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#### Financing Herd Rebuilding After Drought-Induced Liquidations

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AGRICULTURAL ECONOMICS

OKLAHOMA STATE UNIVERSITY

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## INTRODUCTION

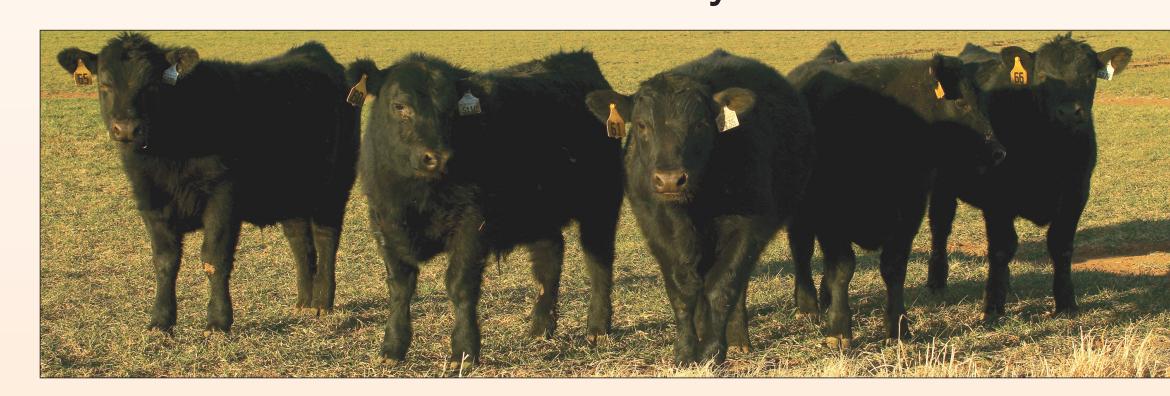
Prior to a severe regional drought, Texas and Oklahoma accounted for approximately onequarter of the nation's beef cows (Livestock Market Information Center). In 2011, lack of forage and water, costly feed and hay, physical and financial stress on cow owners and caretakers along with the opportunity to sell at or near record high prices led to substantial liquidation of cows from beef operations in the southern plains states. Liquidation strategies varied with some producers liquidating the breeding herd partially or entirely and others maintaining as many cows as possible. These liquidations more than offset additional placements of breeding beef females in other leading cow/calf states, resulting in an additional decline in cow numbers nationally

As the number of cows nationally is at a historic low while both domestic and export demand are strong, market signals are strongly encouraging beef production. The dilemma for cow/calf producers is when and how to return to full production. Factors that must be taken into account include the condition of the land and forage base, availability of water and weather/ climate forecasts, ranch financial position, and anticipated market prices and production costs. Financial feasibility may depend on individual producer's financial position prior to the drought as well as agricultural lenders willingness and ability to loan money for cow purchases.

