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What Does It Cost to Develop a Replacement Heifer?[1]

Matt Hersom, Todd Thrift, and Joel Yelich[2]

The decision a beef cattle producer must address regarding raising or purchasing replacement heifers is a critical decision that will affect the long-term whole-herd cost structure. There are practical considerations and real costs that beef cattle producers need for critical assessment in order to make an informed decision whether to raise or purchase. One aspect that is often overlooked or poorly understood is the practical production costs associated with developing a replacement heifer from the cow herd. This article will highlight some of the important considerations, requirements, and inputs for developing a replacement heifer.

Capacity

The first issue to address is do you have the capacity to develop replacement heifers? Heifers are a different animal than the mature cow, and, as such, need different levels of management. Heifers require closer attention in the areas of growth, health, and nutrition to meet development program goals. Nutritional programs for heifers need to be tailored to meet the growth requirements necessary to move a 500 pound calf to an 800 pound heifer that is physiologically ready to be bred. This nutritional regime can necessitate improved feeding equipment (feed bunks, hay rings, feed storage) that might not be required for the cow herd. Heifers also require additional management inputs for health processing. Are you prepared to accept the additional labor and time investment to adequately vaccinate, observe, and treat sick heifers? Likewise, does your operation have the resources to manage heifers separately from the mature cow herd? Developing replacement heifers have different nutritional requirements, social dominance, and breeding management issues that indicate separate management from mature cows.

Genetics

When developing a replacement heifer from the existing cow herd, a number of genetic issues should be considered. First, clearly, will the potential replacement heifer be good enough to return to the cow herd, or are there better genetics to be had? How would this heifer alter the overall genetic base of the cow herd? Will she be just as good as the top 20% of herd cows, will she be average, or will she be "just another cow"? Secondly, what is the potential heifer's sire type? Is she to be from a terminal type sire? If so, this heifer may not fit the production environment that the cow herd experiences annually. Finally, bulls with lower birth weight EPD's and smaller actual birth weight should be utilized on heifers—do you have the bull power necessary to

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2. Matt Hersom, assistant professor; Todd Thrift, associate professor; Joel Yelich, associate professor; Department of Animal Sciences; Institute of Food and Agricultural Sciences; University of Florida; Gainesville 32611.

utilize on both replacement heifers and mature cows? Much of the improvement in the annual calf crop can be accomplished with improved bull selection, but turnover in the cow herd is also an opportunity for genetic improvement through the development or purchase of genetically-improved heifers.

Economics

If you've determined that you have the capacity and the cow herd has the genetic base to develop replacement heifers, the final consideration is economic. Feed costs, forage/pasture costs, and other finances need to be evaluated for long-term feasibility. Table 1 presents a simplified example of the base costs generally associated with taking a heifer from weaning through 60 days post-breeding (pregnancy check time). For this example, we will assume that we have 100 potential replacement heifers at weaning, start the development program in early November, initiate the breeding season in March, and manage these heifers through pregnancy check in late May. There will be a 1% assumed death loss, and 10% of the heifers will not be pregnant and can therefore be marketed. Note, however, that this example does not include any labor costs associated with managing the replacement heifer group, nor does it take into account the infrastructure required to manage the heifers as a separate group. The calculations are for illustrative purposes only.

Our sample estimate shows that the largest proportion (53%) of the cost is associated with retaining the calf. The calf cost is the price the producer would have received if the heifer was sold at weaning. This price will vary according to the quality of the heifers, the number of heifers marketed, and market timing. It is imperative to utilize a realistic value of the heifer.

Feed costs to develop heifers account for 33% of the total cost of production to get a heifer from weaning to breeding. Inputs include pasture rent, stored forage, and supplemental feeds. The nutritional program for replacement heifers is critically important, and keeping in mind that any number of successful nutritional programs can be used, each will have its own inherent cost structure and outcome. All other costs (health, breeding, interest, death) amount to slightly less than 5% of total cost. Therefore, key control points in determining the feasibility of raising replacement heifers are the current calf prices at weaning and projected feed costs. The cost to develop a heifer in this scenario is approximately $770. However, this scenario predicts a 90% pregnancy rate for this set of heifers; therefore, the development cost of the non-pregnant heifers has to be spread across the remaining pregnant heifers, resulting in a development cost of $885. The credit of selling the non-pregnant heifers results in a total development cost of $850.

Compare this brief analysis and your particular labor and financial situation to what purchasing a bred heifer would cost. Forage resources, supplement availability, and differences in calving season will vary these costs considerably. What is imperative is that as a beef cattle producer interested in developing replacement heifers, you are keenly aware of and can accurately determine the true costs as related to your operation. In this scenario, could bred replacement heifers of the same genetic quality be purchased for less than $850? High-cost replacement heifers will become high-cost cows in the herd in that they will have to produce more pounds of weaned calves annually to recover their development cost and return a profit to the producer. Low-cost replacement heifers will become low-cost cows and have greater potential for a greater return on investment with potential for profitability.

Table 1. Example of simple costs associated with developing a replacement heifer

Item	Amount	Description
Calf cost	$ 450.00	500 lb calf valued at $0.85/lb
Supplement	$ 71.55	Priced at $180/ton fed at 4.5 lb/heifer for 150 days and 2 lb/heifer for 60 days
Forage	$ 200.00	Hay priced at $45/900 lb bale, fed for 150 days, 4,000 total lbs offered
Mineral	$ 10.50	Mineral priced at $20/50 lbs, fed for 210 days, 2 oz./day
Total Feed	$ 282.05	210 days of feeding, heifers gaining 1.75 lb/day
Land/Pasture	$ 10.81	Opportunity cost to use land; priced at $20/acre, 0.5 acre/heifer for 5 months, and 2 acre/heifer for 2 months
Basic Health	$ 15.00	Starter vaccinations, de-worming, etc.
Breeding	$ 12.00	Bull cost
Opportunity cost	$ 6.47	Interest on calf value at weaning, 2.5% interest for 210 days (weaning-to-breeding period)
Death loss	$ 4.25	1% death loss on 100 heifers calculated at purchase
Sub-total	$ 769.92	Development cost from weaning to pregnancy check
Adjusted cost	$ 855.47	Adjusted to 90% of heifers pregnant
Credit for non-pregnant heifers	$ + 5.33	800 lb at $0.60/lb spread across the remaining 90 heifers
Total	**$ 850.14**	**Cost to take a heifer from post-weaning to late-spring pregnancy**