Beef & Cattle Market Outlook, Drought Implications, and Risk Management Overview

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Auburn, KS

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AG MANAGER.INFO
Kansas State Research & Extension
www.agmanager.info

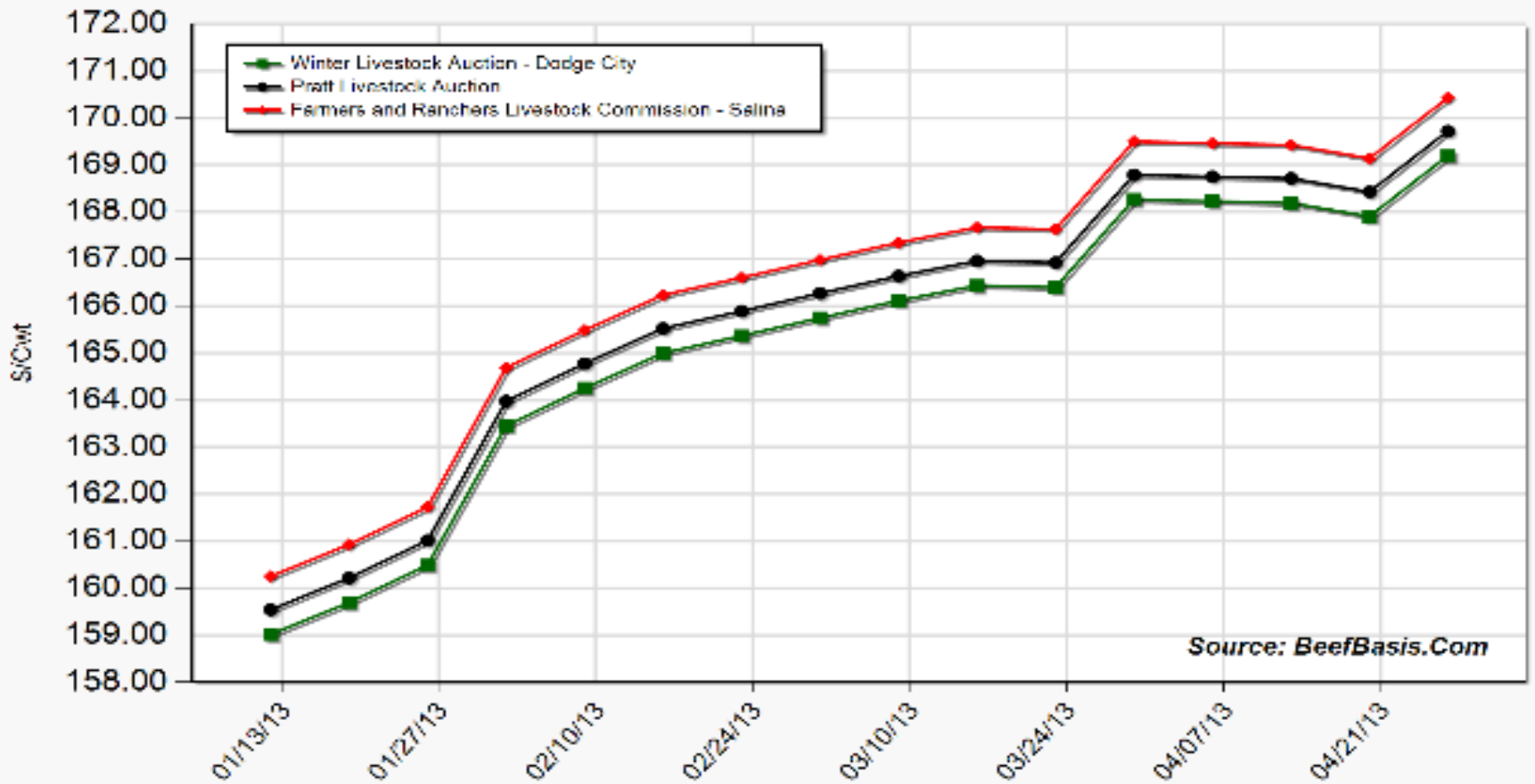
Economic Outlook Overview: Cow-Calf Sector

- 2012 was a historical year for calf price levels and variability…
  - "White hot" market in spring
  - National vs. regional drought magnified market impact compared to 2011
  - 2013 market will reflect tight supplies, water prospects, expansion possibilities…

- Returns over cash costs
  - 2012 (2013) estimates fell over $170/cow ($75) from March to Dec.
  - Will 2015 now be "the peak return year" ?

- Further widening between top 1/3 and bottom 1/3 of producers?
  - Cost management drives majority of differences in returns and likely is even more critical in period of drought response ….
  - Read This Report: http://www.agmanager.info/livestock/budgets/production/beef/Cow-calf_EnterpriseAnalysis(Nov2012).pdf

As of: 1/14/13’



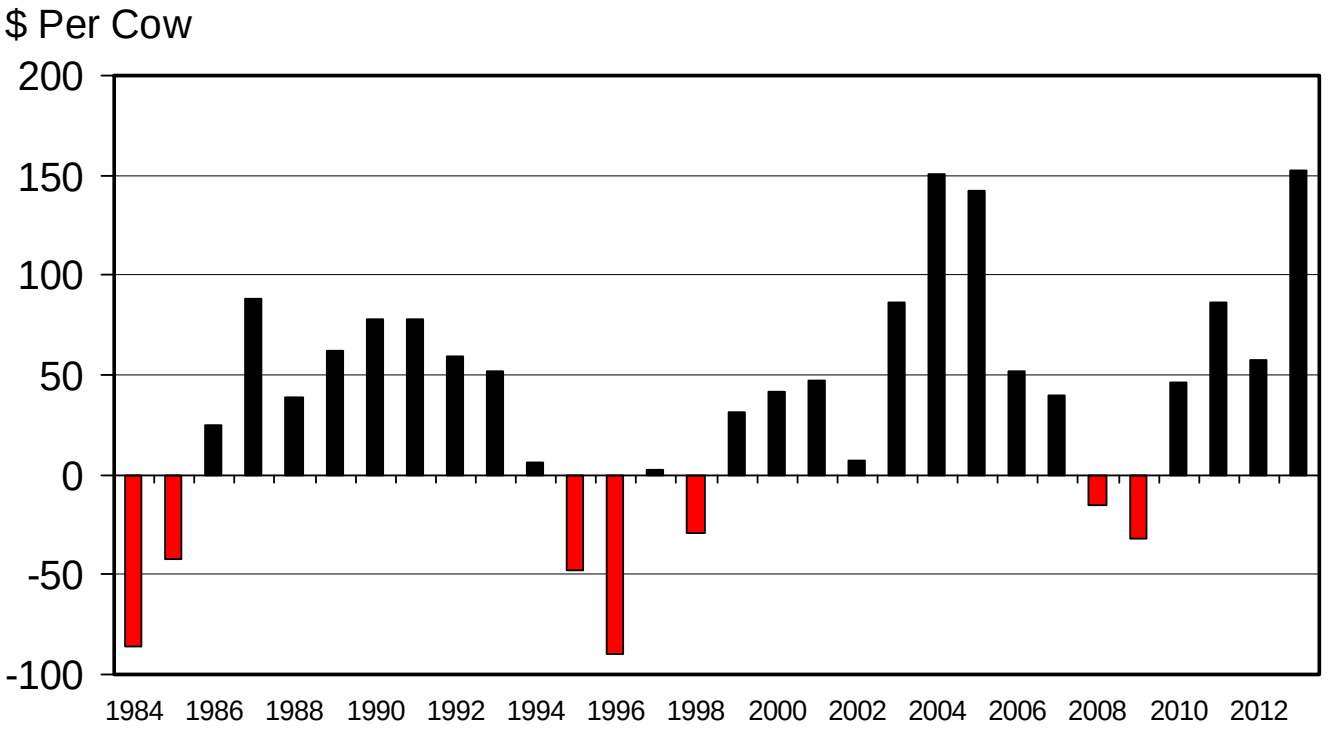
CAS Custom Ag Solutions

Agricultural Economics
Kansas State University

http://www.agmanager.info/livestock/marketing/graphs/cattle/prices/default.asp

ESTIMATED AVERAGE COW CALF RETURNS

Returns Over Cash Cost (Includes Pasture Rent), Annual



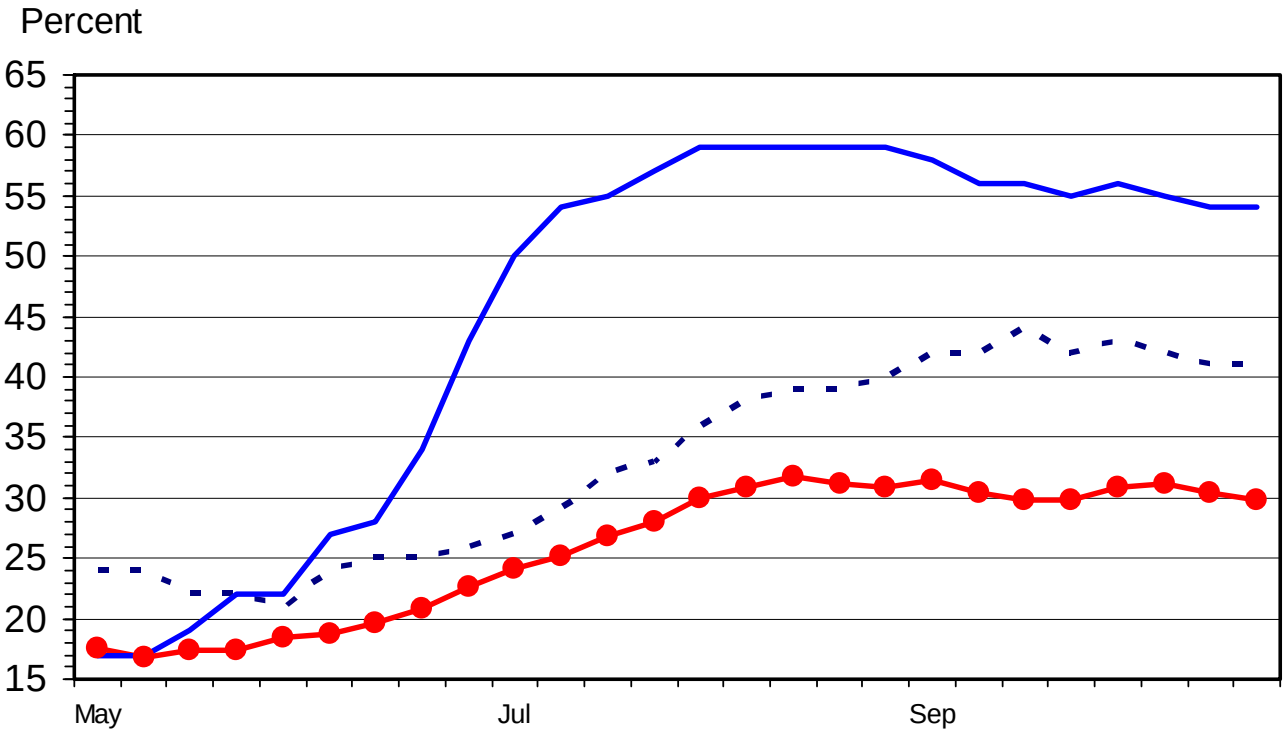
Livestock Marketing Information Center

Data Source: USDA-AMS & USDA-NASS, Compiled & Analysis by LMIC

C-P-66
09/20/12

US RANGE AND PASTURE CONDITION

Percent Poor and Very Poor, Weekly



Beef Cows in states with 40% Poor to Very Poor		
Last year	Cows	% of Total
10/23/11	14862	**48.31%**
10/30/11	14185	**46.11%**
This Year		
10/21/12	21009	**70.50%**
10/28/12	21009	**70.50%**

10/31/10': 19.9% of Cows

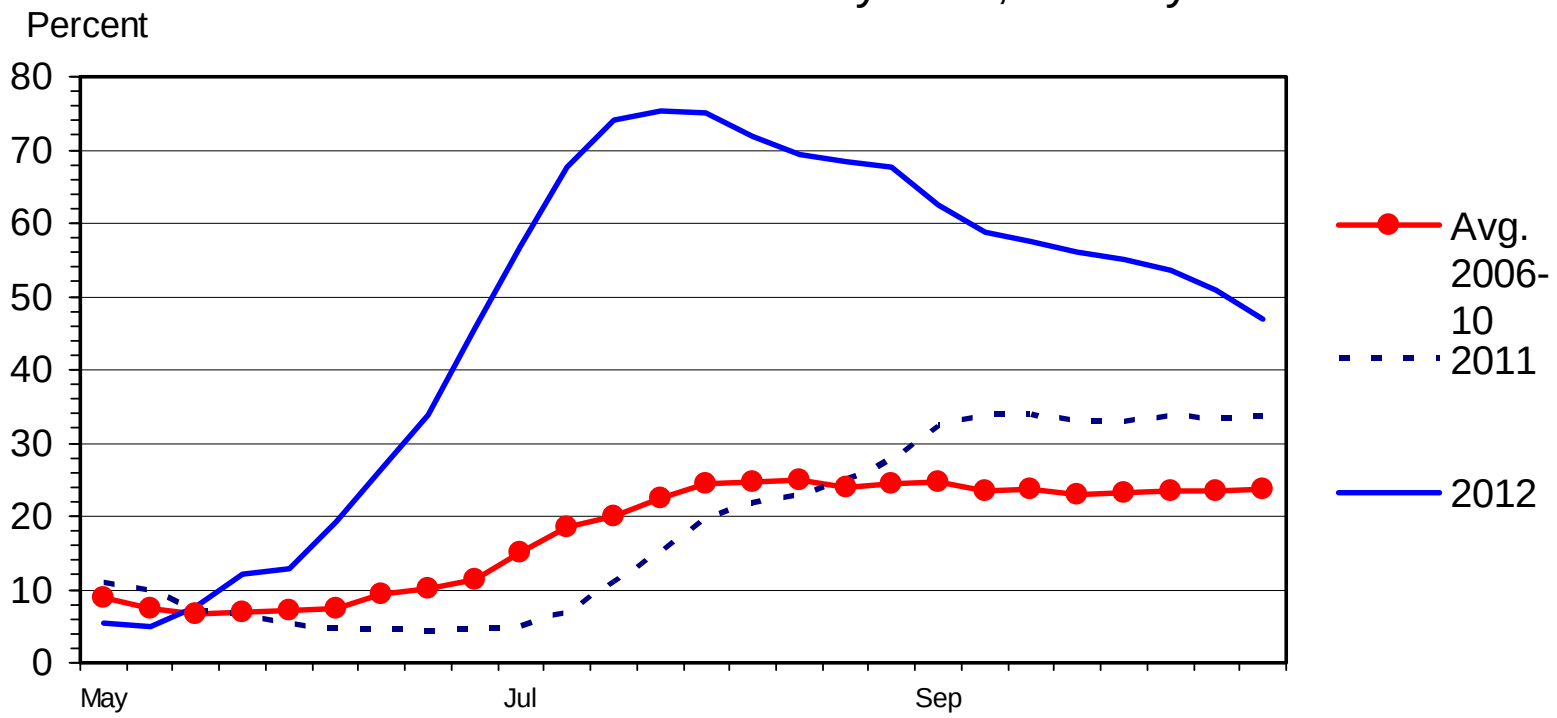
G-NP-30
10/31/12

Livestock Marketing Information Center

Data Source: USDA-NASS, Compiled & Analysis by LMIC

IL, IN, IA, MI, MN, MO, OH, & WI
14.5% of Cows
(2012)

CORNBELT REGION
RANGE AND PASTURE CONDITION
Percent Poor and Very Poor, Weekly



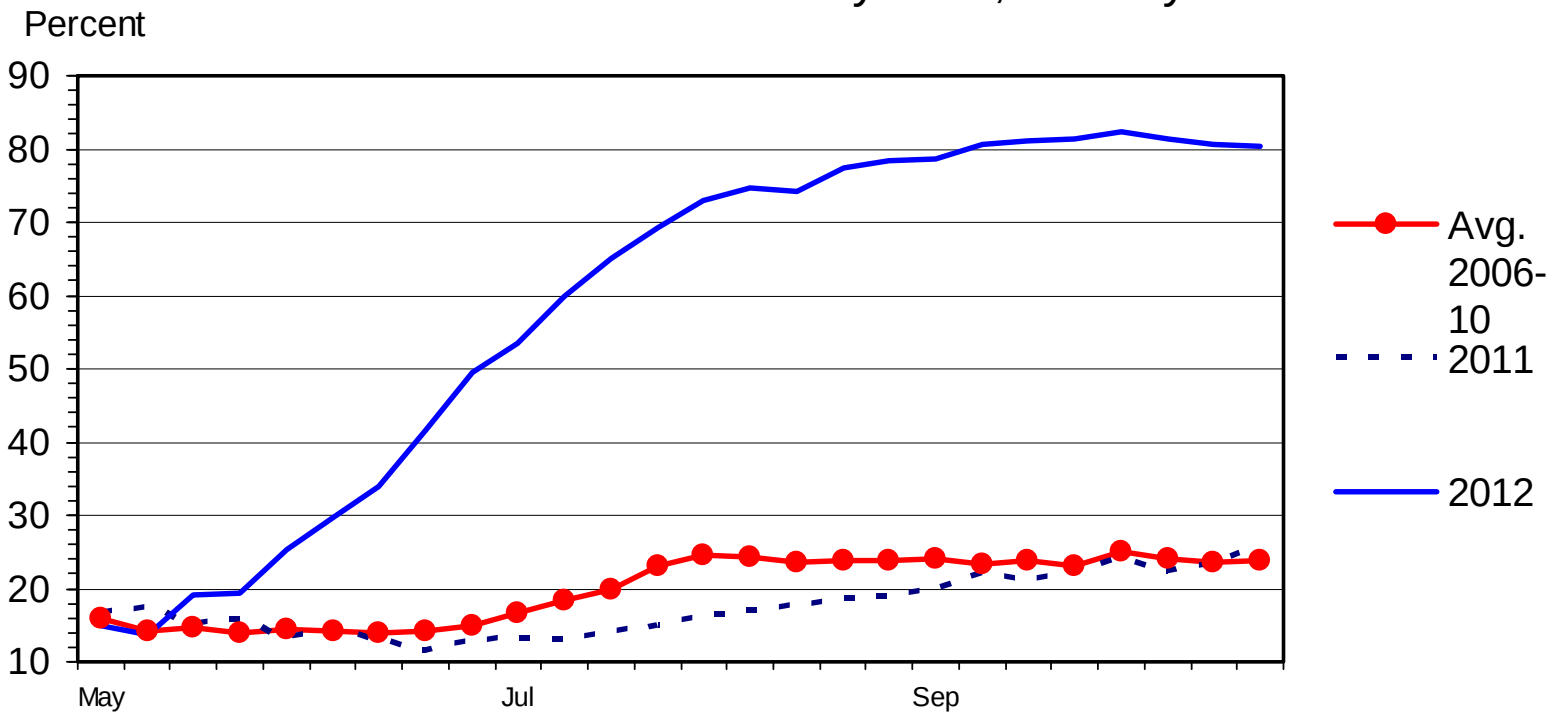
G-NP-34
10/31/12

Livestock Marketing Information Center

Data Source: USDA-NASS, Compiled & Analysis by LMIC

CO, KS, MT, NE, ND, SD, & WY
29.2% of Cows
(2012)

GREAT PLAINS REGION
RANGE AND PASTURE CONDITION
Percent Poor and Very Poor, Weekly



