

# ECONOMIC EVALUATION OF COW CULLING VS. REPLACEMENT HEIFERS

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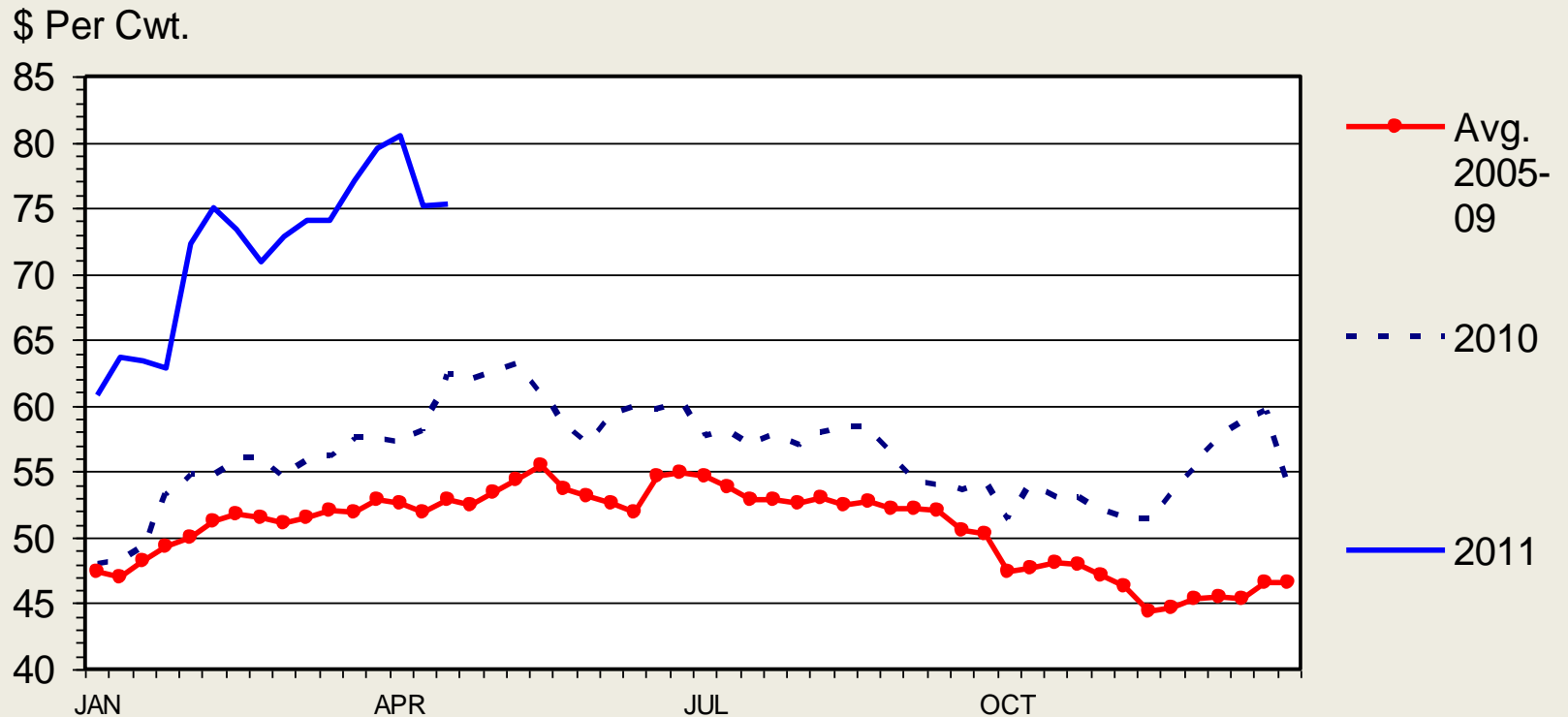
Agricultural &  
Applied  
Economics

UGA-Tifton



# SLAUGHTER COW PRICES

## Southern Plains, 85-90% Lean, Weekly



Livestock Marketing Information Center

Data Source: USDA-AMS

C-P-35  
05/02/11

# SITUATION

- Cow sales comprise 15-25% of the beef enterprise's income.
- Slaughter cow prices are at an all-time high making it very tempting to liquidate cows.
- However, with calf prices and heifer prices also at all-time highs it makes it worth considering getting 1-2 more calves before culling calves.



# DECISIONS, DECISIONS

- Cull or keep?
- How much can I pay for replacements?



# BASIC QUESTION

Is the money you give up on a cow today worth more or less in the future?

# BASIC COW (OR ANY OTHER ASSET) REPLACEMENT MATH

$$NPV = -Inv + \frac{NCF_0}{1} + \frac{NCF_1}{(1+i)^1} + \frac{NCF_2}{(1+i)^2} + \dots + \frac{NCF_n}{(1+i)^n}$$

Where:

