Looking Long-Term: The Value of Reproductive Efficiency in Replacements

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Due to current inventory levels the value of young cows and heifers is increasing as demand for breeding stock increases. At the time of writing this in August, the sale price of bred heifers is relative to the cost of raising replacements when considering the opportunity cost of keeping a weaned heifer calf worth $2,000. Whether buying or retaining heifers, rebuilding is going to be a large investment. Utilizing Net Present Value (NPV) can be useful in estimating if this investment is financially feasible for future profitability.

The example in Table 1 illustrates calculating the NPV for a $4,000 bred heifer with an annual production cost of $800, a cull value of $1,500, and an interest rate of 8%. The value of her calves is estimated to be $1,837 per head ($3.50/lb x 525 lbs), resulting in net returns of $1,037 per head per year. It is important to note that this example uses constant values for each year based on *record-breaking* market prices. Fluctuations in revenue, expenses, and interest rates will affect these values. It is important to estimate NPV using several different scenarios, ranging from the best scenario (calves every year, high prices, low input costs) to the worst (open years, low prices, high input costs).

Table 1. Calculating Net Present Value Example

Year	Description	Formula	Discounted Net Return
0	Initial Investment	$4,000 ÷ (1 + 0.08)^0	**($4,000.00)**
1	Future Net Return	$1,037 ÷ (1 + 0.08)^1	$960.19
2	Future Net Return	$1,037 ÷ (1 + 0.08)^2	$889.06
3	Future Net Return	$1,037 ÷ (1 + 0.08)^3	$823.20
4	Future Net Return	$1,037 ÷ (1 + 0.08)^4	$762.23
5	Future Net Return	$1,037 ÷ (1 + 0.08)^5	$705.76
5	Cull Value	$1,500 ÷ (1 + 0.08)^5	$1,020.87
	Total Present Value		**$5,161.32**
	Net Present Value	Present Value – Initial Investment	**$1,161.32**

After producing a calf every year for 5 years, this heifer has a positive NPV. A negative NPV would indicate that investing in her would not have been the most economical option. For simplicity, 5 years was the production life span, but this can be lengthened as a productive heifer will likely stay in the herd longer than that. The remainder of this article goes a step further by adjusting reproductive performance to illustrate the importance of reproductive efficiency after purchasing or investing in bred heifers.

If it is financially feasible to buy or retain replacement heifers, the investment does not stop there. The hardest year for a heifer to get rebred is with her second calf. A first-calf heifer needs to get rebred within about 83 days after calving—while still growing and raising her first calf. Investments and decisions might need to be made to ensure she gets rebred that second time because an open cow, regardless of age, often costs more than she earns overtime. A few considerations when thinking about the long-term productivity and profitability of replacements include altering forage/nutrition programs, adopting management practices such as early weaning, and implementing certain reproduction technologies.

Table 2 illustrates the Net Present Value (NPV) of buying beef cattle replacements based on purchase price and reproductive efficiency. Calf value is adjusted to $2.75/lb for 525-pound calves, and cull value is adjusted to $1.00/lb for 1,200-pound cows to provide a more "average" scenario and represent years with high and low market prices.

Table 2. Net Present Value of Beef Cattle Replacements at 10 Years of Age Based on Reproductive Efficiency

Replacement	Purchase Price of Replacement	NPV: Never Open	NPV: Open Once	NPV: Open Twice
Young, Bred Cow *(~5 years of age)*	$2,500	$887.01	($95.59)	($1,333.37)
Bred Heifer	$3,500	$847.72	($390.06)	($1,170.07)
Bred Heifer	$4,000	$347.72	($890.06)	($1,670.07)
Bred Heifer	$4,500	($152.28)	($1,390.06)	($2,170.07)

Calf Revenue: $1,444; Cull Value: $1,200; Input Costs/Cow: $800; Discount Rate: 8%

As expected, NPV declines when purchase price increases, except when comparing the young, bred cow to a $3,500 bred heifer that was open twice. This is because the bred heifer presumably stays in the herd longer, giving her more time to increase her net returns. NPV also declines when reproductive efficiency declines. The table includes young, bred cows as an alternative risk management strategy. This is not to say a young, bred cow will not come up open, especially if that is one of the reasons she is being sold. (It is important to buy replacements you can obtain history on.) However, she will be more "seasoned" than a bred heifer, meaning she may come with less risk and pressure from a rebreeding standpoint compared to a first-calf heifer.

Again, it is important to note that calf prices, cull values, and discount rates did not vary year by year in this 8-year scenario. ***The key point is that market prices will inevitably fluctuate, influencing profitability. However, not having a calf to sell results in a more significant negative impact on profitability.*** There are many factors – some controllable, some not - that influence a cow's reproductive performance. In today's market, assessing risk and adopting management strategies to increase the chances of having a calf every year is essential to making sure investments in young breeding stock lead to future returns.

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Upcoming Events
– for additional details and links to register visit our online calendar: https://rcrec-ona.ifas.ufl.edu/about/calendar/

Ona Highlight – 'Calf Value & Management: What Florida Agents Learned Visiting Texas Feedlots**'** – Oct. 14, 11:00 - 11:45 a.m. presented by Hannah Baker, state specialized extension agent, beef and forage economics, UF/IFAS Range Cattle REC, Ona and Allie Williams, Small Farms & Alternative Enterprises Agent, Hillsborough County. Attend in person at the Center or by Zoom.

Ranching Foundations – Oct. 23, 10:00 a.m. – 2:30 p.m. Seminole Tribe of Florida Cattle & Range Bldg., 15465 Reservation Road NE, Okeechobee. Fee, $20. Register on Eventbrite.

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UF/IFAS Range Cattle REC - 3401 Experiment Station Rd., Ona - http://rcrec-ona.ifas.ufl.edu/