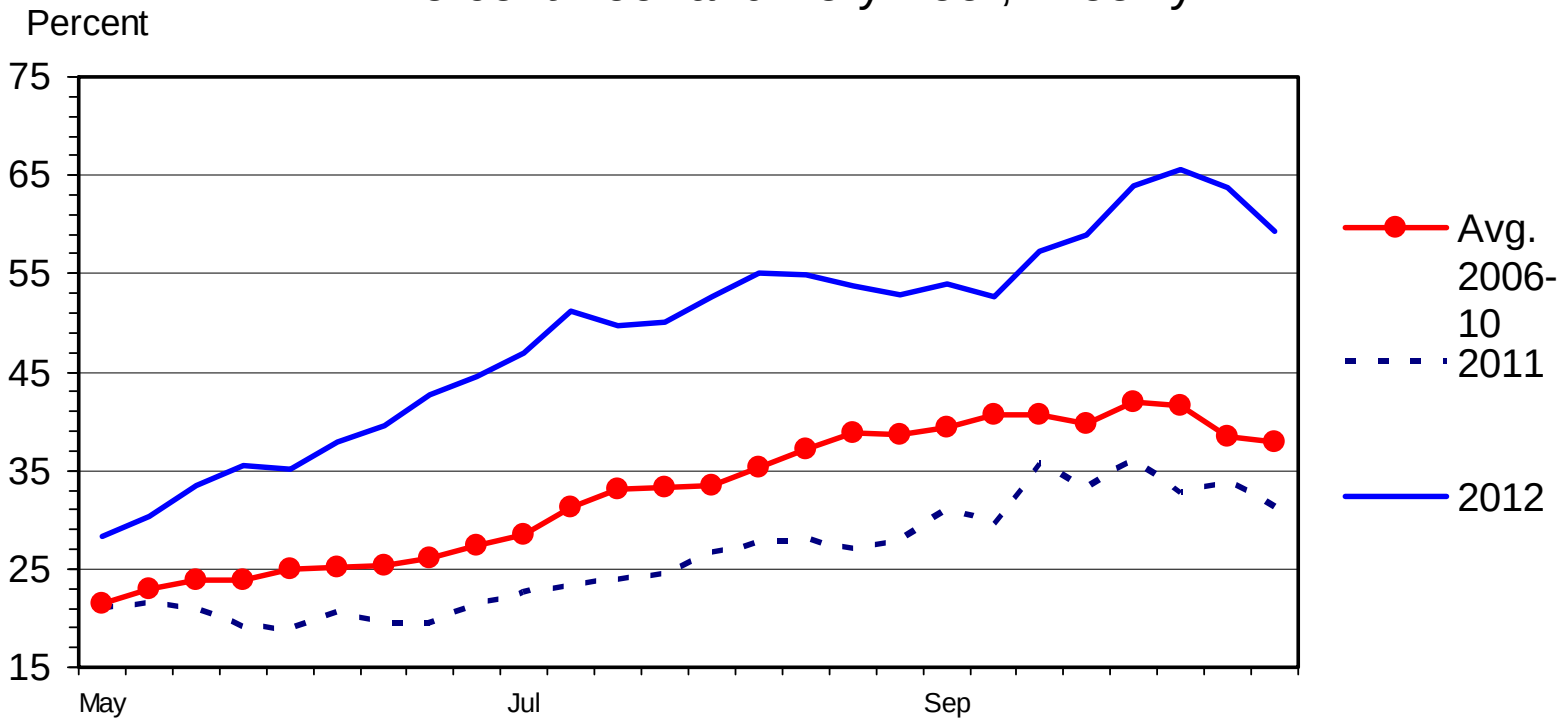
G-NP-32
10/31/12

Livestock Marketing Information Center

Data Source: USDA-NASS, Compiled & Analysis by LMIC

AZ, CA, ID, NV, NM, OR, UT, & WA
10.2% of Cows
(2012)

WESTERN REGION
RANGE AND PASTURE CONDITION
Percent Poor and Very Poor, Weekly



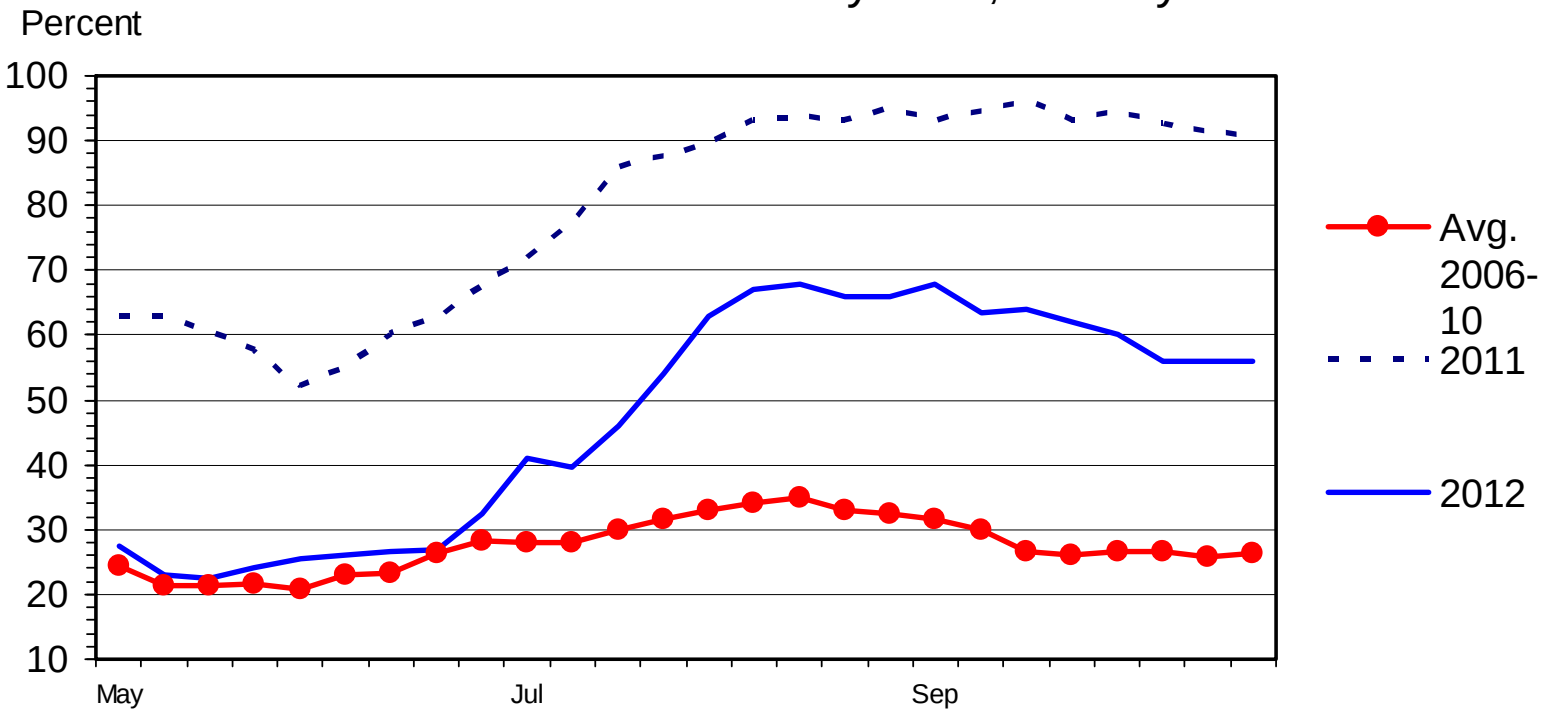
G-NP-31
10/31/12

Livestock Marketing Information Center

Data Source: USDA-NASS, Compiled & Analysis by LMIC

OK & TX
20.4% of Cows
(2012)

SOUTHERN PLAINS REGION
RANGE AND PASTURE CONDITION
Percent Poor and Very Poor, Weekly



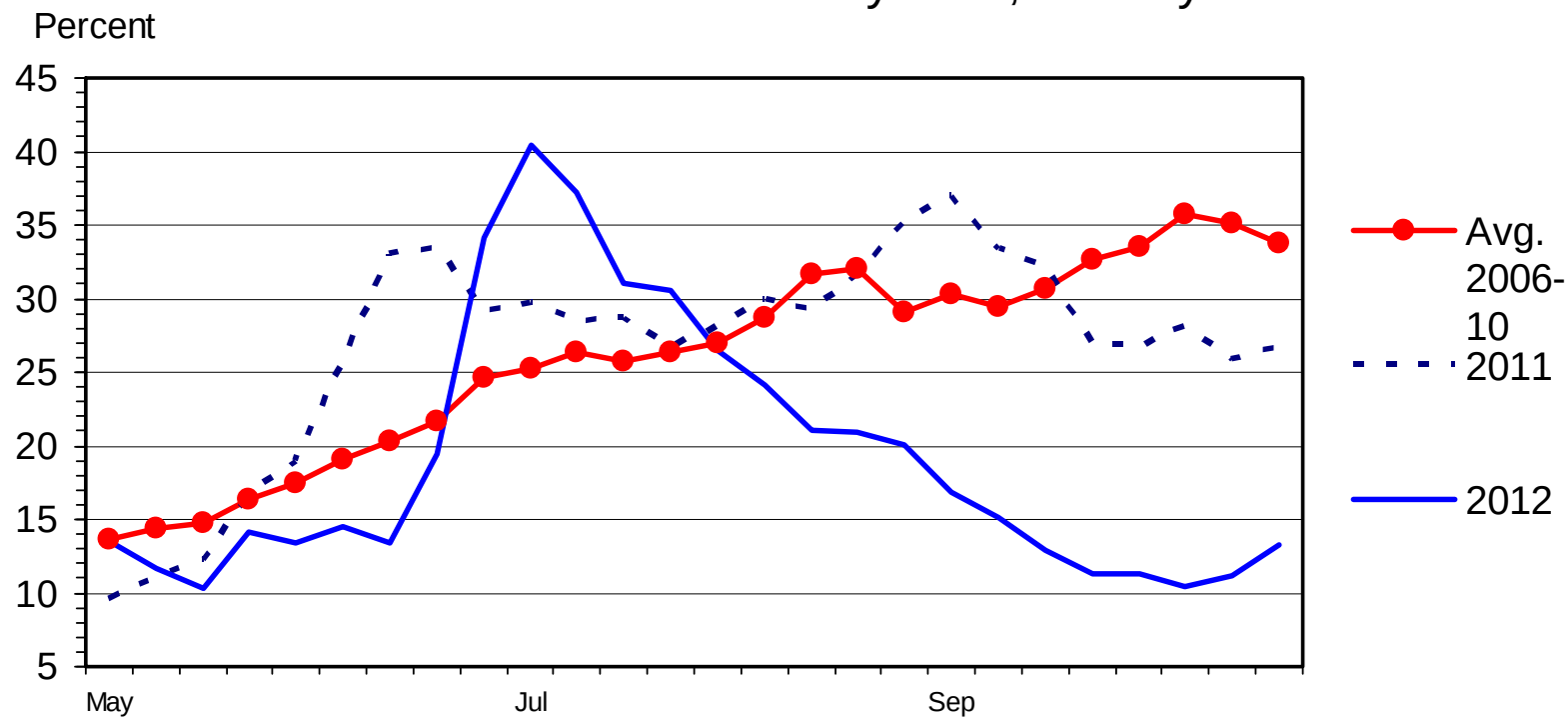
G-NP-33
10/31/12

Livestock Marketing Information Center

Data Source: USDA-NASS, Compiled & Analysis by LMIC

AL, AR, FL, GA, KY, LA, MS, NC, SC, TN, VA, & WV
24.5% of Cows (2012)

SOUTHEAST REGION
RANGE AND PASTURE CONDITION
Percent Poor and Very Poor, Weekly



G-NP-36
10/31/12

Livestock Marketing Information Center

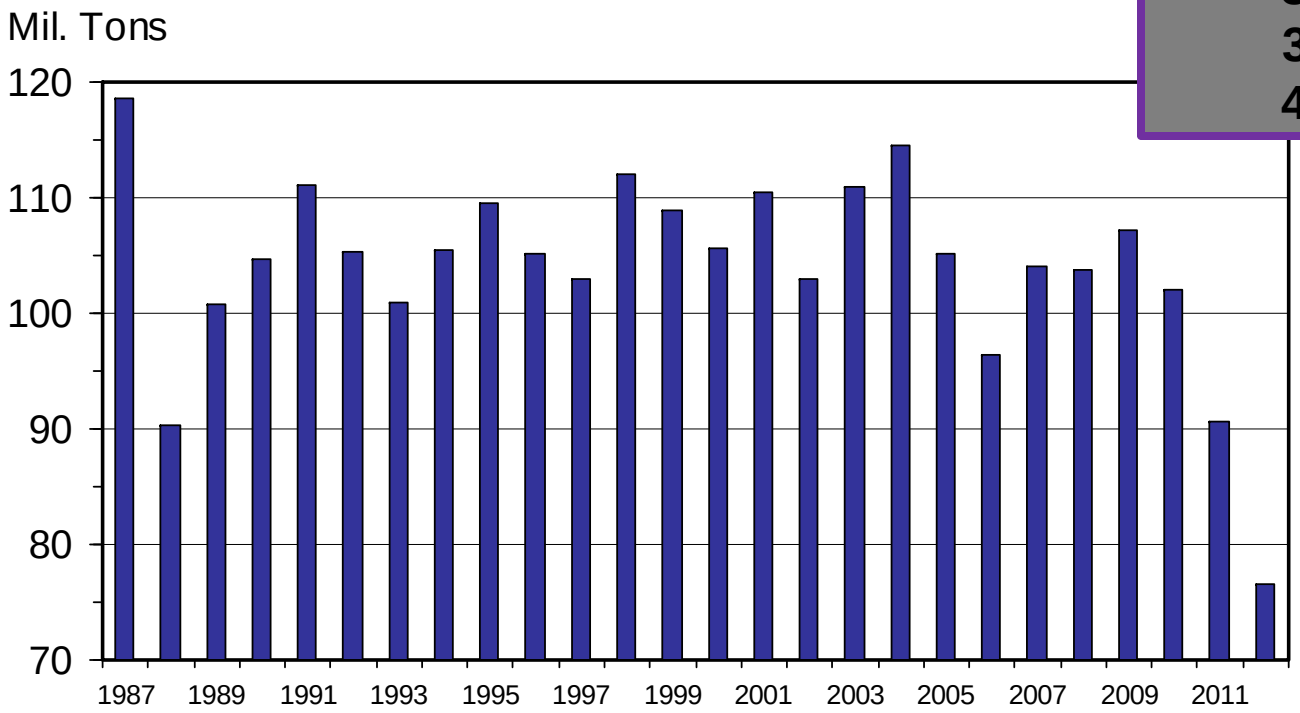
Data Source: USDA-NASS, Compiled & Analysis by LMIC

U S ALL HAY STOCKS

December 1

Dec. 1 US Stocks:
Smallest since 1957

Dec. 1 KS Stocks:
3.0 mil tons (12')
3.9 mil tons (11')
4.5 mil tons (10')



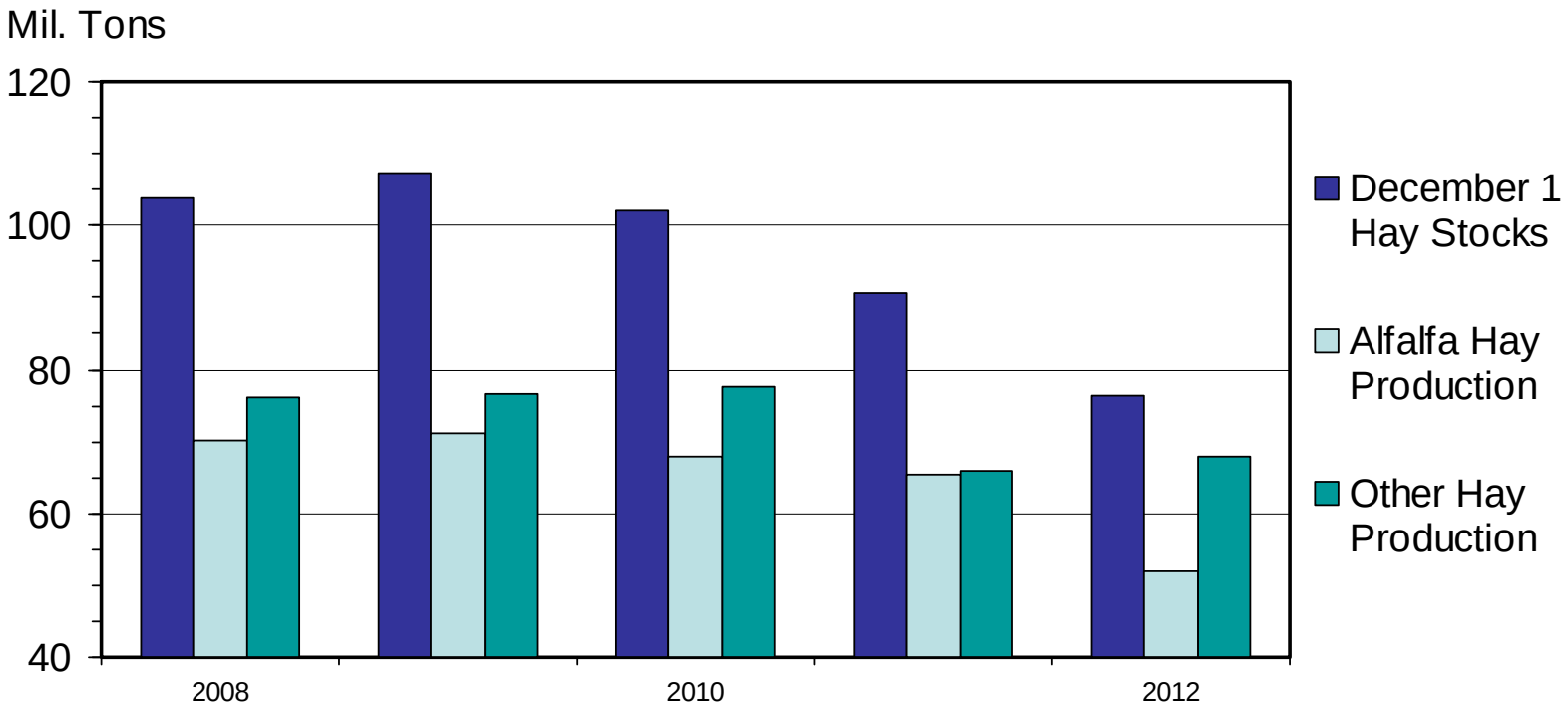
G-NP-22
01/11/13

Livestock Marketing Information Center

Data Source: USDA-NASS, Compiled & Forecasts by LMIC

U S HAY STOCKS AND PRODUCTION

Crop Year

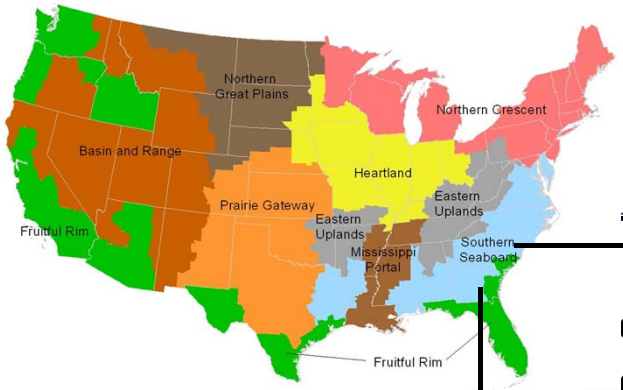


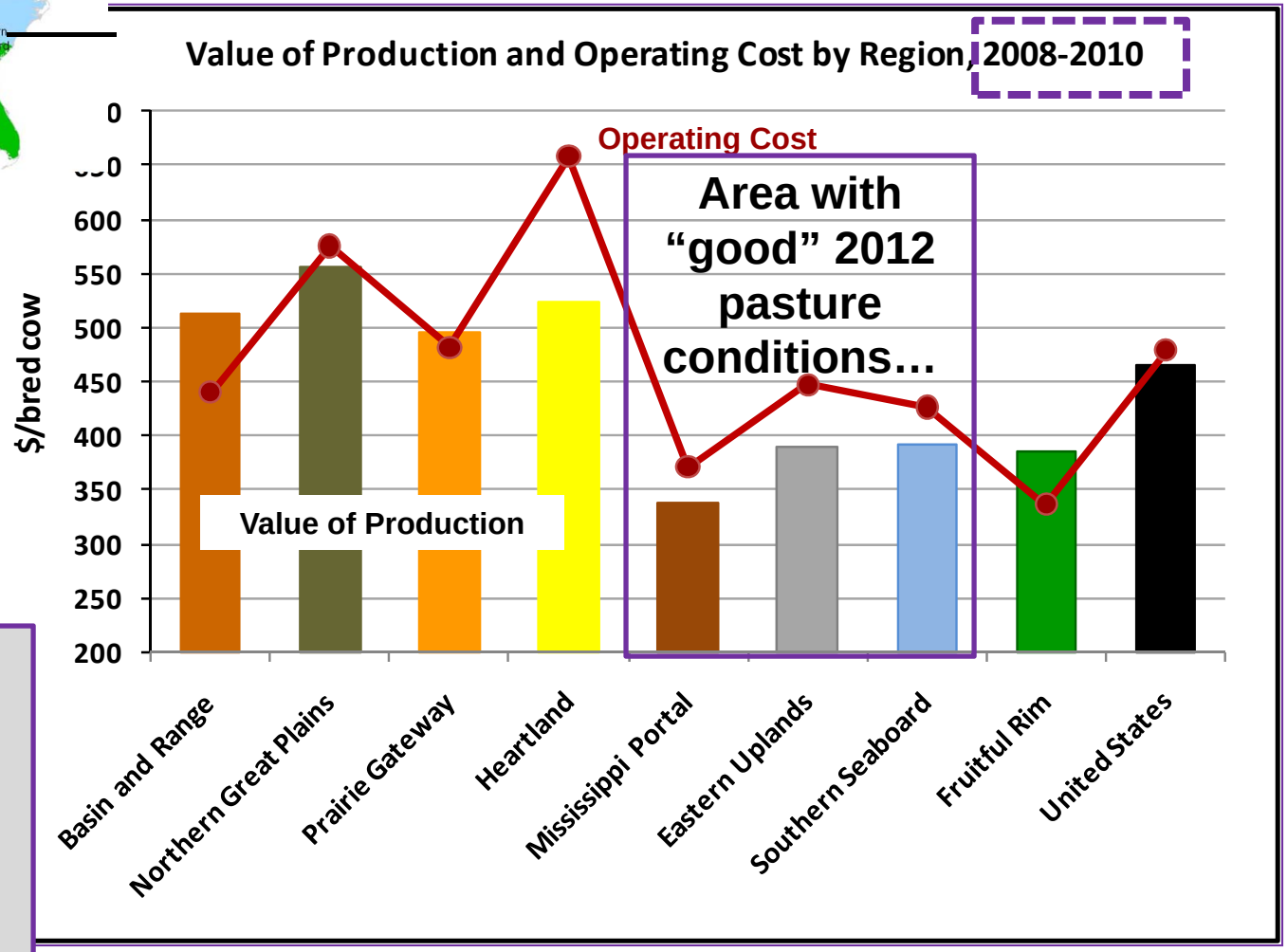
Livestock Marketing Information Center

01/11/13

Data Source: USDA-NASS, Compiled & Forecasts by LMIC

Do some regions have an economic advantage for expansion?