NPV = Net Present Value

NCF = Net Cash Flow

INV = Investment value

i = interest rate

n = Number of Periods



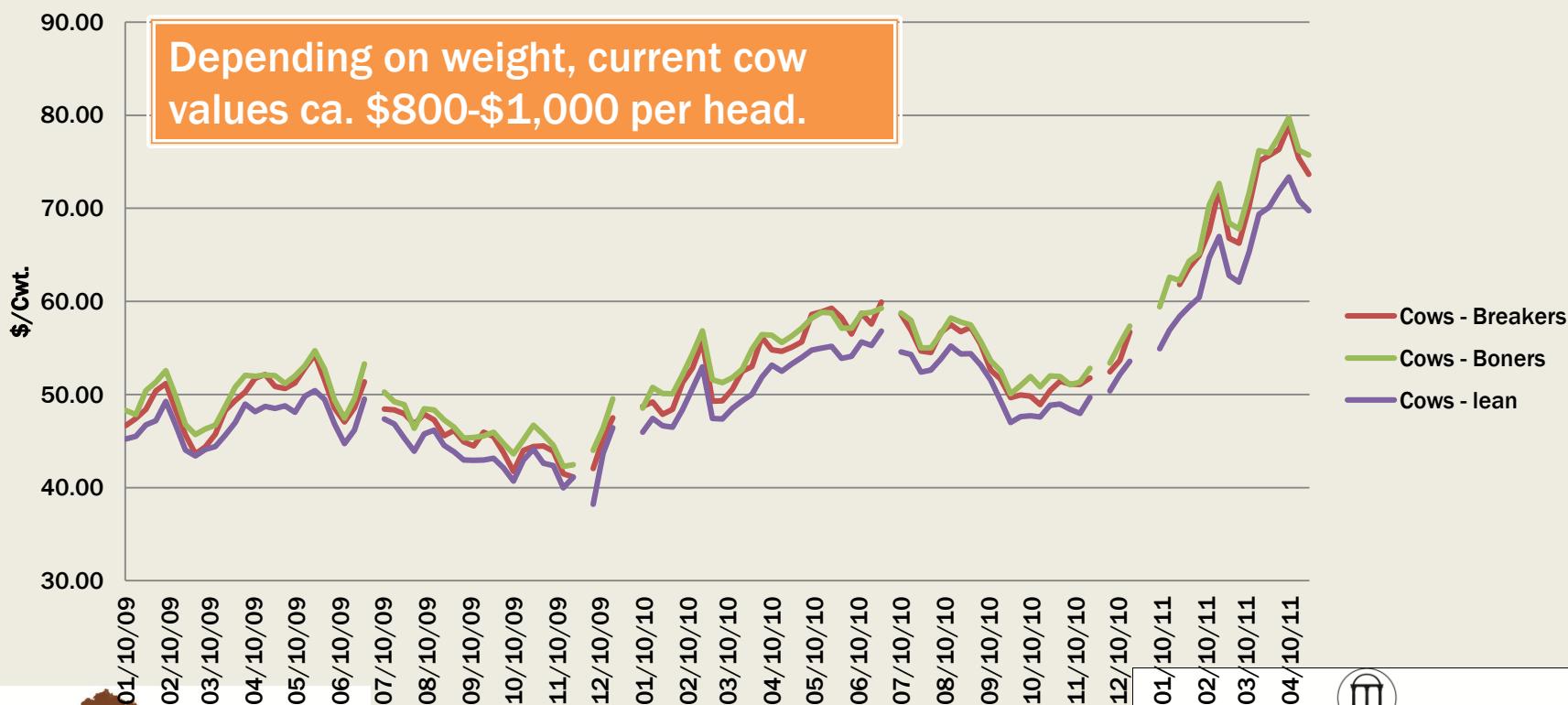
# MAJOR ITEMS TO CONSIDER

$$NPV = -\text{Inv} + \frac{NCF_0}{1} + \frac{NCF_1}{(1+i)^1} + \frac{NCF_2}{(1+i)^2} + \dots + \frac{NCF_n}{(1+i)^n}$$

