

# How much can I pay for a bull?

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# What determines a bull's value?

- The overall value of a bull in today's dollars (purchase price) the sum of discounted net income produced by progeny.
- In other words, what is the total inflation adjusted net income of his progeny?
- Factors affecting future net income
  - Number of calves sired (cows and number of seasons)
  - Revenue → impacts on weight and sales price (calf/carcass quality)
  - Costs → do his female offspring have desirable maternal traits?

# What makes one bull more valuable than another bull?

- Sire more calves
  - Higher libido
  - Higher serving capacity
- Sire heavier calves
- Sire “better looking” calves???
  - Calves that are worth more
  - Calves that have a reputation
- Sire calves with “better” carcass quality and yield grade
- Sire calves with more carcass weight
- Sire heifers that will be “better” replacements
- Sire calves for several years

# How much is a good bull worth?

	<u>Bargin Bull</u> <u>(sale barn)</u>	<u>Super Stud</u> <u>(with data)</u>
Cost	\$1000	\$2000
# of calves	25	25
Calf weight	500 lbs	550lbs
Calf price	\$100/cwt	\$95/cwt
Calf value	\$500	\$522.50
Calf crop value	<u>\$12500</u>	<u>\$13062</u>
Difference		\$562

# Information Available for Selection

Visual  
Pedigree  
Performance records  
EPD's

1949 EAST TEXAS FAIR TYLER









# Do EPD's Work?

Sire EPD	BW EPD	WW EPD	YW EPD
High	7.3	31.3	56.2
Low	0.9	19.6	42.1
<b>DIFF</b>	<b>6.4</b>	<b>11.7</b>	<b>14.1</b>

Progeny	BW, lbs	WW, lbs	YW, lbs
High	77.8	455	750
Low	69.6	442	735
<b>DIFF</b>	<b>8.2</b>	<b>13</b>	<b>15</b>

Accuracy of sires  $\geq .80$ , University of Georgia

# Selection for Increased Marbling Using EPD's

trait	Marbling, EPD	
	Low	High
No. of animals	64	65
Backfat, cm	1.3	1.3
Carcass weight, kg	341	334
% Choice	78	96
Yield grade	2.9	3.0
REA, cm <sup>2</sup>	84.5	81.9

University of Nebraska

# Selection for Increased Marbling and Decreased Fat Using EPD's

<u>Marbling EPD</u>	<u>Control</u>	<u>Marbling</u>
Time on feed, d	159	159
Age at slaughter, d	755	755
Backfat, in	.46	.32
Marbling score <sup>1</sup>	371	440
Quality Grade <sup>2</sup>	11.1	12.0
Percent Choice	62	99

<sup>1</sup> Marbling Score: 200=slight, 300=small, 400=modest

<sup>2</sup> Quality grade: 10=Select<sup>+</sup>, 11=choice<sup>-</sup>, 12=Choice<sup>o</sup>

University of Georgia

# Tale of Two Angus Bulls

Non parent bull EPDs

	<u>BW</u>	<u>WW</u>	<u>YW</u>	<u>Milk</u>	<u>TM</u>
Bull A	2.2	67	102	30	63.5
Bull C	2.2	42	77	20	41
Diff	0	25	25	10	22.5

Bull C is an AVERAGE bull in the Angus breed compared to Non parent bulls  
Bull A is in the top 3% for WW, YW, and Milk

# What does a bull really cost?

- Purchase price
- Annual cost (feed, hay, pasture, mineral)
- Vet expenses (BSE, vaccines, dewormer)
- Interest
- Depreciation
- Death loss (broken leg, lightning, etc.)

# Assumptions in Analysis- calves sold at weaning

- Bull salvage weight = 1700lbs
- Salvage price = \$65/cwt
- Death loss = 5%/yr
- Annual bull cost = \$365 (\$1/hd/day)
- Annual vet cost = \$50 (BSE, dewormer, shots)
- Years of service = 4
- Cows serviced / year = 30
- Calf crop weaned = 85%
- Calf weaning weight base = 525 lbs

# Assumptions in Analysis- calves sold at weaning

- Base bull will cost \$1500
- Selected bulls will cost more but will add:
  - 25 lbs of weaning weight (@ .45 cent/lb)
  - \$5/cwt to calf price
  - 25 lbs of weaning weight and \$5/cwt to calf price
- Bull to cow ratio 1:30 (63 day breeding season)
- 85% calf crop weaned



How much  
can I pay?