## OBJECTIVES

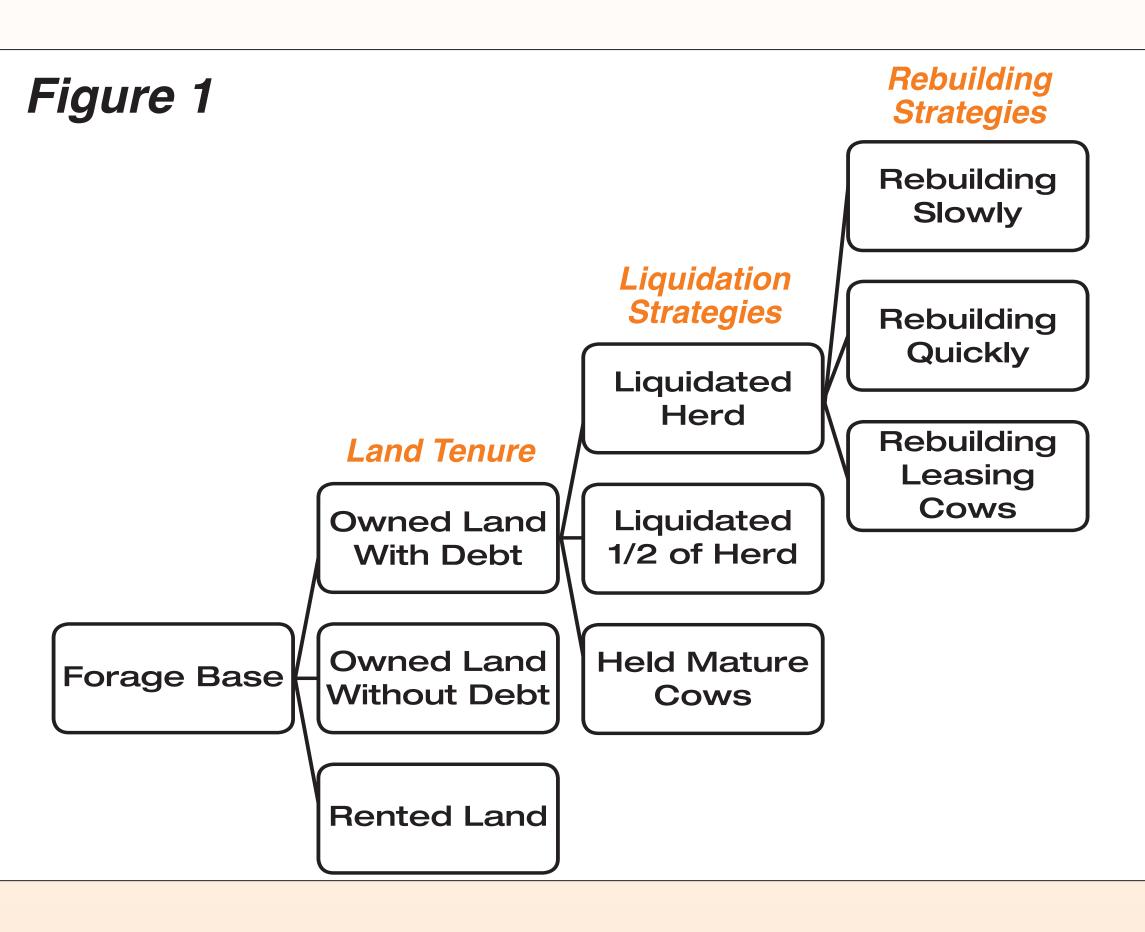
- Evaluate impacts of drought on ranch financial performance and position for dominant pasture types, alternative asset control scenarios and herd liquidation strategies.
- 2. Assess changes in financial performance over time under various herd rebuilding strategies.

To assess potential barriers to herd-rebuilding, we evaluate the ranch's likely financial performance and position during the drought year, then project financial performance ahead five years. We focus on financial measures related to projected cash flow and changes in debt levels. Important factors impacting farm/ ranch cash flow include timing and extent of livestock sales, prices received, length of feeding period, prices paid for feed and hay, the way that ranch assets are financed and controlled (leased versus owned) and disaster payments received. Both the percentage of cows culled and the timing of liquidation impacted how much additional expense in feeding was incurred during the drought year. Financial consequences of rebuilding depend on how quickly pasture recovers and whether land can be restocked at historical levels, whether breeding females are raised or purchased and how quickly the herd is rebuilt as well as maintenance costs in future years.



Case studies are developed for:

- two forage bases, native and introduced, with native pasture typical of western Oklahoma and introduced pasture typical of eastern Oklahoma.
- three land tenure situations.
- three liquidation strategies.
- three rebuilding strategies: rebuild slowly beginning with stockers including stocker heifers with some retained as replacement heifers; rebuild quickly by purchasing cow/calf pairs; and rebuild slowly with leased cows



Using enterprise budgets (Figure 2 and agecon.okstate.edu/budgets) with Integrated Farm Financial Statement Software (agecon.okstate.edu/iffs), whole farm financial plans are developed and projected for five years The results highlight differences in cash flow, borrowing needs, and changes in financial position over time.