- Current cow value/Purchase price of heifers

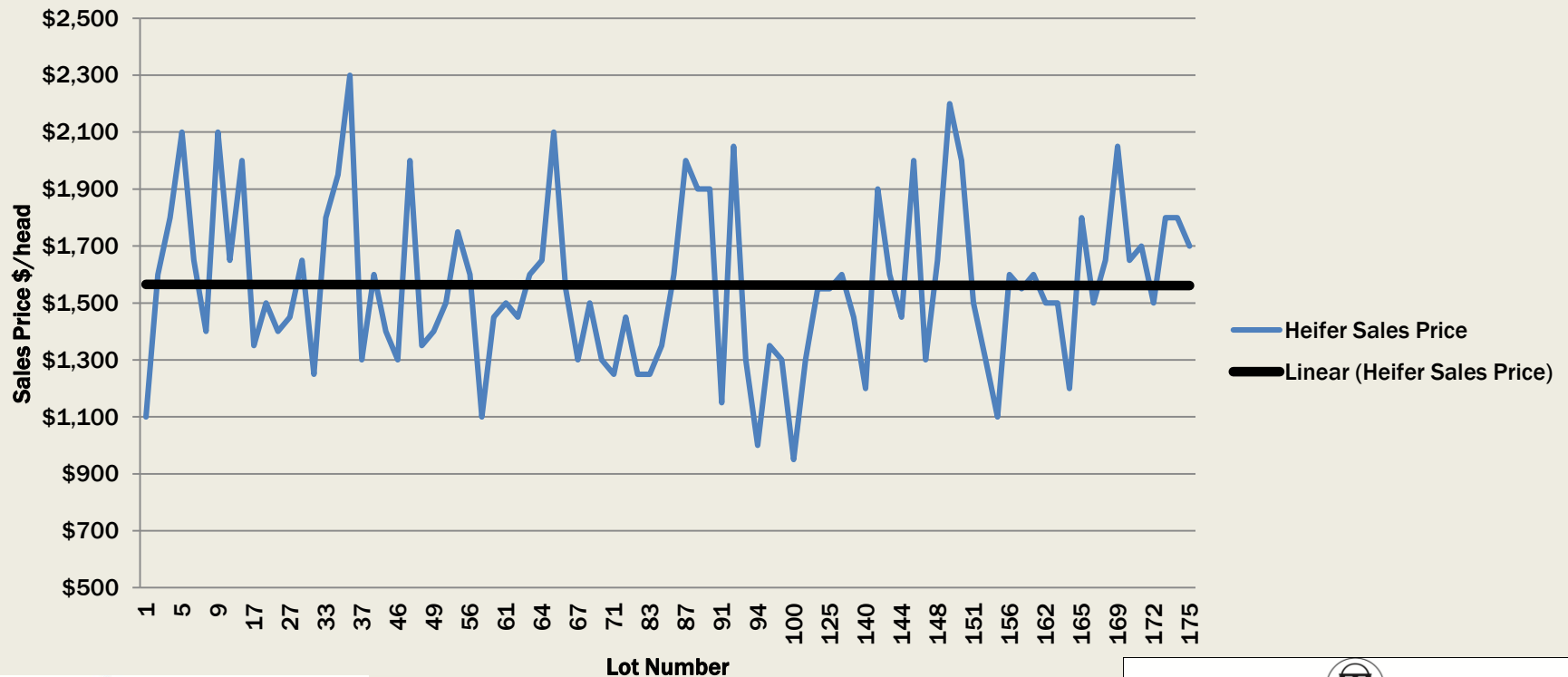
# CURRENT COW PRICES

## Georgia Auction Slaughter Cow Prices 2009-Current



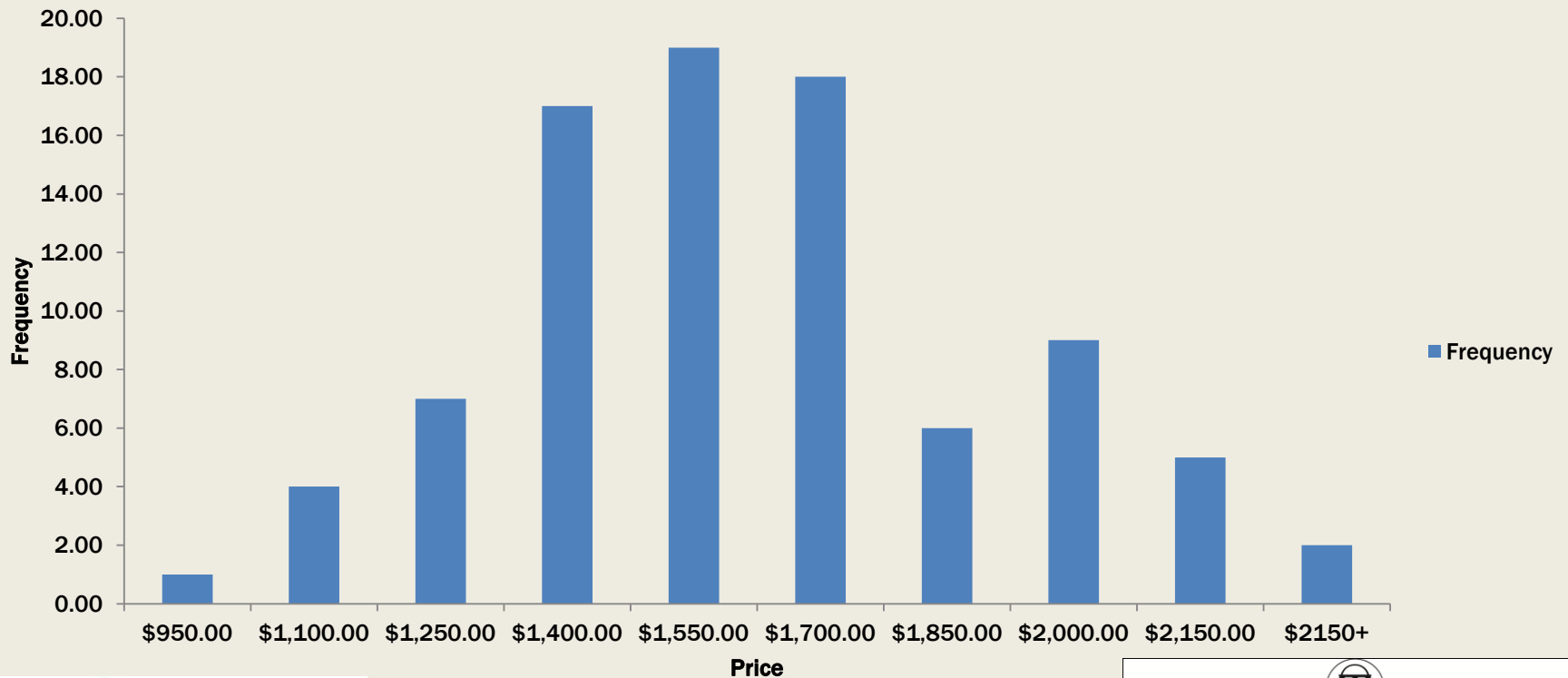
# AS A RESULT, HEIFER PRICES ARE HIGH TOO

**UGA Tifton HERD Sale Results,  
April 19, 2011**



# THERE AREN'T JUST A FEW HIGH-PRICED HEIFERS EITHER

**Distribution of UGA Tifton HERD Sale Prices  
April 19, 2011**



Heifer Development Budget				
<i>Item</i>	<i>Unit</i>	<i>Cost/unit</i>	<i>Quantity</i>	<i>Item cost</i>
Heifer	cwt.	\$ 125.00	5	\$ 625.00
Winter Pasture	ac	\$ 150.00	0.67	\$ 100.00
Coastal Pasture	ac	\$ 150.00	0.67	\$ 100.50
Other Pasture	ac	\$ -	0.67	\$ -
Hay	ton	\$ 75.00	1.65	\$ 123.75