# How much can I pay assuming 25lbs more weaning weight?

purchase price, \$	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000
weaning wt, lbs	525	550	550	550	550	550	550	550	550	550
total cost/bull/year, \$	693	863	1033	1203	1373	1543	1713	1883	2053	2223
bull cost/ calf, \$	27	34	41	47	54	61	67	74	81	87
additional bull cost, \$/calf *	-	6.67	13.33	20.00	26.67	33.33	40.00	46.67	53.33	60.00
additional bull cost, \$/year*	-	170	340	510	680	850	1020	1190	1360	1530
calf value, \$	525	536	536	536	536	536	536	536	536	536
diff in \$ /calf (what its worth)*	-	11	11	11	11	11	11	11	11	11
diff in \$/year (what its worth)*	-	287	287	287	287	287	287	287	287	287
what its worth minus what it cost	-	117	-53	-223	-393	-563	-733	-903	-1073	-1243

\* As compared to a \$1500 bull

# How much can I pay assuming no increase in weaning weight and a \$5/cwt "premium"?

purchase price, \$	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000
weaning wt, lbs	525	525	525	525	525	525	525	525	525	525
total cost/bull/year, \$	693	863	1033	1203	1373	1543	1713	1883	2053	2223
bull cost/ calf, \$	27	34	41	47	54	61	67	74	81	87
additional bull cost, \$/calf *	-	6.67	13.33	20.00	26.67	33.33	40.00	46.67	53.33	60.00
additional bull cost, \$/year*	-	170	340	510	680	850	1020	1190	1360	1530
calf value, \$	525	551	551	551	551	551	551	551	551	551
diff in \$ /calf (what its worth)*	-	26	26	26	26	26	26	26	26	26
diff in \$/year (what its worth)*	-	669	669	669	669	669	669	669	669	669
what its worth minus what it cost	-	499	329	159	-11	-181	-351	-521	-691	-861

\* As compared to a \$1500 bull

# How much can I pay assuming 25lbs more weaning weight and a \$5/cwt premium?

purchase price, \$	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000
weaning wt, lbs	525	550	550	550	550	550	550	550	550	550
total cost/bull/year, \$	693	863	1033	1203	1373	1543	1713	1883	2053	2223
bull cost/ calf, \$	27	34	41	47	54	61	67	74	81	87
additional bull cost, \$/calf *	-	6.67	13.33	20.00	26.67	33.33	40.00	46.67	53.33	60.00
additional bull cost, \$/year*	-	170	340	510	680	850	1020	1190	1360	1530
calf value, \$	525	564	564	564	564	564	564	564	564	564
diff in \$ /calf (what its worth)*	-	39	39	39	39	39	39	39	39	39
diff in \$/year (what its worth)*	-	988	988	988	988	988	988	988	988	988
what its worth minus what it cost	-	818	648	478	308	138	-32	-202	-372	-542

\* As compared to a \$1500 bull

# How can I get more calves/year from a bull?

- Higher serving capacity bulls
  - ✓ Hard to access
- Artificial insemination
  - ✓ Labor
- Longer breeding seasons??
  - ✓ Less lbs
  - ✓ Poor management
- Two breeding seasons

# Assumptions in Analysis-

## Use of bull in two breeding seasons

- Extra 50\$ added to bull cost/yr for feed to recondition bulls between breeding seasons

# How much can I pay assuming 25lbs more weaning weight and use of the bull in two breeding seasons?

purchase price, \$	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000
weaning wt, lbs	525	550	550	550	550	550	550	550	550	550
total cost/bull/year, \$	693	913	1083	1253	1423	1593	1763	1933	2103	2273
bull cost/ calf, \$	14	18	21	25	28	31	35	38	41	45
additional bull cost, \$/calf *	-	4.31	7.65	10.98	14.31	17.65	20.98	24.31	27.65	30.98
additional bull cost, \$/year*	-	220	390	560	730	900	1070	1240	1410	1580
calf value, \$	525	536	536	536	536	536	536	536	536	536
diff in \$ /calf (what its worth)*	-	11	11	11	11	11	11	11	11	11
diff in \$/year (what its worth)*	-	574	574	574	574	574	574	574	574	574
what its worth minus what it cost	-	354	184	14	-156	-326	-496	-666	-836	-1006

