EXTENSION

A Strategy for Building a Beef Cow Herd

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Building a beef cow herd is challenging for beginning and younger cow-calf producers due to the intensive capital requirements and approximate 27-month lag between the initial purchase of heifers and the sale of a calf crop. A three-phase herd-building strategy and summarization of the results of an economic analysis of the strategy for the Oklahoma cattle market are described below.

In Phase I, the producer borrows the necessary funds to purchase 100 weaned heifers in this example. (Alternatively, bred heifers could be purchased to shorten the time to calf sales, but at a higher initial cash outlay.) The weaned heifers are placed on pasture and bred at around 14 months to 15 months of age. Open heifers are sold as feeder heifers and the revenue is used to pay down debt, as well as feed and veterinary expenses. In Phase II, heifers calve around 24 months of age and calves are weaned with 70% of heifer calves retained as breeding stock. Steer calves and remaining heifer calves are sold. In Phase III, cows are rebred three months after their first calving and sold about four months later. As second-calf heifers ("two-coming-threes"), they are at their highest market value. It is assumed open cows are culled at cull cow prices.[1] By selling weaned steer and heifer calves, rebred cows and culled cows, sufficient cash may be generated to repay debt incurred for the initial heifer purchase and operating expenses. At the end of Phase III, the producers retains part of the heifer crop—approximately 29 head. In most years, the producer has paid off all debt and operating expenses, owning the 29 heifers debt free. Replicating the process, the producer can build a herd of 100 cows in about four years.

In ShalekBriski et al. (2021), this strategy using calf prices, cull cow prices, feed prices and pasture rental rates for Oklahoma was analyzed. Data from 2003-2019 were used. The production assumptions and production costs are summarized in Tables 1 and 2. Oklahoma budgets resulted in positive net cash flows and net returns for 13 of the 14 cycles, which is summarized in Table 3. Feed costs were approximated using

Table 1. Production Assumptions*

Phase I	
Heifer Weight at Purchase	450 pounds
Heifer Age at Purchase	205 days
Death Loss	0.50%
Percent of Initial Heifer Purchase Financed	100%
Interest Rate of Financed Initial Heifer Purchase	6%
Age at Breeding	450 days
Age at First Cull	570 days
Cull Rate	15%
Weight at First Cull	810 pounds
Phase II	
Age at Calving	733 days
Weaning Percentage	98%
Calf Age at Weaning	205 days
Weaning Weight: Steer Calves	450 pounds
Weaning Weight: Heifer Calves	425 pounds
Cow Rebreeding Age	833 days
Cull Open Cows Age	938 days
Weight of Culled Open Cows	1,180 pounds
Phase III	
Conception Percentage	85%
Age of Bred "Twos-coming-Threes" when sold	1,028 days
Weight of Bred "Twos-coming-Threes" when sold	1,270 pounds
Assumptions for All Phases	
Percentage of Operating Expenses Financed	75%
Interest Rate of Operating Expenses Financed	5%

*Source: ShalekBriski et al. (2020)

1 This is a conservative assumption as the culled cows are under 30 months of age and qualify as "Grade A" beef.

Table 2. Production costs ($ per head)*

Phase I	
Feed Expense: Pre-breeding	250d
Veterinary and Medical Expense: Pre-breeding	$15
Breeding Cost	$25
Feed Expense: Gestation	283d
Veterinary and Medical Expense: Gestation	$5
Phase II	
Feed Expense: Lactation, Rebreeding and Post-Lactation	205d
Veterinary and Medical Expense: Lactation, Rebreeding and Post-Lactation	$15
Breeding Cost	$25
Phase III	
Feed Expense: Bred Cows Post Weaning	90d
Open Cows Post Weaning	7d
Veterinary and Medical Expense	$5

*Source: ShalekBriski et al. (2021)

CowCulator (Lalman and Gill, 2017), feed prices and pasture rental rates varying by year.

Results are encouraging for most cycles except for the 2014 cycle. If heifer calves were purchased in fall 2014, net cash flow was projected to be negative as feeder calf prices in 2014 were abnormally high. Conversely, cattle prices were lower in 2016 when the steers and heifers from the 2014-purchased heifers were sold. This resulted in negative cash flows for the fall 2014 cycle.