Feed - Developing Heifer	lbs	\$ 0.13	540	\$ 67.50
Feed - Pregnant Heifer	lbs	\$ 0.13	300	\$ 39.00
Feed - 1st Calf Heifer	lbs	\$ -		\$ -
Other Feed	lbs	\$ -		\$ -
Mineral	hd	\$ 18.20	1	\$ 18.20
Ear Tags	hd	\$ 2.80	1	\$ 2.80
Vet & Med - Vaccinations	hd	\$ 6.12	1	\$ 6.12
Vet & Med - Preg check	hd	\$ 3.00	1	\$ 3.00
Labor	hrs	\$ 10.00	1.5	\$ 15.00
<b>Total Variable Costs</b>	<b>hd</b>			<b>\$ 1,100.87</b>
Interest	hd	8.00%	\$ 550.44	\$ 44.03
Bull Costs	hd	\$ 19.20	\$ 1.00	\$ 19.20
Non-breeders	percent	15.00%	\$ 1,144.90	\$ 171.74
<b>Total Costs of Retaining Heifers</b>	<b>hd</b>			<b>\$ 1,335.84</b>
Adjustment for cull heifer sales	hd	\$ 105.00	800	\$ 126.00
<b>Total net costs for retaining heifer</b>				<b>\$ 1,209.84</b>

