WesternBeef DEVELOPMENT CENTRE

FACT SHEET
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RAISING REPLACEMENTS— WHAT IS THE COST

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Introduction

The cost to develop a replacement heifer can vary from year to year and, as the industry shifts from herd contraction to consolidation to expansion, these development costs can increase. This is because approximately 50 percent of the total development costs are the heifer's value as a weaned calf when she becomes part of the replacement program. Strong feeder calf prices signal producers to expand, but those same high heifer-calf prices need to be figured into the cost of developing bred heifers.

As of September 2012, the number of heifers for breeding was just large enough to offset the culling of cows, so herd expansion was not yet underway. Market analysts at Canfax have indicated the Canadian cattle industry is in the stabilization phase, which may last four to five years before expansion occurs. We are in a time when some producers will exit the industry while others will start to expand their herd.

In a previous WBDC fact sheet, the cost of raising replacements was addressed (Larson 2011). The purpose of a new fact sheet is to provide updated information on the costs associated with raising a weaned heifer calf to bred heifer stage.

Approach

When determining the cost to develop replacement heifers, we take into consideration all the feed, grazing, and yardage from the time the heifer is weaned until pregnancy check time and the female is determined to be safely in calf. If the heifer was weaned in November, we add in all the feed and yardage costs from November until preg-check the following October/November. In addition to the feed and yardage, we add a breeding charge to cover the cost of a bull for natural breeding, and a starting value for the heifer. Even though a heifer may be home-raised, her value at weaning must be included in the development costs because there is an opportunity cost associated with keeping the heifer for a replacement - the lost revenue from not having sold her at weaning. As stated above, the cost of a weaned heifer calf can account for over half of the total cost of developing the replacement female.

Cost Estimates from U.S.

In a July 2012 *Beef* magazine article titled "Cost of Raised Replacements," Dr. Harlan Hughes discussed the costs associated with developing replacement heifers. He stated the biggest cost was "the opportunity cost of the market value of the weaned heifer calf that wasn't sold." Dr. Hughes

believes the high prices for fall 2011 weaned calves means that heifers due to have their first calf in spring 2013 may well be the most expensive heifer many producers have ever developed.

Hughes estimated that a 2011-born heifer will cost a North Dakota producer just over $1350 to develop, with 60% of that cost ($825) being the market value of the heifer at weaning time. The calculation of the $1354 involved several factors, including winter feed, pasture, and bull service costs. Costs and assumptions for Hughes's calculations are included in Table 1 for comparison with WBDC's calculations. Dr. Hughes's full article can be read online at www.beefmagazine.com.

2011-Born Replacements

Starting Value - $754
Heifer calves weaned during October through December 2011 averaged **$1.37/lb** for a 550 lb heifer (or **$753.50/hd**). In this fact sheet, we assumed the heifers were backgrounded for 197 days, from their mid-November weaning until pasture turnout on 01 June 2012.

Backgrounding (15 November to 01 June) - $290
The rule of thumb has been to have heifers weighing 65% of their mature body weight (MBW) at breeding. If the mature body weight of a cow is 1300 lb, 550 lb developed to 65% MBW pre-breeding will need to gain 1.44 lb/d to be ready for a 30 June bull turnout. Over-wintering was estimated at **$1.47/d** ($1.02/lb x 1.44 lb/d), which covered the cost of feed, bedding, mineral/salt, vet/medicine, yardage, labour, interest, and death loss for a total cost of **$290/head** ($1.47/d x 197 d) (see Table 1). Feed was based on a diet of 10 lb hay and 5 lb barley valued at $0.025/lb and $0.11/lb, respectively. Yardage (including labour) was estimated at $0.40/day.

