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## **PURCHASING VERSUS RAISING REPLACEMENT FEMALES: TO OUTSOURCE OR NOT TO OUTSOURCE?**

By Jack C. Whittier  
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### **INTRODUCTION**

The beef cattle industry is experiencing changes in the way it does business. Some have suggested that there is more change occurring now than in any other period of the industry's history. Among these changes are indications, driven by real incentives, that more uniformity of production is evolving. Alliances and coordinated supply systems are developing that suggest - even specify - certain genetic and production parameters for those who supply calves into their production programs.

Establishing and maintaining a logical, economical, practical and effective system for replenishing the cowherd is a necessary (some would say a necessary evil) component of producing calves. Several alternatives exist for accomplishing this objective. In general, such alternatives revolve around either raising females from within the herd or purchasing replacement females from an outside source. This paper will address considerations when evaluating these alternatives.

### **OUTSOURCING AS A BUSINESS PRACTICE**

The business sector is using outsourcing – the practice of hiring another entity to do certain tasks for the company – more and more, as a practical and efficient method to improve business (Responsive Database Services, Inc. 1999, 2002; Large, J. 1999.). Below are a few quotes from the business literature that have application to the topic of purchasing or raising replacement females in beef cattle production:

- A survey on third-party logistics conducted by Penske Logistics revealed cost savings and reduced overhead are the main reasons why firms outsource logistical functions.
- Eighty-five percent of the respondents cited the desire to reduce costs as the main reason for outsourcing; while 33% cite increased efficiency as their reason for outsourcing.

- Reputation, price, the ability to solve problems, and partner were the factors usually considered when selecting a provider.
- Companies ... outsource manufacturing to specialists in certain ... processes, citing the advantages of timesavings, cost efficiencies and the ability to tap into the technological expertise of suppliers.
- Outsourcing can save time and offer companies the benefit of specialized capabilities and technologies, without the company having to make large capital investments.

One business author (Large, J. 1999) in an article titled, “Outsourcing: A New Way To Do Business,” uses logic and terminology that has direct application in beef production (emphasis added):

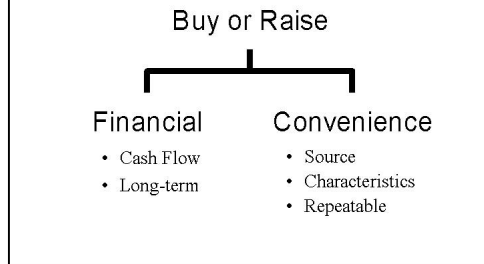
*“Corporate treasury and finance divisions globally **are under pressure to decrease cost, decline headcount, take on new work, and enhance the quality of their performance.** There is an increasing realization that the benefits of corporate treasury and re-engineering finance processes are inevitably limited and that outsourcing might be a better alternative. The inquiry for many corporate treasury and finance divisions **is not whether to outsource but when and what.** A complex task for these divisions is to evaluate what processes to outsource. First, it is important to comprehend that outsourcing is not the same as re-engineering existing processes, not whether it is the same as setting up a shared service center operated by the firm. Outsourcing for corporates is intended to **characterize between non-core and core activities in their business.** Generally, it is agreed that the main benefits of outsourcing corporate treasury and finance activities are **achieving economies of scale by decreasing operating costs and overheads; enabling the corporate to center on its core business and operate a lean operation; freeing up resources to invest in core business processes; achieving world-class expertise and experience; and freeing up senior finance and treasury management staff to utilize data rather than generating it.** Moreover, outsourcing is not just a cost-declining strategy but is becoming an **accepted tool for redefining and recentering** finance and corporate treasury divisions.”*

From this perspective, a rancher might benefit in cost saving, simplification, focus and broadening the technical input to his ranching operation by “outsourcing” all or part of the replacement heifer enterprise to another party. Conversely, certain ranches may be able to enhance their business and market their resources more effectively and profitably by becoming the source for those outsourcing replacement female needs.

