

Taking Your Beef Cow Herd Profitably Through The Cattle Cycle

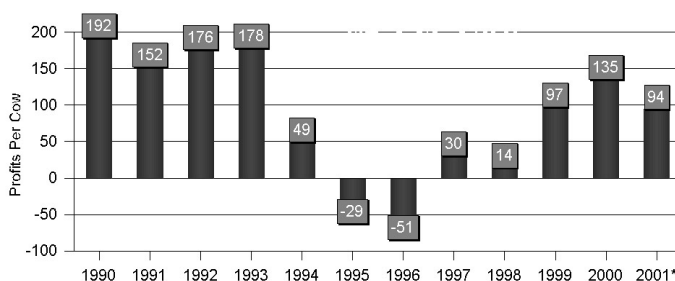
By
Harlan Hughes, North Dakota State University
Lee Meyer, University of Kentucky
Tim Cross, University of Tennessee
Dwight Aakre, North Dakota State University

***Section I: Set Your Goals In The Good
Times To Increase Economic Efficiency
And To Build A Financial Reserve***

Introduction

The key to surviving the cattle inventory cycle, and its resulting price cycle (cattle and beef), is to first increase the economic efficiency of your beef cowherd during the good times. Then, use this gained economic efficiency to build a financial reserve to take your beef farm or ranch through the next downturn in beef cattle prices with lower production costs.

***Figure 1. Beef Cow Profits: Net-Value-Added
(North Dakota Farm Business Management Herds)***



*Preliminary

We know that a typical cattle cycle lasts about 10 years. We also know that cattle inventory cycles are the fundamental factor behind cattle price cycles. Random shocks such as the 1995 record corn prices can influence the cyclical nature of the industry¹. The beef price cycles of the 1980's and 1990's shared much in common and future cattle cycles will likely have much in common with past cycles.

Lessons From The 1990s Cattle Cycles

Figure 1 shows the impact that the cattle cycle of the 1990s, and its related beef price cycle, had on profits in North Dakota's beef cowherds.² Based on the North Dakota data, beef cow operators started out the decade of the 1990s with high net income per cow. The 1990 through 1993 time period completed a record high 7-year beef cow net income period (1987-1993) driven by the same 7-year record-high price period. After the 7-year high, profits decreased for 3 consecutive years. The 74 percent decline in profit during 1994 certainly got the attention of cow-calf producers. After the 1994 drop, losses occurred in 1995 and even larger losses occurred in 1996.

Average beef cow profits finally turned upward in 1997, but could not be sustained in 1998. In 1999, profitability did increase again. Looking

ahead, average profits are projected to trend upward through 2003 and maybe even 2004. In the last cattle cycle, calf prices were strong for 7 years (1987-1993) before turning downward. The downturn was delayed by widespread droughts in 1988 and 1989, a 1992 severe snow storm in the Central Plains cattle feeding region and 1993 frosted food grains that became feed grains in the Northern U.S. and Canada.

It now appears that in 2000 and 2001 drought in major cow-calf states have changed the current cattle inventory cycle some. As the current beef price cycle continues, economically efficient beef cowherds should again experience several profitable years.

Table 1. Cow-Calf Producer Profitability (% Of Herds)

	1993	1994	1995
Profitable	72%	46%	21%
Near Breakeven	22%	39%	43%
Not Profitable	6%	15%	36%

Source: Cattle-Fax

Table 1 illustrates what happened to beef cow profits in the last downturn. In the 1993 record feeder calf price year, 72 percent of the CattleFax herds were profitable. Profits decreased in 1995 to the point that only 21 percent of all CattleFax herds were profitable. The actual price bottom year was in 1996 and is not included in Table 1. We are projecting that less than 15 percent of all beef cowherds were profitable in 1996.

The Northern Plains Integrated Resource Management (IRM) Cooperator Database indicates that during the last decade profits dropped the fastest in the high-cost herds; therefore, the take-home message here is that the herds that best survived the last downturn were those herds with high economic efficiencies. Current projections suggest a similar dismal economic performance for herds with low economic efficiencies going into the second half of this decade.