Grazing & Bull Service (01 June to 01 November) - $151
The cost of grazing was valued at $0.60 per head per day and we assumed the heifers grazed until 01November 2012, for a total grazing cost of $92 per head. There was also a $59-per-head bull breeding charge. This charge was based upon a number of factors; the assumed purchase price of the heifer bull was $4000, and it was assumed to breed 20 heifers per year for four years. The cull value of the bull was estimated at $1330 (1900 lb x $0.70/lb). Annual feed costs for a bull were estimated at $375 per head.

The heifers were pregnancy checked in early November. We assumed an 85% conception rate. The open heifers were sold for **$1140/head** (Nov-2012 fed heifers were projected to be worth $1.20/lb x 950 lb).

Total production costs for the replacement heifer in this example were $1194 ($754 + $290 + $92 + 59) prior to adjustments for conception rate and sales of open heifers. The cost per head needed to be divided by the conception rate of 85 percent to calculate the total cost per bred heifer, which worked out to $1405 per head ($1194/0.85).

This cost needed to be adjusted once more to take the sale of opens into consideration. The culls were projected to be worth $1140 ($1.20/lb x 950 lb). The cull credit ($1140 x 0.15) brought the cost down to **$1234 per bred heifer**.

Table 1. 2011-Born Replacement Heifer Development Costs

	WBDC	Hughes[†]
Average weaning weight	550 lbs	554 lbs
Weaning date	15 Nov 2011	01 Nov 2011
Value at weaning ($1.37/lb vs. $1.49/lb)	**$754**	**$825**
Mature weight	1300 lbs	1,250 lbs
ADG[‡] over winter (197 d vs. 181 d)	1.44 lb/d	1.16 lb/d
Date to grass	01 June 2012	01 May 2012
Wintering costs ($/hd)	**$290**	**$304**
Feed	$158	$237
Bedding	$7	
Salt & Mineral	$5	
Vet & Medicine	$5	$7
Yardage/Lot Costs	$80	$18
Interest @ 5%	$20	$21
Death Loss (2.0% vs. 2.5%)	$15	$21
Grazing ($0.60/day vs. $13.60/mos)	**$92**	**$90**
Breeding Costs	**$59**	**$56**
Price of heifer bull	$4,000	$4,000
# heifers serviced	20	20
# years used	4	4
Cull weight	1900	1900
Cull price	$0.70	$0.75
Interest @ 5%	$140	$136
Annual bull feed costs	$375	$350
Subtotal	**$1,194**	**$1,275**
Heifer conception rate (%age)	85%	85%
Adjust for conception	**$1,405**	**$1,500**
Market price of open heifer ($1.20/lb x 950 lb vs. $1.20/lb x 813 lb)	$1,140	$976
Adjust for opens	**$1,234**	**$1,354**
Calculated heifer development costs (born 2011)	**$480**	**$529**

†Hughes, Harlan. 2012. "Cost of raised replacements." Market Advisor, Beef Magazine. July 2012. p. 12-14.
‡Average Daily Gain

Summary & Conclusions

The starting value of a heifer calf is the single largest cost of raising replacement heifers , accounting for 61% of the total cost estimates in this fact sheet example. Based on the assumptions in this fact sheet, the cost to develop a 2011-born bred heifer is **$1234 per head**.

The cost calculated by Dr. Harlan Hughes is $1354 per head. While WBDC's and Hughes's approaches were fairly similar, there were some differences. Most of the difference in the two calculations is due to different market values for the heifers. Dr. Hughes's numbers have been provided in this fact sheet for comparison purposes only, as they reflect market and management practices for North Dakota, which differ from western Canada.

Canadian beef replacement heifer numbers were up 3.5% at 662,200 head (01 July 2012 inventories), but these numbers are still below the long-term average inventory, suggesting we are still in the stabilization phase of the cattle cycle. This can be a time for producers to expand their herds in order to take full advantage of the anticipated expansion phase.

The numbers and costs in this fact sheet were based on assumptions and industry averages. Whenever possible a producer should use their own production and financial information to determine their own cost of raising replacement females.

References

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