# MAJOR ITEMS TO CONSIDER

$$NPV = -Inv + \frac{NCF_0}{1+i} + \frac{NCF_1}{(1+i)^1} + \frac{NCF_2}{(1+i)^2} + \dots + \frac{NCF_n}{(1+i)^n}$$

- Purchase price of heifers/current cow value
- Productivity of the female
  - Survivability
  - Calf crop percentage
  - Calf weight
  - Calf quality

# OLD COW RESEARCH

- Not a lot
- BIF guidelines make adjustments for Weaning Weights
  - Based on mostly English-type cattle
- Other factors to consider include
  - Survivability
  - Conception rates
- Anecdotal evidence suggest Brahman-cross cows start to see real quality declines after 13-14 years of age vs. 11-12 for English-breeds



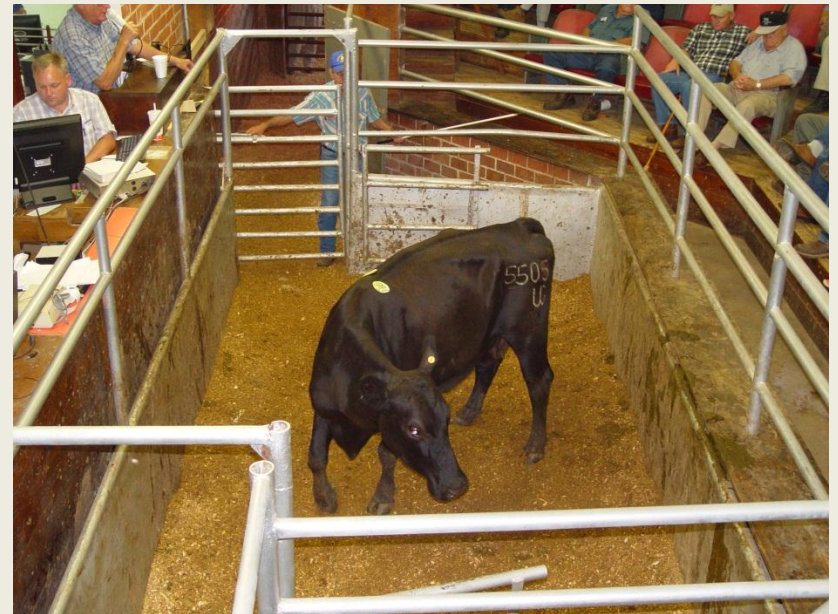
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- Purchase price of heifers/current cow value
- Productivity of the female
  - Survivability
  - Calf crop percentage
  - Calf weight
  - Calf quality
- Future cull value of cows

