

FAPRI (Aug, 2015) Estimates

Price Projections	14/15	15/16	16/17	17/18	18/19	19/20
All hay price, \$/t	172.00	155.90	155.39	16416	170.35	173.84
Corn, \$/bu	3.70	3.68	3.71	3.96	4.09	4.14
Beef cows, M hd	29.7	30.7	31.4	31.6	31.7	31.5
Steers, all grades 5-area, \$/cwt	156.89	149.10	136.60	129.80	124.77	122.12
Steers, 600-650 lb OKC, \$/cwt	242.01	224.95	198.26	181.60	168.93	162.75

Annual Cow Cost

- **Annual feed cost (Rasby, 2015)**
 - Mature cows \$508.88
 - 1st calf heifers \$558.25
 - Replacement heifers \$358.25
- **Other cash costs** \$85.00
- **Ownership costs** \$133.00
- **Total**
 - Mature cows \$727.00
 - 1st calf heifers \$776.00
 - Replacement heifers \$567.00

- ### Challenges – What Are They Worth?
- **Accurately estimating future prices**
 - Pasture, feed, supplement
 - Power and fuel
 - Equipment/facility repair/replacement
 - Interest
 - Bulls
 - Feeder calves
 - Cull/surplus cows
 - **How much risk is the ranch willing to take?**

What are They Worth?

My answer:

“All cattle are worth market price, anything above or below that is based on perceived value.”

Is Perceived Value = Real Value?

Value of cattle on cash flow statement
vs.
What someone is willing to pay

Likely not the same


Net Present Value



Net present value (NPV), also called net present worth (NPW), is an approach to evaluating investments that assesses the difference between all the revenue the investment can be expected to achieve over its whole life and all the costs involved, taking into consideration inflation, and discounting both future costs and revenue at an appropriate rate. It can be challenging to calculate NPV because it is not always clear what discount rates should be used.

Source: Business Terms Glossary

Dangers

In any assumptions we make





NPV - ISU



- Schulz and Gunn (2015)
- Assumptions
 - Annual cow costs (\$400, \$500, \$600, \$700)
 - Future weanling calf prices (FAPRI, 2015)
 - Calf weaning weights (500 vs. 600 lb; 40# discount 1st calf)
 - Cull cows (1200# -1st calf; 1250# -mature cows; \$80/cwt)
 - Discount rate (5%; interest or living expenses)
 - 1 to 5 calves

<http://www.extension.iastate.edu/agdm/livestock/html/b1-74.html>



Assumptions

- We could buy, or are willing to sell
 - 600# Weanling heifer for \$1200
 - 600# x \$200/cwt ≈ \$1200
- Or*
- Bred yearling heifer for \$2000
 - (1063# x \$150/cwt) ≈ \$1600
 - \$1600 + \$400 cost = \$2000
- What's the maximum bid price to break even?



Inputs Used (Bred Yrlg. Example)

Purchase and Financing	
Purchase price of replacement female, \$/head	\$2,000
Year of purchase	2015
First year for calf sales	2016
Expected calving opportunities, years	5
Marketable calves (1 - death loss), %	90%
Discount factor (risk rate), %	5.0%



Inputs Used

Production and Prices	2015	2016	2017	2018	2019	2020
Year Calf	0	0	1	1	1	1
Marketable calves, %	0%	90%	90%	90%	90%	90%
Steer calf weight, lbs		560	600	600	600	600
Steer calf price, \$/cwt		\$225.00	\$198.00	\$182.00	\$169.00	\$163.00
Heifer calf weight, lbs		560	600	600	600	600
Heifer calf price, \$/cwt		\$225.00	\$198.00	\$182.00	\$169.00	\$163.00
Cull cow weight, lbs		0	0	0	0	1250
Cull cow price, \$/cwt		\$80.00	\$80.00	\$80.00	\$80.00	\$80.00

Outputs

Income above annual costs, \$/year		\$0	\$434	\$369	\$283	\$213	\$180	
Nominal Cash Flows	Initial Year 0	2015 Year 1	2016 Year 2	2017 Year 3	2018 Year 4	2019 Year 5	2020 Year 6	
Net cash flow		\$0	\$434	\$369	\$283	\$213	\$180	
Cull cow salvage value		\$0	\$0	\$0	\$0	\$0	\$1,000	
Annual pre-tax cash flows		(\$2,000)	\$0	\$434	\$369	\$283	\$213	\$1,180
Cumulative value of annual pre-tax cash flows		(\$2,000)	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Discounted Cash Flows	Initial Year 0	2015 Year 1	2016 Year 2	2017 Year 3	2018 Year 4	2019 Year 5	2020 Year 6	
Present value of annual pre-tax cash flows		(\$2,000)	\$0	\$394	\$319	\$233	\$167	\$881