### Figure 2

Cow-Calf Enterprise Budget - 100 Cow Unit Size March calving percentage - 87%, calf death loss - 3%

RODUCTION	Wt.	Unit	Р	rice/Cwt	Quant	tity	Total		\$/Head	
eer calves	510.0.	Lbs.	\$	115.70	42.20	Hd.	\$ 24,898	\$	248.98	
eifer calves	480.0	Lbs.	\$	110.37	12.20	Hd.	\$ 6,461	\$	64.61	
ıll cows	1,100.0	Lbs.	\$	47.27	20.00	Hd.	\$ 10,399	\$	103.99	
ıll replacement heifers	825.0	Lbs.	\$	94.07	10.00	Hd.	\$ 7,761	\$	77.61	
ıll bulls	1,750.0	Lbs.	\$	61.48	1.00	Hd.	\$ -	\$	-	
her income		Head	\$	-	1.00		\$ -	\$	-	
tal Receipts							\$ 49,519	\$	495.19	
PERATING INPUTS		Unit	Price/Cwt		Quant	tity	Total	\$/Head		
asture		Head	\$	120.00	1	-	\$ 12,000	\$	120.00	
Ry		Head	\$	27.73	1		\$ 2,773	\$	27.73	
ain		Head	\$	-	1		\$ -	\$	-	
otein Supplement		Head	\$	59.60	1		\$ 5,960	\$	59.60	
alt		Head	\$	-	1		\$ -	\$	-	
nerals		Head	\$	17.08	1		\$ 1,708	\$	17.08	
her feed additives		Head	\$	-	1		\$ -	\$	-	
et services/medicine		Head	\$	6.33	1		\$ 633	\$	6.33	
et supplies		Head	\$	2.91	1		\$ 291	\$	2.91	
arketing		Head	\$	7.68	1		\$ 768	\$	7.68	
achine/equipment fuel, lube, repairs		Head	\$	24.09	1		\$ 2,409	\$	24.09	
achinery, equipment labor		Hrs.	\$	10.00	2.65		\$ 2,650	\$	26.50	
her labor		Hrs.	\$	10.00	3.00	)	\$ 3,000	\$	30.00	
her expenses		Head	\$	-	1		\$ -	\$	-	
nnual operating capital		Dollars		7.00%	219.7	<b>'</b> 2	1,538		15.38	
tal Operating Costs							33,730	337.3		
eturns Above Total Operating Costs							15,789		157.89	

The type of pasture impacts stocking rate as well as the value of pasture as reflected in both rental rates and land values. Figure 3 highlights forage/hay assumptions and differences. Improved pasture requires 150 pounds of N needed to replace forage harvested (Redfearn et al) whereas native pasture does not respond to fertilizer applications (Gillen and Berg). Pasture rental rates are taken from Doye and Sahs (2012).

Pastures are likely to suffer lingering effects from the drought. To account for this reduced pasture, pasture productivity is assumed to 50% of normal in 2012, 75% in 2013, and 100% in 2014 and 2015.

### Figure 3

	Improved Pasture	Native Pasture				
ge	160 acres of fescue + 160 acres of Bermuda	1,000 a				
king rate	3.2 a/head	\$10 a/head				
	\$22/a for fescue, \$17/a for Bermuda	\$12/a				
lizer	\$70/a	Not applicable				
	\$75/ton	\$65/ton				
d purchase price	\$1,000/a	\$800/a				
d market value per acre	\$1,400/a	\$1,100/a				
d value, total	\$420,000	\$1,100,000				
Il land loan (1/2 of land value in arios with debt, 20-year note at 6% hased July 2001.	\$160,000	\$400,000				
d note (remaining balance)	\$96,252	\$256,675				
ual loan payment	\$13,950	\$34.874				