# WHAT DETERMINES COW VALUE

1. Percent Lean Meat Yield
2. Live weight

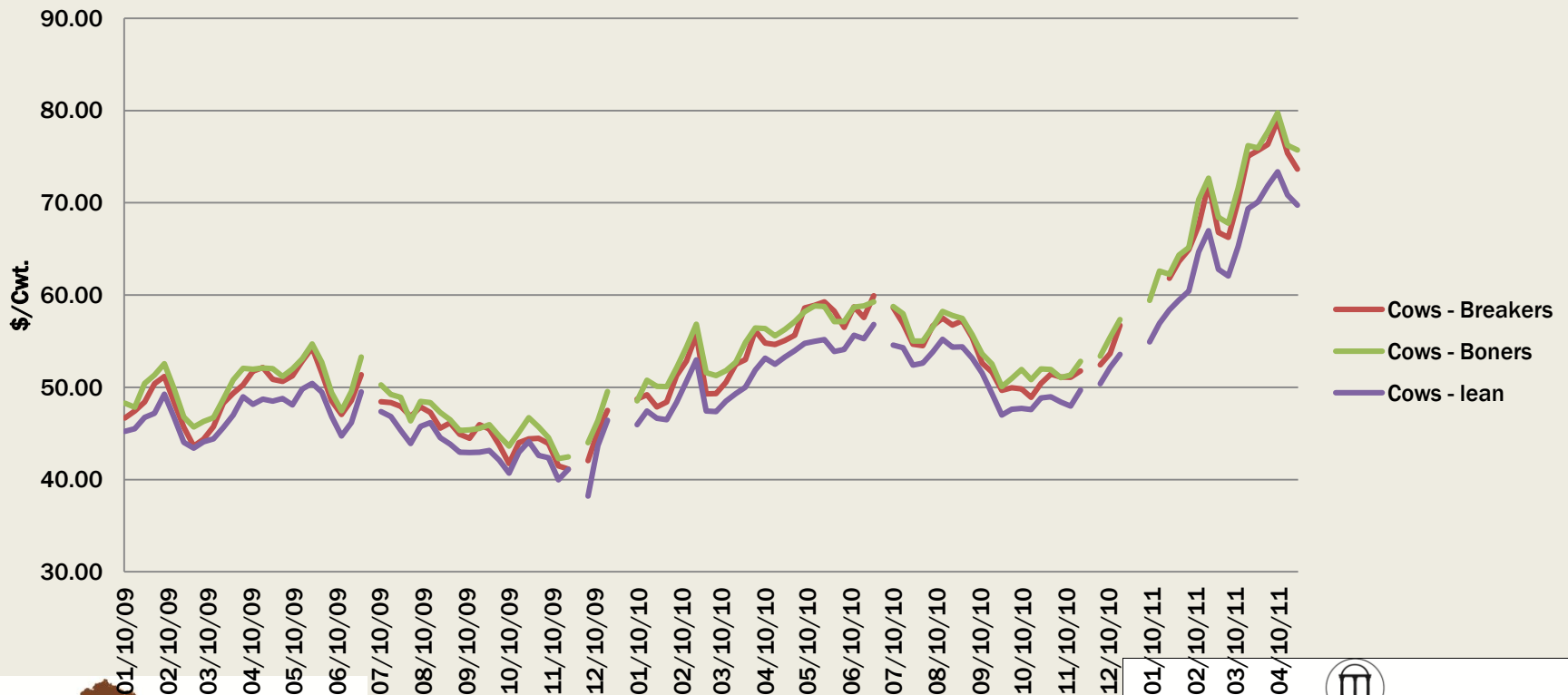


# MARKETING CLASSIFICATIONS OF CULL COWS

Classification	Lean Percentage of Trimming	Body Condition Score	Premium (Discount) 2009-2011
Cutter/Canner	85%+	1-3	(\$\$3.00- 5.00/Cwt.)
Boning Utility	80-85%	4-6	Base
Breaking Utility	Less than 80%	7+	(\$0.00- \$3.00/Cwt.)

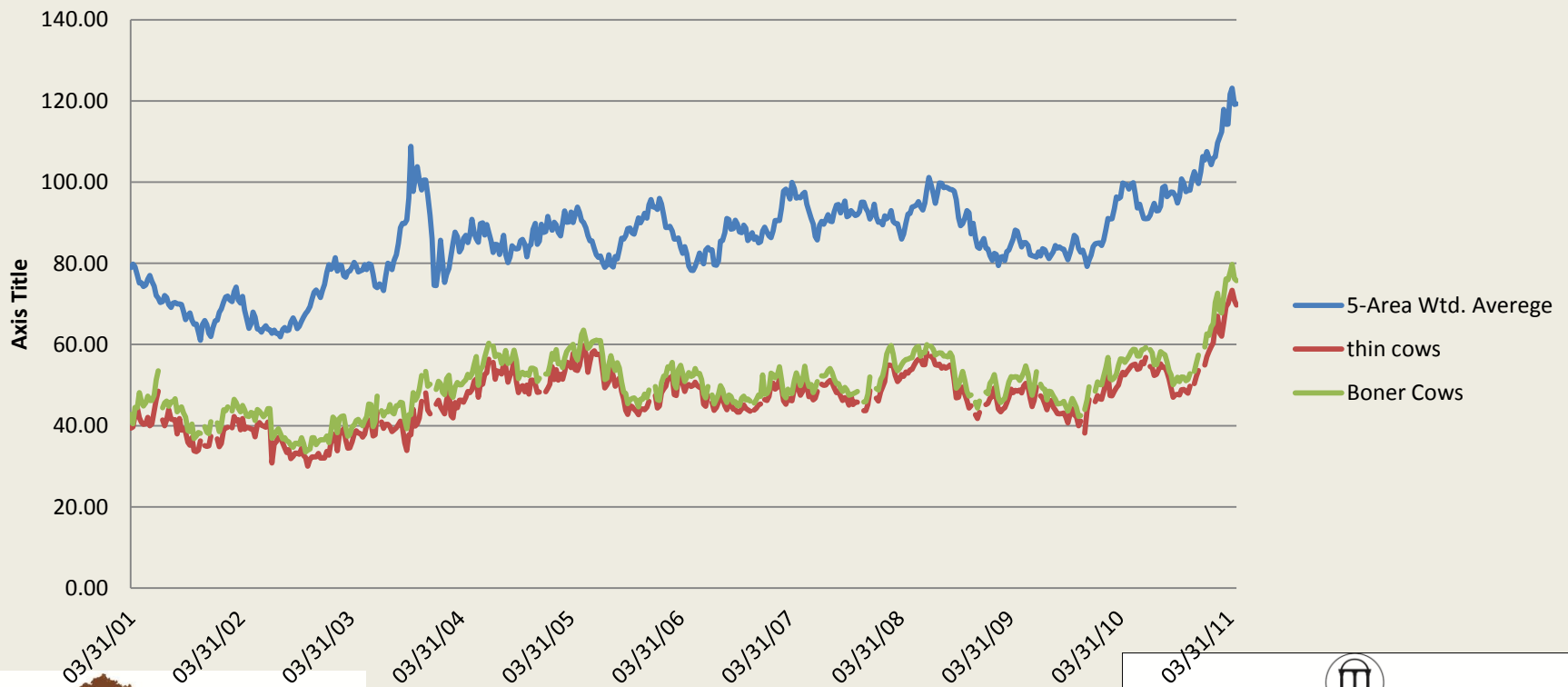
# QUALITY DOES MATTER,..SOMETIMES

**Georgia Auction Slaughter Cow Prices  
2009-Current**



# HOW CAN YOU PREDICT THE CULL COW MARKET? WATCH FED OR FEEDER CATTLE PRICES.

**Weekly Average Price of 5-Area Fat Cattle vs. Georgia Cull Cow Prices (2001-2011)**



# MEANWHILE, BACK AT THE RANCH. CULL NOW OR LATER?

## Mature Cow

- Likely productivity over then next year or so.
  - Conception rate
  - Calf weight
  - Calf quality
- Current cull cow value

## Replacement Female

- Investment cost
- Productive life

# DECISION AND CONSIDERATIONS

## 14-Year old Cow

- Forego favorable cull price
- One more calf without the heifer expense.
- Probably worth less at culling due to lower BCS