The abnormally high calf prices in fall 2014 resulted in high net cash flows and net returns for the cycles beginning in 2012 and 2013. Initial heifer purchases were at lower prices relative to 2014 prices. Sales of calves, rebred cows and cull cows from the 2012 cycle were made in fall 2014, resulting in extremely high returns for the 2012 cycle. The 2013 cycle sold cull heifers as feeder heifers into the fall 2014 market, also resulting in high net cash flow and returns.

Sensitivity analyses were used to evaluate the robustness of the strategy to decreases in herd revenues and increases

Table 3. Baseline and sensitivity of net cash flow (top) and net return (bottom) due to reduced revenue and increased cost.

		Revenue as % of baseline		*Cost as % of baseline*	
Year	*Baseline (100%)*	*90%*	*75%*	*110%*	*125%*
2003	$38,963	$26,038	$6,651	$29,934	$16,392
	$54,594	$40,106	$18,374	$45,565	$32,023
2004	$11,956	$30	-$17,859	$1,225	-$14,870
	$25,876	$12,528	-$7,419	$15,145	-$950
2005	$19,132	$6,914	-$11,414	$8,827	-$6,631
	$33,139	$19,520	-$908	$22,834	$7,376
2006	$7,181	-$2,629	-$19,141	-$2,629	-$17,345
	$19,999	$10,189	-$9,527	$10,189	-$4,527
2007	$326	-$9,552	-$24,370	-$9,552	-$24,370
	$12,361	$1,279	-$15,344	$1,279	-$15,344
2008	$39,147	$29,782	$15,735	$28,782	$15,735
	$53,270	$42,493	$26,327	$42,493	$26,327
2009	$55,004	$15,373	$12,881	$45,598	$31,490
	$72,085	$55,471	$30,550	$60,971	$44,301
2010	$55,070	$37,437	$10,987	$42,944	$24,754
	$74,210	$54,663	$25,342	$60,170	$39,019
2011	$69,732	$50,813	$22,436	$57,787	$39,869
	$91,917	$70,780	$39,075	$77,753	$56,508
2012	$126,118	$96,624	$52,383	$109,236	$83,912
	$162,136	$129,040	$79,396	$141,652	$110,926
2013	$90,159	$67,444	$33,372	$76,460	$55,912
	$118,231	$92,790	$54,426	$101,725	$79,966
2014	-$24,508	-$41,008	-$65,649	-$43,466	-$71,794
	-$9,026	-$27,018	-$53,991	-$29,476	-$60,136
2015	$3,032	-$12,522	-$35,853	-$12,219	-$35,095
	$22,636	$5,122	-$21,150	$5,425	-$20,392
2016	$38,695	$23,637	$1,049	$27,506	$10,723
	$57,777	$40,811	$15,361	$44,680	$25,034
Cash flow≥0	13 years*	10 years	8 years	10 years	8 years
Net return≥0	13 years	13 years	8 years	13 years	9 years

* Number of years (out of 14 simulated) with positive net cash flows (top) and net returns (bottom).

in heifer purchase cost and operating expenses. The resulting net cash flows and net returns also are reported in Table 3. Revenues were decreased by 10% and 25%. At the 10% revenue reduction level, the strategy is projected to have positive net cash flows and net returns 10 and 13 cycles of the 14 cycles. At the lowest revenue level, just 75% of baseline, the strategy is projected to have positive net cash flows and net returns eight of the 14 cycles. Similarly, all costs were increased by 10% and 25%. Net cash flows and net returns are slightly less sensitive to cost increases than to revenue decreases. A 10% increase in costs had projected positive net cash flows and net returns 10 and 13 cycles of the 14 cycles. A 25% increase in costs had projected positive net cash flows and net returns eight and nine cycles, respectively, of the 14 cycles evaluated.

Along with the high capital outlays and long-term lags, beginning cow-calf producers face other difficulties, such as land acquisition, student loan debt and knowledge to efficiently run the operation. However, the results of this strategy are encouraging. The timing of purchases relative to large price swings results in either large positive (if bought low and sold high) or negative (if bought high and sold low) net cash flows and net returns. In more "typical" years, building a herd for a first-time cow-calf producer seems financially feasible. Operating debt is incurred but can be paid down through selling cull heifers, steer calves and open cows. However, individual producers should work with county Extension educators and agricultural lenders to evaluate their personal situation before investing in breeding heifers.

References

ShalekBriski, A. E.A. DeVuyst, C.S. DeVuyst, R.Sahs, M. Stockton and K. Ramy. "Financing Beef Cow Herd Building for Beginning Ranchers," *Journal of Applied Farm Economics*, 2021 (forthcoming).

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