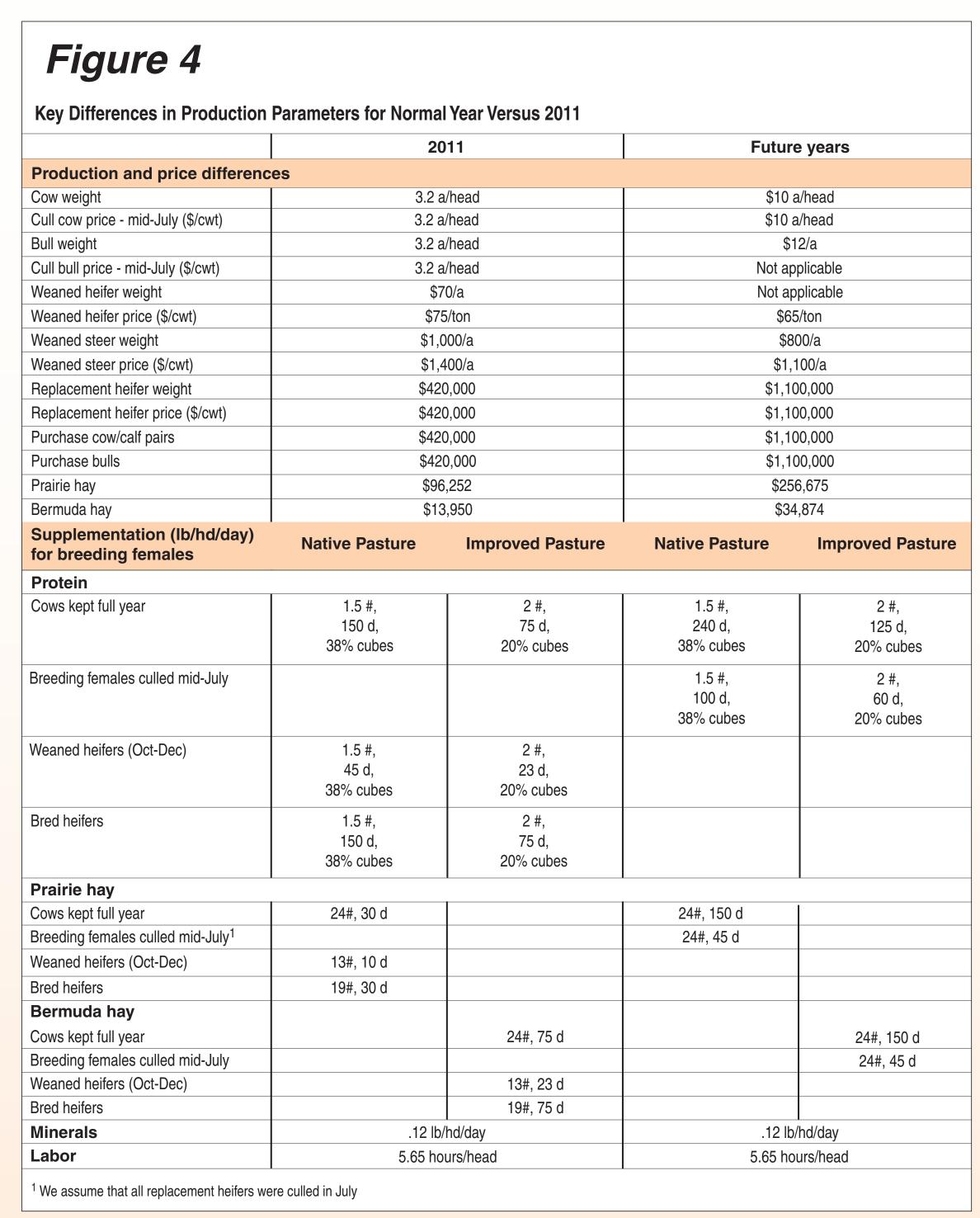
The base case is 100 moderate breeding females plus 3 bulls, the number of breeding females that can normally be stocked on 1,000 acres of native pasture in Oklahoma. The introduced pasture scenario is designed to meet the 100 cow, moderate-size base case. Stocking rate is adjusted based on estimated pasture productivity to achieve approximately equal grazing pressure in each scenario or system. We assume that in normal years the calving percent is 87% and calf death loss is 3% regardless of pasture system (Bevers).