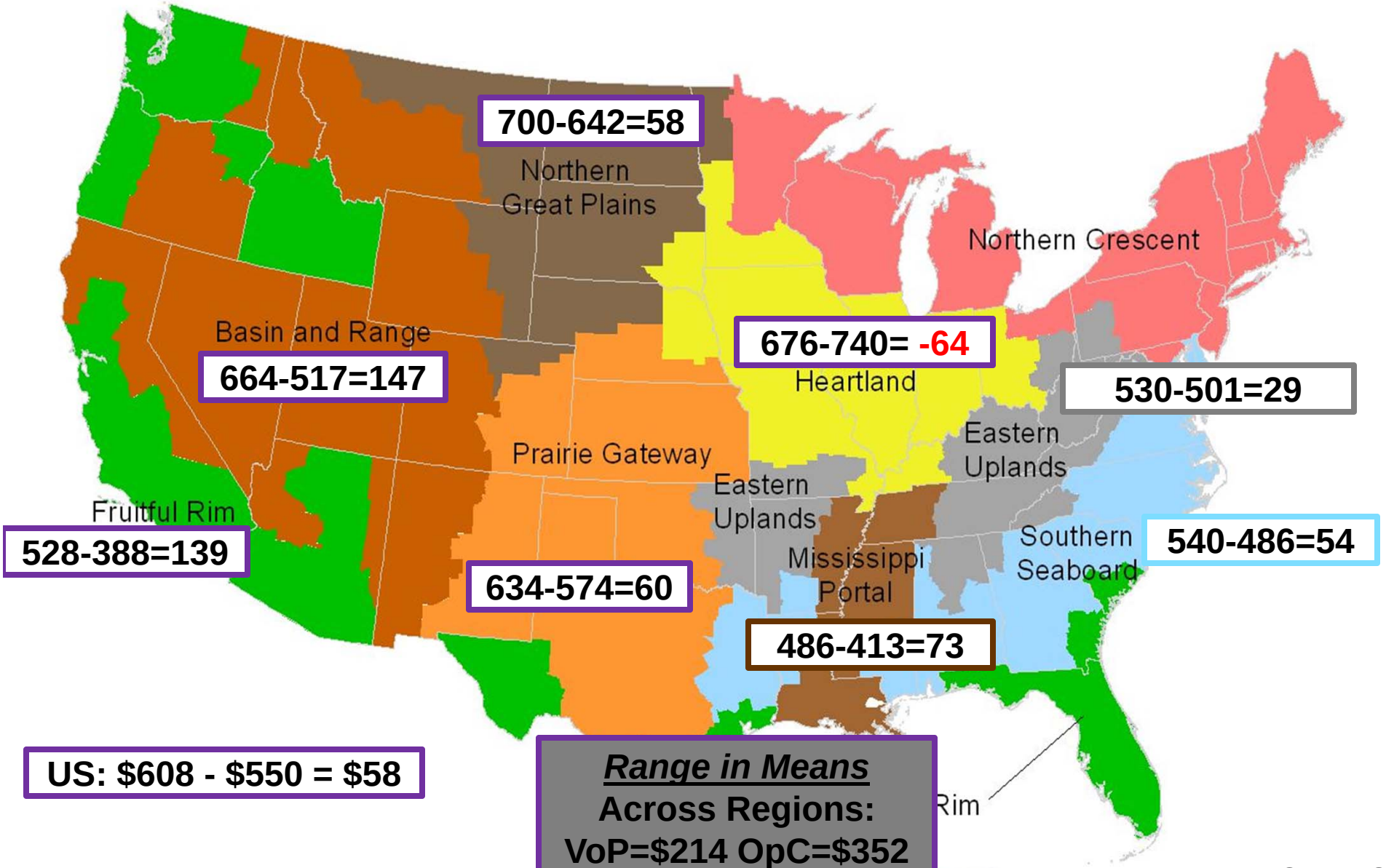


Herds > 20 cows

Operating Costs = 37% (MP) to 52% (NGP) of Total Costs

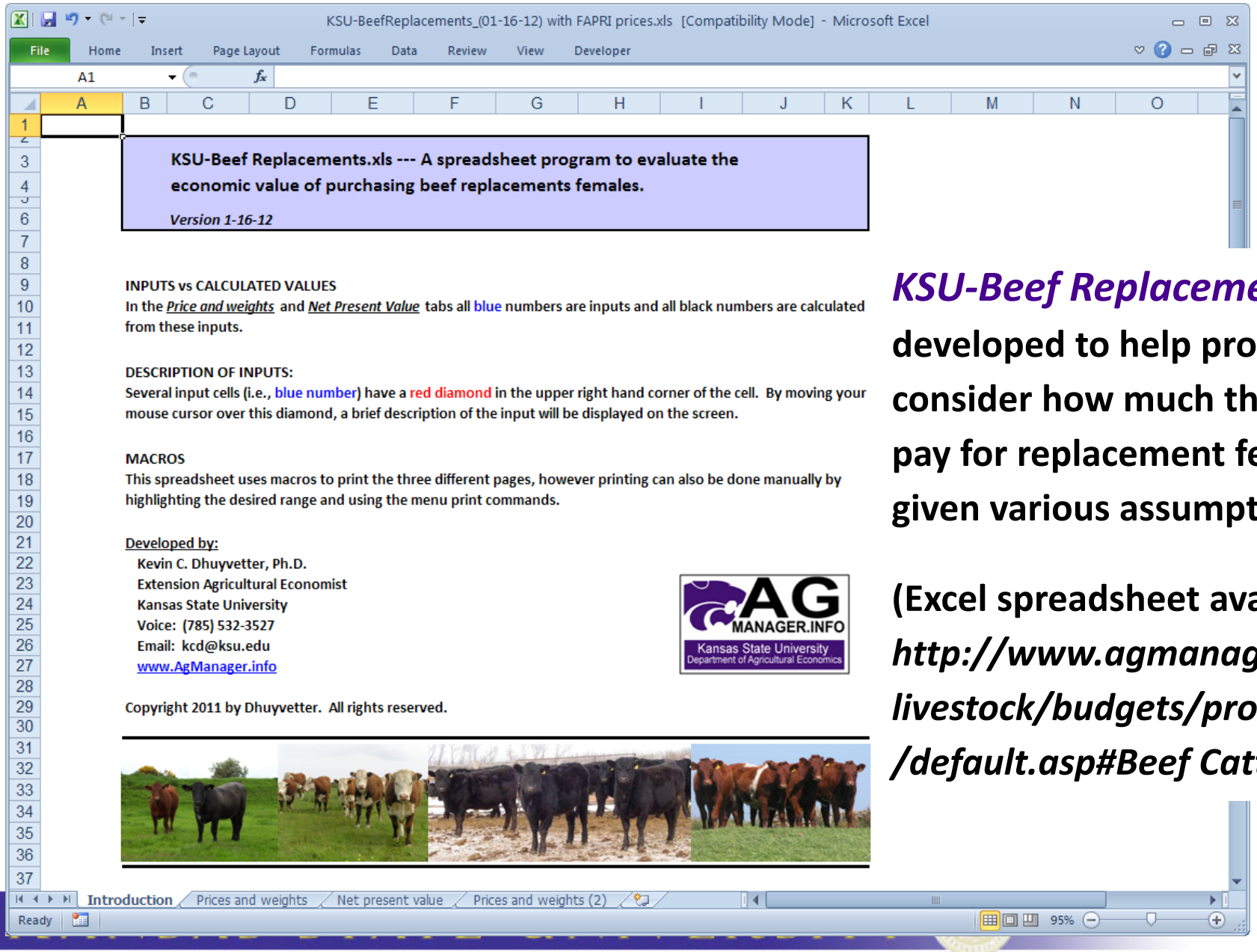
Data source: USDA-ERS

ERS 2011 ($/cow): Value of Production LESS Operating Costs



Data source: USDA-ERS
http://www.ers.usda.gov/Data/CostsAndReturns/testpick.htm#recent

Build herd -- How much can I pay for a heifer/cow?



KSU-Beef Replacements.xls **developed to help producers consider how much they can pay for replacement females given various assumptions.**

(Excel spreadsheet available: *http://www.agmanager.info/livestock/budgets/production/default.asp#Beef Cattle*)

Build herd -- How much can I pay for a heifer/cow?
Average cow costs of middle 1/3 = $803

Print Information

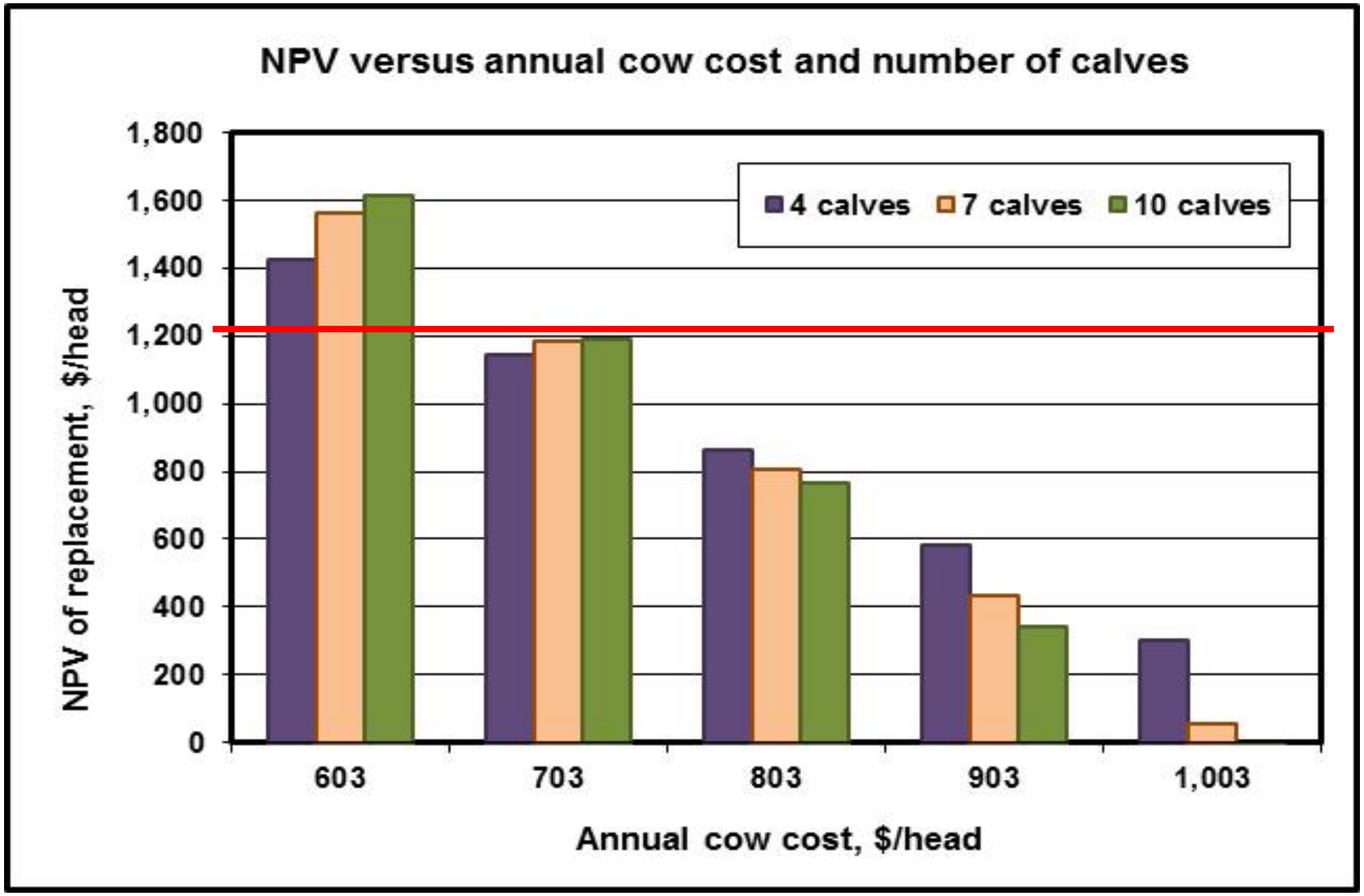
Input Assumptions

Number of replacements purchased	100	Percent marketable calves (1 - death loss)	97.0%
Year of purchase	2013	Annual cow death loss	0.5%
First year for calf sales	2014	Annual cull rate	15.0%
Cull cow weight, lbs/hd	1,250		
Annual cow costs, $/year	$803	Annual inflation rate on costs	1.0%
Price scenario to use (1-3) (GTT Adj LMIC)	1	Annual increase in average weaning weight	0.0%
Weaning weight scenario to use (1-3)	1	Discount rate (interest rate)	6.5%

Net Present Value Analysis

	Cows at			Prices, $/cwt		Calf	Cull Income			Cost	Net	Discount	
Year	BOY*	Calf	Calf wt	Calf	Cull	Income	Annual	Age	Cost	Adj.	Income	factor	NPV**
2014	100.0	1	542	$170.48	$70.00	$896	$131.25	$739	$811	$0	$217	0.9390	$898
2015	84.5	2	552	$164.88	$70.00	$746	$110.91	$625	$692	$0	$165	0.8817	$899
2016	71.4	3	562	$159.28	$70.00	$620	$93.72	$528	$591	$0	$123	0.8278	$887
2017	60.3	4	567	$153.98	$70.00	$511	$79.19	$446	$504	$0	$86	0.7773	$864
2018	51.0	5	572	$153.68	$70.00	$435	$66.92	$377	$430	$0	$71	0.7299	$844
2019	43.1	6	572	$153.68	$70.00	$367	$56.54	$319	$367	$0	$57	0.6853	$826
2020	36.4	7	567	$153.98	$70.00	$308	$47.78	$269	$313	$0	$43	0.6435	$809
2021	30.8	8	565	$154.10	$70.00	$260	$40.37	$227	$267	$0	$33	0.6042	$793
2022	26.0	9	562	$154.28	$70.00	$219	$34.12	$192	$228	$0	$24	0.5674	$778
2023	22.0	10	559	$154.46	$70.00	$184	$28.83	$162	$195	$0	$18	0.5327	$765
* BOY = Beginning of year			562	$157.28	$70.00						** Net present value if replacement is sold in this year		

Build herd -- How much can I pay for a heifer/cow?



Total costs of bottom, middle, and top 1/3 operations (07'-11' KFMA): $961/cow, $803/cow, and $697/cow

Managing Price Risk - Summary

It can look easy, but remember …

… it's always easier in hindsight.

There is no free lunch in price risk management. Risk-reward trade-offs must be appreciated…

LRP – Feeder Cattle

Resources Overview

- RMA Fact Sheet
  - http://www.rma.usda.gov/pubs/rme/lrp-feedercattle.pdf
- Premium Calculator
  - http://www.rma.usda.gov/tools/livestock.html
- Approved agents and Insurance Companies
  - http://www.rma.usda.gov/tools/agent.html

K-State Feeder Cattle Risk Management Tool

(http://www.agmanager.info/livestock/marketing/LRP/default.asp)

Risk Management Tools

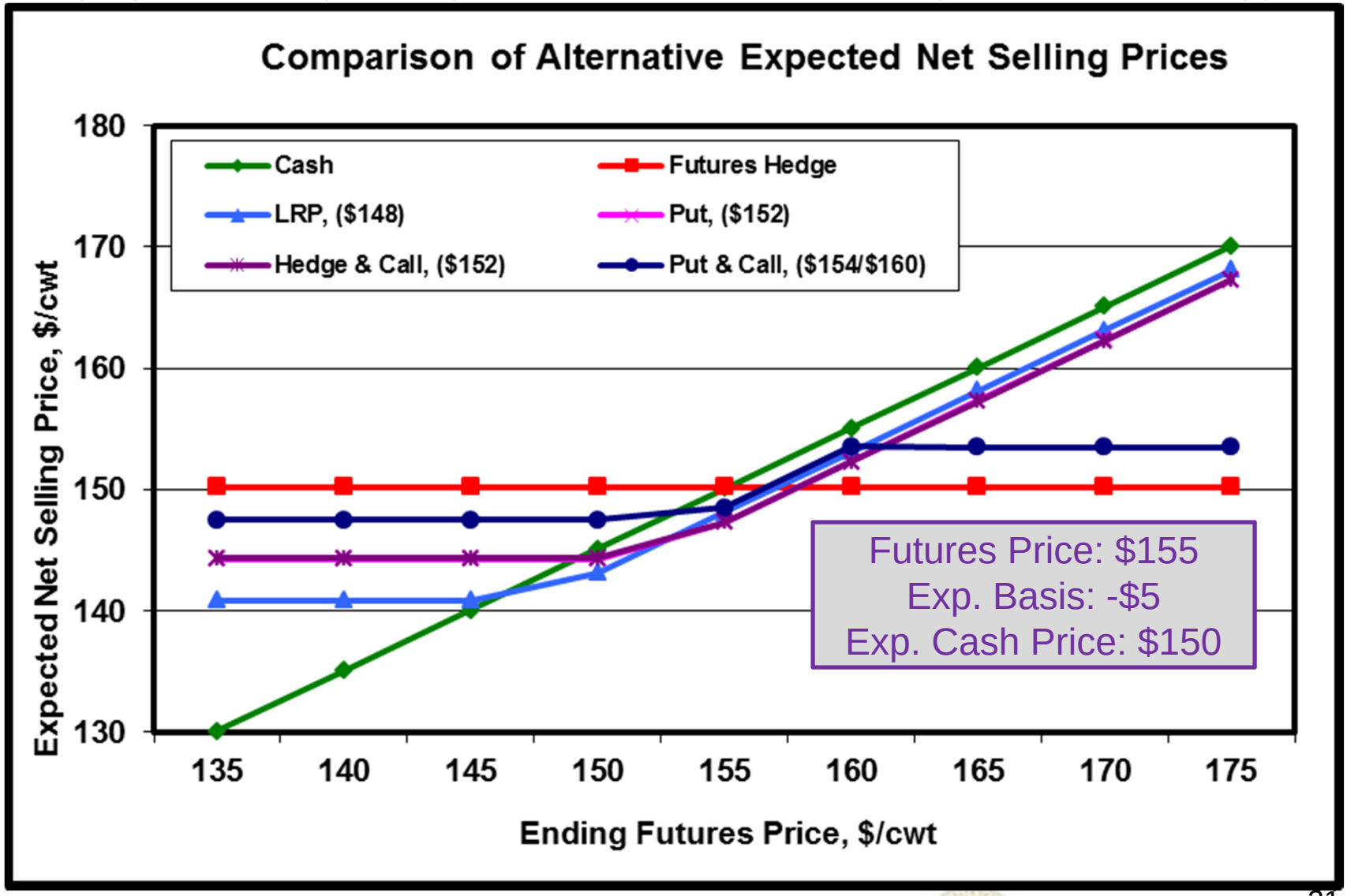
Title	Author	Date	File
K-State Feeder Cattle Risk Management Tool (use to compare Expected Selling Prices using LRP insurance, CME feeder cattle futures, CME feeder cattle options, plus other strategies)	Dhuyvetter	3/10/2011	Excel

Jan. 14th Situation:

- Selling 125 steers in mid-April @ 800 lbs
- Expected basis: -$5 (beefbasis.com)
- May FC Futures Contract ($155) & Option Premiums
- LRP Premiums