## CONSIDERATIONS

The decision to buy or raise replacement females can generally be broken into two categories: Financial and Convenience (Figure 1.). Both short-term (cash flow) and long-term financial decisions must be evaluated. In addition, what I term “convenience” considerations may play an equal role in determining a management plan. A source of

Figure 1. General factors to consider in determining whether to buy or raise replacement females.



females must be found; the genetic, phenotypic and behavioral characteristics of the females must match the ranch objectives; and the experience must be repeatable with positive results from one year to the next. The customary approach for female replacement has been to select and develop heifer calves born from the cows in production on a ranch. However, certain factors have led many managers to re-evaluate their replacement female program. These include:

1. The inability to effectively and successfully incorporate the advantages of maternal and terminal heterosis into their production system.
2. The desire to reduce the number of enterprises they are required to manage, thereby allowing them to focus more attention on other things; including dealing with “non-production” pressures such as land and water use, development, and other issues that threaten their ability to survive in the ranching business.
3. A recognition that end-products produced from the calves they currently manufacture are not in step with incentives that are driving value determination in today’s beef industry.
4. Growth of maternal supplier enterprises that make high quality replacement females more assessable and often more affordable than “home-raised” replacement heifers.

## FINANCIAL CONSIDERATIONS

There is an excellent Extension Bulletin (Willett and Nelson, 1992) written by Gayle S. Willett and Donald D. Nelson at Washington State University entitled: *Analyzing the Economics of Raising versus Buying Beef Replacement Heifers*. I will not duplicate this bulletin in these proceedings. However, I will refer to many of the points listed in this bulletin, and the analytical worksheet included in the bulletin. For those interested in obtaining this bulletin, it can be ordered from Washington State University at the following web site:

<http://pubs.wsu.edu/scripts/PubOrders/webListing.asp?category=140>

This publication can also be ordered by phone at: 509/335-3564.

Willett and Nelson (1992) list the following variables in determining a herd replacement procedure. It is difficult, if not impossible to generalize about raising or purchasing replacement females since each ranch and ranch manager have different resources and goals. However, this list of variables will apply in most every decision tree.

- Interest rates on savings or other alternative uses of capital
- Interest rates on borrowed capital
- Cash flow needs
- Labor availability and costs
- Relative price difference between cull cows and heifer calves
- Reproductive rates
- Forced culling rates (those cows that must be culled each year)
- Economic restrictions on growth to weaning
- Genetic improvement potential
- Price and availability of bred replacement heifers (or cows)
- Tax implications

Using these and other variables, Willett and Nelson (1992) developed worksheets to assist producers in analyzing alternatives for buying or raising replacement females. We at Colorado State University have undertaken to computerize these worksheets using an Excel spreadsheet format. These worksheets are located on the Colorado State University Animal Science homepage at:

<http://www.colostate.edu/Depts/AnimSci/>

At this Internet site, select: Beef Cattle Resources, then select: Software and Interactive Programs. The spreadsheet can be saved to a local drive and used as a Microsoft Excel Workbook.

The worksheets consider both positive and negative financial effects if a replacement heifer is purchased rather than raised and compute breakeven values for: 1) sale price of raised heifer calf, 2) price for purchased replacement heifer, and 3) change in weaning weight needed to offset a change in replacement female procurement. Table 1 outlines an example computation for a typical ranch situation based on estimated costs and prices in Northern Colorado on November 1, 2001. The expanded example computations are also shown in the worksheet at the end of this paper.

Table 1. Example inputs and outcomes for change in net income and breakeven analysis for raising versus purchasing replacement heifers in Northern Colorado in November 2001. *(Based on Willett and Nelson, 1992)*

<b>Inputs</b>	<b>Number</b>	<b>Outcomes</b>
Sale weight of raised heifer calf	600 lbs	Breakeven sale price for raised heifer calf = \$.79
Sale price of raised heifer calf	\$.87/lb	
Operating interest rate	9.0%	Breakeven price for purchased bred replacement heifer = \$1,024.44
Hay, pasture, supplement, health, labor, and bull costs for raised heifer from weaning to pregnancy diagnosis	\$355.08	
Non-feed costs of raised heifer calf	\$65.00	Breakeven change in weaning weights from raised heifer = 46.7 lbs/head/year
Cost of purchased bred heifer	\$900.00	

Based upon the example computations outlined in Table 1, the sale price of the raised heifer calf could drop from \$.87 to \$.79 before it would cost less to raise replacements from within the herd than purchasing them at \$900 each. Conversely, a producer could pay up to \$1024.44 per bred heifer before it would be more costly to purchase than raise a replacement, using these assumptions. Another approach to understand this comparison is to consider the added amount of weaning weight, per raised heifer, per year in production to offset the financial advantage of purchasing replacements, in this scenario. In this example, it was assumed that there would be 6 years from the decision to retain the raised heifer to the sale of the last calf from that raised heifer. As shown in Table 1, raised heifers would need to produce an extra 46.7 pounds of calf per year to make an equal contribution to ranch net income.