## Purchase Bred Heifer

- Delayed returns
- Higher initial costs
- Longer useful life
- Better calves

# BASIC ASSUMPTIONS

## ■ Base herd

- F1 Brahman-cross cows with English or Continental bulls
- Calving season November-January
- Average weaning weight 550 pounds
- Average cow cash expense = \$500

## ■ 14 year old cow

- Good health
- Current cull value = \$840
- Future cull value = 50% of steer price
- If culled later
  - BCS 3
  - \$5.00/cwt. discount
  - 250 pounds less

## ■ Bred heifer

- Two years old at calving
- Similar genetics as cows
- \$1,300 purchase price

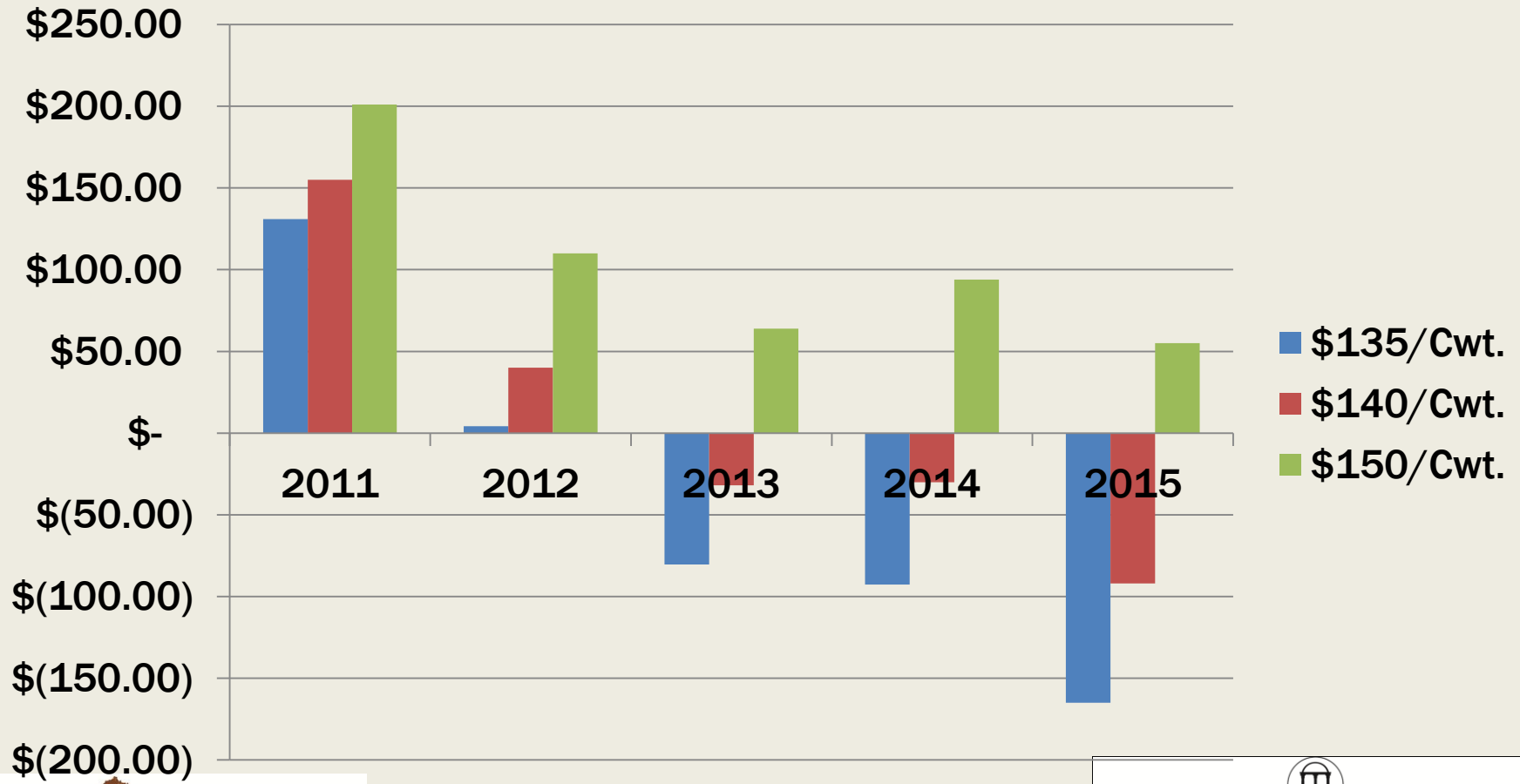


# ASSUMPTIONS

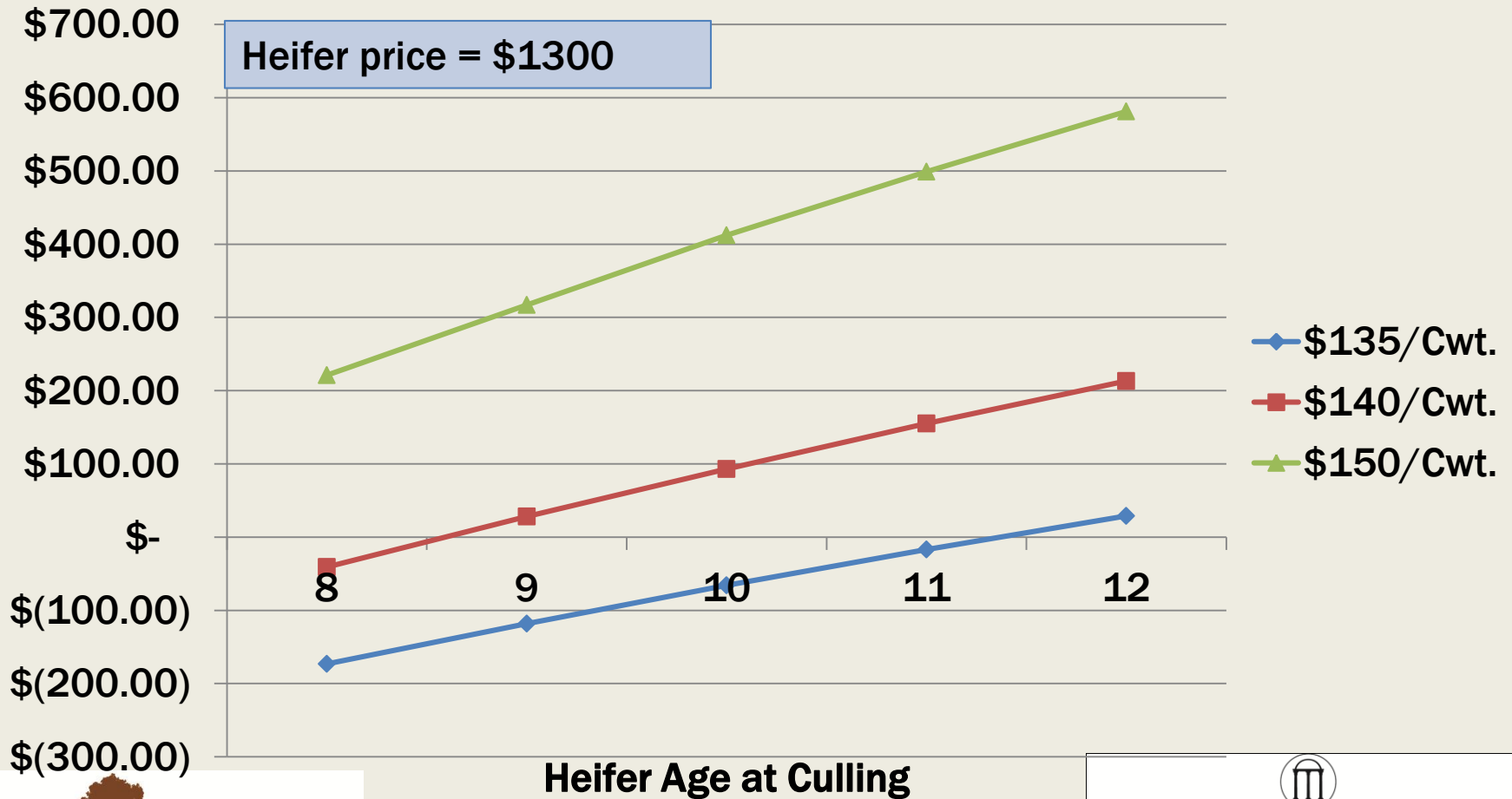
Age	Weaning Weight Adjustment	Calf Crop Percentage	Death Loss
2 (bred)	60	90	0
3	40	75	0
4	20	85	1
5-13	0	85	2
14	20	75	8
15	40	75	10
16	60	73	12
17	60	70	12