#### Other assumptions include:

- moderate size cows = 1,100 lb. mature weight.
- 100 raised breeding females = 85 mature cows, 15 replacement heifers.
- liquidating half of herd = sell all replacement heifers (15) + cows (35) + 1 bull.
- raised cows, bred heifers and replacement heifers are all valued at \$900 each; bulls = \$2,500 each.

Figure 4 highlights other production parameters used. Cow and heifer rations were developed using Cowculator (Lalman and Gill, 2012). Because of tight cattle markets and elevated demand for breeding females, replacement heifer prices are anticipated to be elevated and identical to steer calf prices. For years 2012

through 2014, \$175/cwt prices are used for both weaned heifers and bulls. For 2015, \$170/cwt is



# RESULTS

Farm/ranch cash flow and ending financial position for 2011 ranged widely depending on the pasture base, method of land control and herd liquidation strategy. Cash inflow was determined by the liquidation strategy, with those liquidating the herd entirely generating the most cash. Cash outflow was influenced by liquidation strategy (selling early lowered feed costs) but also pasture type and land control method. Introduced pasture had higher costs and clear, rental expenses were less than principal and interest payments on land with debt. Although flush with cash if proceeds of cow sales were retained, producers who liquidated the entire breeding herd faced the biggest cash flow challenge in rebuilding given the high cost of replacement females. Results from our multi-vear financial projections for alternative rebuilding strategies from total herd liquidation were encouraging. Regardless of land tenure. pasture type, or rebuilding strategy, rebuilding appeared to be financially feasible. In some scenarios, operating debt accumulated, but generally debt-to-asset ratios remained healthy throughout the years analyzed. Obviously, producers with owned land and no land debt had the best cash flow and self-financed heifer retention and purchases of cow/calf pairs to a degree. However, operating money was still needed while rebuilding quickly with purchases of cow/calf pairs, initially cash flow was higher relative to rebuilding slowly as the entire calf crop was being sold. However, in the longer run, the financing costs associated with the cow purchase took a toll. While rebuilding using leased cows looked the least positive with respect to net cash flow, it had the lowest cash flow demand and required no term debt. Thus, it offers opportunities to producers who want to avoid debt or face borrowing constraints.