If a ranching operation has lower cost for hay, pasture, health, etc. than the \$355.08 used here, obviously the analysis and decision would differ. It is important to recognize, however, that costs occur even when they are not direct “out-of-pocket” costs. For example, the opportunity costs of capital and related costs must be included to have accurate information on which to base a decision. Secondly, this example only considers the direct financial portrayal of the input/output scenario described. As mentioned previously, other “convenience” considerations must also be evaluated.

## CONVENIENCE CONSIDERATIONS

I do not mean to infer that factors such as source, female characteristics, and repeatability do not have financial components in the buy or purchase decision, they certainly do. However, for purposes of simplicity, I have chosen to discuss these as a separate question.

**Source**. Locating a source of replacement females that meet your objectives may be the most difficult part. Factors such as location, production environment, genetic program, animal handling practices, etc. will all play a key role in the level of satisfaction for the female purchaser. As previously mentioned, in relation to the business world, establishing a partnership relationship – formal or informal – will often facilitate these issues. When there is mutual benefit and trust, there will be more gain for both parties.

**Characteristics**. Genetic, phenotypic, and behavior characteristics all must be at or above the current level produced from heifers raised from the cow herd, if purchasing females is to be a viable management practice. There are quantitative tools such as EPDs, certification of adherence to predetermined criteria, etc. that can minimize uncertainty when moving to a purchasing option. It will be important that the purchaser knows and can accurately describe the desired characteristics to the supplier if satisfaction is to occur.

**Repeatable**. Assuming a financial analysis indicates cost savings by purchasing replacement females and that a satisfactory source of replacement females with desired characteristics is found, it will be most beneficial if this source is readily available year after year. Otherwise, some of the positive aspects of outsourcing (e.g. simplicity, time savings, etc.) may be lost.

A key component of this “repeatability” hinges on the buyer and seller having a clear and similar perception of value as compared to price. It is the nature of cattle producers to think in terms of price, in fact, lowest price. The message to become a “low-cost producer” has been preached and incorporated widely in recent years. In this context, it may be better to rephrase this as “best-cost.” In other words, paying more for the quality of replacement females that add value to your business will likely be a better management decision than purchasing the lowest price females that can be found. Certainly price and value will become critical measures of whether a source of females is repeatable.

### **CALVES, BRED HEIFERS, RE-BRED 2-YEAR-OLDS, OR COWS**

Throughout this paper I have deliberately used the term “replacement female” rather than “replacement heifer.” The decision to purchase or raise replacement females should not be limited to the mindset of only purchasing bred heifers. Because of differences in production systems and resources, there may be wide latitude in the age and stage at which the female is purchased. Associated reproductive risk will be reduced as re-bred 2-year-olds are considered when compared to purchasing heifer calves. Additionally, purchasing heifer calves will provide more time for further selection and adaptation of the female, but the benefits of managing fewer enterprises will be gone if heifer calves are purchased.

In some cases purchasing young cows may be a viable option. If the source ranch has a sufficiently stringent reproductive management system to identify and eliminate sub-fertile heifers, young cows that may have conceived late may be very acceptable to a ranch that calves later. Though less predictable, purchasing cows from areas that have experienced a drought and must decrease stocking rates may also be an option.

When comparing bred heifers with re-bred 2-year-olds, price and value also play a key role. Re-bred 2-year-olds are more likely to remain in the herd than bred heifers because they have proven their ability to conceive during the stressful year of first calving. An additional benefit for a producer using a terminal breeding program is that the re-bred 2-year-old could be carrying a calf of the same genotype as the production herd. If a contract agreement with a supplier for re-bred 2-year-olds were developed, specifying both the breed and the sire would be possible.

### **SUMMARY**

Beef production is not a simple matter. This paper has endeavored to lay out some of the considerations related to replacement female management. The decision of whether to purchase or raise replacement females is complex. However, the contemporary business and production environment of the beef business may persuade producers to consider alternatives to the manner in which they produce beef. A careful analysis of financial and convenience factors, along with experience and wisdom must be used in this decision.

If the beef industry follows other businesses, it is likely that the current increase in replacement female producing entities will continue. This specialization toward maternal multiplier operations may allow ranchers to capitalize on expertise of the supplier and develop a long-term method for outsourcing replacement females.



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Worksheets are adapted from "Analyzing the Economics of Raising Verses Buying Beef Replacement Heifers." An extension bulletin by Gayle S. Willett and Donald D. Nelson, Washington State University Cooperative Extension, Publication EBI1710.