\* As compared to a \$1500 bull

# How much can I pay assuming a \$5/cwt "premium", and use of the bull in two breeding seasons?

purchase price, \$	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000
weaning wt, lbs	525	550	550	550	550	550	550	550	550	550
total cost/bull/year, \$	693	913	1083	1253	1423	1593	1763	1933	2103	2273
bull cost/ calf, \$	14	18	21	25	28	31	35	38	41	45
additional bull cost, \$/calf *	-	4.31	7.65	10.98	14.31	17.65	20.98	24.31	27.65	30.98
additional bull cost, \$/year*	-	220	390	560	730	900	1070	1240	1410	1580
calf value, \$	525	551	551	551	551	551	551	551	551	551
diff in \$ /calf (what its worth)*	-	26	26	26	26	26	26	26	26	26
diff in \$/year (what its worth)*	-	1339	1339	1339	1339	1339	1339	1339	1339	1339
what its worth minus what it cost	-	1119	949	779	609	439	269	99	-71	-241

\* As compared to a \$1500 bull

How much can I pay assuming 25lbs more lbs of weaning weight, a \$5/cwt "premium", and use of the bull in two breeding seasons?

purchase price, \$	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000
weaning wt, lbs	525	550	550	550	550	550	550	550	550	550
total cost/bull/year, \$	693	913	1083	1253	1423	1593	1763	1933	2103	2273
bull cost/ calf, \$	14	18	21	25	28	31	35	38	41	45
additional bull cost, \$/calf *	-	4.31	7.65	10.98	14.31	17.65	20.98	24.31	27.65	30.98
additional bull cost, \$/year*	-	220	390	560	730	900	1070	1240	1410	1580
calf value, \$	525	564	564	564	564	564	564	564	564	564
diff in \$ /calf (what its worth)*	-	39	39	39	39	39	39	39	39	39
diff in \$/year (what its worth)*	-	1976	1976	1976	1976	1976	1976	1976	1976	1976
what its worth minus what it cost	-	1756	1586	1416	1246	1076	906	736	566	396

\* As compared to a \$1500 bull



# How Much More Can I Pay for Different Weight X Price Combinations?

Weaning Wts	\$ (3.00)	\$ (1.00)	\$ -	\$ 1.00	\$ 3.00
0	(\$1,330.23)	(\$443.41)	base	\$443.41	\$1,330.23
10	(\$510.98)	\$392.74	\$844.59	\$1,296.45	\$2,200.16
20	\$308.28	\$1,228.88	\$1,689.18	\$2,149.49	\$3,070.09
30	\$1,127.53	\$2,065.03	\$2,533.78	\$3,002.53	\$3,940.02
40	\$1,946.79	\$2,901.17	\$3,378.37	\$3,855.56	\$4,809.95
50	\$2,766.04	\$3,737.32	\$4,222.96	\$4,708.60	\$5,679.88

- Assumes \$1,500 base bull
- Amounts are the additional dollars you could pay at different weight X price differences
- Assumes you KNOW this will happen

