –
  - locks in a “floor” price (CME cash index)
  - subject to basis risk
  - contract specifications somewhat flexible (e.g., weight)
  - contract size flexible (1 head up to 1,000 – max of 2,000 hd/year)
  - deal with crop insurance agent
  - pay premium for LRP policy
  - have to buy in “off hours” (i.e., ~ 4:00 pm to 9:00 am)
  - tied to options market (determines availability)
  - price quotes available on RMA website
  - no risk of other party “backing out”
  - no risk of low quality cattle being “refused”
  - cash settled contract (no delivery ability / obligation)

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## Other options strategies...

- Characteristics –
  - anything goes...
  - buy / sell put(s), calls(s), sell futures, forward contract...
  - selling options requires margin account and maintenance
  - make sure you understand what you are doing!

### Several of the more common options strategies

- Synthetic put – hedge (sell futures) or forward contract and buy call option (works similar to buying put option)
- Window / fence – establish minimum (floor) and maximum (ceiling) prices by buying a put option and selling a call option(s)

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## Comparing pricing alternatives...

### Cash vs. Hedging vs. Options...

Because the various risk management tools have different characteristics (e.g., flat price vs. minimum price), it is useful to compare them under alternative price outcomes.

*FeederCattleRiskMgmtTool.xls* is a tool that allows users to compare various feeder cattle pricing strategies, specifically focusing on LRP versus options.

*KSU-Option Strategies.xls* is a tool that allows users to compare various pricing strategies, specifically focusing on using put and call options.

Both tools are available on [www.agmanager.info](http://www.agmanager.info).

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**FeederCattleRiskMgmtTool.xls**

**FeederCattleRiskMgmtTool.xls** – A decision making tool that can be used to compare Expected Net Selling Prices using alternative risk management tools available for pricing feeder cattle. The authors gratefully acknowledge funding provided by USDA's Risk Management Agency (RMA) for development of this feeder cattle risk management tool.

**INPUTS vs CALCULATED VALUES**

In the **Comparison** sheet all blue numbers are input by the user. All black numbers are calculated using data provided by the user. The spreadsheet automatically recalculates every time an additional input is entered. Thus, it is important to wait until all data have been entered and reviewed before interpreting any of the calculated results (i.e., black numbers).

**DESCRIPTION OF INPUTS**

Most of the input cells (i.e., blue number) have a red diamond in the upper right hand corner of the cell. By moving your mouse cursor over this diamond, a brief description of the input will be displayed on the screen.

**COMPANION PUBLICATIONS**

This spreadsheet was developed as a decision-aid tool for producers interested in managing feeder cattle price risk. You can learn more about managing price risk and using LRP insurance at [www.AgManager.info](http://www.AgManager.info) by clicking on the following links:

[LRP Insurance Information](#)      [Price Risk Management Information](#)

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 email: [kcd@ksu.edu](mailto:kcd@ksu.edu)  
 website: [www.agmanager.info](http://www.agmanager.info)

Note: Macros in this spreadsheet are simply used for printing and do not contain viruses.  
 Version: 8.06.09

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FeederCattleRiskMgmt.xls

Example INPUT screen for LRP premiums  
 INPUTS: Date = 08/05/2009, State = Kansas, Commodity = Feeder Cattle, Type = Steers Weight 2 (600-900 lbs)

“Tab” included with example screens for LRP and RMA web address where premiums can be found.

Example OUTPUT screen for LRP premiums  
 OUTPUTS: End dates 11/04/2009 = 13 wk endorsement; 12/02/2009 = 17 wk endorsement; 12/30/2009 = 21 wk endorsement

LRP

FeederCattleRiskMgmt.xls

Comparison of Alternative Risk Management Strategies for Pricing Feeder Cattle

Current date: 10/12/2009  
 Number of head (number of head to match futures contract = 68): 68  
 Expected weight at time of sale, lbs/head -- (use weight 1 for LRP): 730  
 Pounds of cattle expected to sell in cash market, lbs: 49,640  
 Expected sale date: 3/1/2009  
 Feeder cattle type: Steers

Futures price	Cash	Hedge	LRP	Put	Call	Put/Call
\$84.00	\$83.20	\$95.62	\$91.14	\$91.72	\$94.66	\$93.27
\$88.00	\$87.20	\$98.89	\$91.14	\$91.69	\$94.83	\$93.24
\$92.00	\$91.20	\$95.57	\$91.14	\$91.66	\$94.60	\$93.24
\$96.00	\$95.20	\$96.64	\$91.31	\$91.69	\$94.67	\$93.18
\$100.00	\$99.20	\$99.51	\$99.31	\$99.69	\$94.64	\$96.22
\$104.00	\$103.20	\$96.48	\$99.31	\$99.69	\$94.51	\$99.22
\$108.00	\$107.20	\$96.45	\$105.31	\$105.69	\$98.45	\$101.16
\$112.00	\$111.20	\$95.42	\$107.31	\$107.69	\$102.45	\$101.13
\$116.00	\$115.20	\$95.39	\$111.31	\$111.69	\$106.45	\$101.10