We are writing this fact sheet to encourage beef farmers and ranchers to utilize current beef cow profits to carefully invest in management tools and techniques that improve economic efficiency. Then, they should use this economic efficiency to build a financial reserve to be utilized in the next price downturn. These recommend management tools and techniques are described in this publication, and five

other Fact Sheets in the series entitled: 1) *Determining Your Unit Costs Of Producing a Hundred weight Of Calf*, 2) *Conducting A Comparative Analysis Of Your Herd's Production Facts With Other Herds' Production Facts*, 3) *Benchmarking Your Herds Economic Facts*; 4) *Understanding Your Financial Situation*; and 5) *Applying The Assessment Tools To Your Farm/Ranch*.

The Beginning Of the Expansion Phase Is A Key Time To Increase Economic Efficiency

Whether calf prices or high or low, improvements in economic efficiency can lead to improved profits. When improvements in economic efficiency require additional investments, the start of the expansion phase of the cattle cycle can be a good time for a beef farmers and ranchers to become proactive and to implement an action plan for “taking advantage of the cattle cycle.” Since more capital is usually available, managers can use the early expansion phase of the cattle cycle to increase economic efficiency.

Unfortunately, many producers allow economic efficiencies to decline during the good times. Then, when prices again turn downward, these same beef cow producers typically do not have sufficient time to increase economic efficiency. As a result, financial stress tends to hit them hard during the tough times of the cattle cycle.

To illustrate the potential for improved economic efficiency, consider again the North Dakota IRM database. In 1999 all of the participating Northern Plains IRM Cooperators were operating highly tuned beef cow businesses.³ Approximately one-half of these cooperators had been specifically working on their economic efficiencies for five plus years. For 1999, these experienced IRM Cooperators generated the lowest average annual calf production costs of any year in the Northern Plains IRM Cooperator databank. These low unit costs were the direct result of high economic efficiencies. Even so, thirty-three percent of these IRM herds had considerable room for improving their economic efficiencies if the average of the low-cost one-third of these 1999 Northern Plains IRM Herds⁴ was used as the benchmark.

When ranked by the unit cost of producing a hundredweight of calf, the low-cost one- third of these experienced Northern Plains IRM Herds netted \$145 profit per cow with their 1999 calves. This is

\$84 more than the high-cost one-third of the herds who averaged only \$61 profit per cow demonstrating that economic efficiency does make a difference in the high priced years -- even on intensively managed herds.

The key to taking advantage of the “up cattle market” is to remember that beef prices go in cycles. Beef prices will once again cycle downward. Current management energies should be directed towards executing a specific management action plan designed to increase economic efficiencies and to build financial reserves to be used when the tough times return. Without a specific action plan, some beef farmers and ranchers will not build a financial reserve and may not have sufficient financial resources to take them through the next price lows.

Recommended Special Management Actions

The very first management action that beef farmers or ranchers should take, in maximizing economic efficiency and in building a financial reserve, is to *assess* his herd’s current economic efficiency. Section II in this fact sheet presents three recommended herd business management tools, and Section III in this fact sheet presents three recommended total business financial assessment tools. Sections II and III are both designed to provide “green-flag and red-flag” benchmarks on economic efficiencies of beef cow herds and total farm or ranch businesses.

Section II: Three Beef Cow Herd Business Management Tools

There are three “green-flag/red-flag” herd business management tools that producers should consider as they take their beef cows through the 10-year cattle cycle. The first recommended herd business management tool is the *net cash flow account* specifically designed for the beef cow profit center. The two other recommended herd business management tools are the *net-value-added account* and the *net-financial-returns account* both also specifically designed for the beef cow profit center. The bottom lines from these three business management tools become that herd’s key economic benchmarks.

These three key herd economic benchmarks need to be established during the good times of the beef price cycle so that benchmark trends are in place before the cyclical downturn. Deviations from

the benchmark trends can then be used as early warning “red-flag” business signals as prices cycle downward. Our past IRM experiences suggest that beef farmers or ranchers that recognize their beef cow herds’ “red-flags” early best survive the cattle cycle’s beef price downturn.

1. Net-Cash-Flow Account

The annual *net-cash-flow account* is based on the direct cash costs of the cowherd including growing farm-raised feed and forage for the cows⁵, servicing debt (interest and principal payments) and drawing family living from the beef cow herd profit center. Depreciation on cows and equipment are not cash costs and are not considered in the cash flow analysis.

Net-cash-flow is the business’ bottom-line benchmark and is used to answer the question: “Are my beef cows generating a positive cash flow or are my beef cows being subsidized by other sources of cash flow?” If the beef cows are generating a positive net-cash-flow, the benchmark is a “green-flag” and if the beef cows are generating a negative net-cash-flow it is a “red-flag.” A multi-year original net-cash-flow benchmark trend should be established during the expansion phase of the cattle cycle.