# How Many More Pounds Will I Need for Different Prices?

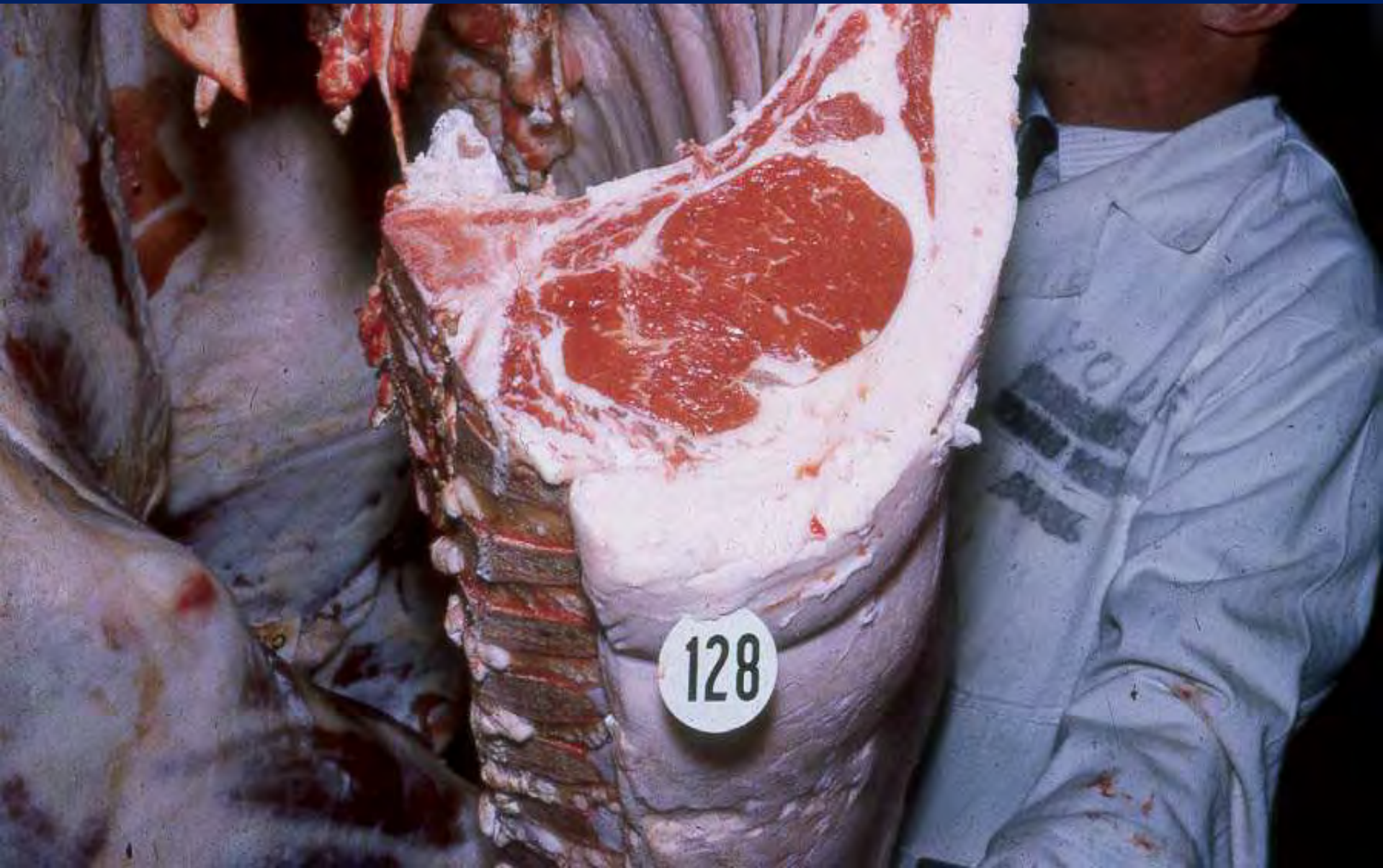
Can give up 5.24 pounds and still breakeven

Bull Values	Price Difference					
	\$ (3.00)	\$ (1.00)	\$ -	\$ 1.00	\$ 3.00	
\$ 1,500.00	15.73	5.24	Base	(5.24)	(15.73)	
\$ 2,000.00	21.64	11.16	5.91	0.67	(9.82)	
\$ 2,500.00	27.56	17.07	11.83	6.58	(3.91)	
\$ 3,000.00	33.47	22.98	17.74	12.50	2.01	
\$ 3,500.00	39.38	28.90	23.65	18.41	7.92	
\$ 4,000.00	45.30	34.81	29.57	24.32	13.83	
\$ 4,500.00	51.21	40.72	35.48	30.23	19.75	
\$ 5,000.00	57.12	46.64	41.39	36.15	25.66	
\$ 5,500.00	63.04	52.55	47.30	42.06	31.57	
\$ 6,000.00	68.95	58.46	53.22	47.97	37.49	

# How Many More \$/Cwt Will I Need for More Pounds?

Bull Values	ADDITIONAL POUNDS				
	0.00	10.00	20.00	30.00	40.00
\$ 1,500.00	BASE	(1.94)	(3.88)	(5.81)	(7.75)
\$ 2,000.00	1.03	(0.71)	(2.44)	(4.18)	(5.92)
\$ 2,500.00	2.07	0.32	(1.43)	(3.18)	(4.93)
\$ 3,000.00	3.14	1.37	(0.40)	(2.16)	(3.93)
\$ 3,500.00	4.22	2.44	0.66	(1.13)	(2.91)
\$ 4,000.00	5.32	3.52	1.72	(0.07)	(1.87)
\$ 4,500.00	6.44	4.62	2.81	1.00	(0.81)
\$ 5,000.00	7.58	5.75	3.92	2.09	0.26
\$ 5,500.00	8.73	6.89	5.05	3.20	1.36
\$ 6,000.00	9.91	8.05	6.19	4.33	2.47

How much can I pay for a bull if I plan to retain ownership on his calves?