K-State Feeder Cattle Risk Management Tool

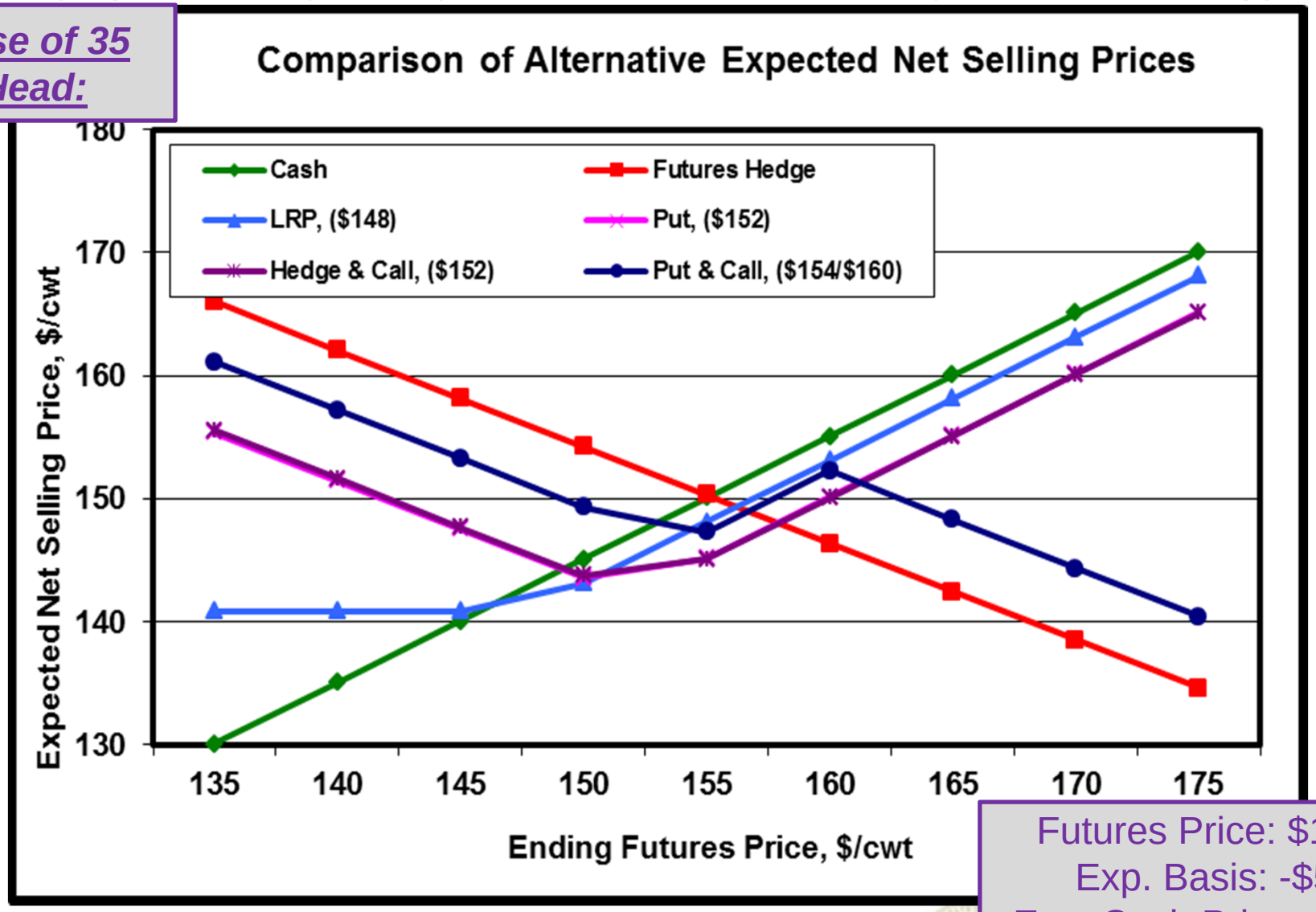
(http://www.agmanager.info/livestock/marketing/LRP/default.asp)



K-State Feeder Cattle Risk Management Tool

(http://www.agmanager.info/livestock/marketing/LRP/default.asp)

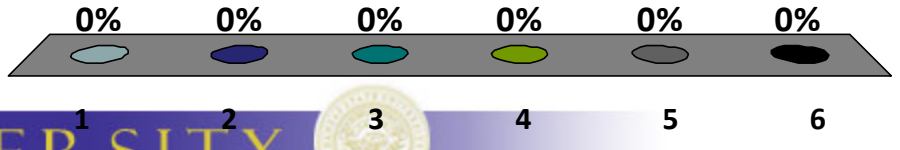
Case of 35 Head:

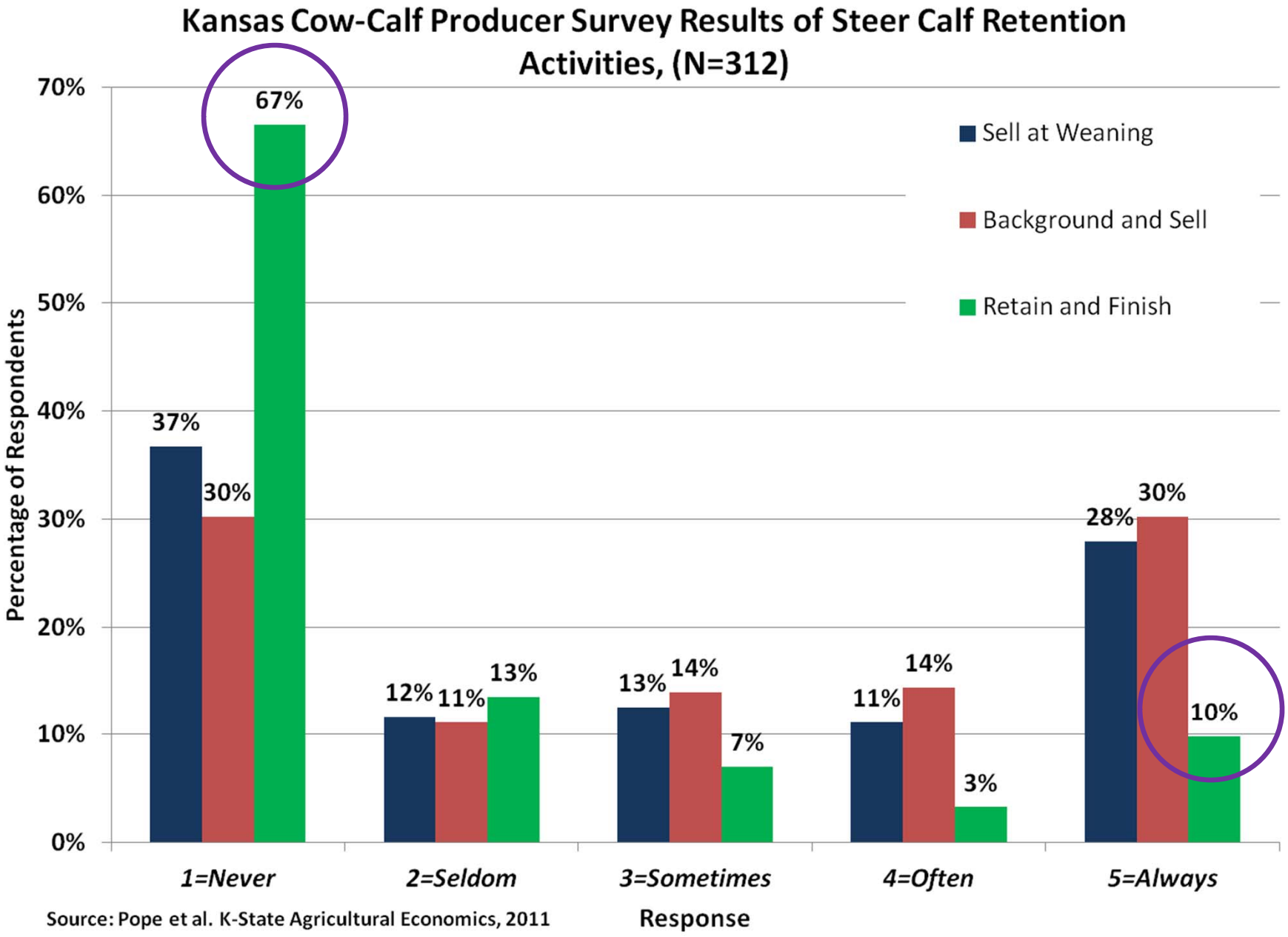


Futures Price: $155
Exp. Basis: -$5
Exp. Cash Price: $150

Which of the following methods do you typically use to price calves/steers?

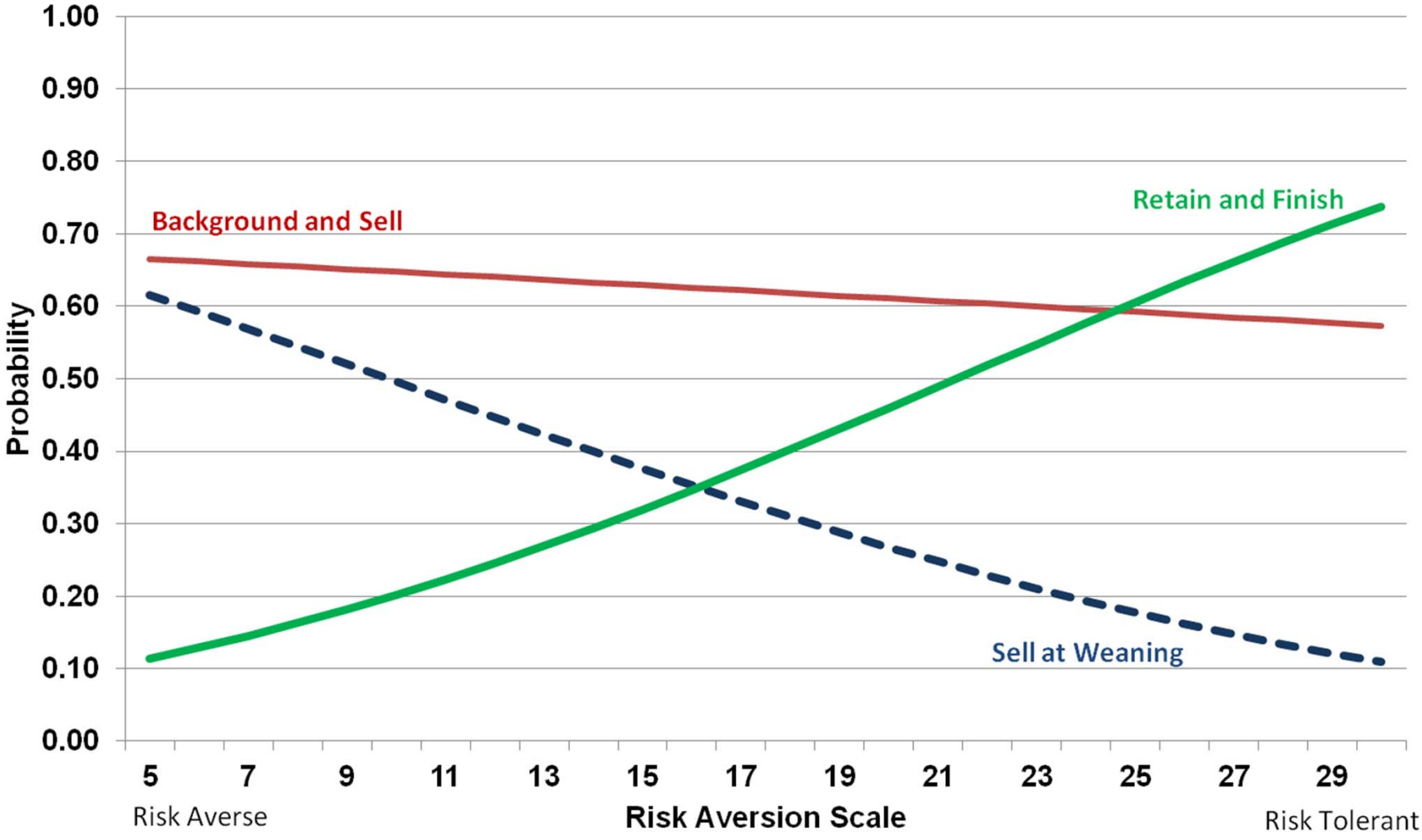
1. Cash sales
2. Buy put option(s)
3. Hedge with futures contract(s)
4. Forward contract sales
5. Livestock Risk Protection (LRP)
6. Other





Source: Pope et al. K-State Agricultural Economics, 2011

Kansas Cow-Calf Producer Results of How Risk Aversion Relates to Steer Calf Retention Activities, (N=312)



Source: Pope et al. K-State Agricultural Economics, 2011

Economic Outlook Overview : Stockers

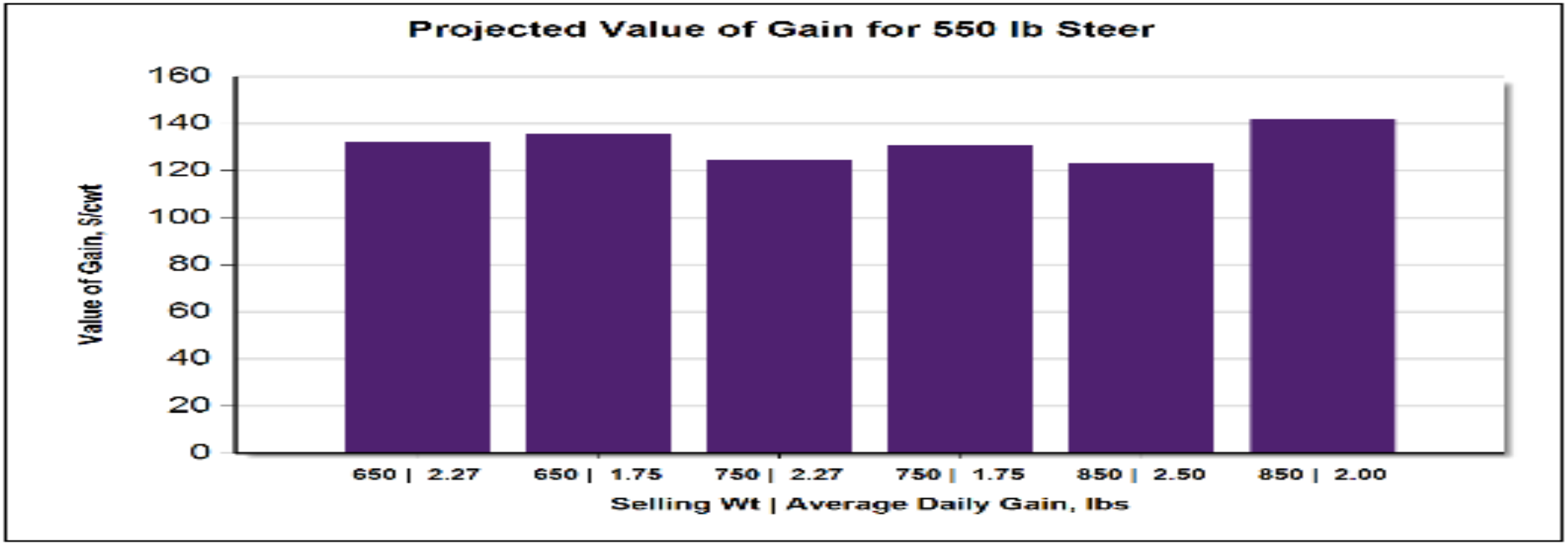
- Historically high Values of Gain (VOG)
  - But also historically high Costs of Gain (COG)…

- Of course, not everyone has their typical feedstuffs/resources to engage this fall/winter
  - ↑ VOG = ↑ rewards for sound management
  - ↑ COG = ↑ pain of hiccups or poor management
    - Many producers feeding something new…
      - *Is there a widening gap between returns of stocker operations?*

How Should VOG Be Projected?

- Naïve (current cash market offering) vs. Forward Looking (futures market & basis)
  - Important to recognize no crystal ball exist
  - Salina, KS / 550 to 750 lb in 3 month case / Jan. 07' to July 12' period: naïve is less accurate
  - *Forward-looking VOG projections are now updated daily on AgManager*

http://www.agmanager.info/livestock/budgets/production/beef/KSU_FactSheet_ValueOfGainForecastingApproaches.pdf



Projected Value of Gain

Begining Weight, lbs	Ending Weight, lbs	Date	Weight Gain, lbs/hd	ADG, lbs	Value of Gain, $/cwt
550	650	02/25/2013	100	2.27	$132.24
550	650	03/10/2013	100	1.75	$135.56
550	750	04/10/2013	200	2.27	$124.53
550	750	05/06/2013	200	1.75	$130.83
550	850	05/12/2013	300	2.50	$123.00
550	850	06/11/2013	300	2.00	$141.70

Note: Projections dervied for the Salina, KS market using BeefBasis.com
Related information is available at: BeefBasis.com

1/12/2013

http://www.agmanager.info/livestock/marketing/graphs/cattle/prices/VOG.asp
http://www.beefbasis.com/ForecastingTools/ValueofGain/tabid/1132/Default.aspx

Economic Outlook Overview: Feedlots

- Excess capacity concerns remain & are growing…
  - Drought & Mexican feeder supplies:
    - mitigated this initially / magnifying it now and going forward …
- Closeouts have been at historically high losses…
  - 12 month rolling avg. thru Nov. 12' -$126.23
- Recent placements +/- $20 from b.e. projections
  - Watch response to shrinking available supplies…

Historical and Projected Kansas Feedlot Net Returns

(as of 1/3/13')

(http://www.agmanager.info/livestock/marketing/outlook/newsletters/FinishingReturns/default.asp)

November 12': -$177.66/steer

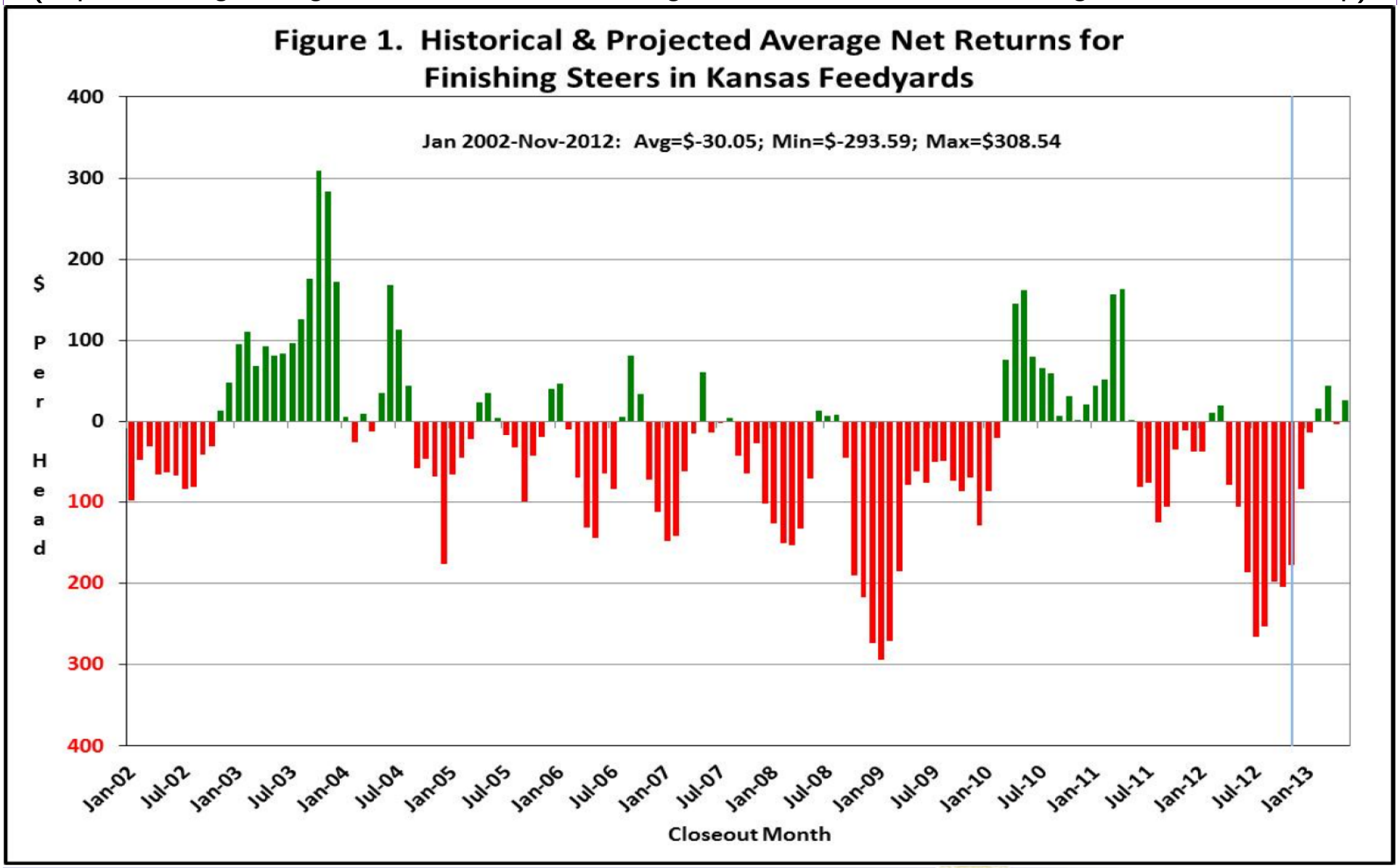
Table 1. Projected Values for Finishing Steers in Kansas Feedyards*

Closeout Mo-Yr	Net Return	FCOG**	Fed Price	Feeder Price	Breakeven FCOG**	Breakeven Fed Price	Breakeven Feeder Price
Dec-12	-83.77	116.22	125.13	139.75	101.55	131.33	129.02
Jan-13	-13.90	120.85	131.74	138.41	118.38	132.76	136.67
Feb-13	15.72	121.45	135.87	140.87	124.27	134.74	142.77
Mar-13	44.59	117.87	137.11	142.68	125.53	133.85	148.36
Apr-13	-2.84	115.47	133.82	144.85	114.98	134.03	144.48
May-13	26.66	113.10	135.92	147.04	117.51	133.98	150.49