2. Net-Value-Added Account

The net-value-added account is based on farm-raised feed and farm raised hays priced to the beef cows at fair market value (opportunity costs), assets valued at market value, actual interest paid on borrowed money and non-cash depreciation. Principal payments and family living draw, on the other hand, are not part of economic costs. Net-value-added and net-cash-flow are two distinctly different business management tools.

Net-value-added is the business’ bottom-line benchmark used to answer the question: “How much added economic value did my family generate by running the beef cow herd?” Net-value-added is the dollar net returns that the farm or ranch family earned from their unpaid family and operator labor, management, and the family’s equity capital” contributed to the beef cow profit center. These are the three, and the only three, family resources contributed to the beef cow profit center by the farm or ranch family.

Positive net-value-added benchmark profits reflects the magnitude of the family’s earned net income for its unpaid family and operator labor,

management and equity capital. Negative economic net-value-added benchmark, on the other hand, implies that the family received no economic payment for its three resources contributed and, in fact, the beef cows did not even pay market price for farm-raised feeds.

In general, a beef farmer or rancher does not need to add value to the family's resources consumed by the beef cows each and every year; however, a negative net-value-added benchmark in any one year, does send up a "red flag" that needs management's attention. Repeated years of negative net-value-added benchmarks from the beef cow profit center, has the potential to put the total beef farm or ranch business into financial jeopardy.

3. *Net-Financial-Return Account*

The third herd business management tool is the net-financial-return account based on assets valued at book value (costs minus depreciation taken to-date), costs of producing farm-raised feeds, cost of pastures grazed, and actual interest paid on money borrowed for capital assets. Land is valued at actual acquisition cost and not at current market value or opportunity cost. If the land is paid for, there is no land cost.⁶

The net-financial-return is the bottom-line benchmark used to answer the question: "Are my beef cows adding equity to my family business or are my cows consuming family equity?" A negative net-financial-return is a "red-flag" implying that equity capital is being consumed. This is serious and must be immediately turned around or the total business may quickly fail.

What We Learned From "Green-Flag/Red-Flag" Herd Assessments In The Last Cattle Cycle

North Dakota generated herd assessments for IRM Cooperators' for one complete cattle cycle (1990's). Let's review what was learned from this decade of "green-flag/red-flag" herd assessments.

When beef prices were high, the typical beef cow business generated a positive net-cash-flow, a positive net-value-added and a positive net-financial-return. During the good times, all herd assessment benchmarks for typical beef cowherds were sending "green-flags" signals.

As the beef price cycle turned downward in the mid part of the decade, a distinct order of red flags started showing up. In the first year of the downturn (1994) we saw some herds, but not all herds, generate net-cash-flow "red-flag" signals. Typically,

the other two business benchmarks were positive and sent "green-flag" signals. We now know that the early net-cash-flow "red-flags" were a signal of more financial problems to come.

As beef prices continued to go lower in the next year (1995), we started getting "red-flag" signals from the net-value-added herd assessment. The net-financial-return benchmark benchmarks, however, were typically still positive. As beef prices continued to go lower in the third year (1996), the net-financial-return benchmarks, on some herds, turned negative and sent "red-flag" signals. This third indicator implied that these ranchers were consuming equity capital and that long-term survival for these operations was in jeopardy.

It is significant to note the order that the "red-flags" appeared in this downturn. The first "red-flag" to pop up was negative net-cash-flow, the second "red-flag" was negative net-value-added economic returns, and the third "red-flag" was negative net-financial-returns. The net-cash-flow "red-flag" was typically received two to three years before the long-term survival of the business came into jeopardy. The key to the financial performance of these businesses was early detection and managements' immediate corrective actions.

Astute managers responded to the early "red-flags" and took corrective management action before the businesses deteriorated any more. Others, without these red-flag benchmarks, waited for their banker to detect financial stress. By the time that their banker raised the question with the herd manager, it was typically too late. A beef cow manager needs to read the "red-flags" earlier than does his banker. Bankers' responsibilities to depositors are to protect their loan security rather than to ensure the financial health of the farm or ranch business. A manager that waits for his banker to raise the first "red-flag" signal is asking for financial trouble.

