

3-2011

Beef Cow Replacement Decisions: Is Keeping Open Cows Possible?

Trenton T. Bohling

University of Nebraska-Lincoln, trenton.bohling@huskers.unl.edu

Darrell R. Mark

University of Nebraska-Lincoln, dmark2@unl.edu

Follow this and additional works at: http://digitalcommons.unl.edu/agecon_cornhusker



Part of the [Agricultural and Resource Economics Commons](#)

Bohling, Trenton T. and Mark, Darrell R., "Beef Cow Replacement Decisions: Is Keeping Open Cows Possible?" (2011). *Cornhusker Economics*. 524.

http://digitalcommons.unl.edu/agecon_cornhusker/524

This Article is brought to you for free and open access by the Agricultural Economics Department at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Cornhusker Economics by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

CORNHUSKER ECONOMICS

March 2, 2011

University of Nebraska–Lincoln Extension

Institute of Agriculture & Natural Resources
Department of Agricultural Economics
<http://agecon.unl.edu/cornhuskereconomics>

Beef Cow Replacement Decisions: Is Keeping Open Cows Possible?

Market Report	Yr Ago	4 Wks Ago	2/25/11
<u>Livestock and Products,</u>			
<u>Weekly Average</u>			
Nebraska Slaughter Steers, 35-65% Choice, Live Weight	\$90.00	\$104.00	\$112.00
Nebraska Feeder Steers, Med. & Large Frame, 550-600 lb.	122.03	146.75	152.22
Nebraska Feeder Steers, Med. & Large Frame 750-800 lb.	102.16	126.11	129.31
Choice Boxed Beef, 600-750 lb. Carcass.	149.62	173.25	169.90
Western Corn Belt Base Hog Price Carcass, Negotiated.	69.93	80.41	80.76
Feeder Pigs, National Direct 50 lbs, FOB.	70.22	*	*
Pork Carcass Cutout, 185 lb. Carcass, 51-52% Lean.	72.93	87.79	91.77
Slaughter Lambs, Ch. & Pr., Heavy, Wooled, South Dakota, Direct.	*	164.75	172.50
National Carcass Lamb Cutout, FOB.	260.35	348.73	361.89
<u>Crops,</u>			
<u>Daily Spot Prices</u>			
Wheat, No. 1, H.W. Imperial, bu.	3.90	7.66	7.58
Corn, No. 2, Yellow Omaha, bu.	3.61	6.36	7.02
Soybeans, No. 1, Yellow Omaha, bu.	9.38	13.66	13.31
Grain Sorghum, No. 2, Yellow Dorchester, cwt.	5.71	10.59	11.68
Oats, No. 2, Heavy Minneapolis, MN, bu.	2.21	3.96	3.87
<u>Feed</u>			
Alfalfa, Large Square Bales, Good to Premium, RFV 160-185 Northeast Nebraska, ton.	135.00	130.00	130.00
Alfalfa, Large Rounds, Good Platte Valley, ton.	87.50	72.50	72.50
Grass Hay, Large Rounds, Premium Nebraska, ton.	*	*	*
Dried Distillers Grains, 10% Moisture, Nebraska Average.	105.00	195.50	204.25
Wet Distillers Grains, 65-70% Moisture, Nebraska Average.	35.00	66.00	68.75
*No Market			

In the past few years, some cow-calf producers have encountered abnormally large numbers of open, or unbred, cows in their herd. A couple of years ago, trichomoniasis, a venereal cattle disease spread by bulls, contributed to high percentages of open cows. This year, open cows are again showing up in herds, hypothesized to partially be the result of difficult winter conditions last winter and “washy” grass early last summer. In some cases, 40-70 percent of a cow herd has tested open, leaving producers to determine how best to replace these animals. Typically, options considered to replace these open cows are retaining heifers from within the herd, or purchasing bred heifers or cows.

