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FARM Assistance Focus

Texas A&M AgriLife Extension

Economic Impact of Beef Cattle Best Management Practices in South Texas:

Purchasing vs. Producing Hay

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Producing hay and owning the baling equipment may be more profitable than having it custom cut

In South Texas cow-calf operations, overstocking and variations in rainfall and forage conditions mean that cattle often must be fed supplemental hay or range cubes, which increases operating costs and affects a ranch's profitability. An analysis of five scenarios on the financial impact of purchasing vs. producing hay showed that

- Buying hay may be more beneficial to producers in an average year.
- Producing hay and owning the baling equipment may be more profitable than having it custom cut.
- Owning haying equipment and custom cutting hay for other producers can supplement net income and be a better alternative than just buying hay.

The analysis by the Texas AgriLife Extension Service was produced using the Financial and Risk Management (FARM) Assistance strategic planning model and based on a 2,000-acre ranch consisting of 1,900 acres of native pasture and 200 acres of established Coastal bermudagrass.

Assumptions

The general assumptions are given in Table 1. Typical rates for the region were used for production inputs, yields, costs, and estimates for overhead charges. In 2009, the income from hunting was $7 per acre. The assets, debts, machinery inventory, and scheduled equipment replacements for the projection period were the same in all the management scenarios. It was assumed that the ranch had only intermediate-term debt. The evaluations used cattle prices from the Live Oak Livestock Commission Company auction report in Three Rivers, Texas, for May 4, 2009.

The analysis compared five scenarios:

- Buy all hay.
- Grow and harvest hay with the rancher's own baling equipment.
- Grow hay and have it custom cut.
- Buy all hay and reduce the stocking rate.
- Grow hay, have it custom cut, and reduce the stocking rate.

Table 1: 2009 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 Expenses	$30,000/year
Native Pasture	1,900 acres
Improved Pasture (Bermuda)	100 acres
Ownership Tenure	100%
Royalty Income	Not Included
Hunting Income	$7/acre
Herbicide Costs/Acre	$1.50
Fertilizer Cost/Acre	$50.00
Cow Herd Replacement	Bred cows
Vet, Medicine & Supplies	$25/cow
Salt/Mineral Blocks/Year	$20/cow
Hay Fed/Cow/Year	1.5 tons
Protein Cubes Fed/Cow/Year	150 lb
Calving Rate	95%
Cow Culling Rate/Year	7.5%
Steer Weaning Weights	525 lb
Heifer Weaning Weights	475 lb
Steer Prices	$1.08/lb
Heifer Prices	$.98/lb
Cull Cow Prices	$.50/lb
Cull Bull Prices	$.62/lb
Bred Cow Prices	$1,100/head
Replacement Bull Prices	$2,300/head
Hay Prices	$75/ton
Range Cube Prices	$0.18/lb
Pregnancy Testing	$6.50/cow
Bull Testing	$57.63/bull
Soil Testing	$10/year
Custom Hay Cutting	$25/bale

A typical commercial cattle ranch incorporates annual breeding soundness examination testing for bulls and pregnancy testing for cows with a 95 percent calving rate

In Scenario 1, the high stocking rate (one animal unit to 8 acres) assumes that 50 additional cows can be grazed on the 100 acres of unharvested Coastal bermudagrass. The last four scenarios assume 200 cows and eight bulls (one animal unit to 10 acres stocking rate). A typical commercial cattle ranch incorporates annual breeding soundness examination testing for bulls and pregnancy testing for cows with a 95 percent calving rate.

The base year for the 10-year analysis of the representative ranch is 2009; projections are carried through 2018. 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.

Representative measures, including profitability and liquidity, were chosen to assess each scenario. Each measure provides information on 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 for the ranch under each management practice.

Scenario 1: Buy all hay.

Purchase all hay and use the 100 acres of improved pasture for grazing only. Based on soil test recommendations, fertilize this pasture once a year with 250 pounds per acre of 27-4-9 fertilizer at $50 per acre. This includes a one-time application of a broadleaf insecticide at $8 per acre.

Results

- Average net cash farm income per year is $43,410.
- Net farm income is $42,720.
- Cumulative 10-year cash flow is $530,260.

Scenario 2: Grow and harvest hay with the rancher's own baling equipment.

Own the hay harvesting equipment: tractor ($36,000), baler ($18,000), rake ($5,000), cutter ($10,000), and hayfork ($100). Harvest the 100 acres of Coastal bermudagrass 3 times a year. The yield is 2.5 bales per acre for each cutting or 750 bales per year in 1,200-pound bales.

Fertilize the field 3 times a year at $150 per acre or $15,000. Apply a one-time herbicide application at $8 per acre. Part-time labor increases $1,800 ($10 per hour x 10 hours a day x 3 days for cutting, raking, and baling, plus 3 more days for moving hay from the field).

Fuel and lubricating oil for hay baling adds $4,692 to expenses (65 gallons of fuel per day x 3 days of cutting, raking, and baling x $2.30 per gallon + 10 gallons per day x 3 days for moving hay). Use net wrap to bale the hay at $1.12 per bale or $1,140 per year. Maintenance and repairs are estimated at $1 per bale. The producer does not custom-cut hay outside of his operation.

Results

- Average net cash farm income per year is $44,620.
- Net farm income is $38,640.
- Cumulative 10-year cash flow is $487,820.

Scenario 3: Grow hay and have it custom cut.

The third scenario involves hay production with custom harvesting at $25 per bale or $18,750 a year. Fuel for moving hay bales off the field costs $207 a year (10 gallons a day x 3 days x $2.30 per gallon x 3 cuttings). Additional labor for moving hay from the field is estimated to be $900 a year ($10 an hour x10 hours a day x 3 days at 3 cuttings per year).