Outputs

Profitability Indicators

Nominal (undiscounted):



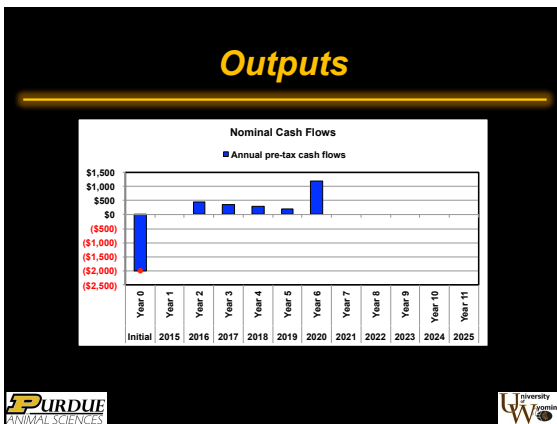
Average annual pre-tax cash flows	\$495.76
Internal rate of return (IRR)	4.9%
Payback period, years	6
Payback year	2020

Outputs

Preferred (discounted):



Net present value (NPV)	-\$7
Max bid price for replacement female to yield risk rate	\$1,993

Maximum Bid Price

Weanling Heifer; 500 lb Wwt				
Calf, no. ^a	\$400 Annual Cost ^b	\$500 Annual Cost ^b	\$600 Annual Cost ^b	\$700 Annual Cost ^b
1	829	743	656	570
2	1167	999	830	661
3	1410	1163	916	669
4	1622	1300	979	657



Bred Yearling; 500 lb Wwt				
Calf, no. ^a	\$400 Annual Cost ^b	\$500 Annual Cost ^b	\$600 Annual Cost ^b	\$700 Annual Cost ^b
1	1353	1262	1171	1081
2	1770	1593	1416	1239
3	2074	1814	1555	1296
4	2317	1979	1642	1304
5	2528	2116	1704	1291

Maximum Bid Price

Weanling Heifer; 600 lb Wwt				
Calf, no. ^a	\$400 Annual Cost ^b	\$500 Annual Cost ^b	\$600 Annual Cost ^b	\$700 Annual Cost ^b
1	983	897	810	724
2	1456	1287	1119	950
3	1818	1571	1324	1077
4	2139	1818	1496	1174

Bred Yearling; 600 lb Wwt				
Calf, no. ^a	\$400 Annual Cost ^b	\$500 Annual Cost ^b	\$600 Annual Cost ^b	\$700 Annual Cost ^b
1	1537	1446	1355	1264
2	2108	1931	1754	1576
3	2546	2287	2027	1768
4	2908	2571	2233	1895
5	3229	2817	2405	1993






Something to Think About

If weanling heifers are valued at \$1200
AND
We buy/sell 100 heifers

What's their value, if only 85% get bred?

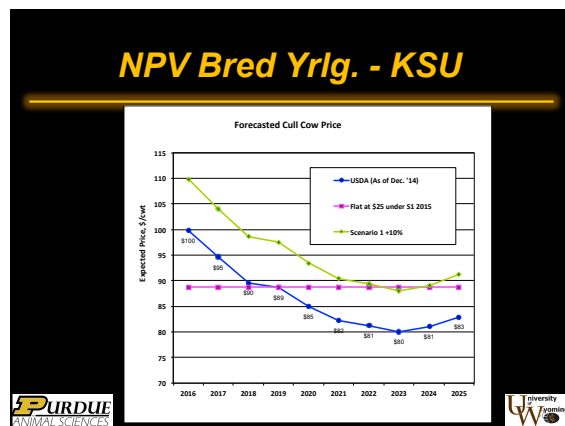
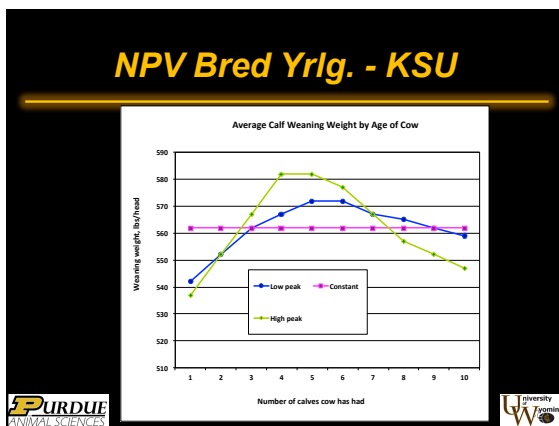
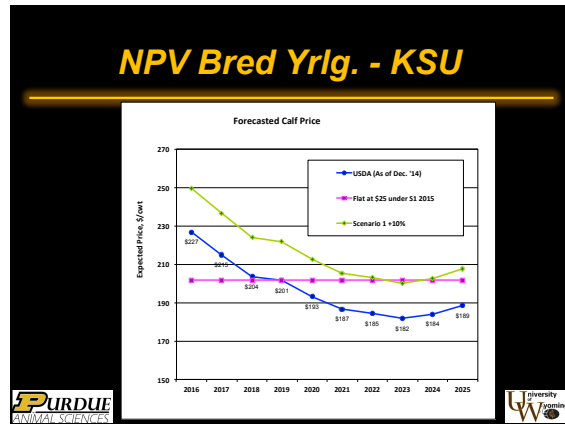
$\$1200 \times .85 = \$1020?$