Representative Barometer for Trends in Profitability

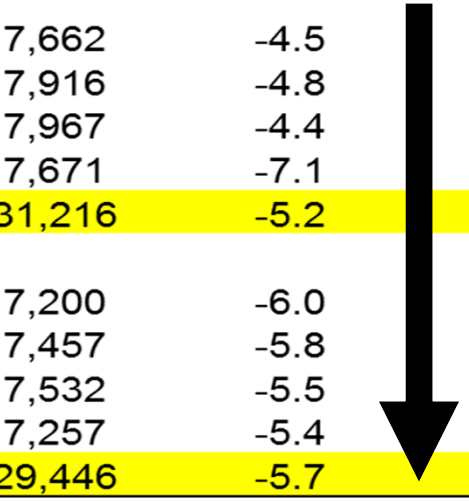
Historical and Projected Kansas Feedlot Net Returns as of 1/3/13')

(http://www.agmanager.info/livestock/marketing/outlook/newsletters/FinishingReturns/default.asp)



Quarterly Forecasts (LMIC:1/3/2013)

Year Quarter	Commercial Slaughter (1,000 hd)	Change from Year Ago (%)	Average Dressed Weight (lbs)	Change from Year Ago (%)	Commercial Beef Production (mil lbs)	Change from Year Ago (%)
2011						
I	8,314	1.8	771	0.7	6,410	2.6
II	8,640	-0.5	759	0.7	6,559	0.2
III	8,738	-0.2	771	-0.3	6,736	-0.5
IV	8,395	-3.0	773	-0.8	6,490	-3.7
Year	34,087	-0.5	768	0.1	26,195	-0.4
2012						
I	8,027	-3.5	783	1.5	6,283	-2.0
II	8,311	-3.8	779	2.6	6,475	-1.3
III	8,332	-4.6	790	2.5	6,584	-2.3
IV	8,253	-1.7	793	2.6	6,545	0.8
Year	32,923	-3.4	786	2.3	25,887	-1.2
2013						
I	7,662	-4.5	783	0.004	5,997	-4.5
II	7,916	-4.8	779	0.02	6,168	-4.7
III	7,967	-4.4	796	0.7	6,342	-3.7
IV	7,671	-7.1	799	0.8	6,130	-6.3
Year	31,216	-5.2	789	0.4	24,637	-4.8
2014						
I	7,200	-6.0	792	1.2	5,702	-4.9
II	7,457	-5.8	786	0.9	5,861	-5.0
III	7,532	-5.5	805	1.1	6,061	-4.4
IV	7,257	-5.4	807	1.0	5,857	-4.5
Year	29,446	-5.7	797	1.0	23,481	-4.7



Quarterly Forecasts (LMIC:1/3/2013)

Year Quarter	Live Slaughter Steer Price 5-Market Average ($/cwt)	Change from Year Ago (%)	Feeder Steer Price Southern Plains 7-800# ($/cwt)	5-600# ($/cwt)
2011				
I	110.12	23.11	129.06	150.07
II	112.79	17.08	132.03	148.61
III	114.05	19.47	135.93	141.69
IV	121.99	21.66	143.15	153.11
Year	114.74	20.29	135.04	148.37
2012				
I	125.29	13.78	154.25	182.41
II	120.91	7.21	152.65	178.65
III	119.69	4.94	141.82	150.57
IV	125-126	2.88	146.50	161.42
Year	122-123	6.77	148.81	168.26
2013				
I	128-131	3.36	143-146	161-165
II	128-132	7.52	146-151	163-169
III	126-131	7.36	148-154	164-173
IV	128-134	4.38	149-156	163-170
Year	128-132	6.12	147-151	163-169
2014				
I	132-139	4.63	154-162	175-184
II	134-142	6.15	157-167	178-190
III	132-140	5.84	158-169	174-187
IV	133-143	5.34	156-168	171-185
Year	134-140	5.38	158-165	177-184

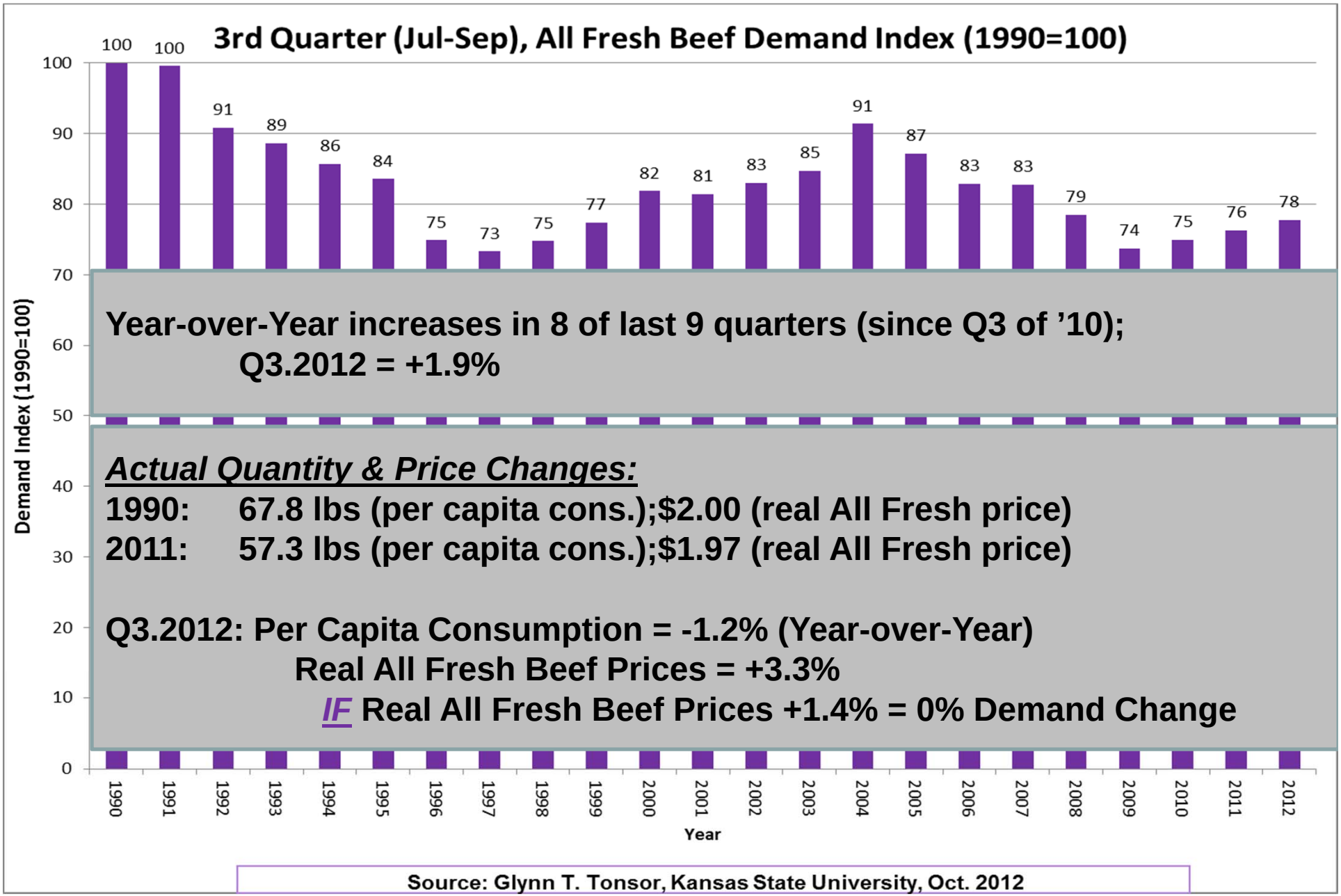
Economic Outlook Overview : Beef Demand

- Meat prices rising w/i basket of purchases…
  - "bacon shortage" discussions are exaggerations; record retail meat prices in 2013 are not…
  - as prices increase, public will require more quality…
    - Quality and value are in the eye of the beholder...

      = debates on various technologies likely will intensify within industries, with customers, and with consumers…

Economic Outlook Overview : Beef Demand

- Discussion on demand “getting complicated”
  - Growing request for information regarding “how my food is produced”
    - Animal welfare, food safety, antibiotics, hormone use, local, organic, sustainability, traceability…
      - Requests do not necessarily = higher WTP…
      - Voting vs. buying behavior disconnect is growing…
  - “Perception is reality” implications are growing


3rd Quarter (Jul-Sep), All Fresh Beef Demand Index (1990=100)
Demand Index (1990=100)
Year
100 100 91 89 86 84 75 73 75 77 82 81 83 85 91 87 83 83 79 74 75 76 78
1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012
Year-over-Year increases in 8 of last 9 quarters (since Q3 of '10);
Q3.2012 = +1.9%
Actual Quantity & Price Changes:
1990: 67.8 lbs (per capita cons.);$2.00 (real All Fresh price)
2011: 57.3 lbs (per capita cons.);$1.97 (real All Fresh price)
Q3.2012: Per Capita Consumption = -1.2% (Year-over-Year)
Real All Fresh Beef Prices = +3.3%
IF Real All Fresh Beef Prices +1.4% = 0% Demand Change
Source: Glynn T. Tonsor, Kansas State University, Oct. 2012

Industry Size Going Forward …

- The U.S. beef cow industry has been downsizing for a long time…
  - Even if national herd expands, the number of operations will likely continue to decline…

- Alignment with those “in it for the long haul” is increasingly important

USDA's longer-term projections (*as of Feb. 2012*) …

http://www.ers.usda.gov/Publications/OCE121/

- **U.S. beef cow inventory:**
  - **29.8 million in 2012**
  - **34.5 million in 2021 (+/- 1997 levels) / was 39.3 million in 1982**
    - **Beef Production (billion lbs) : 25.4 (1997), 26.2 (2011)**
      - ***More beef per cow will continue = less throughput in # head…***

- **Domestic per capita red meat & poultry consumption:**
  - **221 lbs in 04-07 (Beef=65.7 lbs; Pork=50.4 lbs; Poultry=103.8 lbs)**
  - **198 lbs in 2013 (Beef=51.3 lbs; Pork=46.3 lbs; Poultry=98.5 lbs)**
  - **213 lbs in 2021 (Beef=58.7 lbs; Pork=47.2 lbs; Poultry=105.8 lbs)**
    - ***These lower per capita volumes will be purchased with more consumer requests and hence requirements for industry-wide investment (& collaboration) in beef quality …***

Hot Topic/Big Picture Points to Ponder

- MCOOL: Aggregate economic loss is apparent
- Animal Welfare: 1 of several "social concerns"
- Complex relationship & views on technology:
  - Feed 9 billion, "control" prices, and do so in an "acceptable" manner is the story…
- Issues vary in many facets BUT each raise uncertainty for industry stakeholders…
  - *Ben Franklin: "In this world nothing can be said to be certain, except death and taxes."*
  - *How much does today's uncertainty change a "$100/hd expansion" rule of thumb ???*

Other points for discussion

- Global beef demand growth & restrictions from U.S. industry heterogeneity must be watched…
  - Comparative position of U.S. is critical…
  - Is path of U.S. animal ID and traceability consistent w/ global needs and desires ???
- Growth of cow-herd vs. # of operations
  - Are traits of those who may expand more aligned with changing consumer requirements?
- *How does regionally varying expansion (cow herd) &/or excess capacity resolution (feedlot and/or packer) influence your business?*

What To Do?

- Utilize available resources
  - VOG projections, decision aides, these events…
- Do you know your comparative advantage?
  - Having a favorable cost structure is imperative…
- I encourage you to:
  - Recognize this “isn’t your father’s world” anymore and manage accordingly…
  - “Think globally, manage locally, and stay informed”

More information available at:

This presentation is available in PDF format at:
http://www.agmanager.info/about/contributors/individual/tonsor.asp

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AgManager.info website is a comprehensive source of information, analysis, and decision-making tools for agricultural producers, agribusinesses, and others. The site serves as a clearinghouse for applied outreach information emanating from the Department of Agricultural Economics at Kansas State University. It was created by combining departmental and faculty sites as well as creating new features exclusive to the AgManager.info site. The goal of this coordination is to improve the organization of web-based material and allow greater access for agricultural producers and other clientele.

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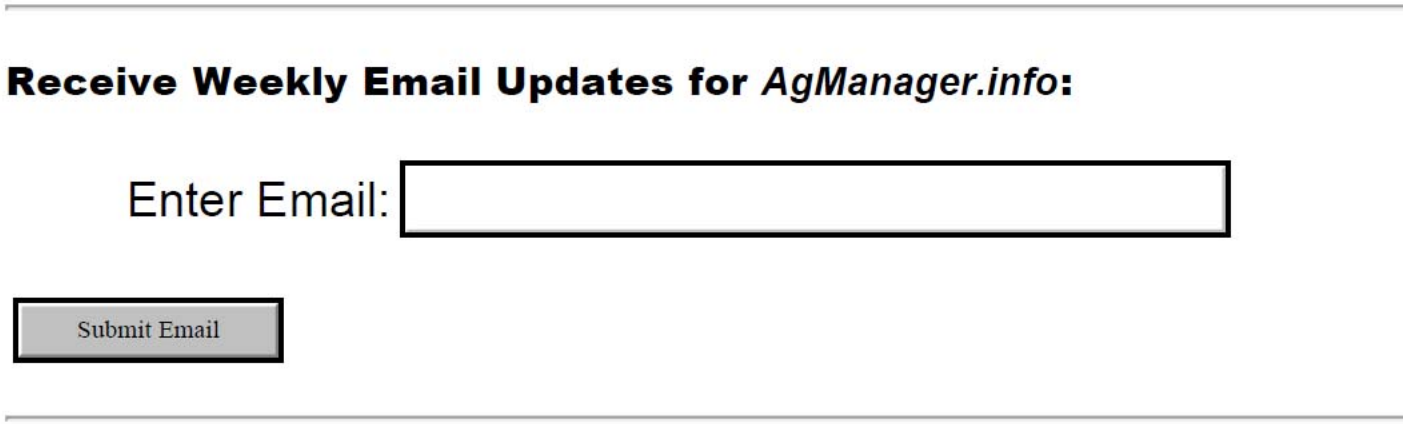

http://www.AgManager.info/Evaluation/Email.htm

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K-State Decision Aides: Cattle Price Oriented

(http://www.agmanager.info/Tools/default.asp)

- Expectations on Future Cash Prices
  - http://www.beefbasis.com/
- Examine Feeder Cattle Risk Management Alternatives
  - *"K-State Feeder Cattle Risk Management Tool"*
- Project Premium/Discount of Calf/Steer Attributes
  - "*K-State Feeder Cattle Price Analyzer*"
- Stocker Breakeven Selling/Purchasing Prices
  - *"Cattle Breakeven Selling and Purchase Prices"*

Other K-State Decision Aides

(http://www.agmanager.info/Tools/default.asp)

- NPV of Beef Replacements
  - *"KSU-Beef Replacements"*
- Beef Cow Lease Agreements
  - *"KSU-CowLease"*
- Determining Flint Hills Pasture Rents
  - "*KSU-Graze.xls"*

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- **February 14**
- **May 14**
- **August 13**
- **November 5**

For details about specific topics and registering for webinars see additional information on AgManager.info AND http://www.meatingplace.com/Industry/Webinars

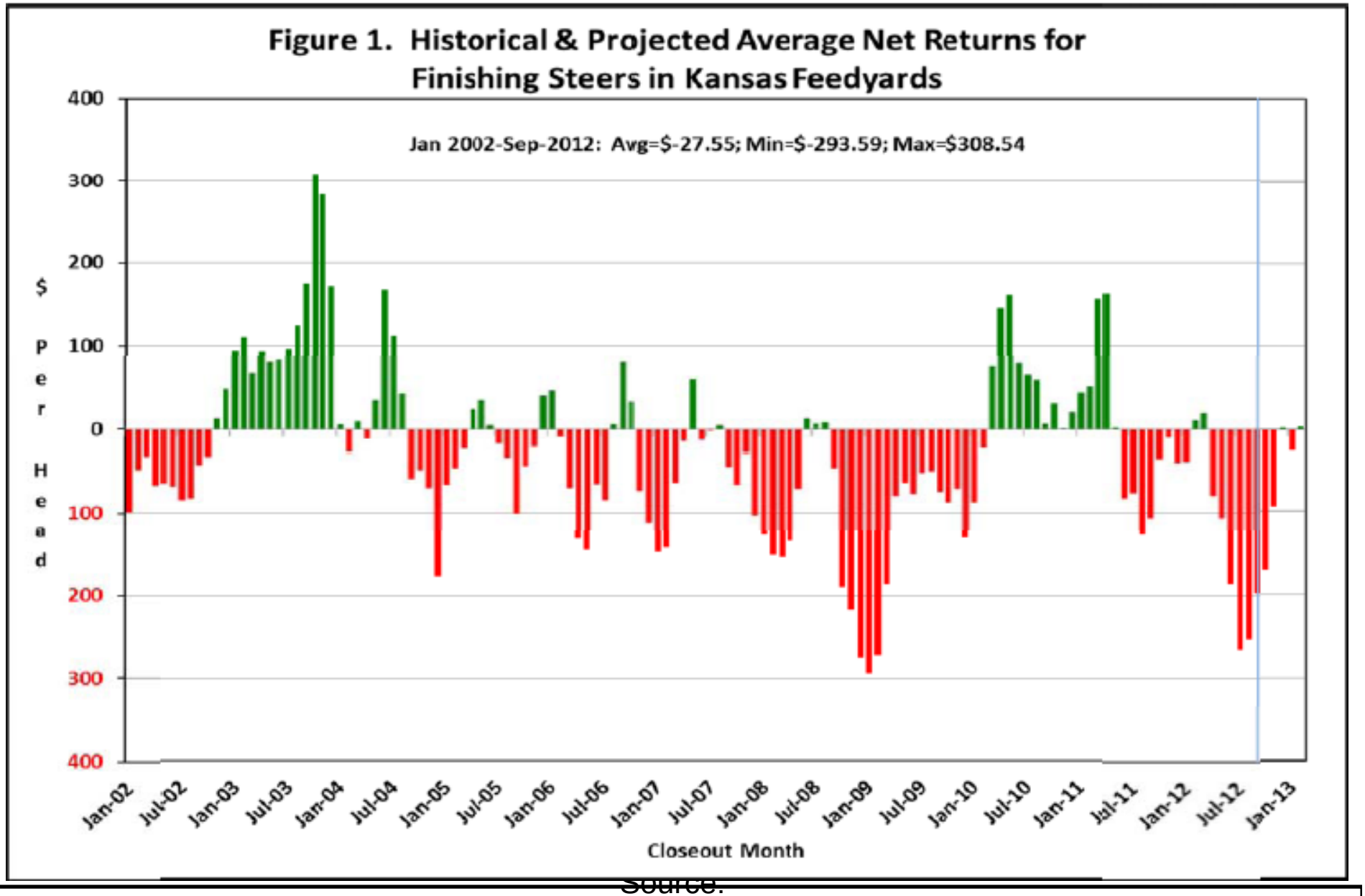
Here are additional slides from past presentations focused on risk management issues in the cattle industry.