Comparison of Alternative Expected Net Selling Prices

Developed by: Kevin C. Ohyvetter, PhD  
 Professor, Department of Agricultural Economics  
 Kansas State University  
 786-632-3827 (voice) — kcd@ksu.edu (email)

AG MANAGER INFO RMA

## Inputs for FeederCattleRiskMgmtTool.xls

### Comparison of Alternative Risk Management Strategies for Pricing Feeder Cattle

Current date	10/12/2009
Number of head (number of head to match futures contract = 68)	68
Expected weight at time of sale, lbs/head -- (use weight 1 for LRP)	730
Pounds of cattle expected to sell in cash market, lbs	49,640
Expected sale date	3/1/2009
Feeder cattle type	Steers
CME futures contract for hedging (Jan, Mar, Apr, May, Aug, Sep, Oct, Nov)	Mar
Commission for roundtrip (sell and buy) futures trade, \$/contract	\$60.00
Commission to buy or sell options contract, \$/contract	\$30.00
Futures price -- Mar CME feeder cattle contract, \$/cwt*	\$96.375
Expected basis (cash - Mar CME futures), \$/cwt#	-\$0.72 /1
LRP expected ending value for relevant time period^	\$96.202
End date for LRP contract	3/5/2010

/1 basis for futures and options can vary from LRP basis

http://www.beefbasis.com

BEEFBASIS.COM  
 Decision Support for America's Beef Producers

Welcome to BeefBasis

BeefBasis.Com - Decision Support for America's Beef Producers

The Cattle Basis Risk Analysis Tools at BeefBasis.com give producers the information and analytics they need to improve marketing decisions influenced by cattle basis risk. This site is completely free of charge to producers.

Basis, defined simply as the difference between the local cash markets and futures contract prices, can be complex and can vary dramatically between weight classes and market locations from year to year. Understanding the risk related to basis uncertainty, or "basis risk," is essential to making effective use of price risk management tools such as Chicago Mercantile Exchange (CME) futures and options and forward contracts.

The BeefBasis website was developed by Custom Ag Solutions, Inc. (CAS) and Kansas State University (K-State) in partnership with the USDA's Risk Management Agency (RMA).

BeefBasis gives you relevant information and analytics you need to evaluate marketing decisions and manage your price risk.

BeefBasis News!

- Paper on BeefBasis presented at the 2008 annual meeting of the Western Agricultural Economics Association in Big Sky, MT on June 27, 2008. Download

AMS  
 USA

**Feeder Cattle Basis Forecast**

State: Missouri Location: Joplin Regional Stockyards Expected Sale Date: 3/1/2010

Sex: Steer Frame: Lg & Med/Lg Grade: 1-2

Weight: 730 lbs/head Head: 68

Feeder Cattle Futures Price: 96.37 \$/cwt Live Cattle Futures Price: 88.17 \$/cwt Corn Futures Price: 3.83 \$/bu

Reference Contract: Mar 2010 Transaction Date: Oct 09, 2009

Reference Contract: Apr 2010 Transaction Date: Oct 09, 2009

Reference Contract: May 2010 Transaction Date: Oct 09, 2009

**RUN**

**Instructions:**

- 1) Select values from each of the pull-downs, enter values in each of the text boxes.
- 2) Hover cursor over entry labels for explanation of value to be entered.
- 3) When all values have been entered, click the run button.
- 4) Results are displayed here.

**Feeder Cattle Basis Forecast**

State: Missouri Location: Joplin Regional Stockyards Expected Sale Date: 3/1/2010

Sex: Steer Frame: Lg & Med/Lg Grade: 1-2

Weight: 730 lbs/head Head: 68

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Reference Contract: Mar 2010 Transaction Date: Oct 09, 2009