We Wanted a 2nd Opinion

- **Tonsor and Dhuyvetter, 2014.**
KSU-Beef Replacements.xls
Spreadsheet Program to Evaluate the Economic Value of Purchasing Beef Replacement Heifers.

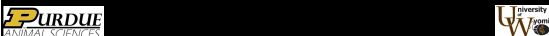
www.agmanager.info/livestock/.../beef/KSU-BeefReplacements

Print Information


NPV Bred Yrlg. - KSU

Input Assumptions			
Number of replacements purchased	100	Percent marketable calves	97.0%
Year of purchase	2015	Annual cow death loss	0.5%
First year for calf sales	2016	Annual cull rate	15.0%
Cull cow weight, lbs/head	1,250	Annual inflation rate on costs	1.0%
Annual cow costs, \$/year	\$400	Annual increase in wwt.	0.0%
Price scenario to use (USDA-Dec. '14)	1	Discount rate (interest rate)	5.0%
Weaning weight scenario to use (1)	1		



NPV Wnlg. Heifer - KSU

Calf No.	Annual Cow Cost			
	\$400	\$500	\$600	\$700
1	1833	1737	1645	1552
2	2183	2015	1847	1680
3	2354	2125	1896	1667
4	2430	2152	1873	1595
5	2386	2067	1748	1429
6	2266	1915	1563	1211
7	2099	1720	1342	963
8	1891	1491	1091	691
9	1663	1246	828	410
10	1422	990	557	125



NPV Bred Yrlg. - KSU

Results				
Calf No.	Annual Cow Cost			
	\$400	\$500	\$600	\$700
1	1925	1829	1733	1637
2	2299	2125	1950	1776
3	2481	2243	2005	1776
4	2564	2274	1984	1695
5	2518	2187	1855	1523
6	2394	2029	1663	1297
7	2219	1826	1433	1039
8	2002	1586	1170	754
9	1764	1330	895	461
10	1511	1061	612	163

- ### Our Recommendations
- These results *might not fit anyone in this room*
 - Based only on selling feeder calves at weaning
 - No value-added calf/yearling/cow prices considered
 - Run your ranch “net present value” numbers
 - Weaning weights
 - Annual cow cost
 - Calf/yearling/cow price expectations out 5 - 10 years
 - Discount needed for loan interest and family expenses

What Are They Worth?

- Assumptions: ≈ 600# wwt.

Weaning Heifer (4 Calves)	FAPRI & USDA	
Annual Cow Cost	Range in Value	Mean
400	2200 – 2400	2300
500	1800 – 2150	2000

- ### How Many Do I Keep?
- Question: “What do you think they’re worth?”
 - Can I make more money selling heifers, or keeping?
 - How much risk is the ranch willing to take?
 - Where is ranch debt?
 - What are ranch interest payments?
 - What’s annual cow cost been running?
 - Where are ranch weaning weights?
 - Can I add value beyond feeder calf prices?

- ### Based on These Simulations
- Keep only the “best” heifers
 - Keep herd genetics moving forward
 - Keep herd size constant vs. expansion
 - Consider selling heifer packages:
 - Wnlg. heifers when there are premiums
 - Bred yrlg. when there are premiums
 - Pay down debt, lower interest payments

- ### Other Useful Resources
- Tranel and Sharp – CSU spreadsheets
 - What Are Your “Cow Carrying Costs”. Cow-Calf Enterprise Budget.
www.coopext.colostate.edu/ABM/cowcarryingcosts2011.xls
 - Buying verses Raising Replacement Heifers – Weaning to Pregnancy Testing.
www.coopext.colostate.edu/ABM/heiferreplacementdecisiontool.xlsx
 - What Can You Afford to Pay for a Cow. A decision Aid for Cattle Producers v2.0.
www.coopext.colostate.edu/ABM/afford_a_cow.xls

Contacts

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