Managing Price Risk in Feedlots

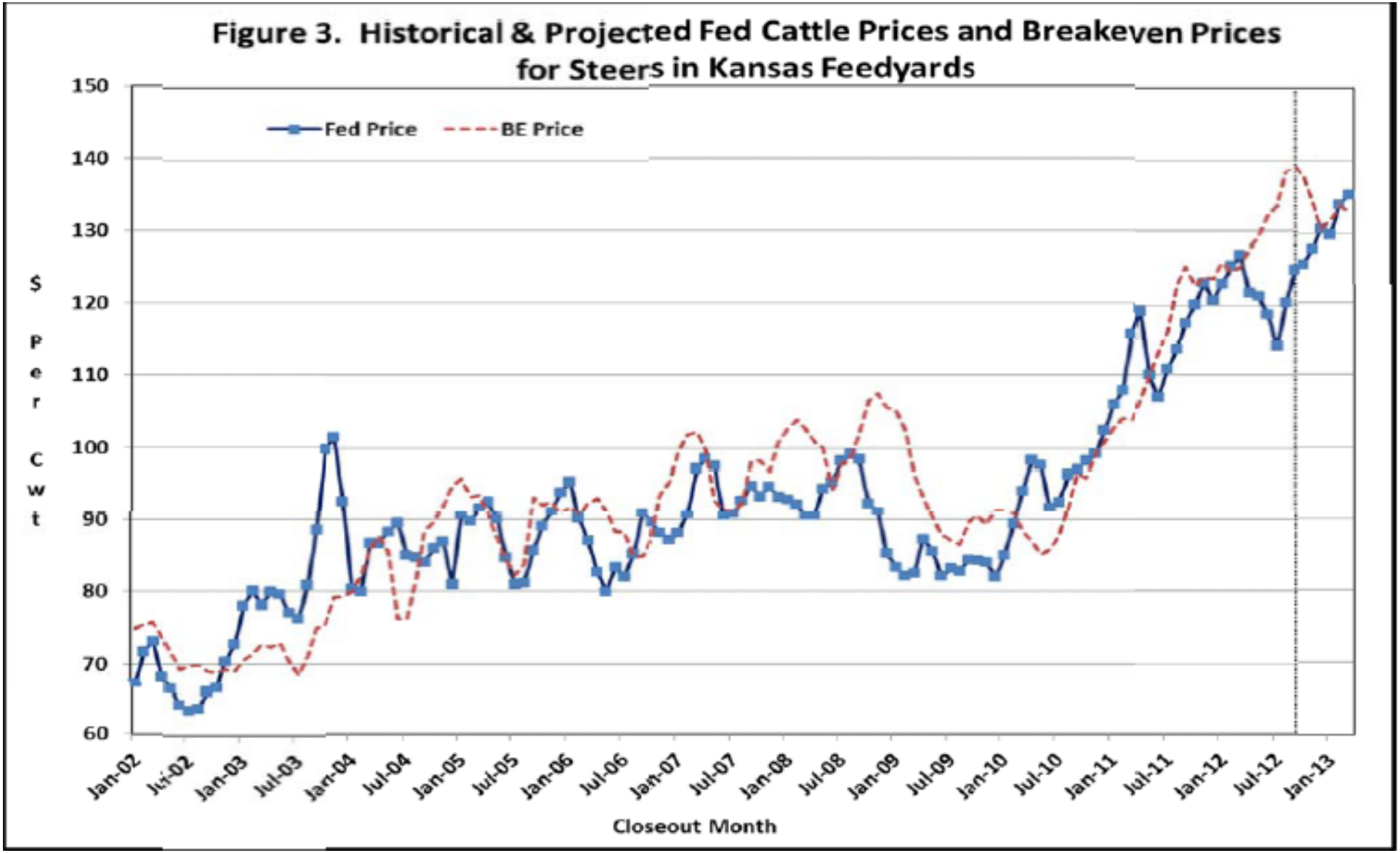
Glynn Tonsor, Ph.D.
Department of Agricultural Economics
Kansas State University

Sources of Economic Risk in Feedlots

- Cattle prices (feeder and fed cattle)
- Feed prices
- Interest rates
- Cattle health and performance
- Capacity utilization
- Labor
- Equipment/facilities
- Multitude of others…



Source:
http://www.agmanager.info/livestock/marketing/outlook/newsletters/FinishingReturns/default.asp
(November 30, 2012)



Source:
http://www.agmanager.info/livestock/marketing/outlook/newsletters/FinishingReturns/default.asp
(November 30, 2012)

Within Year, Month, Day, Hour… Price Volatility

- Live cattle
  - Core Output of Feedyard = Sales Price Risk
- Feeder cattle
  - Core Input of Feedyard = Purchase Price Risk
- Feedstuffs (Corn, DGS,…)
  - Core Input of Feedyard = Purchase Price Risk

Methods of Managing Price Risk

- Cash sales
- Forward contracts
- Hedge with futures contracts
  - Sell LC futures in anticipation of upcoming cash LC sale
  - Buy FC futures in anticipation of upcoming cash FC purchase
- Buy put or call options
  - Other option market strategies also exist

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

Forward Contract

Characteristics:

- Locks in a “fixed” price
- Basis risk is eliminated
- Pay a premium for transferring basis risk
  - Yet another “there is no free lunch” example …
- No margin account or maintenance required
- May or may not involve broker / brokerage commission
- Contract specifications and size can be flexible
- Obligated to deliver to one party
- Low quality cattle might be excluded/refused
- Risk of other party not honoring contract
- Not always available
- Prices are less transparent

Hedge with Futures Contract

Characteristics:

- Locks in a “fixed” futures price (CME/CBT 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”
- Feeder cattle futures is cash settled contract
- No delivery ability / obligation
- No risk of low quality cattle being “refused”

Buy Put (Call) Option Contract

Characteristics:

- Puts (calls) locks in a “floor” (ceiling) price – strike price
- Subject to basis risk
- Fixed contract specifications and size
- Deal with broker / brokerage commission
- Pay premium for option
  - Again, cost of transferring risk….
- No margin calls (unless option is exercised)
- Easy to enter and liquidate
- Transparent price quotes
- No risk of other party “backing out”
- Cash settled contract (no delivery ability / obligation)

Other Option 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

Risk Management Using Futures

Hedging defined…

Use of the futures market as a temporary substitute for an intended transaction in the cash market which will occur at a later date

Why we don't try to "beat the market?"

- Because we believe (and research largely supports) the "Efficient Market Hypothesis" holds
  - There is no systematic approach to regularly make money through futures and options market trades (e.g., hard to "beat the market")
- So it makes sense to understand basis and utilize futures market prices to obtain cash price forecasts.
  - Given these forecasts and market implied volatility of prices, price risk management alternatives can better be examined…

Basis

Basis is more predictable than cash or futures prices due to:

- Basis is a difference in two series
- Convergence
- Futures and cash prices move together (same fundamental conditions generally affect both markets)
- Year-to-year stability implies the ability to rely upon historical data for predictions
- Sources of basis information
    - -- www.agmanager.info
    - -- www.beefbasis.com

AgManager: Providing agricultural economic information on crops, livestock, marketing and outlo - Windows Internet Explorer

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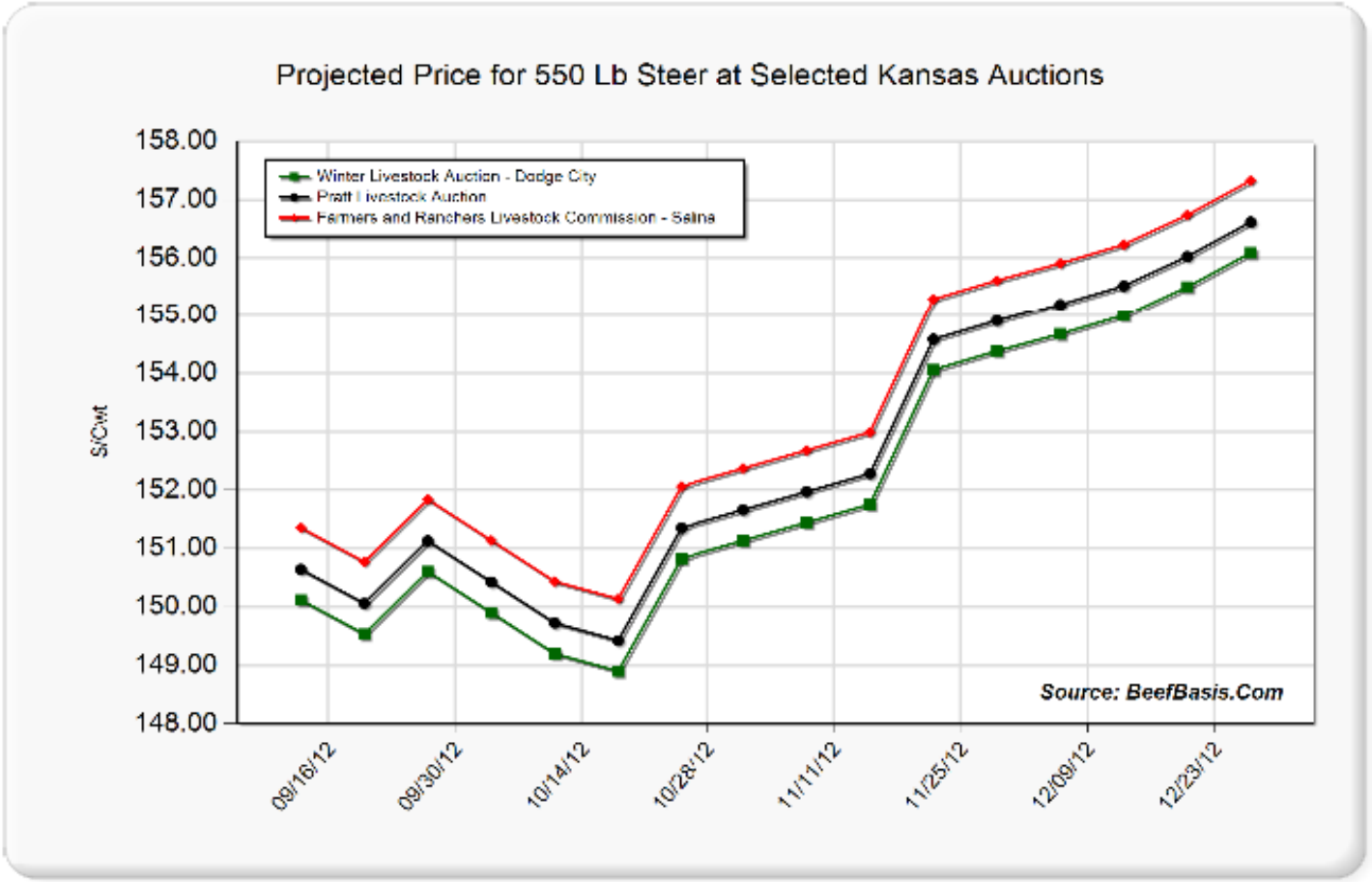
Kansas Feeder Cattle Prices: Dodge City, Pratt, Salina

Projected Price for 550 lb. Steer at Selected Kansas Auctions



CAS

Agricultural Economics Kansas State University

http://www.agmanager.info/livestock/marketing/graphs/cattle/prices/default.asp

Forecasting Tools Ã Basis and Price Forecast

CAS Custom Ag Solutions RMA USDA Agricultural Economics Kansas State University

http://www.beefbasis.com/

Feeder Cattle Basis Forecast

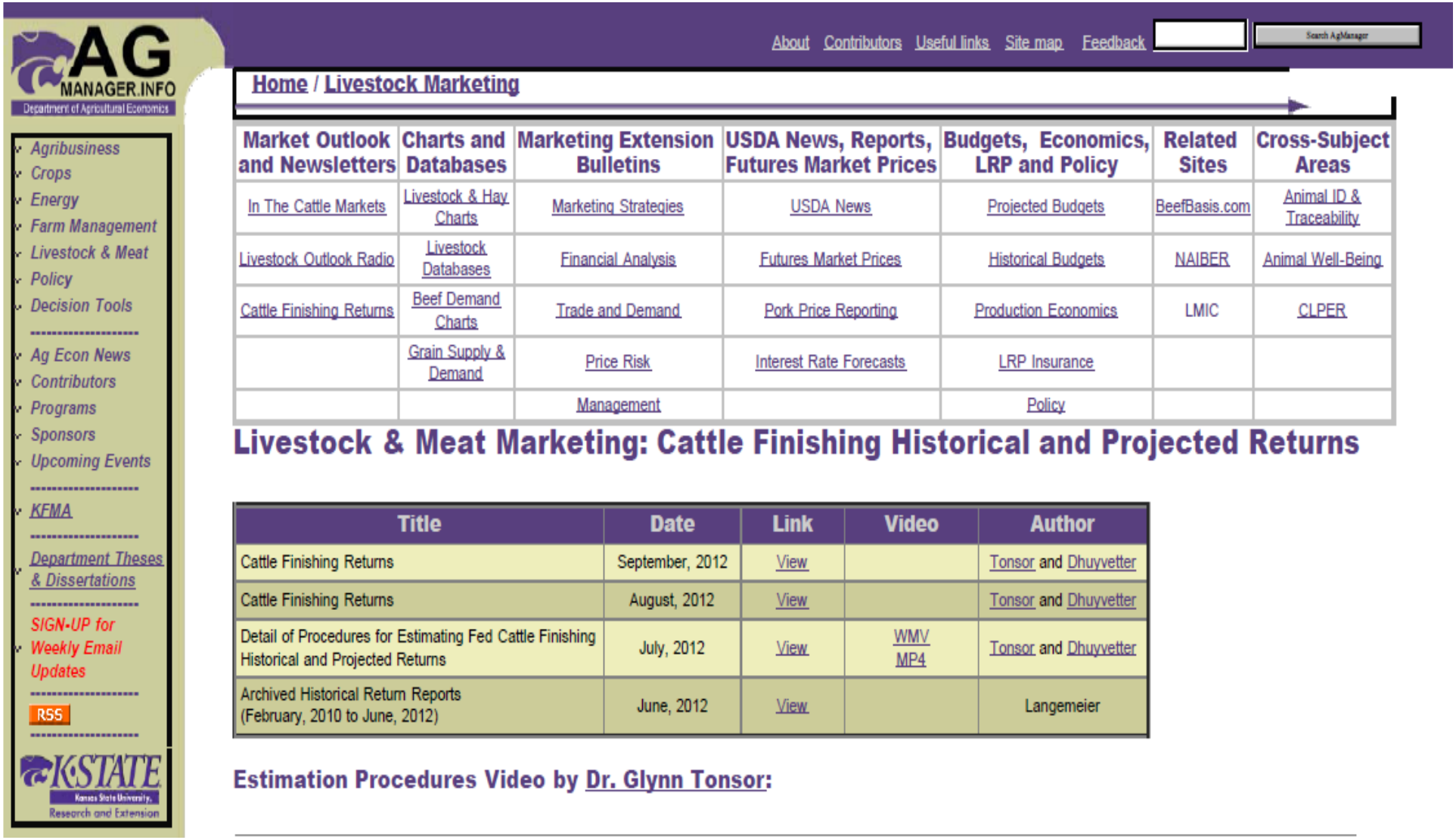
Compare Selling Strategies
Hedge Analysis

State: Kansas	Location: Farmers and Ranchers Livestock Commission - Salina	Expected Sale Date: 11/30/2012
Sex: Steer	Frame: Lg & Med/Lg	Grade: 1-2
Weight: 750 lbs/head	Head: 150	
Feeder Cattle Futures Price: 146.075 $/cwt		Corn Futures Price: 7.60 $/bu
Reference Contract: Jan 2013 Transaction Date: Nov 28, 2012		*Reference Contract: Dec 2012 Transaction Date: Nov 28, 2012*
Display Horizontal	Display Vertical	BeefBasis.Com RUN

November 2012

Sun	Mon	Tue	Wed	Thu	Fri	Sat
28	29	30	31	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	1
2	3	4	5	6	7	8

Model-Estimated Feeder Cattle Basis Values[1]	Feeder Cattle Basis Results	LRP Cattle Basis Results[6]
Model-estimated feeder cattle basis, $/cwt [2]	-2.88	-3.20
Confidence interval for basis, $/cwt[3]	-5.77 to 0.01	-6.17 to -0.24
Expected cash price, $/cwt	143.19	142.87
Confidence interval for expected cash price, $/cwt[3]	140.30 to 146.09	139.90 to 145.84
Optimal hedge ratio[4]	0.9728	N/A
Number of calves hedged per contract[5]	69	N/A



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Market Outlook and Newsletters	Charts and Databases	Marketing Extension Bulletins	USDA News, Reports, Futures Market Prices	Budgets, Economics, LRP and Policy	Related Sites	Cross-Subject Areas
In The Cattle Markets	Livestock & Hay Charts	Marketing Strategies	USDA News	Projected Budgets	BeefBasis.com	Animal ID & Traceability
Livestock Outlook Radio	Livestock Databases	Financial Analysis	Futures Market Prices	Historical Budgets	NAIBER	Animal Well-Being
Cattle Finishing Returns	Beef Demand Charts	Trade and Demand	Pork Price Reporting	Production Economics	LMIC	CLPER
	Grain Supply & Demand	Price Risk	Interest Rate Forecasts	LRP Insurance		
		Management		Policy		

Livestock & Meat Marketing: Cattle Finishing Historical and Projected Returns

Title	Date	Link	Video	Author
Cattle Finishing Returns	September, 2012	View		Tonsor and Dhuyvetter
Cattle Finishing Returns	August, 2012	View		Tonsor and Dhuyvetter
Detail of Procedures for Estimating Fed Cattle Finishing Historical and Projected Returns	July, 2012	View	WMV MP4	Tonsor and Dhuyvetter
Archived Historical Return Reports (February, 2010 to June, 2012)	June, 2012	View		Langemeier

Estimation Procedures Video by Dr. Glynn Tonsor:

http://www.agmanager.info/livestock/marketing/outlook/newsletters/FinishingReturns/default.asp

Relationship Between Cash & Futures Prices is Critical for Risk Management

- Basis = Cash Price - Futures Price

Rearranging formula gives:

- Cash Price = Futures Price + Basis

- Video overview of cattle cash price forecasts: http://www.agmanager.info/livestock/marketing/outlook/newsletters/default.asp

Start by Identifying Expected Cash Prices – Then Examine Risk and Management Options…

- Assume you are selling 1,300 lb steers in mid-May
- As of Nov 30, 2012:
  - JUN LC is trading @ $131.875/cwt.
  - Expect mid-May basis to be $1.00/cwt.
    - **Exp. Cash Price = $131.875 + $1.00 = $132.875**

Future Hedge Example (as of Nov. 30, 2012)

Assume JUN LC are $131.875 /cwt. when hedge is initiated *(11/25)*

Expect mid JUN basis to be $1.00/cwt. (for 1,300 lb steer)

Assume brokerage commission = $60/ round turn or $0.15/cwt.

What is the *Expected Selling Price*?

Futures Price at which hedge is initiated	$131.875
+ Expected Basis	+ 1.000
- Brokerage commission	- 0.150
Expected Selling Price	$132.725/cwt.

Decomposing A Cash Price

- Cash Price = Futures Price + Basis
- Hedging effectively "locks in" the Futures Price when the hedger sells (for a short hedger) the futures contract
- Hedging does not "lock in" the Basis
- Therefore the Cash Price is not locked in and the hedger is still exposed to basis risk

Evaluating a Hedge: *Case of Feedlot Hedging Live Cattle Prices*

At the time a hedge is placed, we can estimate the *Expected Selling Price* (i.e., what the hedger expects to receive for the commodity net of any gains or losses in the futures, minus the brokerage commission)

Futures Price at which futures contract is sold
+ Expected Basis
- Brokerage commission
Expected Selling Price

Future Hedge Example (as of Nov. 30, 2012)

Assume JUN LC are $131.875 /cwt. when hedge is initiated *(11/25)*

Expect mid May basis to be $1.00/cwt. (for 1,300 lb steer)

Assume brokerage commission = $60/ round turn or $0.15/cwt.

What is the *Expected Selling Price*?

Futures Price at which hedge is initiated	$131.875
+ Expected Basis	+ 1.000
- Brokerage commission	- 0.150
Expected Selling Price	$132.725/cwt.

At Hedge's Conclusion

Calculate *Actual Sale Price* (ASP)

Price received in the cash market
+ Net on futures transaction
- Brokerage Commission

Actual Sale Price

Futures Hedge Example

Assume JUN LC are $126.875/cwt. on 5/15 when hedge is concluded.

Assume cash 1300 lb steer cash price = $127.875/cwt on 5/15 when hedge concludes.

What is your net gain on the futures trade?

Sold JUN LC futures @	$131.875
- Offset (buy) JUN LC futures @	- 126.875
Net gain on futures transaction	+ $5.00

Futures Hedge Example

So, If JUN LC are $126.875/cwt. on 5/15 when hedge concludes and cash 1300 lb steer price = $127.875/cwt. when hedge concludes, What is your *Actual Sale Price*?

Price received in cash market	$127.875
+ Net on futures transaction	+5.000
- Brokerage commission	- 0.150
Actual Sale Price	$132.875/cwt

Expected Sale Price = Actual Sale Price ONLY WHEN Exp. Basis = Actual Basis…

Option Hedging Strategies

- Buying a PUT (CALL) gives the option buyer the right but not the obligation to SELL (BUY) a futures contract at a specified price known as the “strike price”
- So, we can use the purchase of a PUT (CALL) in place of selling (buying) a futures contract
- Therefore, a producer can buy a PUT option to establish a *Minimum Expected Selling Price*
- Similarly, buying a CALL option will establish a *Maximum Expected Purchase Price*

Minimum Expected Selling Price

- Start with put option strike price
- Subtract the put option premium

This creates a “futures equivalent”

- Then add basis forecast
- Subtract brokerage commission
  - remember that many brokers charge once to buy an option and once to sell an option
  - have to account for possibility of “double” brokerage commission in calculations

Minimum Expected Selling Price (as of Nov. 30, 2012)

Example: Buy CME $128.00 JUN Live Cattle Put (when OCT LC futures are @ $131.875)

- Put option premium = $2.125/cwt.
- Mid-May basis forecast = +$1.00/cwt. (1,300 lb. steer)
- Assume brokerage commission is $40 to buy an option contract and $40 to sell an option contract
- For the buyer of a $128.00 JUN LC Put what is the *Minimum Expected Selling Price*?

Minimum Expected Selling Price

Option Strike Price	$128.000
Put premium	- 2.125
Futures equivalent	$125.875/cwt.
Expected mid-May basis	+ 1.000
Maximum possible commission	- 0.200
Minimum Expected Selling Price	$126.675/cwt.

Actual Sale Price

- Start with price received in cash market
- Add the “net” from the option trade
- Subtract actual brokerage commission

-- Sell cash cattle in mid-May for $127.875/cwt.

-- JUN live cattle futures are $126.875/cwt.

-- What is the value of the $128.00 JUN LC put option?

Actual Sale Price

(for buyer of CME Put Option)

Cash Market Price	$127.875
+ Net on Option Trade	- 1.000
- Brokerage Commission	- 0.200
Actual Net Sale Price	$126.675

Actual = Expected Minimum Why?

-- Prices fell after Put Option purchase and Option buyer exercised the Option

Put

--- Actual Basis = Expected Basis

Comparing Pricing Alternatives

Cash vs Hedging vs Option…

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*.

Managing Price Risk - Summary

It can look easy, but remember …

… it's always easier in hindsight.