When an otherwise fertile and productive cow becomes open, keeping the open cow has rarely been considered an option. In agreement with normal industry practices, research highlighted by Azzam and Azzam (1991), and Frasier and Pfeiffer (1994), has disregarded the potential of keeping an open cow and recommended culling any open female. However, Ibendhal, Anderson, and Anderson (2004), recognized that price differentials between cows and replacement heifers, when incorporated with calf income and feed costs, may influence the feasibility of keeping an open cow and rebreeding it the following year.

Recent trends in cattle prices have created a unique situation that suggests the need for an updated analysis on the best replacement options for large percentages of open cows. Five-year discounted cash flow budgets are useful in determining the feasibility of a particular decision. In this project, budgets were created to calculate the annual costs of retaining replacement heifers, purchasing bred heifers or purchasing cows, as well as the alternative of keeping an open cow. The latter



(open cow budgets) reflect lower annual cow carrying costs (feed expenses plus operating costs) for an open cow, which has lower nutritional requirements.

In a case study of a typical Nebraska Sandhills 100-head cow herd, Figure 1 (on next page) shows the 5-year discounted cash flow values for the three methods of common replacements, as well as keeping the open cows. Based on Winter 2011 prices, the results show the long-term feasibility of the different alternatives at differing open cow rates. Herd inventories were calculated for each alternative at differing open cow rates to calculate annual expenses and the income generated by the herd. All of the open cows were culled in the first year of analysis and completely replaced by: retaining heifers (Alternative 1); purchasing bred heifers (Alternative 2); or purchasing bred cows (Alternative 3). Alternative 1 only allows for normal replacement rates to enter the herd in the first year, thus not allowing the target herd size of 100 in Year 1 if over 25 percent of the herd is open. However, in all but the 100 percent open cow rate scenario, the herd is returned to 100 cows within the 5-year cash flow study in Alternative 1.

As expected, the discounted total 5-year cash flow values decrease as the herd's open cow rate increases from zero to 100 percent. However, Alternative 1 (retaining heifers) actually is substantially higher at the 100 percent open cow rate. This is because all open cows are culled in Year 1 (at the current market price), and there is a large influx of cash. This gain in Year 1 is not reinvested quickly if the producer is retaining heifers from within the herd, thus the cash from the cull cows in Year 1 is still having considerable effect on the total returns. However, negative annual cash flows are noted in later years.

The zero percent open cow rate still recognizes a normal culling practice for all alternatives, where 20 percent of the herd is culled annually and replaced with the respective alternatives. This suggests that at the zero percent open cow rate for all scenarios the values should represent the likely cash flow outcome of a normal herd. However, the historically high bred heifer prices this winter cause Alternative 2 to have significantly lower returns than the other alternatives, yet still profitable at normal open cow rates.

As Figure 1 shows, current prices suggest positive five-year returns for most replacement alternatives at open cow rates up to 50 percent. More interesting is the fact that Alternative 4 (keeping open cows) is not the least desirable alternative at any open cow rate. Purchasing bred cows has a substantial long-term profit

