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**Evaluating Beef Cattle Best Management Practices: Conversion to Grass-Fed Beef**

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**Abstract:**

Commercial cow-calf producers in Texas have traditionally had three marketing options: livestock commission companies, private treaty sales, or retained ownership (stockers/feeders). Most calves are placed on wheat or other forage for conditioning with some sold as herd replacements. Grass-fed beef may be a viable, alternative management practice for improving profitability.

**Introduction:**

Conversion to a grass-fed beef operation may require operational adjustments such as reducing cow numbers and forage improvement unless additional land resources are bought or leased. Cow numbers may need to be reduced to accommodate grazing weaned calves for an extended period and to higher weights if no additional land is acquired. Forage availability may also need to be enhanced with improved pasture and/or annual crops to ensure adequate grazing. By using artificial insemination (AI), herd bulls can be eliminated allowing for more cows to be maintained as well as improving genetics and meat quality.

The availability of production and marketing information regarding the conversion and establishment of a grass-fed beef operation is limited. This study analyzes the financial implications of converting a traditional cow-calf herd to a grass-fed beef operation to improve profitability and financial performance. Major changes to forage and the options of natural and organic beef production were not considered in this study.

**Data and Assumptions:**

The data and assumptions for this study are based on a model 200-cow operation with average prices and typical inputs in Texas.

Initial, local cattle prices used were from the Live Oak Livestock Commission Company auction report in

Three Rivers, Texas, for July 10, 2012. Weight gain and death loss assumptions in the scenarios were based on research conducted by Texas A&M AgriLife Research and Extension Service. The base year for the 10-year analysis is 2012 and projections are carried through 2021. Commodity and livestock price trends follow projections provided by the Food and Agricultural Policy Research Institute (FAPRI, University of Missouri) with costs adjusted for inflation over the planning horizon.

The grass-fed scenario assumes that conversion occurs in 2012. Cow numbers are reduced to 120 head as calves are weaned and all bulls are sold. The 40% reduction in cow numbers was an estimate to compensate for additional forage required to graze calves to larger weights in a grass-fed operation and maintain an equivalent 1:10 stocking rate. In 2012, calves in the traditional cow-calf operation are born Mar-May and 168 head are sold 7 months later in November-December. AI is initiated in May with estrus synchronization. Ten cows per month are synchronized and bred to ensure producing a steady monthly supply of calves year round. The first AI calves are born in February 2013 and weaned in September.

It is assumed that only 6-7 cows are bred in the first AI attempt in May 2012 requiring the remaining 3-4 to be re-synchronized and rebred again. As the operator's AI skills improve, 9 cows are bred per month producing a 90% calving rate. The total number of cows bred in 2012 is 51, 99 in 2013 and 108 in 2014. Open cows (12/year) are culled after two synchronization attempts.

Grass-fed calves are grazed approximately 300 days to 1,000 lbs, assuming a 1.5 lb/day average weight gain. Annual supplemental hay and protein feed requirements were increased in 2013 and again thru 2014-2021 to compensate for the additional grass-fed animals. Assuming a 2% death loss (1% at birth and 1% pre sales), the number of grass-fed calves marketed is 0 in 2013, 51 in 2014, and 106 annually in 2015-2021.

While a 1,000-lb sale weight and \$3.00/lb market price for grass-fed cattle are targets, these levels may or may not be obtained every year due to the risk of drought conditions and low-performing calves. If forage conditions deteriorate in a grazing cycle, calves may have to be sold at lighter weights. Average market weight over a 10-year period was adjusted 10% down to 900 lbs to reflect "forage" risk. Calves not making the quality grade or size requirements would be sold at discount. Average prices were adjusted down to \$2.75/lb.

**Methodology:**

The methodology involves a ten-year financial simulation of returns to a 2,000-acre traditional (200 cows, 8 bulls) ranch and a grass-fed operation (120 cows, 0 bulls) using stochastic cattle prices and weaning/sale weights. Scenarios compare the financial performance of maintaining the traditional cow-calf operation and conversion to a grass-fed beef operation.

