FARM Assistance Focus

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Economic Impact of Beef Cattle Best Management Practices: Restocking Strategies

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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 ranching profitability.

Cow-calf producers in South Texas have endured 30 or more months of exceptionally severe drought. 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 to avoid feeding costs. However, high values for calves and cull animals persist and have translated into higher replacement costs.

Although the drought still persists in many parts of South Texas, some areas have received adequate rain and have improving forage conditions. 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 ranching profitability. Herd replacement options may include buying open or bred heifers, pairs or open cows.

Assumptions

The Financial And Risk Management (FARM) Assistance strategic planning model was used to illustrate the individual financial impacts of stocking practices by South Texas ranchers. Five scenarios of 16 described by Gill, et al 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 five scenarios (or some combination) are likely paths to restocking by most ranchers in South Texas. They 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 conditions.

The 2,000-acre ranch in this model consists of 1,800 acres of native pasture and 200 acres of established Coastal Bermuda grass used for grazing. The cow herd includes 200 cows (1 animal unit to 10 acres) and 8 bulls (1 bull to 25 cows). The general assumptions are given in Table 1. Production inputs, yields, cost, and estimates for overhead charges were based on typical rates for the region. 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. The income from hunting was $10/acre, annually. Remaining 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. The assets, debts, machinery inventory, and scheduled equipment replacements for the projection period were the same in all management scenarios. It is assumed the ranch has only intermediate term equipment debt prior to financing the cattle purchase. Cattle prices used were from the Live Oak Livestock Commission Company auction report in Three Rivers, Texas, for April 3, 2013.

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

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/acres
Herbicide/Acre (Native Pasture)	$0.83
Herbicide/Acre (Bermuda)	$7.53
Fertilized /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.; 550wt.)	$1.60/lb.
Heifer Prices (250wt.; 500wt.)	$1.45/lb.
Cull Cow Prices	$0.90/lb.
Cull Bull Prices	$1.00/lb.
Replacement Bull Prices	$3,000/head
Hay Prices (2011, 2012, 2013)	$120/ton
Range cube Prices	$0.20/lb.
Pregnancy Testing	$6.50/cow
Bull Testing	$57.63/bull

value are based on TAMU research & extension results (Table 2). The ranch pregnancy tests cows and BSE tests bulls. It was assumed that the operation restocks to full capacity or 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 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. Representative measures, including profitability and liquidity, were chosen to assess the financial implications of each scenario. Profitability measures the extent to which a farm or ranch generates income from the use of its resources. Net cash farm income (NCFI) includes the purchase/sale of breeding livestock, but does not include non-cash expenses such as depreciation. Net Farm Income, considered a more accurate measure of profitability, includes non-cash expenses, but does not count the longer-term capital purchase/sale of breeding livestock. Liquidity measures the ability of a farm or ranch to meet its short-term financial obligations without disrupting the normal operations of the business. The liquidity of the operation may be measured by the ending cash balance which is net of taxes. Each measure provides information with respect to the projected variability in the ranch's financial position and performance. When taken as a whole, the analysis provides insight into the risk and return expectations of the ranch throughout the 10-year planning horizon under each management practice.

Results

Comprehensive financial projections for each management scenario are illustrated in Table 3. This table represents the average outcomes for net cash farm income, cash flow and other selected financial projections during the 10 years (2013-2022). Additionally, Figure 1 graphically illustrates the range of possible variation in Net Cash Farm Income for the 5 scenarios. The graphic in-lay in Figure 1 uses a smaller scale to better highlight and compare NCFI for each scenario for the 9 years (2014-2022) after the initial capital outlay.

All five restocking strategies offer the potential to generate bottom line profits as forage conditions allow the cow herd to be restored (Table 3 and Figure 1). The initial capital outlay to replace the herd has a major impact on the 10-year average bottom-line for each replacement strategy.

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% 2016-2022: 85%	15%	$900
2-Bred Heifers	2013: 90% 2014: 80% 2015-2022: 85%	15%	$1,000
3-Young Pairs	2013: 95% 2014-2022: 85%	15%	$1,400
4-Old Pairs	2013: 95% 2014-2022: 85%	20%	$1,250
5-Open Cows	2013: 0% 2014-2022: 85%	20%	$1,000

Results indicate that several factors, including ongoing replacement costs, development costs, calving rate, cow culling rate, and first year calves for sale, come into play in evaluating the different scenarios. Scenario 2 (bred heifers) has the highest potential for net cash farm income (NFCI) at $60,240 or $301/cow, followed by Scenario 4 (old pairs) with $55,670 or $278/cow (Table 3). The advantage of bred heifers over the other strategies is largely due to having a first year calf for sale along with a lower expected cow culling rate due to age and lower replacement prices (Table 2).