There is no free lunch in price risk management. Risk-reward trade-offs must be appreciated…

Cow-Calf Producer Risk Management

Glynn Tonsor

and

Ted Schroeder

Agricultural Economists

Kansas State University

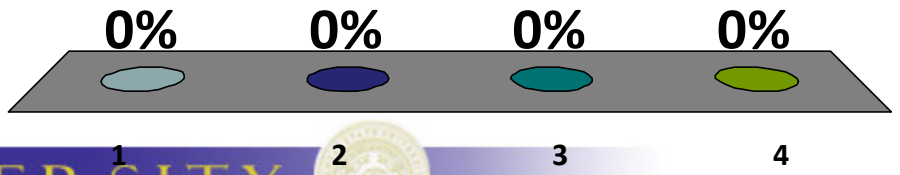
Cattlemen's Day

March 2, 2012

Manhattan KS

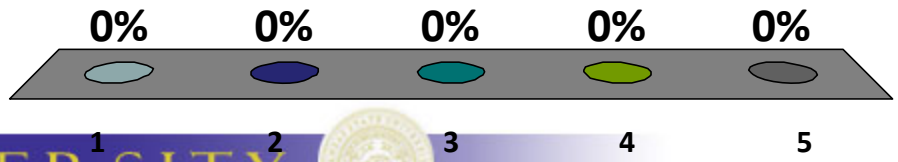
Which of the following best describes your operation and situation?

1. Cow-calf
2. Backgrounder/Stocker
3. Feedlot
4. None of the above



Which of the following sources of risk do you most worry about?

1. Output prices (calves, feeders, cull cows)
2. Input prices (feedstuffs, pasture, replacements)
3. Value-added premiums (SAV, VAC 45)
4. Production (Weaning weights, calving %)
5. Other



Kansas Cow-Calf Producer Perceptions of Comparative Advantages (N=312)

Production skills (forage ylds, calving rates, weaning wghts, etc.)	70%
Cattle genetics	59%
Low cost	53%
High quality land/pasture	47%
Machinery management	36%
Loan and interest rate management	35%
Personnel management	33%
Analysis and use of new technology	26%
Business planning skills (transition, structure, alliances, etc.)	21%
Marketing skills	20%

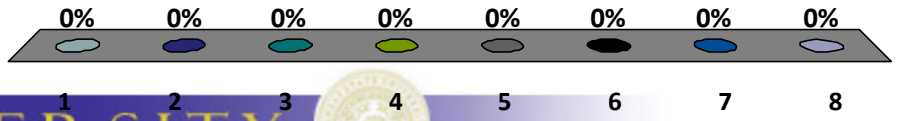
Source: Kelsey Frasier-Pope, 2009

List of Volatility Factors in Today's Beef Industry

- Feed Costs (weather, farm policy, etc.)
- Shrinking herd; over-capacity in segments
- Domestic demand (relative prices, non-price factors)
- Export demand (exchange rates, politics)
- Policy uncertainty (GIPSA, MCOOL, AW?)
- Interest rates (expansion capital)
- Industry fragmentation (bimodal dist'n???)

Which of these input costs are you most concerned about?

1. Animal health costs
2. Cost of breeding stock
3. Feed costs
4. Fuel
5. Interest
6. Labor
7. Maintenance Costs
8. Pasture



What are your Risks?

1. Input Costs

Ranked Input Cost Concerns Kansas Cow-Calf Producer Survey (312 Respondents, 2009)

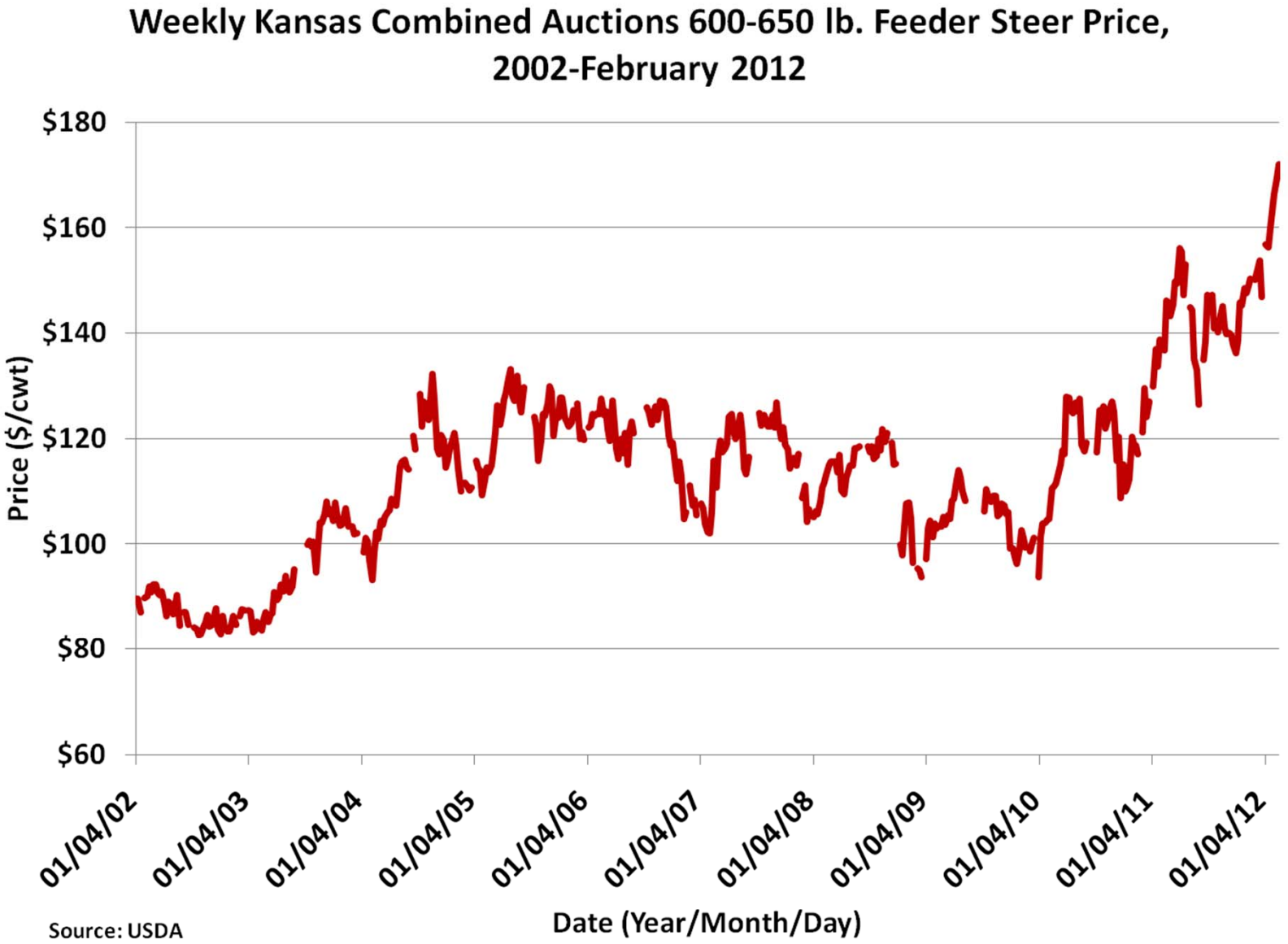
Rank		Average
1	Feed Costs	1.9
2	Pasture rent/ownership costs	2.7
3	Cost of breeding stock	4.0
4	Animal health costs	4.8
5	Maintenance Costs	5.4
6	Labor	5.6
7	Fuel	5.7
8	Interest	6.0

Source: Kelsey Frasier-Pope, 2009

What are your Risks?

2. **Output Prices – Calves, Cull Cows**
   - **Price risk over time**
   - **Added cost of value added vs. added revenue**

Price risk over time



2011 Price Levels vs. Past

Within-Year Average Values					
YEAR	Corn ($/bu)	Alfalfa Hay ($/ton)	Slaughter Steer Price 5-Mkt Avg ($/cwt)	Feeder Steers 7-800 Lbs. ($/cwt)	Feeder Steers 5-600 Lbs. ($/cwt)
1996-2007	2.37	99.88	75.18	89.37	100.33
2008	4.78	162.50	92.78	104.99	115.81
2009	3.75	122.92	83.25	97.28	109.68
2010	3.83	116.00	95.38	110.89	122.84
2011	6.01	174.67	114.74	135.04	148.37
Change (11' vs. 96'-07')	153%	75%	53%	51%	48%

Within-Year Average Values		
YEAR	Slaughter Cows (KY, 75-80% Breaking) ($/cwt)	Bred Cows (Medium-Large 2 Young, 1,000 lb) ($/hd)
1996-2007	42.34	812.11
2008	51.02	785.76
2009	45.40	682.40
2010	53.61	698.73
2011	67.21	813.13
Change (11' vs. 96'-07')	59%	0%

Prices Variability in Context

Within-Year Range (Maximum less Minimum)					
YEAR	Corn ($/bu)	Alfalfa Hay ($/ton)	Slaughter Steer Price 5-Mkt Avg ($/cwt)	Feeder Steers 7-800 Lbs. ($/cwt)	Feeder Steers 5-600 Lbs. ($/cwt)
1996-2007	0.65	18.95	11.54	15.77	16.56
2008	1.49	44.00	14.04	23.27	23.69
2009	1.11	39.00	5.33	10.03	15.26
2010	1.41	11.00	18.17	21.99	21.75
2011	1.94	82.00	18.26	19.03	18.34

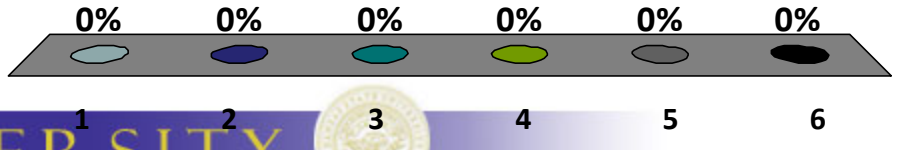
Within-Year Range (Maximum less Minimum)		
YEAR	Slaughter Cows (KY, 75-80% Breaking) ($/cwt)	Bred Cows (Medium-Large 2 Young, 1,000 lb) ($/hd)
1996-2007	9.59	180.00
2008	14.16	291.67
2009	9.36	148.75
2010	14.98	168.50
2011	19.91	162.75

Commodity Price Volatility

- Max-Min, range differences = increased cost of business & interest rate risk exposure…
  - Up for most cattle industry commodities…
- COV differences = changes in relative price risk present across commodities…
  - Up most notably for forage in ’11

Which of the following methods do you typically use to price calves/steers?

1. Cash sales
2. Buy put option(s)
3. Hedge with futures contract(s)
4. Forward contract sales
5. Livestock Risk Protection (LRP)
6. Other



K-State Feeder Cattle Risk Management Tool

(http://www.agmanager.info/livestock/marketing/LRP/default.asp)

Risk Management Tools

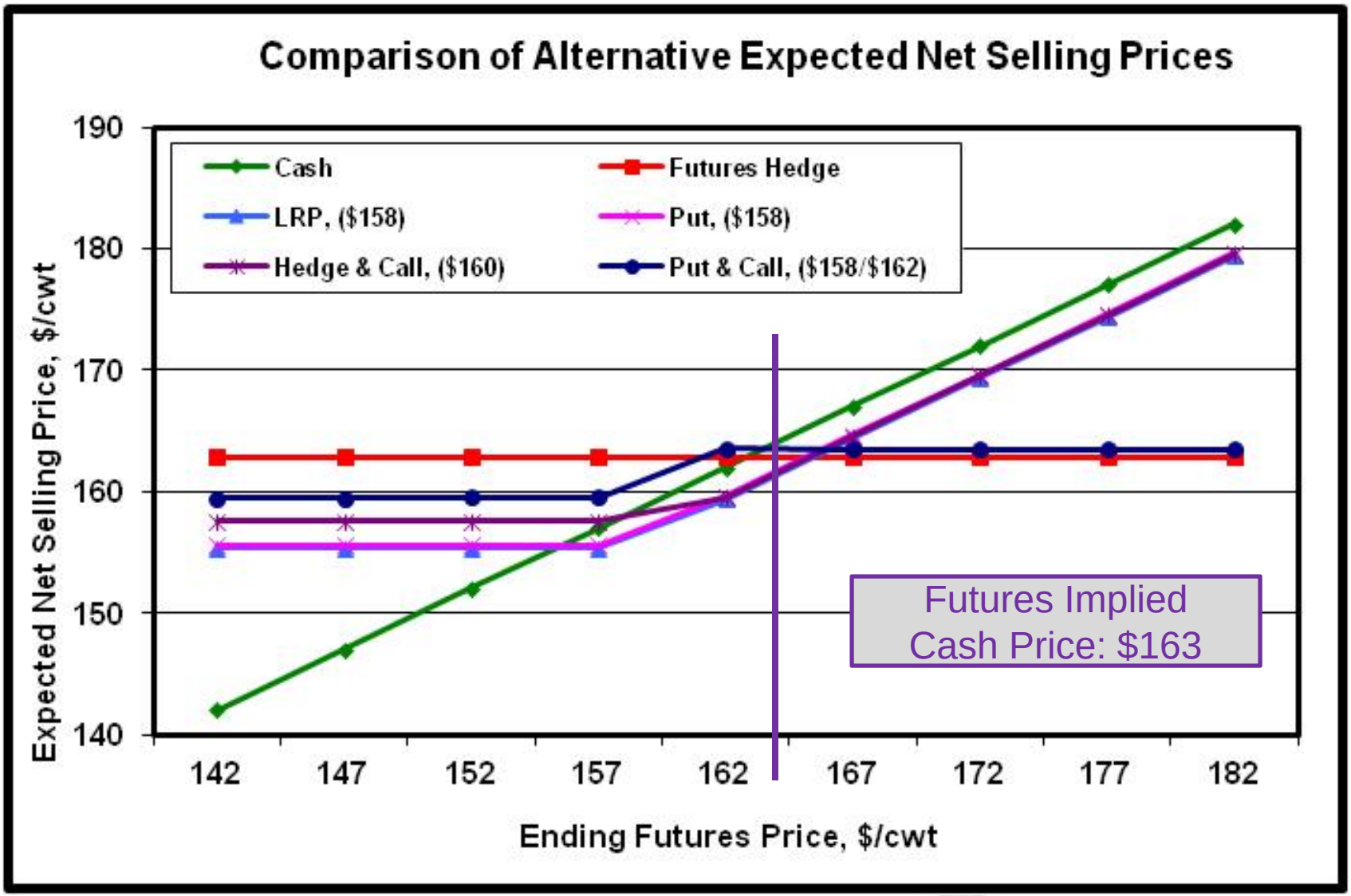
Title	Author	Date	File
K-State Feeder Cattle Risk Management Tool (use to compare Expected Selling Prices using LRP insurance, CME feeder cattle futures, CME feeder cattle options, plus other strategies)	Dhuyvetter	3/10/2011	Excel

Feb. 22nd Situation and Knowns:

- Selling 69 steers in May @ 725 lbs
- Expected basis
- May FC Futures Contract & Option Premiums
- LRP Premiums

K-State Feeder Cattle Risk Management Tool

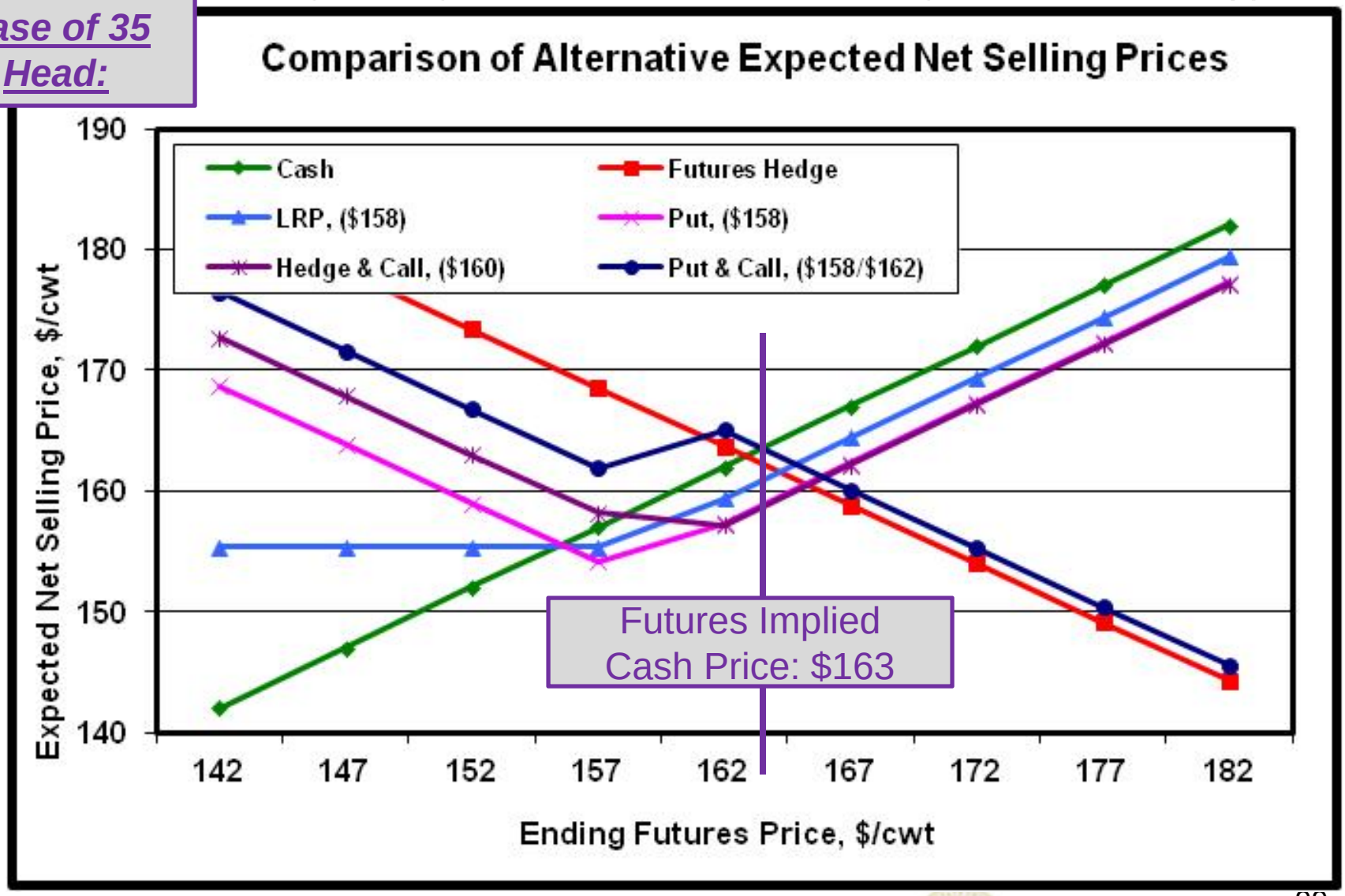
(http://www.agmanager.info/livestock/marketing/LRP/default.asp)



K-State Feeder Cattle Risk Management Tool

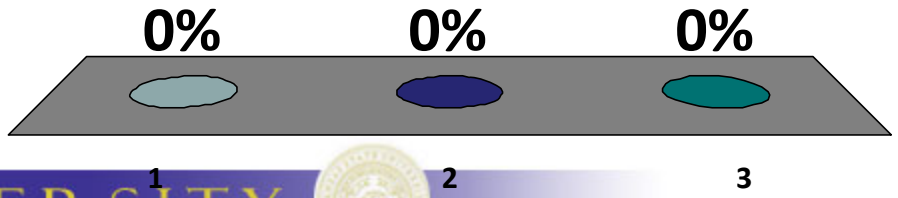
(http://www.agmanager.info/livestock/marketing/LRP/default.asp)

Case of 35 Head:

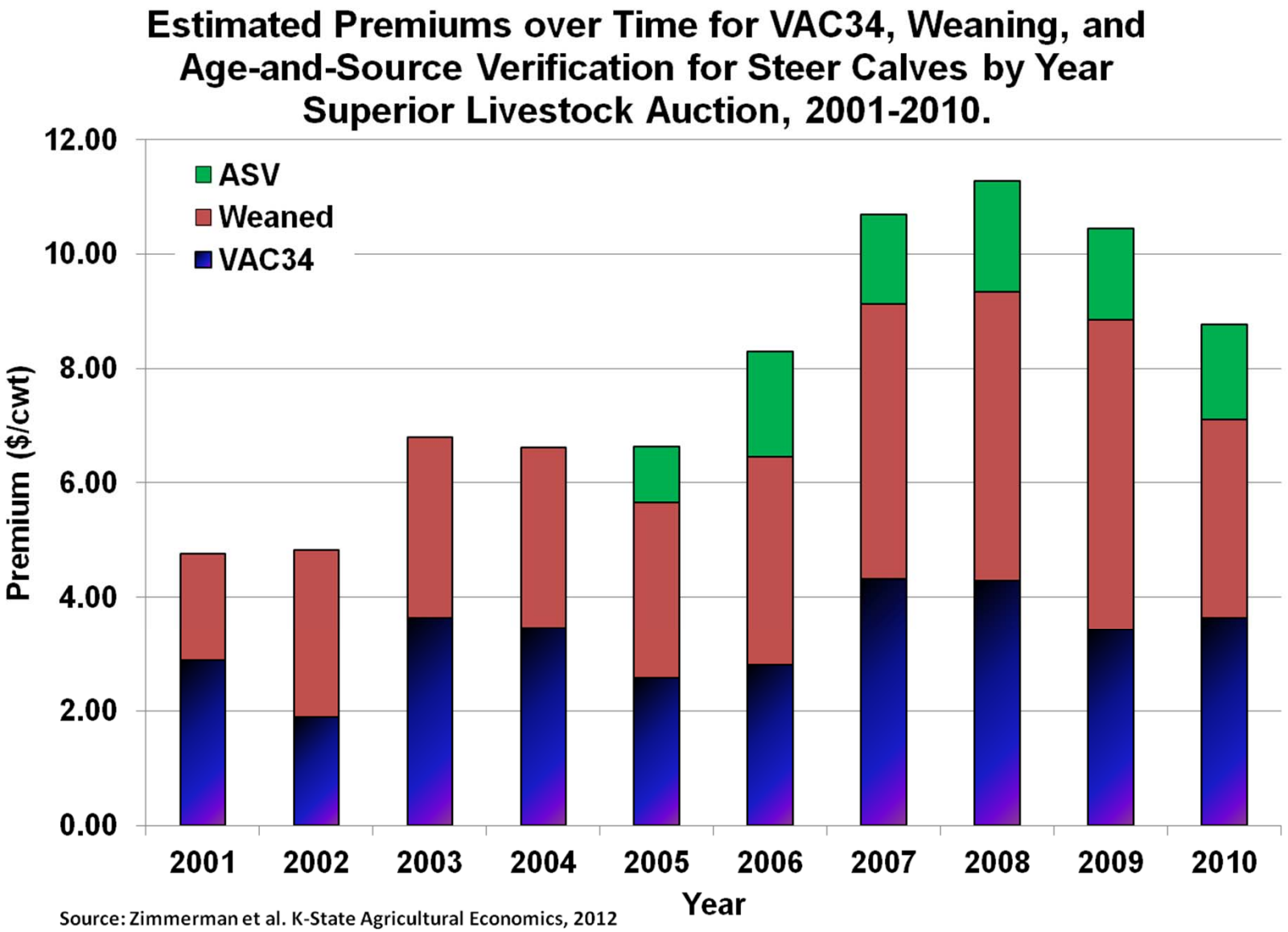


Which of the following do you believe has recently provided the largest value-added premium in calf sales?