	Introduced Pasture													Native Pasture				
	Rented Land			Owned Land With Debt			Owned Land No Debt			Rented Land			Owned Land With Debt			Owned Land No Debt		
	100%	50%	Retain	100%	50%	Retain	100%	50%	Retain	100%	50%	Retain	100%	50%	Retain	100%	50%	Retain
	Liquidated	Liquidated	Mature Cows	Liquidated	Liquidated	Mature Cows	Liquidated	Liquidated	Mature Cows	Liquidated	Liquidated	Mature Cows	Liquidated	Liquidated	Mature Cows	Liquidated	Liquidated	Mature Cows
Cash revenue (\$)																		
Calf sales	44,938	44,938	44,938	44,938	44,938	44,938	44,938	44,938	44,938	44,938	44,938	44,938	44,938	44,938	44,938	44,938	44,938	44,938
Government payments	6,176	6,176	6,176	6,176	6,176	6,176	6,176	6,176	6,176	6,176	6,176	6,176	6,176	6,176	6,176	6,176	6,176	6,176
Capital sales	79,454	40,904	14,479	79,454	40,904	14,479	79,454	40,904	14,479	79,454	40,904	14,479	79,454	40,904	14,479	79,454	40,904	14,479
Cash inflow	130,568	92,018	65,593	130,568	92,018	65,593	130,568	92,018	65,593	130,568	92,018	65,593	130,568	92,018	65,593	130,568	92,018	65,593
Cash outflows (\$)																		
Cash expenses	47,825	61,398	67,820	41,105	54,669	61,100	41,105	54,669	61,100	30,224	42,181	47,467	18,224	30,181	35,467	18,224	30,181	35,467
Debt service				13,950	13,950	13,950							34,873	34,873	34,873			
Operating interest	702	1,018	1,219	500	816	1,018	500	816	1,018	752	1,019	1,187	392	659	827	392	659	827
Net cash flow from operations	82,040		(3,446)	75,012	22,582	(10,474)	88,962	36,532	3,476	99.592	48,817	16,939	77,079	26,304	(5,574)	111,952	61,836	29,299
Line of credit balance:		29,611																
Average <sup>1</sup>	10,799	15,654	19,403	7,697	12,553	18,473	7,697	12,553	15,655	11,567	15,684	18,258	6,029	10,145	14,276	6,029	10,145	12,719
Maximum	29,531	40,615	47,336	22,811	33,895	40,616	22,811	33,895	40,616	26,625	36,102	41,679	14,625	24,102	29,679	14,625	24,102	29,679
Ending			3,446			10,543									5,574			
Debt to asset ratio (year-end)			1.9	14.9	15.0	18.7							18.6	18.6	19.0			
Interest expense as % of gross receipts	1.4	2.0	2.4	13.0	13.6	14.0	1.0	1.6	2.0	1.5	2.0	2.3	30.9	31.4	31.7	0.8	1.3	1.6

### Rebuilding Slowly

Plan for Rebuilding Slowly from Total Liquidation 2011 2012 2013 2014 2015 2016 Purchases 172 215 146 \$53,000 \$36,000

