Economic Impact of Beef Cattle Best Management Practices: Restocking Strategies

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Abstract

A prolonged 2011-2013 drought and poor grazing conditions in South Texas caused cattle producers to destock herds to minimize feed bills and take advantage of high cattle prices. As forage conditions recover, producers should closely evaluate their herd restocking options to optimize long-term profitability.

Introduction

Cow-calf producers in South Texas have endured an exceptionally severe drought since 2011. High feed and hay prices were tempered somewhat by the high market prices for calves and cull bulls and cows. Many producers opted early to partially or fully destock to take advantage of the high prices and avoid feeding costs. However, high values for calves and cull animals persist and have translated into higher replacement costs.

As grazing conditions improve, producers will be evaluating restocking alternatives to determine their "best management practices" or strategies to rebuild their cow herd, sustain herd performance, and ensure profitability. Herd replacement options include buying open or bred heifers, pairs or open cows.

Data and Assumptions

A 2,000-acre traditional (200 cows, 8 bulls) cow operation with average prices and typical inputs is assumed. Five scenarios of 16 described by Gill, et al (unpublished) were evaluated: 1) open heifers; 2) bred heifers; 3) young pairs (2+ year old cows); 4) older pairs (6+ year old cows); and 5) older open cows. These represent choices in age (young vs. old) and reproduction status (open, bred or pairs) that may yield financial differences in restocking costs. Quality and availability of cattle were not considered in this study and could alter the results. It is assumed that the ranch was totally destocked due to drought and restocked to 200 cows in 2013.

The base year for the 10-year analysis of the representative ranch is 2013 and projections are carried through 2022. The initial cattle prices used were from the Live Oak Livestock Commission Company auction report in Three Rivers, Texas, for April 3, 2013. The projections for commodity and livestock price trends were provided by the Food and Agricultural Policy Research Institute (FAPRI, University of Missouri) with costs adjusted for inflation.

In scenarios 1 (open heifers) and 2 (bred heifers), additional development costs--$13/heifer for vet expenses and $15/heifer additional protein feed costs--in the first 2 years after purchase were assumed. Retained cattle proceeds from de-stocking available for purchasing replacements is $95,000 in each scenario. The additional capital needed to purchase cows and bulls in each scenario is financed at 6.0% for five years. Assets, debts, machinery inventory, and scheduled equipment replacements for the projection period were the same in all management scenarios.

Specific assumptions and inputs related to cow age distribution was adapted from Azzam, et al (1990), and cow culling rates were adapted from Greer, et al (1980) and Rohrer, et al (1988). Weaning weights of calves by various ages are based on research results from Leighdon, et al (1982). Inputs regarding calving rate, weaning rate death loss and value are based on TAMU research & extension results (Table 2). The ranch pregnancy tests cows and BSE tests bulls.

Methodology

The methodology involves a ten-year financial simulation of returns to the ranch using stochastic cattle prices and weaning/sale weights. Scenarios compare the financial performance of a cow-calf operation restocking a herd assuming the five replacement scenarios.
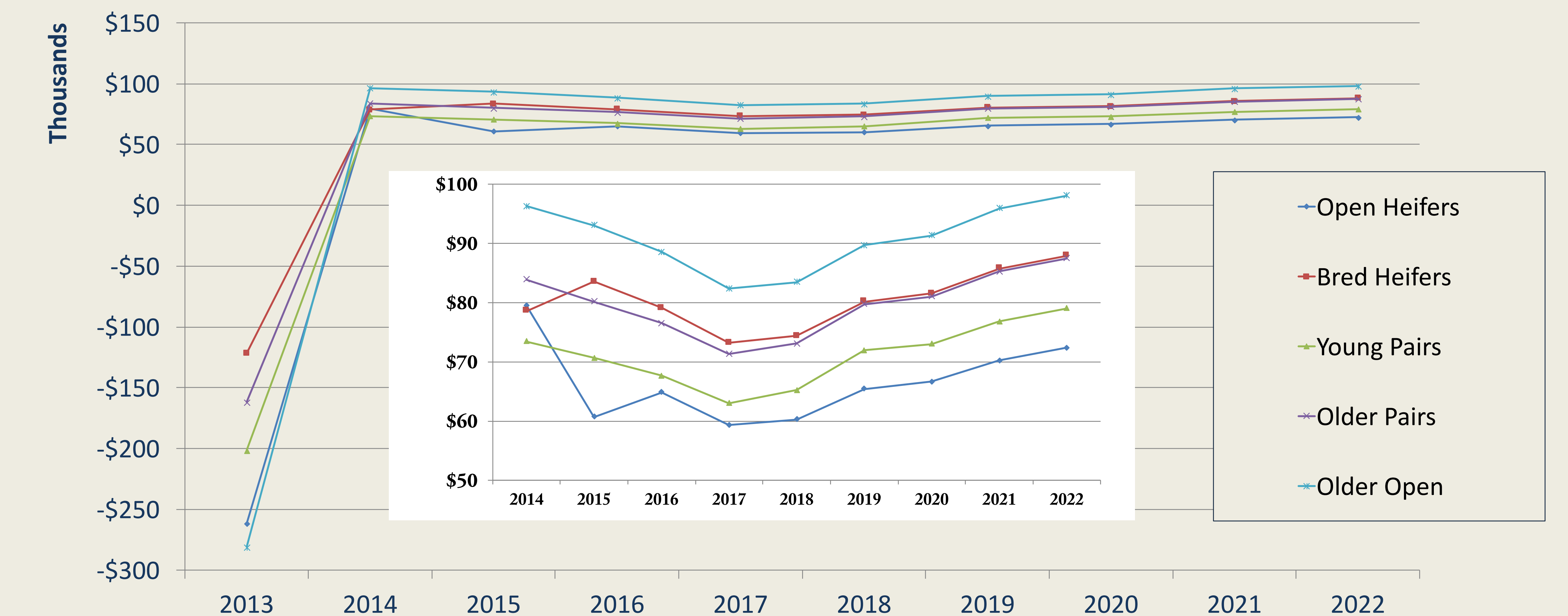
Table 1: 2013 General Assumptions, South Texas Representative Ranch