Reference Contract: Apr 2010 Transaction Date: Oct 09, 2009

Reference Contract: May 2010 Transaction Date: Oct 09, 2009

Model-estimated feeder cattle basis values<sup>1</sup>

Model-estimated feeder cattle basis, \$/cwt<sup>2</sup>: **-0.72**

Confidence interval for basis, \$/cwt<sup>3</sup>: -5.23 to 3.80

Expected cash price, \$/cwt: 95.65

Confidence interval for expected cash price, \$/cwt<sup>3</sup>: 91.14 to 100.17

## Inputs for FeederCattleRiskMgmtTool.xls

## Output for FeederCattleRiskMgmtTool.xls

Comparison of Alternative Risk Management Strategies for Pricing Feeder Cattle

CME feeder cattle option premiums			LRP coverage levels and premiums		
Strike price	Put	Call	Coverage Level		LRP cost
\$/cwt	\$/cwt	\$/cwt	\$/cwt	%	\$/cwt
\$84.00			\$95.830	99.61%	\$3.968
\$86.00	\$0.7000		\$93.830	97.53%	
\$88.00	\$1.0250		\$91.830	95.46%	\$2.165
\$90.00	\$1.4250		\$89.830	93.38%	\$1.528
\$92.00	\$1.9750		\$87.830	91.30%	\$1.071
\$94.00	\$2.6500		\$85.830	89.22%	
\$96.00	\$3.5000	\$3.8750	\$83.830	87.14%	
\$98.00	\$4.5000	\$2.8750	\$81.830	85.06%	
\$100.00	\$5.6500	\$2.0500	\$79.830	82.98%	
\$102.00		\$1.4000	\$77.830	80.90%	
\$104.00		\$0.9000	\$75.830	78.82%	
\$106.00		\$0.6000	\$73.830	76.74%	
\$108.00			\$71.830	74.67%	

Comparison of Alternative Risk Management Strategies for Pricing Feeder Cattle

	Futures	LRP	Put	Call	Put	Call
Number of contracts	1	68	1	1	1	1
Strike price(s), \$/cwt		\$95.83	\$96.00	\$104.00	\$98.00	\$106.00
Premium, \$/cwt		\$3.968	\$3.500	\$0.900	\$4.500	\$0.600

Futures price	Expected Net Selling Prices					
	Cash	Hedge	LRP	Put	Hedge & Call	Put & Call
\$82.00	\$81.28	\$95.64	\$91.14	\$91.74	\$94.67	\$93.29
\$86.00	\$85.28	\$95.61	\$91.14	\$91.71	\$94.64	\$93.26
\$90.00	\$89.28	\$95.58	\$91.14	\$91.68	\$94.61	\$93.23
\$94.00	\$93.28	\$95.55	\$91.14	\$91.65	\$94.58	\$93.20
\$98.00	\$97.28	\$95.52	\$93.31	\$93.69	\$94.56	\$93.23
\$102.00	\$101.28	\$95.49	\$97.31	\$97.69	\$94.53	\$97.23
\$106.00	\$105.28	\$95.46	\$101.31	\$101.69	\$96.45	\$101.23
\$110.00	\$109.28	\$95.44	\$105.31	\$105.69	\$100.45	\$101.14
\$114.00	\$113.28	\$95.41	\$109.31	\$109.69	\$104.45	\$101.11

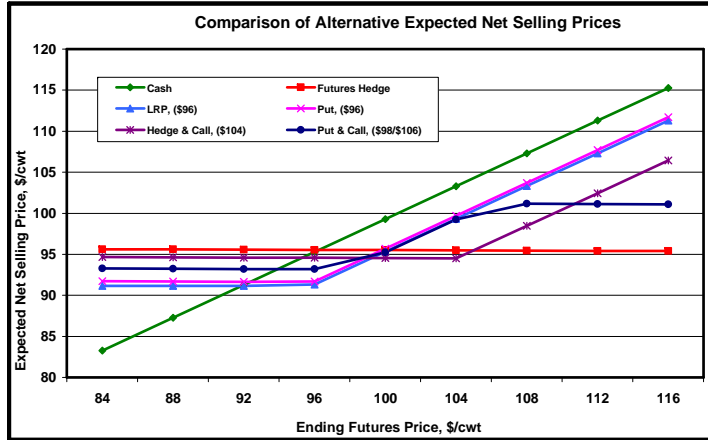
\$4.00 <= futures price increment Signifies maximum price in row



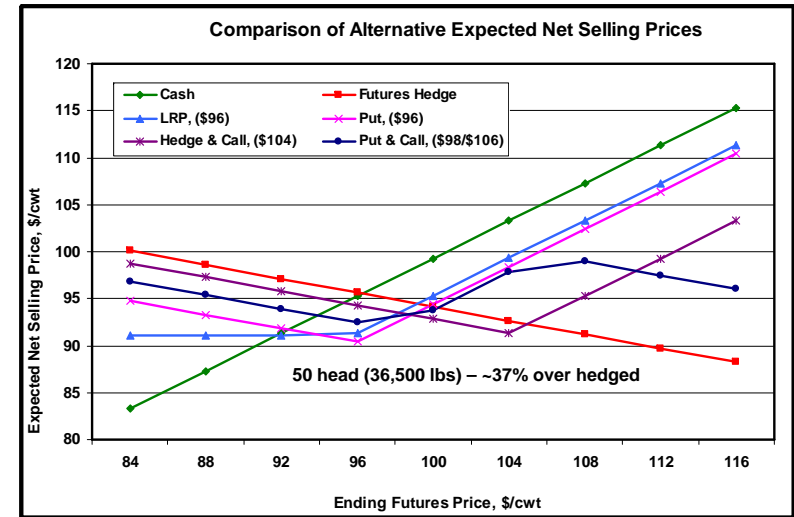
## Output for *FeederCattleRiskMgmtTool.xls*