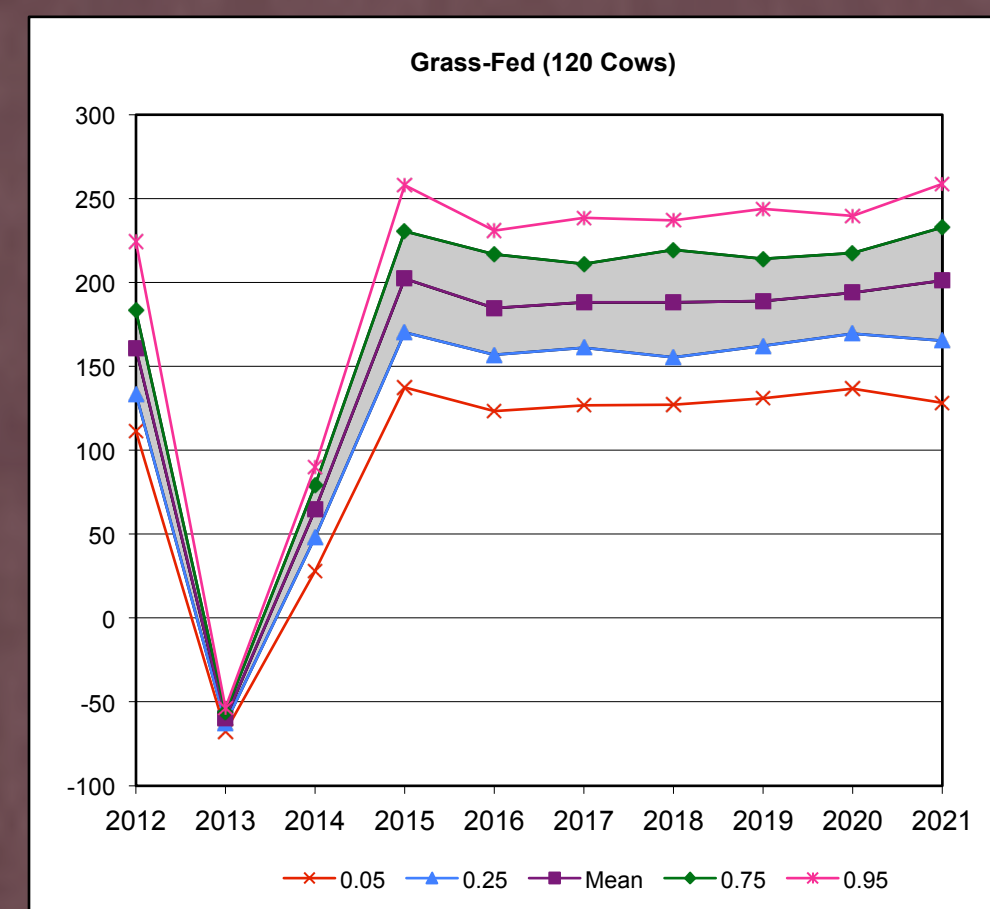
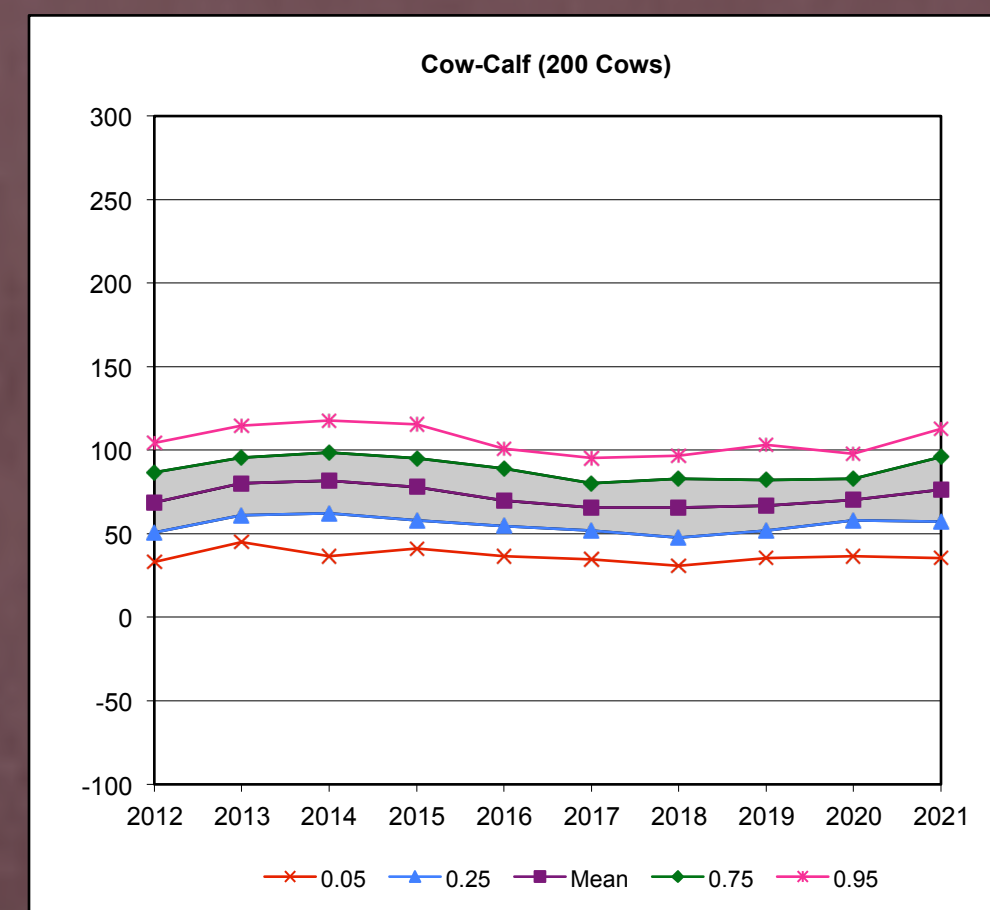
**Results:**