When beef prices started back up in the 1997 to 2000 time period, the next net-financial-return flag turned green first, the net-value-added flag turned green second and the net-cash-flow flag turned green last. Without a financial reserve, some herds had 3 years of negative net-cash-flow and a few had up to 5 years. Typically, three years of negative net-cash-flow will substantially weaken the financial structure of beef or ranch business. We can almost guarantee that 5 years of negative net-cash-flow will ensure that beef cowherd will not make it

through the next cattle cycle. Once stressed, a business may never recover.⁷

Conclusion

Ten years of herd assessments suggest that every beef farmer and rancher needs to cash flow each and every year. Clearly, if they do not cash flow, they will be talking to their banker about some changes. They may even be faced with liquidation of assets.

A beef cow herd, on-the-other-hand, does not need to add value to the family's resources each and every year; however, negative net-value-added benchmarks in any one year does send up a "red-flag" that needs management attention. Negative net-value-added benchmarks over multiple years have the potential to snowball into a major total business problem.

A negative net-financial-return benchmark in any one-year implies that equity capital is being consumed. This is serious and must be immediately turned around quickly or the financial survival of the total business is in jeopardy.

Section III: Three Total Business Indicators

While the previous sections of this fact sheet series focused primarily on assessing the beef cow profit center, there are also three 'Green-Flag/Red-Flag' total business indicators that should be used as financial benchmarks for the overall beef farm or ranch business. The three recommended total business benchmarks – liquidity, solvency, and cost structure and profitability – are each discussed in detail below. These three total business assessment tools are an absolute must for beef farmers or ranchers who are going to build financial reserves.

These total business assessment tools are designed to help beef farmers and ranchers do an evaluation of the financial performance of the total farm or ranch business. Beef farmers and ranchers are encouraged to take their existing *financial statements* that they are going to provide their bankers and use Table 2 in this fact sheet to perform their own total farm or ranch business assessments. We recommend doing these self-assessments and developing alternative operating plans before visiting your banker.

1. Liquidity (also known as cash flow)

Liquidity refers to an operation's ability to meet cash expenses and cash payments as they occur and

to provide for unexpected events. Cash expenses and payments include items which will be paid within a given time period (usually the next 12 months).

Two measures are commonly used to analyze liquidity. The first is *current ratio* and the second is *net-cash-flow* of the total business. You can calculate a current ratio by dividing the value of your total current assets by your total current liabilities. Current assets are those items you own which are easily converted to cash with low transactions costs (e.g., raised livestock, checking accounts, C.D.'s, accounts receivable within a year, etc.). Current liabilities include scheduled payments on loans, accounts payable, and other obligations due within a year.

A large current ratio is desired and should be experienced during the good times. Current ratios greater than 2.0 suggest that opportunities for additional business investment may be feasible; however, *buying additional beef cows during the expansion phase of the cattle cycle is not recommended*. During the period of high bred cow prices, we recommend investing, instead, in management tools and technologies that enhance economic efficiencies. We think beef farmers and ranchers should have been expanding their cow herds when breeding cow prices were relatively low rather than expanding their herds during times of high bred cow prices. *Buying breeding cows when prices are high generally makes that herd a high-cost herd*.

A current ratio between 1.0 and 2.0 suggests that caution be exercised in managing cash and no herd expansion should be considered. A current ratio less than 1.0 indicates potential liquidity problems that may only be solved by liquidating some breeding cows or other assets.

Another useful measure of liquidity is *projected annual net-cash-flow* of the total business, calculated as projected annual cash inflows minus projected annual cash outflows. This measure encompasses all expected sources-and-uses of cash over the next twelve months, and can be used to anticipate liquidity problems before they occur. A monthly cash flow projection can also be prepared to monitor sources-and-use of cash month by month. This monthly cash flow projection can also be used to project borrowed capital needs and repayment ability by the month. It is generally easier to prevent a cash flow problem before it happens rather than to correct a cash flow problem after it occurs.

A decrease in cattle prices can quickly lead to liquidity problems for many beef farmer and ranch operators. It is useful to test a situation with lower-than-projected prices as a way of preparing for the unexpected. Not meeting short-term cash obligations can seriously jeopardize a producer's financial survival. Creditors may refuse to extend credit to an operation that cannot keep its bills current, suppliers may refuse to deliver products to farms with past-due accounts, and lack of cash for living expenses can quickly lead to family stress.

A small negative or small positive net-cash-flow should be interpreted as a “red-flag” warning that margins are small. Management changes that produce incremental increases in revenues and/or cost savings may be needed to provide additional cash flow.