Scenario 1 (open heifers) had the

Table 3: Projected 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

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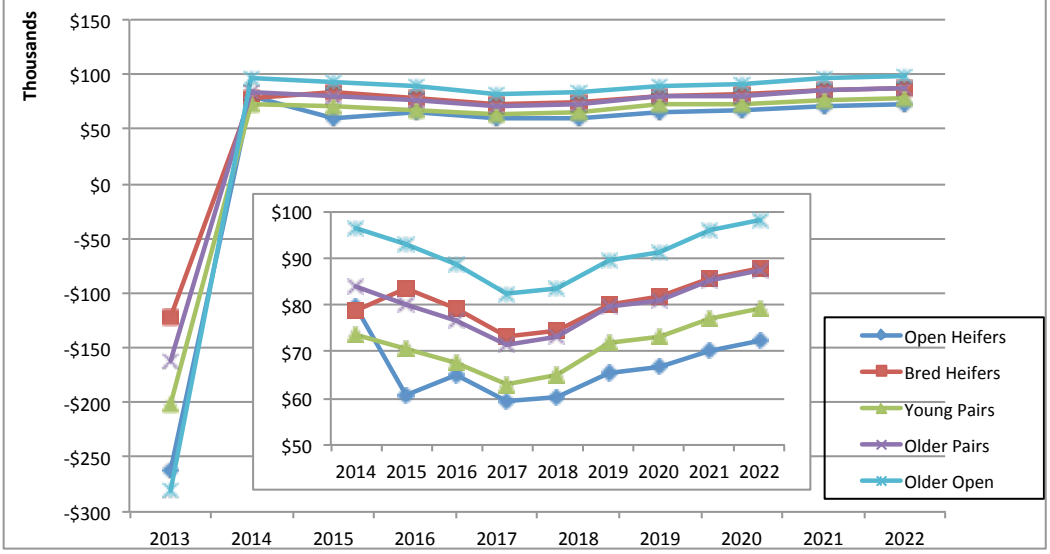
Re-stocking strategies after a drought can have a significant impact on near-term and long-term profitability and performance.

Figure 1. Net Cash Farm Income



lowest expectations for NCFI with $33,750 or $169/cow. This largely reflects no calf the first year and development costs the first two years. In Scenario 3 (young pairs), replacement prices have the most significant impact on profitability. NCFI in Scenario 4 (old pairs) is impacted by higher replacement costs and a high culling rate. Scenario 5 (open cows) is less due to no calf for sale in first year and a high culling rate. It is interesting to note that Scenario 5 has the highest NCFI of any scenario after the first year (Figure 1). This is somewhat due to projected cull cow prices recovering more of the initial purchase cost of open cows compared to the other four strategies. In Scenario 1 (open heifers), ongoing development costs and no calf sold the first year purchased involving annual replacements continue to reduce profitability.

The operation begins the first year of each scenario with a cash balance of $10,000, and if profitable, accumulates cash over the 10-year period. The cumulative after-tax, 10-year cash flow for each scenario reflects a direct correlation to average NCFI. Cumulative cash flow or reserves at the end of the 10-year projections for Scenario 2 is $748,040, compared to only $557,490 for Scenario 1. It is worth noting that off-farm income and hunting contributes substantially to the cash flow of the ranching business; however, this effect is present in all scenarios.

Implications

The financial performance and condition of a typical South Texas cow-calf operation is normally supported by some off-farm income, hunting, and other sources of income. However, re-stocking strategies after a drought can have a significant impact on near-term and long-term profitability and performance. Restocking with bred heifers or older pairs may offer the most effective strategies where herds are 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.

This example ranch is provided to show the bottom-line impacts for a reasonable set of assumptions about restocking choices. A good manager will evaluate and implement the best stocking strategy in a drought and coming out of a drought to improve the overall financial performance of the ranch and minimize overall risk.

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