# Assumptions in Analysis-

## Retained ownership

- Base bull will cost \$1500
- Selected bulls will cost more but will add:
  - 50 lbs of live weight (25 lbs retained from preweaning)
  - 20% improvement in %choice
- 2% death loss from weaning to harvest
- \$6 Choice select spread
- All calves sent to harvest (terminal sire)

# How much can I pay if I retain ownership?

Assuming 50 more lbs of live weight and 20% more choice

purchase price, \$	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000
weaning wt, lbs	525	550	550	550	550	550	550	550	550	550
total cost/bull/year, \$	693	863	1033	1203	1373	1543	1713	1883	2053	2223
bull cost/ calf, \$	27	34	41	47	54	61	67	74	81	87
additional bull cost, \$/calf *	-	6.67	13.33	20.00	26.67	33.33	40.00	46.67	53.33	60.00
additional bull cost, \$/year*	-	170	340	510	680	850	1020	1190	1360	1530
carcass value, \$	989	1039	1039	1039	1039	1039	1039	1039	1039	1039
diff in \$ /calf (what its worth)*	-	51	51	51	51	51	51	51	51	51
diff in \$/year (what its worth)*	-	1264	1264	1264	1264	1264	1264	1264	1264	1264
what its worth minus what it cost	-	1060	890	720	550	380	210	40	-130	-300

\* As compared to a \$1500 bull

# What can I pay for a bull if I am keeping replacement heifers?

- Long term impact on the herd
  - Large impact but probably not as large as most consider it to be
- 30 cows bred x .85 calf crop weaned = 25.5 calves
  - $\frac{1}{2}$  will be heifers = 12 hd
  - How many of those will be "keepers"?
  - Keep 8 hd
  - Impact of those 8 hd on a herd basis is small
  - 8 hd x 4 years of use of bull = 32 heifers in the herd
  - Double this impact if used for two seasons

# Summary

	Breakeven, \$
• 25 lbs	2000-2500
• 5 cent premium	3000-3500
• 25 lbs and 5 cent premium	4000-4500
• 25 lbs and two seasons	3000-3500
• 5 cent premium and two seasons	5000-5500
• 25 lbs and 5 cent premium and two seasons	6000+
• Retained ownership	5000-5500

Use of bulls in two seasons increases the \$ you can afford to pay

Bull cost should be around what 4-5 calves are/will be worth

Bull cost should be around what 2-3 fat steers are/will be worth



# Summary

- A bull purchased in a low calf market is more likely to produce calves on an increasing calf market price
  - Assuming the cattle cycle isn't dead
- A bull purchased this fall will produce most of his calves in 2011, 2012, 2013
  - How good are your predictions of the future?
  - How good are your assumptions in the future?



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# How much can I pay assuming 50 lbs more weaning weight?

purchase price, \$	1500	2000	2500	3000	3500	4000	4500	5000	5500	6000
weaning wt, lbs	525	575	575	575	575	575	575	575	575	575
total cost/bull/year, \$	692.95	862.95	1032.95	1202.95	1372.95	1542.95	1712.95	1882.95	2052.95	2222.95
bull cost/cow, \$	23.10	28.77	34.43	40.10	45.77	51.43	57.10	62.77	68.43	74.10
bull cost/ calf, \$	27.17	33.84	40.51	47.17	53.84	60.51	67.17	73.84	80.51	87.17
additional bull cost, \$/calf *	0.00	6.67	13.33	20.00	26.67	33.33	40.00	46.67	53.33	60.00
additional bull cost, \$/year*	-	170.00	340.00	510.00	680.00	850.00	1020.00	1190.00	1360.00	1530.00
calf value, \$	525	546.25	546.25	546.25	546.25	546.25	546.25	546.25	546.25	546.25
diff in \$ /calf (what its worth)	0	21.25	21.25	21.25	21.25	21.25	21.25	21.25	21.25	21.25
diff in \$/year (what its worth)	0	541.875	541.875	541.875	541.875	541.875	541.875	541.875	541.875	541.875
what its worth minus what it cost	-	371.88	201.88	31.87	-138.13	-308.13	-478.13	-648.13	-818.13	-988.13

\* As compared to a \$1500 bull