1. Age & Source Verified
2. Health Certified
3. Weaned

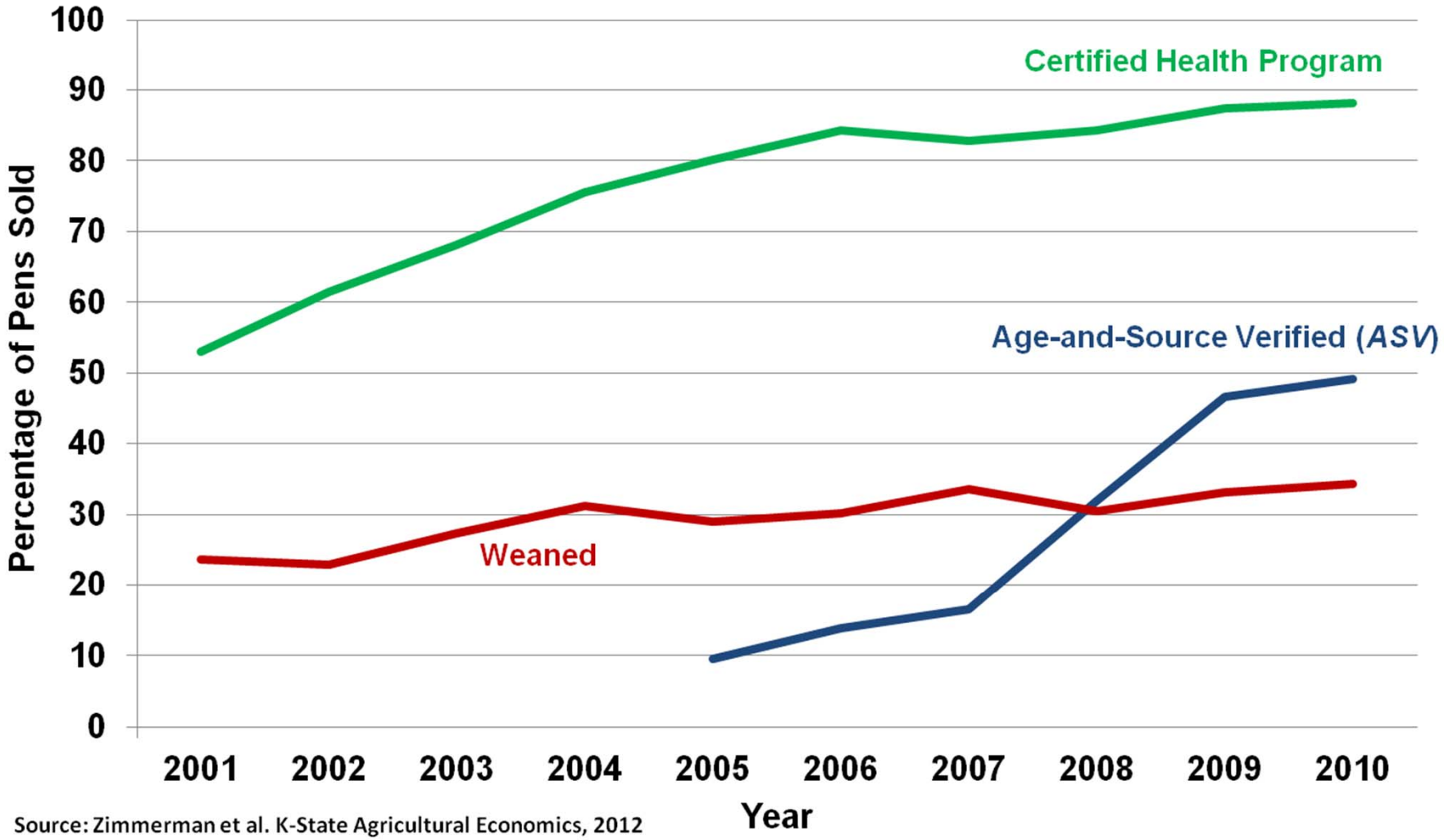


Value-Added Price Variability



Source: Zimmerman et al. K-State Agricultural Economics, 2012

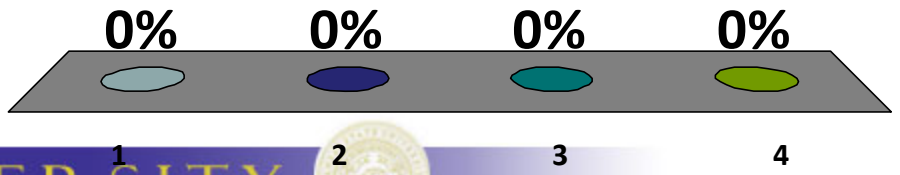
Percentage of Pens of Steer Calves Sold on Superior Livestock Auction that were Weaned, had a Certified Health Program (VAC24, VAC34, VAC34P, VAC45, or VACPC), or were ASV, by Year, 2001-2010.



Source: Zimmerman et al. K-State Agricultural Economics, 2012

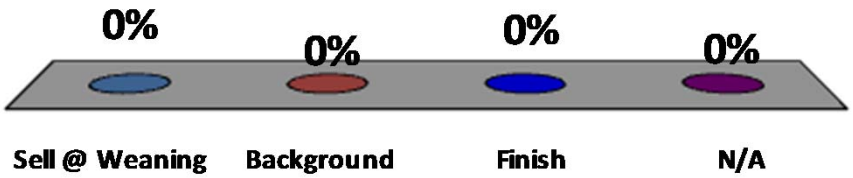
You can sell your calves at different times and weights. Which of the following practices do you typically choose?

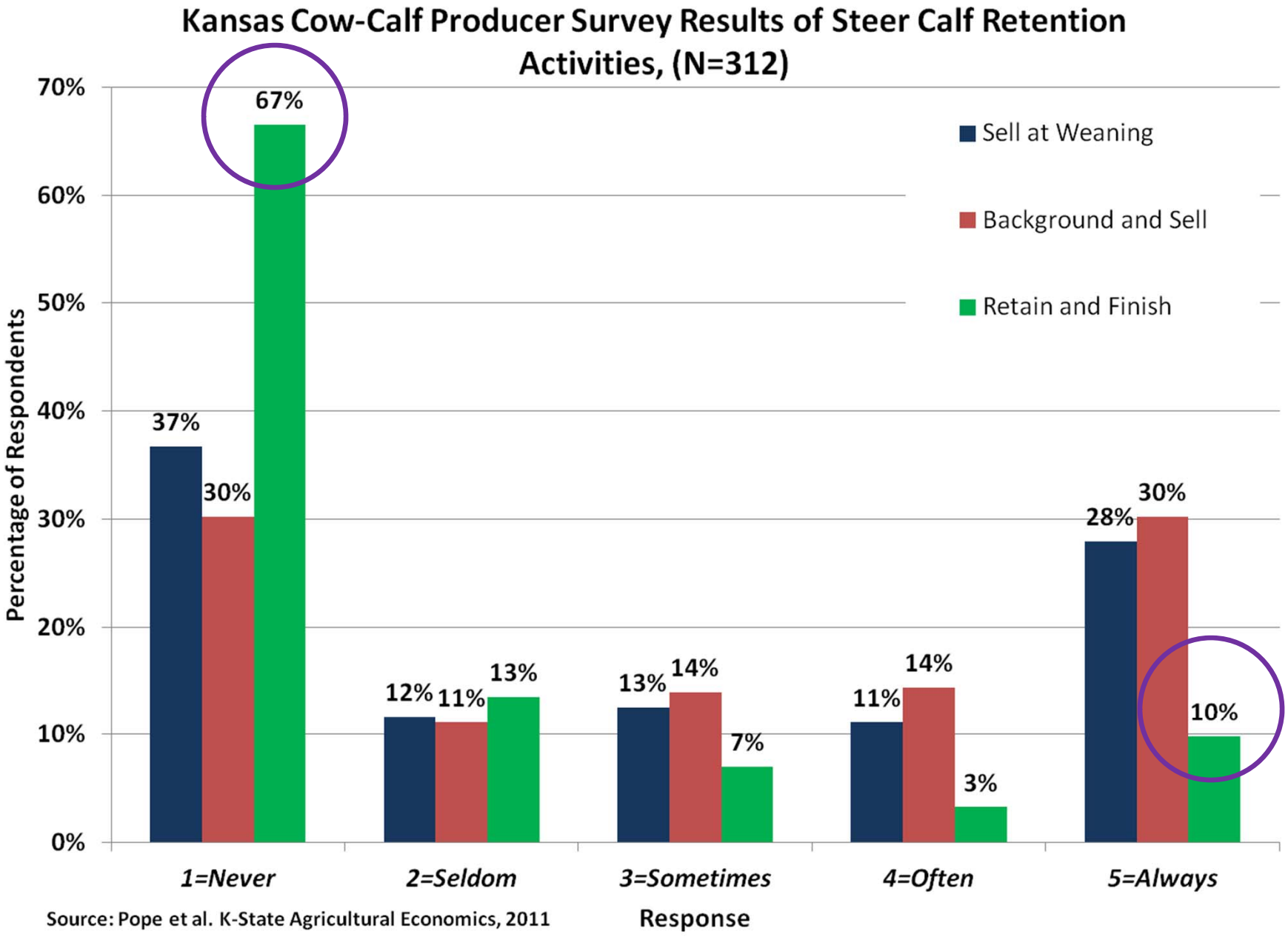
1. Sell calves at weaning
2. Retain post weaning and sell feeders
3. Retain through finishing and sell fed cattle
4. Other/Not applicable



You can sell calves at different times. Given these choices, which would you typically choose?

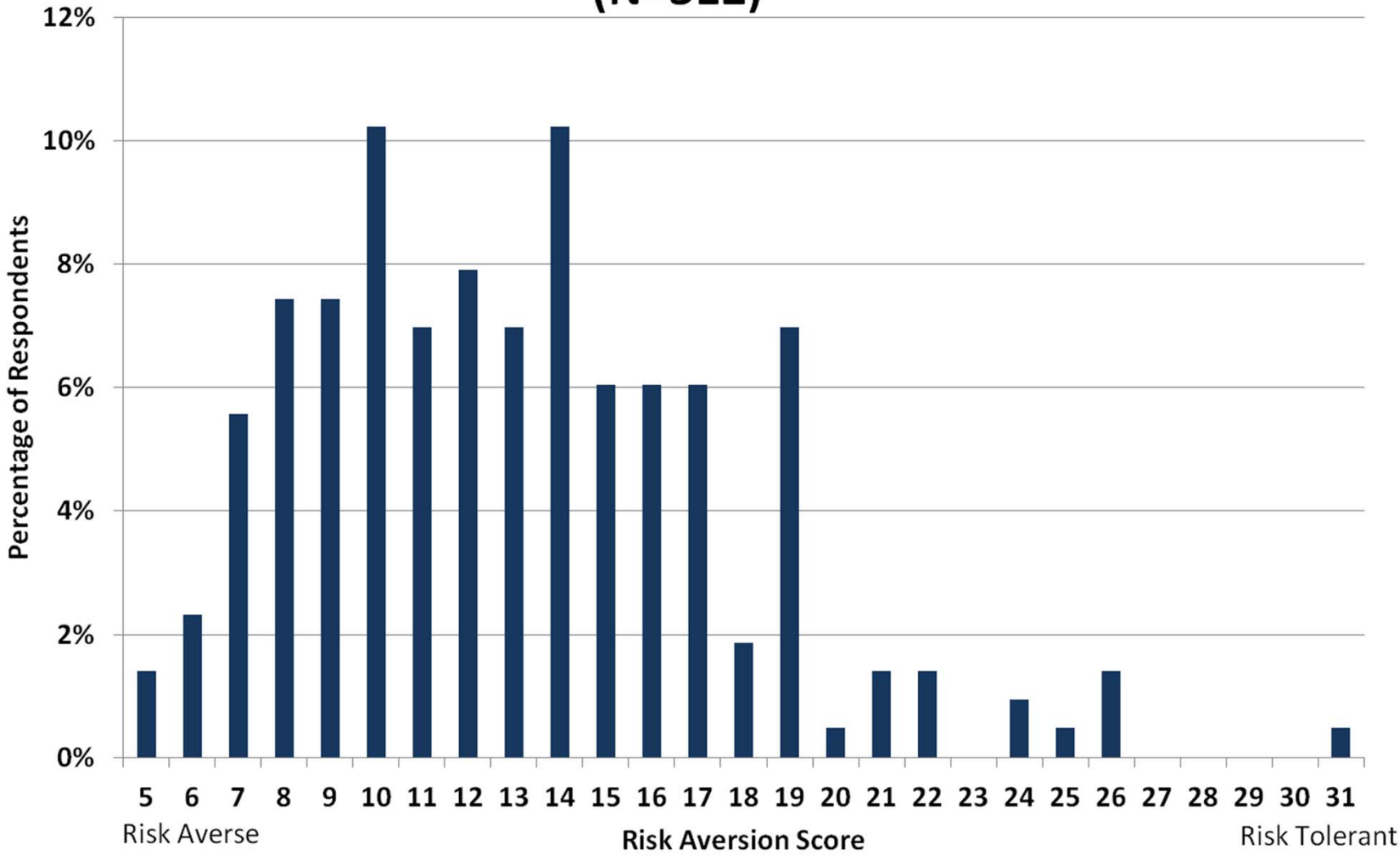
1. Sell at weaning
2. Retain for 2 months post weaning with:
   30% = $5/hd more;
   10% = $10/hd less;
   60% = +/-$0/hd
3. Retain through finishing with:
   30% = $40/hd more;
   15% = $50/hd less;
   55% = +/-$0/hd
4. Not applicable





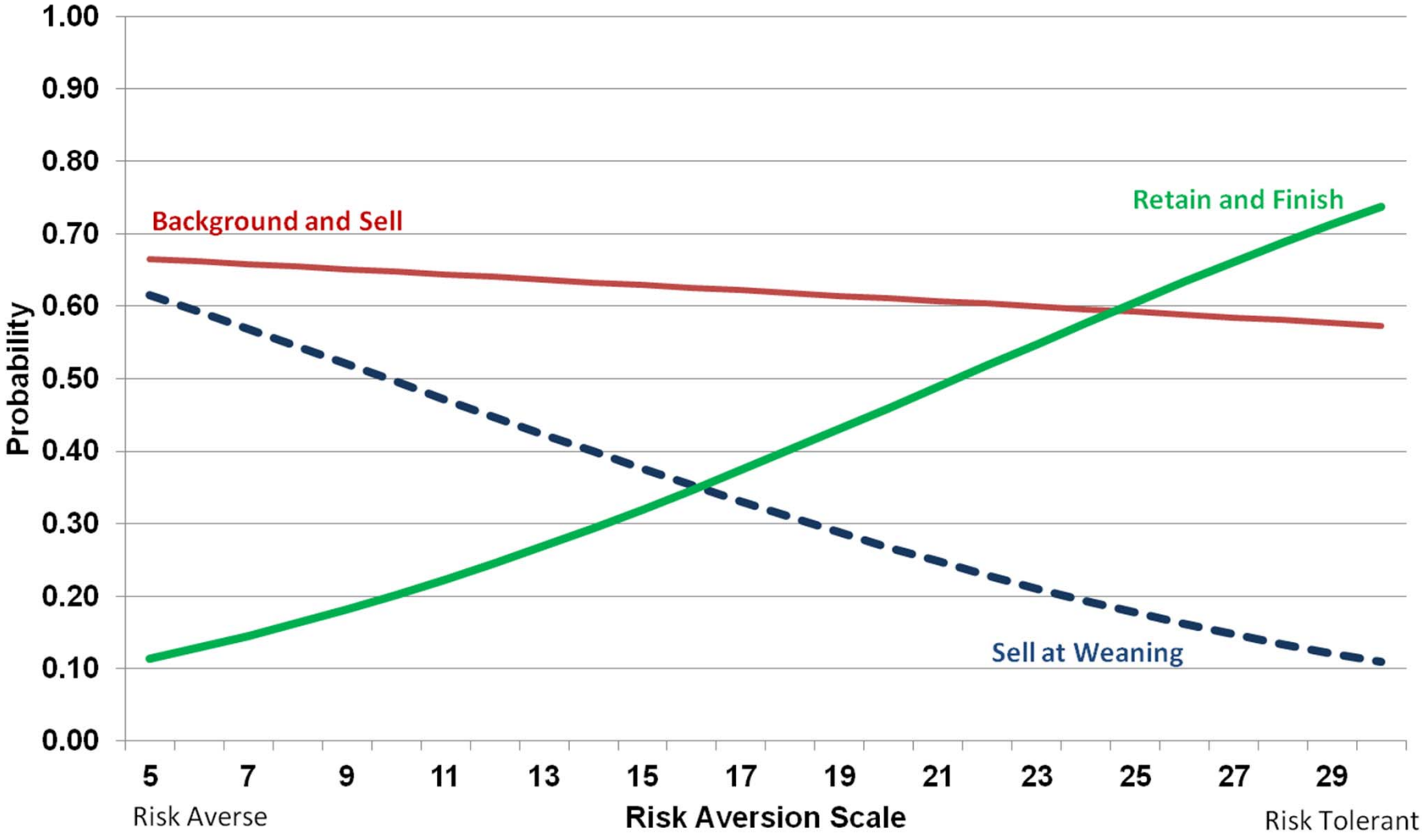
Source: Pope et al. K-State Agricultural Economics, 2011

Kansas Cow-Calf Producer Risk Aversion Scores, (N=312)



Source: Pope et al. K-State Agricultural Economics, 2011

Kansas Cow-Calf Producer Results of How Risk Aversion Relates to Steer Calf Retention Activities, (N=312)



Source: Pope et al. K-State Agricultural Economics, 2011

Current U.S. Cow-Calf Industry

(March ’11 ERS Report: http://www.ers.usda.gov/publications/eib73/)

- Cow-calf only – 36% of cows
- Cow-calf/Stocker – 53% of cows
- Cow-calf/Stocker/Feedlot - 10% of cows

What To Do?

- Options:
  - Size: Status Quo; Expand Herd; Exit Industry
  - Know your situation: favorable cost structure is imperative…
    - KFMA Research: Variability of returns across producers exceeds variability of returns across time…
  - Change Focus?
    - Increase retention practices?
    - Switch to stocker focus?
    - Initiate value-added programs?
- What is your comparative advantage?

Other K-State Decision Aides

(http://www.agmanager.info/Tools/default.asp#LIVESTOCK)

- Project Premium/Discount of Calf/Steer Attributes
  - "*K-State Feeder Cattle Price Analyzer*"
- Stocker Breakeven Selling/Purchasing Prices
  - *"Cattle Breakeven Selling and Purchase Prices"*
- Determining Flint Hills Pasture Rents
  - "*KSU-Graze.xls"*
- NPV of Beef Replacements
  - *"KSU-Beef Replacements"*
- Beef Cow Lease Agreements
  - *"KSU-CowLease"*

Too late to think about Risk Management here!

Photograph by Michael Forsberg


Photograph by Alan Nyiri