Plan for Rebuilding

**Using Leased Cows** 

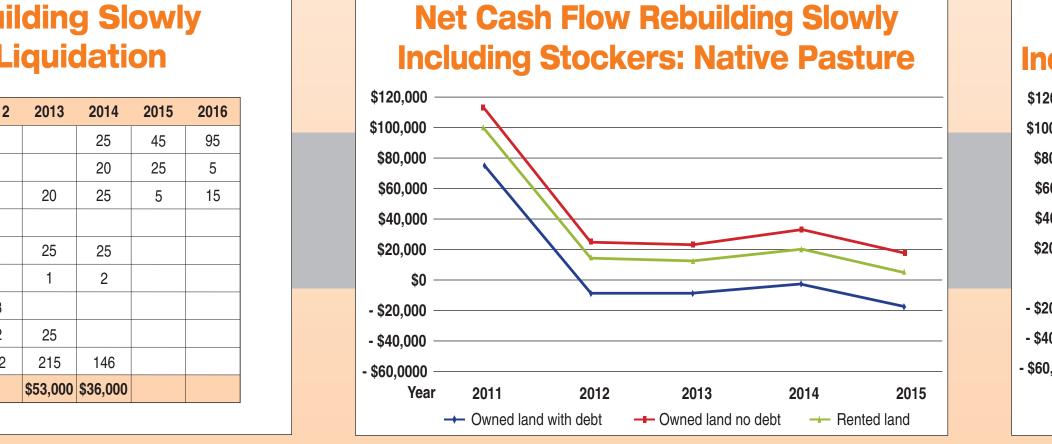
Bred Heifers

Raised heifers retained

Rebuilding Using Leased Cows

2011 2012 2013 2014 2015

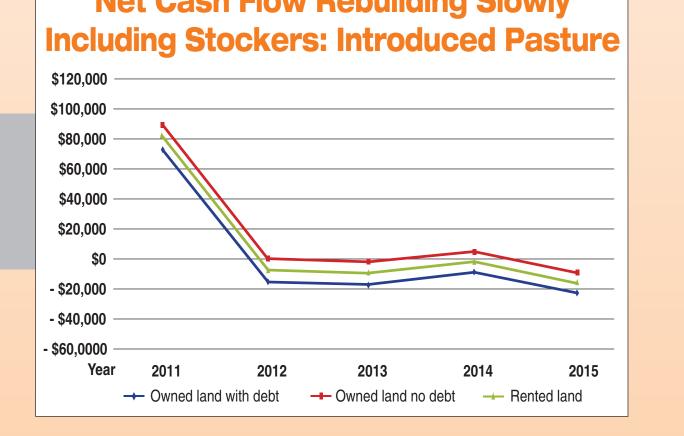
14 23 25



**Net Cash Flow When Rebuilding With** 

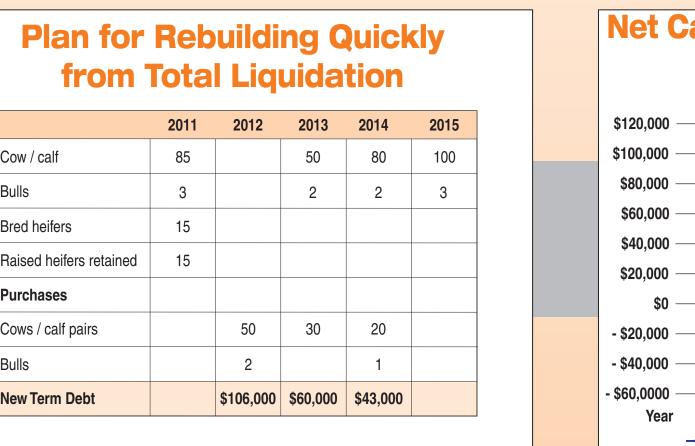
**Leased Cows: Native Pasture** 

# **Net Cash Flow Rebuilding Slowly**

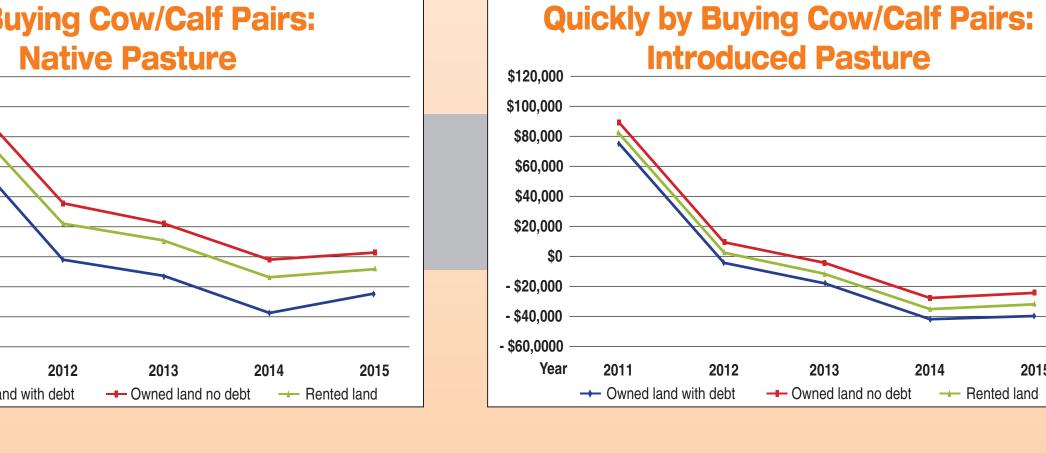


**Net Cash Flow When Rebuilding** 

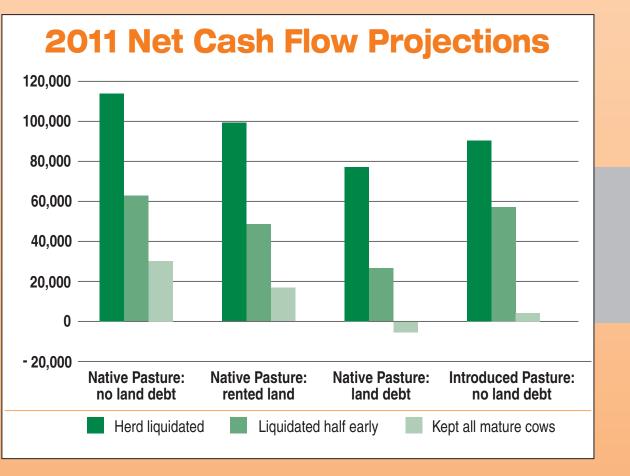
## Rebuilding Quickly

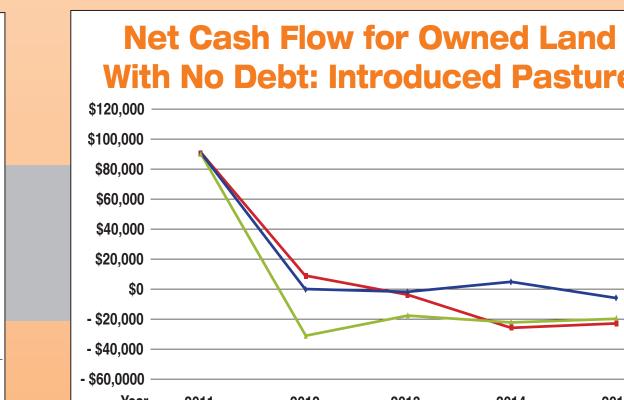


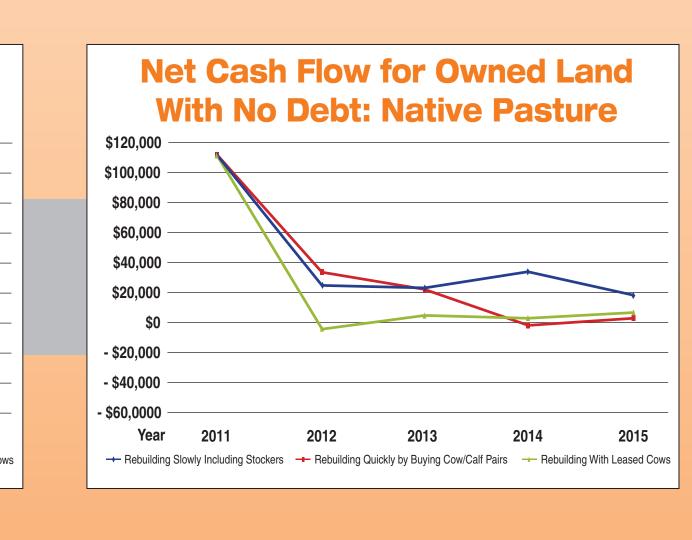




### Net Cash Flow Comparisions







**Net Cash Flow When Rebuilding** 

## CONCLUSIONS

Results indicate that producers who have significant land debt will face severe cash flow problems in rebuilding unless substantial off-farm income is available to supplement cash farm income generated. Producers who own land free and clear are in good financial position and have the

borrowing capacity needed to finance expensive breeding female purchases. Producers who rely on a leased land base are likely to face less financial stress than those with land debt. Leasing cows, while not currently a widespread practice, provides a means of

rebuilding an owned cow herd slowly while minimizing borrowing needs. However, full ownership of the herd is extended to 2017 as the cattle caretaker's share of the calf crop and number of females is limited. Rebuilding slowly is financially less stressful than rebuilding quickly with cow/calf pair

purchases given the projected profitability of stocker enterprises. The cash flow from stockers helps with land debt repayment as well as cow purchases.

Rebuilding quickly requires the highest level of borrowing in early years but results in the highest net cash flow in 2015.

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