The financial performance and condition of a typical cow-calf operation is normally supported by off-farm income, hunting, and other sources of income. Grass-fed beef production using AI may be a viable option for value-added production to improve profitability. Actual results will likely vary by producer, herd genetics, forage conditions, management practices, and cattle markets, but this example is provided to show the bottom-line impacts for a reasonable set of assumptions. Moreover, value-added grass-fed marketing will require a significant level of market development and management to achieve the price and sales assumptions in this scenario.

**Table 1: 2012 General Assumptions for 200-Cow Traditional & 120-Cow Grass-Fed Operation**

Selected Parameter	Cow-Calf	Grass-Fed	Selected Parameter	Cow-Calf	Grass-Fed
Operator Off-Farm Income	\$24,000/year	2012-13 only	Grass-Fed Sale Weight	N/A	1,000 lbs.
Spouse Off-Farm Income	\$35,000/year		Steer Prices	\$1.60/lb. in 2012	
Family Living Expense	\$30,000/year		Heifer Prices	\$1.50/lb. in 2012	
Ownership Tenure	100%		Cull Cow Prices	\$.90/lb. in 2012	
Ranch Size	2,000 acres		Cull Bull Prices	\$1.10/lb. in 2012	
Hunting Income	\$10/acre in 2012		Open Cow Prices	\$1,250/head	
Part-Time Labor	\$2,4000/year	\$4,920/year	Replacement Bull Prices	\$2,500/head	N/A
Herbicide Costs/Acre	\$1.50		Grass-Fed 2012 Sale Price	N/A	\$3.00/lb.
Herd Size (Cows)	200	120	Hay Prices	\$120/ton	
Number of Bulls	8	N/A	Cotton Seed Hulls Prices	\$.15/lb.	
Cow Herd Replacement	Open Cows		Pregnancy Testing	\$6.50/cow	\$7.00/cow
Vet, Medicine & Supplies	\$15/cow	\$20/cow	BSE Testing	\$57.63/bull	N/A
Salt/Mineral blocks/Year	\$26/cow	\$43/cow	AI Blood Test	N/A	\$2.50/cow
Hay Fed/Cow/Year	1.0 ton in 2012		AI Synchronization Shot	N/A	\$16.50/cow
Protein Fed/Cow/Year	200 lbs. in 2012		AI Semen & Shipping	N/A	\$16.46/cow
Cow Culling Rate/Year	10.0%		AI Labor	N/A	\$12/cow
Calving Rate	85%	90%	Liquid Nitrogen/Year	N/A	\$1.67/cow
Bull/Steer Weaning Weights	550 lbs.		Semen Tank	N/A	\$600
Heifer Weaning Weights	525 lbs.		AI Equipment	N/A	\$200

**Figure 1. Projected Variability in Net Cash Farm Income for Traditional Cow-Calf and Grass-Fed Beef Production**



**Table 2: Projected Annual Financial Indicators ( 2012-2021)**

Scenario	10-Year Averages				Cumulative 10-Yr Cash Flow (\$1,000)
	Total Cash Receipts (\$1,000)	Total Cash Costs (\$1,000)	Net Cash Farm Income (\$1,000)	Net Cash Farm Income/Cow (\$1000)	
Cow-Calf (200)	182.22	109.83	72.38	0.362	749.49
Grass-Fed Beef (120)	249.74	98.46	151.28	1.261	1,027.94