Selected Parameter	Assumptions
Operator Off-Farm Income	$24,000/year
Spouse Off-Farm Income	$35,000/year
Family Living Expense	$30,000/year
Cattle Replacement Capital	$95,000
Native Pasture	1,800 acres
Improved Pasture (Bermuda)	200 acres
Ownership Tenure	100%
Royalty Income	Not Included
Hunting Income	$10/acre
Herbicide/Acre (Native Pasture)	$0.83
Herbicide/Acre (Bermuda)	$7.53
Fertilizer/Acre (Bermuda only)	$18.00
Herd Size (Initial)	200 Cows, 8 Bulls
Vet, Medicine & Supplies	$25/cow
Salt/Mineral blocks/Year	$26/cow
Steer Weaning Weights	550 lbs.
Heifer Weaning Weights	500 lbs.
Steer Prices (275 wt.; 550 wt.)	$1.60/lb.
Heifer Prices (250 wt.; 500 wt.)	$1.45/lb.
Cull Cow Prices	$.90/lb.
Cull Bull Prices	$1.00/lb.
Replacement Bull Prices	$3,000/head
Hay Prices (2011, 2012, 2013)	$120/ton
Range Cube Prices	$.20/lb.
Pregnancy Testing	$6.50/cow
Bull Testing	$57.63/bull

Table 2: Specific Assumptions, South Texas Representative Ranch (200 Cows)

Cow Herd Replacement Scenarios	Selected Parameters		
	Calving Rate	Cow Culling Rate/Year	2013 Replacement Prices/Head
1-Open Heifers	2013: 0%; 2014: 90%; 2015: 80%; 2016-22: 85%	15%	$900
2-Bred Heifers	2013: 90%; 2014: 80%; 2015-22: 85%	15%	$1,000
3-Young Pairs	2013: 95%; 2014-22: 85%	15%	$1,400
4-Old Pairs	2013: 95%; 2014-22: 85%	20%	$1,250
5-Open Cows	2013: 0%; 2014-22: 85%	20%	$1,000

Table 3: Projected Annual Financial Indicators (2013-2022)

Scenario	10-Year Averages				Cumulative 10-Yr Cash Flow ($1000)
	Total Cash Receipts ($1000)	Total Cash Costs ($1000)	Net Cash Farm Income ($1000)	Net Cash Farm Income/Cow ($1000)	
Open Heifers	172.11	138.35	33.75	0.169	557.49
Bred Heifers	203.91	143.66	60.24	0.301	748.04
Young Pairs	208.26	164.35	43.91	0.220	626.02
Old Pairs	224.05	168.38	55.67	0.278	706.59
Open Cows	206.13	152.37	53.76	0.269	679.43

Results

Restocking strategies after a drought can have a significant impact on profitability and performance. Bred heifers or older pairs may offer the most effective strategies where herds ere totally destocked. Lower initial capital outlay to repurchase cattle coupled with a calf to sell the first year improves NCFI. Open heifers may be the least profitable way to go due to no calf the first year to sell and development costs.

Actual results will vary by producer, management practices, forage conditions, and cattle markets. Also, the class or quality of beef females that is optimal to restock with may also vary. This analysis should be used only as a guide in evaluating restocking options and it should be remembered that the best restocking scenario may change from season to season.

References
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Figure 1. Net Cash Farm Income