### Comparison of Alternative Risk Management Strategies for Pricing Feeder Cattle

	Futures	LRP	Put	Call	Put	Call
Number of contracts	1	68	1	1	1	1
Strike price(s), \$/cwt		\$95.83	\$96.00	\$104.00	\$98.00	\$106.00
Premium, \$/cwt		\$3.968	\$3.500	\$0.900	\$4.500	\$0.600



## Impact of number of head “hedged” ...



Cash and LRP don't change from base because they are not “fixed quantity” contracts.



## Retain ownership...

- Characteristics –
  - “delaying” when cattle are delivered to market
  - capture returns to adding weight to cattle
  - method of “marketing” feed resources, labor, etc.
  - consider if market is undervaluing traits of your cattle
  - may increase risk
  - still need to price cattle



## Retain ownership...

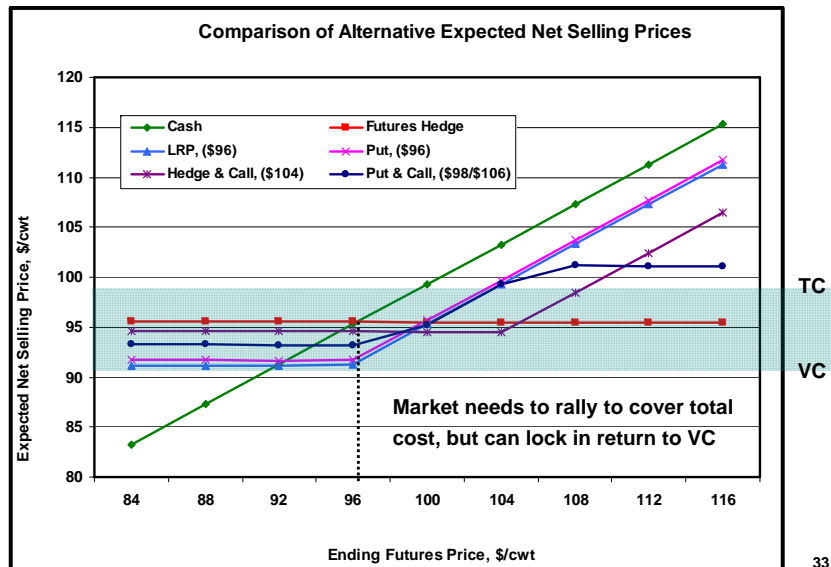
### Retain Ownership\*

Steer weight, lbs/head	550
Estimated price at weaning, \$/cwt	\$97.50
Value at weaning, \$/head	\$536.25
Total variable costs, \$/head	\$119.86
Total fixed costs, \$/head	\$58.23
Total costs, \$/head	\$178.08
Selling weight, lbs/head	730
Breakeven price to cover VC, \$/cwt	\$90.79
Breakeven price to cover TC, \$/cwt	\$98.84

\* Feeding period = 90 days @ ADG of 2.00 lbs and death loss of 1.0%



## Retain ownership – pricing opportunities vs BE



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## Summary...

- More variability in returns across producers at a point in time than on average over time
- Cost management has historically been much more important than income management
- “Marketing” is different than selling or pricing – the value of marketing likely will increase as we move away from commodity beef

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## Summary...

- Price risk management tools available generally only help manage short-term risk. Cow-calf producers are also concerned about multi-year risk
- Short-term price volatility has been increasing and thus managing that risk is likely becoming more important for many producers
- Numerous pricing methods/strategies that can be used and they all have their advantages and disadvantages – make sure you know and understand what you are doing
- Tools available to help analyze pricing methods

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World Grain Supply and Demand Estimates (WASDE)  
October 9, 2009 by Mike Woolverton and Rich Lieswyn

Lower MYA Prices Mean Higher ACRE Payments  
October 9, 2009 by Art Barnaby

Updated MYA 2009/10 Price Estimates for ACRE  
October 9, 2009 by Art Barnaby

Current Grain Outlook Newsletter  
October 9, 2009 by Mike Woolverton

Kansas Grain Price Spread-Transportation Returns  
October 8, 2009 by Daniel O'Brien

Crop Basis Maps  
October 8, 2009 by Kevin Dhuyvetter

Updated Crop Basis Tool  
October 8, 2009 by Kevin Dhuyvetter

Livestock and Hay Charts  
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Livestock Outlook Radio Program  
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In The Cattle Markets  
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Rothlisberger

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September 20, 2009 by Dan O'Brien

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