Results

- Average net cash farm income per year is $29,650—31.7 percent less than Scenario 1 and 33.5 percent less than Scenario 2.

The less-intensive management alternatives in Scenarios 4 and 5 are more profitable than custom cutting but less profitable than Scenarios 1 and 2

- This is the least profitable scenario (Table 2 and Fig. 3).
- Cumulative 10-year cash flow is lowest of all five scenarios.

Scenario 4: Buy all hay and reduce the stocking rate

Buy hay but do not fertilize the 100 acres of Coastal bermudagrass. A one-time application of a broadleaf herbicide on the Coastal bermudagrass costs $8 an acre.

Results

- Average net cash farm income is $35,310.

Scenario 5: Grow hay, have it custom cut, and reduce the stocking rate.

Harvest hay once, then graze cattle on the Coastal bermudagrass field. Changes to the annual operating costs include $6,250 for custom hay harvesting, $69 for fuel, $300 in labor for moving the hay from the field, $5,000 for fertilizer, and $800 for herbicide.

Results

- Average net cash farm income is $33,370.

The less-intensive management alternatives in Scenarios 4 and 5 are more profitable than custom cutting but less profitable than Scenarios 1 and 2.

Table 2. Financial Indicators for a South Texas Representative Ranch

Scenario	Number of Cows	10-Year Averages Per Year: Total Cash Receipts ($1000)	Total Cash Costs ($1000)	Net Cash Farm Income ($1000)	Net Farm Income ($1000)	Cumulative 10-Yr Cash Flow/Cow ($1000)
1) Buy Hay	250	174.36	130.95	43.41	42.72	530.26
2) Own Equipment (3 cuts)	200	157.86	113.24	44.62	38.64	487.82
3) Custom Cutting (3 cuts)	200	157.86	128.21	29.65	29.67	432.74
4) Buy Hay	200	143.01	107.70	35.31	35.33	471.11
5) Custom Cutting (1 cut)	200	142.98	109.60	33.37	33.39	458.44

Figure 1. Projected variability in net cash farm income for buying hay.

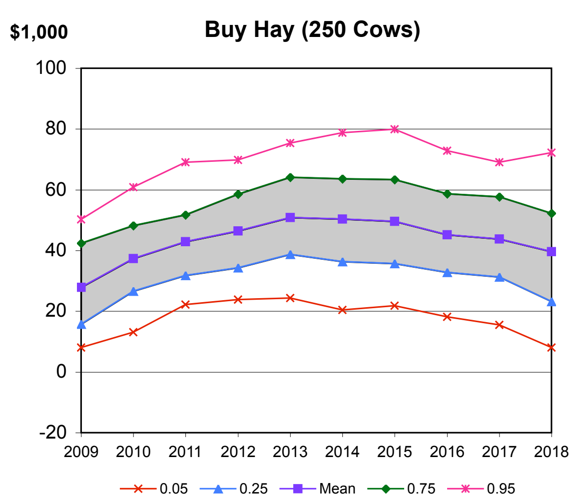
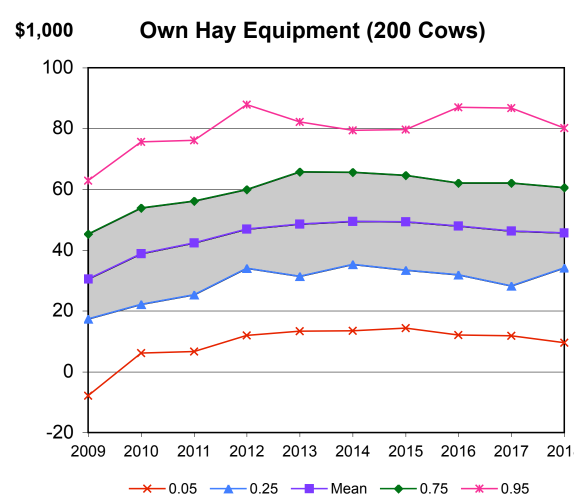
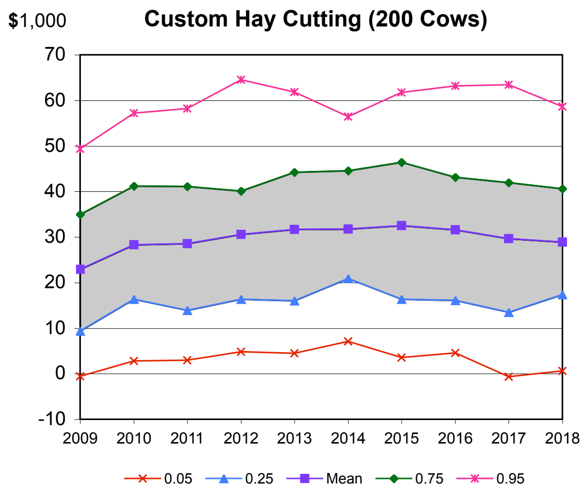


Figure 2. Projected variability in net cash farm income for owning hay equipment.



Implementing the most cost-effective supplemental hay strategies can improve profitability

Figure 3. Projected variability in net cash farm income for custom hay cutting.



Implications

Off-farm income, hunting, and other revenue sources for a typical South Texas cow-calf operation can enhance overall financial performance. Implementing the most cost-effective supplemental hay strategies can improve profitability.

The actual results of these strategies will vary by producer, management practices, type and age of equipment, and method of supplying supplemental hay. Evaluate and implement the best operational strategies that benefit the ranch's overall financial performance and minimize overall risk.

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