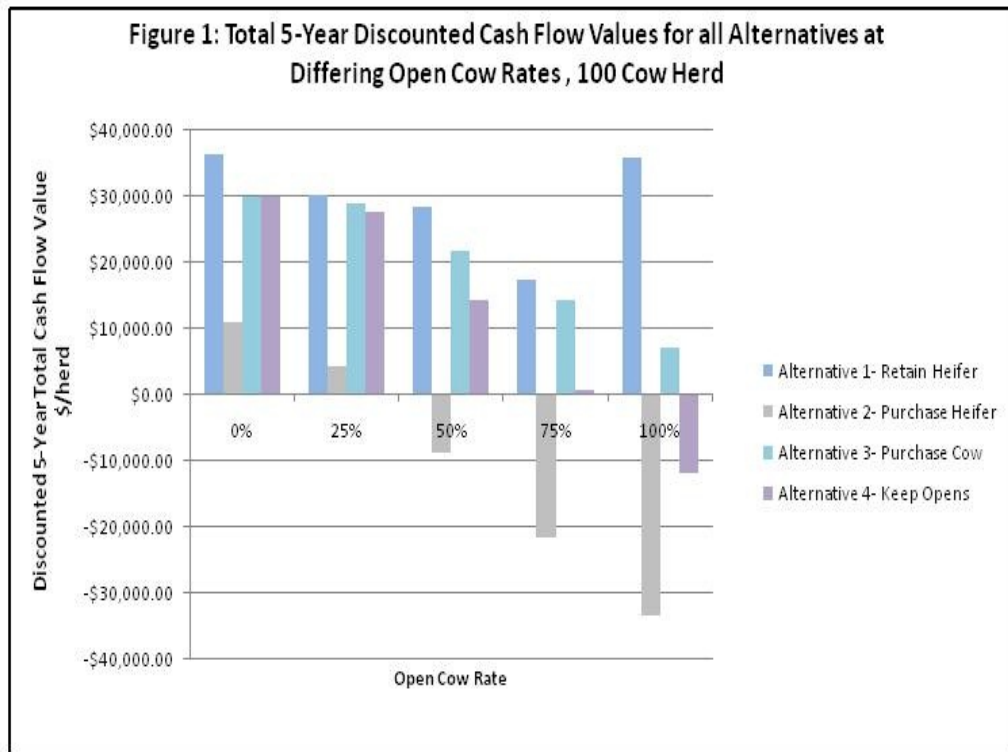
advantage compared to purchasing bred heifers, given the productivity assumptions made and the relative prices used in this study. However, it does result in the producer having a more mature herd. This has both positive and negative implications that must be considered on a case-by-case basis.

Keeping the open cow is profitable in the 5-year case study at the 50 percent open cow rate or lower. Note that even in the alternative of keeping open cows, normal culling and replacement with bred cows is still occurring, so fewer open cows are kept than implied by the percent open. Thus, Alternative 4 is typically similar to Alternative 3 when lower levels of cows are open. The margins between Alternatives 1, 3 and 4 suggest that either of these replacement strategies, or combinations thereof, could be a profitable alternative at open cow rates of less than 50 percent. When open cow rates are at much higher levels, keeping open cows is less attractive, relative to the other replacement alternatives. The annual cash flows of Alternatives 2, 3 and 4 in the fifth year of analysis are at profitable levels, suggesting the herd has returned to normal, but the average return for the first five years is negative for these alternatives (Figure 1).

This case study of a Nebraska Sandhills herd suggests there is some merit in considering keeping open cows and foregoing a year's production, versus purchasing or retaining bred stock. When less than 50 percent of the herd is open and normal culling and replacement still occurs, keeping open cows is not the lowest return replacement strategy. As the price difference between cull cows and purchased cows/heifers narrows, relative returns to Alternative 4 will increase. There are additional implications for herds with a high genetic investment (e.g., a seedstock operation), in that higher valued cattle may further improve the attractiveness of keeping an open cow. Additional research related to the decision to keep open cows will be forthcoming.

References:

- Azzam, S.M. and A.M. Azzam. "A Markovian Decision Model for Beef Cattle Replacement That Considers Spring and Fall Calving." *Journal of Animal Science*. 69(1991): 2329-2341.
- Ibendahl, G.A., J.D. Anderson and L. H. Anderson. "Deciding When to Replace an Open Beef Cow." *Agricultural Finance Review*. 6 (2004): 61-74.
- Fraiser, W.M. and G.H. Pfeiffer. "Optimal Replacement and Management Policies for Beef Cows." *American Journal of Agricultural Economics*. 76(November 1994): 847-858.



Trent Bohling
 Graduate Research Assistant
 Dept. of Agricultural Economics
 University of Nebraska-Lincoln
trenton.bohling@huskers.unl.edu

Darrell R. Mark, (402) 427-1796
 Extension Livestock Marketing Specialist
 Dept. of Agricultural Economics
 University of Nebraska-Lincoln
dmark2@unl.edu