Adapted from 2006 BIF Guidelines

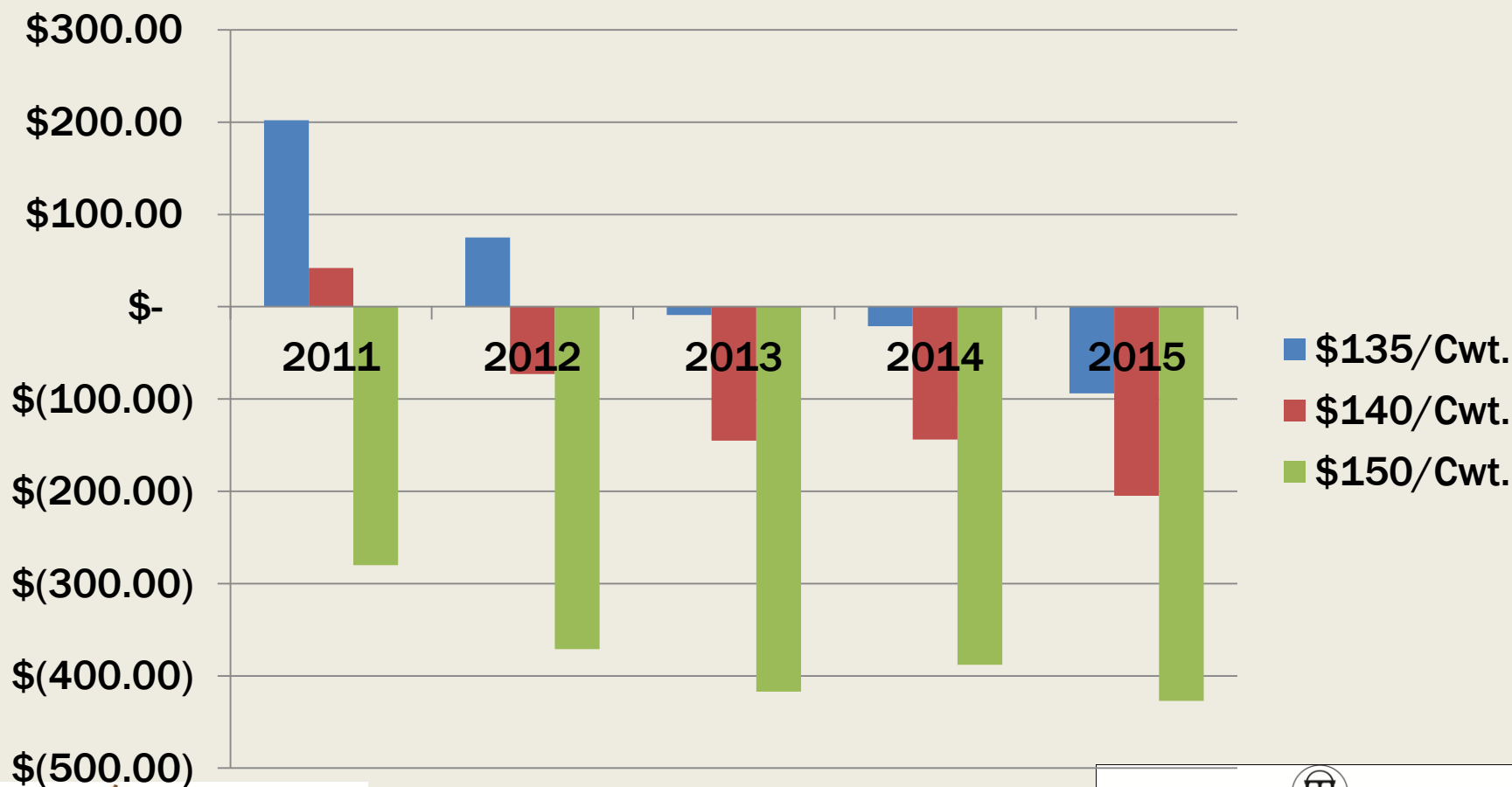
# NPV OF MATURE COWS AT VARIOUS PRICES FOR 550 POUND STEERS



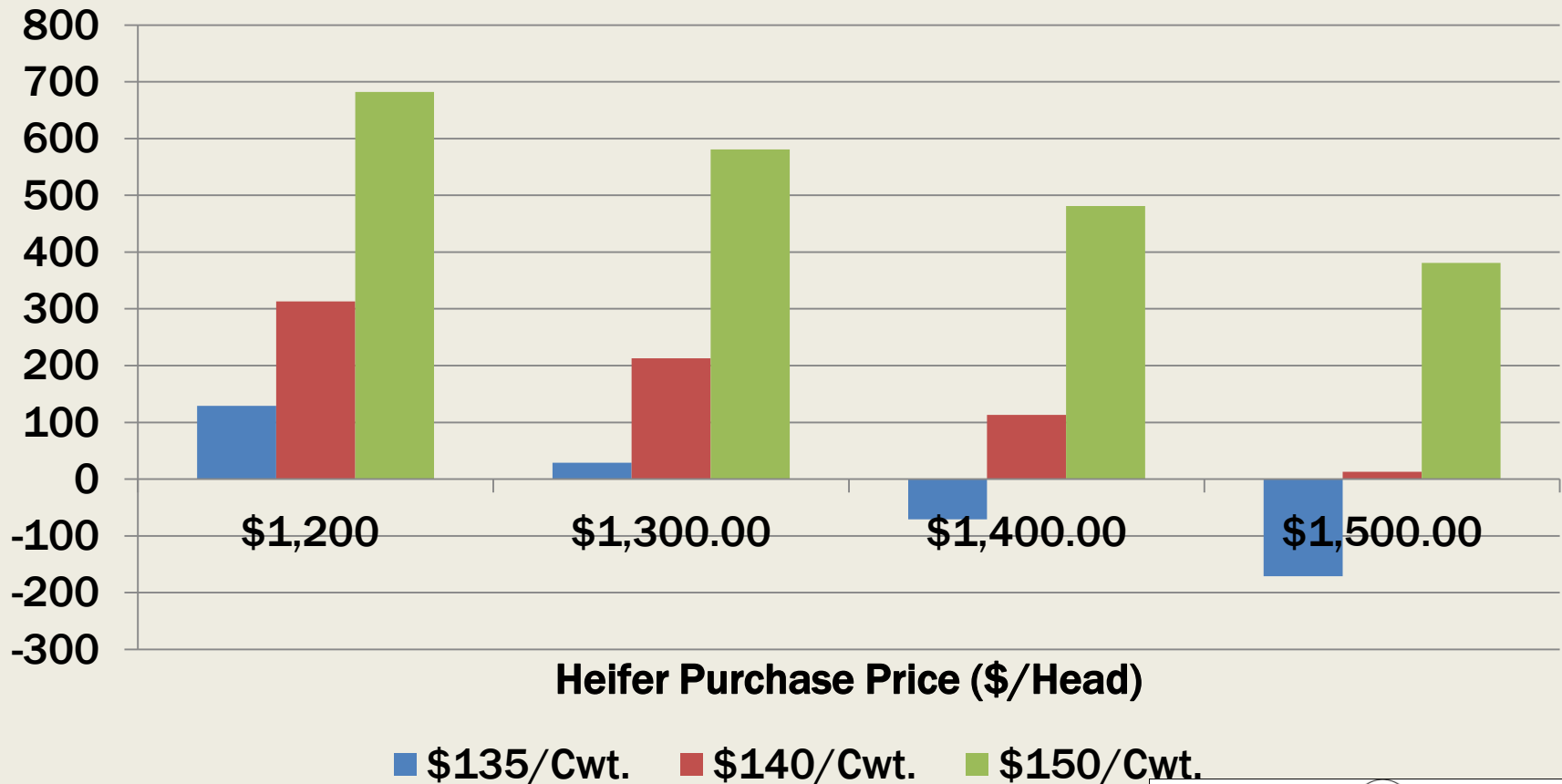
# NPV BY AGE AT CULLING OF BRED HEIFER AT VARIOUS PRICES FOR 550 POUND STEERS



# DIFFERENCE IN NPV OF HOLDING MATURE COWS VS. REPLACING WITH BRED HEIFERS AT VARIOUS SALES PRICES FOR 550 POUND STEERS



# WHAT CAN I PAY FOR A HEIFER?



# SO WHAT? (CONCLUSIONS AND IMPLICATIONS)

- Cow culling and heifer replacement is ranch and probably even herd specific.
- High cull prices make liquidating cows today very attractive.
- Higher future calf prices make purchasing heifers more attractive now.
- If heifers are around \$1200-\$1300 buy today.
- If heifers are around \$1400 buy later (and hope they don't go up).
- Now may be the time to start looking at some form of calf price risk management and/or input cost risk management.



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