Computerized by Jack C. Whittier, Colorado State University  
 Available at: <http://www.colostate.edu/Depts/AnimSci/>

**Worksheet 1 - Change in net income if replacement heifer is purchased rather than raised.**

**Positive Effects**

1	Enter net returns from sale of raised heifer calf		Calf Wt	<input type="text" value="600"/>	Calf Price	<input type="text" value="0.87"/>	\$	522.00
2	Enter interest on net returns from heifer calf sale		Int rate	<input type="text" value="0.09"/>			\$	58.73
3	Total added returns		Months	<input type="text" value="15"/>			\$	580.73

**Reduced Costs**

4	Enter value of hay fed to raised heifer calf		T of hay	<input type="text" value="1.75"/>	\$/T	<input type="text" value="90"/>	\$	157.50
5	Enter value of pasture grazed by raised heifer calf						\$	62.00
6	Enter value of salt and mineral for raised heifer calf						\$	13.00
7	Enter other feed costs for raised heifer calf						\$	23.00
8	Enter veterinary and medicine (including synch drugs) for raised heifer calf						\$	7.50
9	Enter value of labor and management for raised heifer calf		Hr of labor	<input type="text" value="7"/>	\$/hr	<input type="text" value="8.5"/>	\$	59.50
10	Enter raised heifer calf share of bull costs						\$	32.58

Annual bull costs		\$	782.00
Feed	<input type="text" value="410"/>		
Non-feed operating	<input type="text" value="135"/>		
Depreciation	75		
Interest	0.09		162
Purchase cost	<input type="text" value="1800"/>		
Salvage	<input type="text" value="850"/>		
		No. females	<input type="text" value="30"/>
		Months	15

\$ 65.00

- 11 Enter other non-feed costs for raised heifer calf
- 12 Enter interest on feed and nonfeed costs of raised heifer calf
  - Sum of lines 4 to 11 \$ 420.08
  - Interest 0.09
  - Months 15
- 13 Total reduced costs (sum of lines 4 to 12)
- 14 Total positive effects (line 3 + line 13)

\$ 23.63  
 \$ 443.71  
 \$ 1,024.44

**Negative Effects  
 Added Costs**

\$ 900.00  
 \$ -  
 \$ 900.00

- 15 Enter cost of purchased replacement heifer
- 16 Enter other costs of purchased replacement heifer
- 17 Total added costs (line 15 + line 16)

**Reduced Returns**

\$ 900.00

- 18 Enter reduction in returns experienced if heifer is purchased
- 19 Total negative effects (line 17 + line 18)

**Financial Analysis**

- 20 Change in net income per heifer replacement (line 14 - line 19)
- 21 Change in annual net income for the herd

\$ 124.44

Change in net income \$ 124.44  
 Number of heifers 20  
 Months 15

- 22 Average annual rate of return

\$ 1,991.01

\$ 124.44  
 \$ 900.00

15

11.1%

**WORKSHEET II - Breakeven analysis for raising verses purchasing replacement heifers**

***Breakeven Sale Price for Raised Heifer Calf***

1 Enter sale value of raised heifer calf (from worksheet 1)		\$	522.00
2 Enter total reduced costs (line 13, Wks I)		\$	443.71
3 Enter total negative effects (line 19, Wks I)		\$	900.00
4 Enter interest from sale of raised heifer calf			
Sale value of raised heifer calf	\$	522.00	
Interest		0.09	
Months		15	
5 Enter sale value plus lost interest of raised heifer calf	\$	58.73	
6 Breakeven price [(line 3 - line 2)/ line 5 * 100	\$	580.73	
	\$	0.79	\$/lb

***Breakeven Price for Purchased Replacement Heifer***

7 Positive benefits from Worksheet 1, line 14	\$	1,024.44
8 Sum other costs of purchase and reduction in returns (line 16 + line 18, Worksheet 1)	\$	-
9 Breakeven price (line 7 - line 8)	\$	1,024.44

***Breakeven change in weaning weights for raised heifer***

10 Change in net income from per replacement heifer	\$	124.44
11 Interest factor on net income change over life of heifer (from Present Value table)		4.23
Interest		0.09
Years from decision to last weaned calf		6
12 Interest factor for 1 year (from Present Value table)		0.901
13 Average price for steer and heifer calves during raised heifer's stay in the herd		0.8
13a Annual additional earning the raised heifer must produce to be as profitable as the purchased heifer	\$	37.38
14 Breakeven change in weaning weight (line 10 / (line 11 - line 12) / line 13)		46.7 lbs