A projected large negative net-cash-flow value is an indication of serious liquidity problems. Overcoming this cash shortfall may require additional borrowing, sales of assets, or postponement of scheduled payments.

Beef cow producers have one typical advantage over other types for farmers. They can normally sell off breeding cows to generate cash when needed.⁸ Most breeding stock sales, however, entail significant income reductions in following years and often lead to under utilized resources in future years which, in turn, leads to reduced economic efficiency of the beef cowherd, that is, just the opposite of what is desired.

2. Solvency

While liquidity is concerned with the short-run ability of a farm or ranch to meet its cash flow obligations, solvency examines its long-run financial stability. If the farm or ranch were sold today, would the total value of the assets retire all the outstanding farm debt? This is the primary question that a solvency measure should answer. An answer “no” to this solvency question sends a “red-flag” and needs management’s immediate attention.

One measure of solvency is the debt-to-asset ratio. This is calculated as the total outstanding debt on the farm or ranch divided by the total value of all farm or ranch assets times 100. Solvency estimates the percentage of the farm or ranch assets that are debt-financed. For example, an operation with a debt of \$150,000 and assets valued at \$225,000 would have a debt- to-asset ratio of 67% ($\$150,000 \div \$225,000$), and would be at considerable financial

risk. An operation with the same debt but with \$450,000 of assets would have a debt-to-asset ratio of 33%. Both operations are solvent because debt is less than the asset value, but financial risk is greatly different between the two farms.

A lower debt-to-asset ratio indicates greater solvency and a greater ability to withstand short-term operating losses. Ratios less than 40 percent show reasonably good potential for long-run financial health. Debt-to-asset ratios from 40 to 60 percent are acceptable but the business is at some risk. Debt-to-asset ratios above 60 percent suggest that serious attention is required during periods of low prices.

Research suggests that beef cow operations are more sensitive to debt than other types of farming and beef cow operations cannot support as much debt because of the cattle cycle. As a result, debt loads should be closely monitored to insure that progress is being made toward reducing the debt-to-asset ratio over time.⁹ Ratios above 40 percent send up “red-flags” in beef cow operations.

Net worth is another good measure of solvency. Calculated as total assets minus total liabilities, it shows the owner’s equity capital in the farm or ranch. Farms with small net worth values are less able to withstand financial losses compared to similar farms with large net worth values. Net worth is increased by 1) generating profits, 2) asset values appreciating over time and 3) retiring debts.

A related solvency measure is the year-to-year change in net worth. This measure is calculated by subtracting last year’s value of net worth from this year’s value of net worth. A large negative change in net worth from one year to the next is a “red-flag” signal that all is not well on the farm and the value of the owner’s equity capital is declining. A large negative change in net worth is serious and needs immediate attention.

Solvency problems may not manifest themselves as quickly as liquidity problems, but their consequences can be more serious. In fact, liquidity problems can easily progress into solvency problems, especially when intermediate assets (cows) and long-term assets (land) are liquidated to cover current liabilities.

3. Cost Structure And Profitability

Profit in the beef cow herd is determined by a basic profit equation composed of three critical components. The basis profit equation is:

$$\text{Profit} = \text{cwts (Price - UCOP)}$$

Where: **cwts** is the hundredweights of calves produced; **Price** is the price received for calves sold; and **UCOP** is the unit cost of producing a hundred weight of calf. The first profit (**cwts**) component is production oriented and the other two components (**Price and UCOP**) are economic oriented.

For some producers, the cattle enterprise is just not profitable. Even with high beef productivity (high cwts), it may still not be profitable. High beef production is important but does not guarantee high profits. Low unit cost of production, along with high production, is also required to ensure profits. High unit cost herds, on-the-other-hand, are at risk of generating economic losses and can not be sustained over time. High cost herds can even drag the rest of the total farm or ranch business down. Unit cost of producing a hundredweight of calf (UCOP) plays a major role in determining overall profits from the cowherd and the total farm or ranch business.

You absolutely have to know if you are operating a high cost or low cost beef cow herd. Your ability to cope with the next down market will depend on your herd's unit cost of producing a hundredweight of calf. If you are a high cost producer, use the current good times to lower your

unit cost of producing a hundred pounds of calf. If you are already a low cost producer, don't change.

Another fact sheet in this series specifically guides you through a cost of production analysis of your beef cow herd. A third fact sheet helps you benchmark your herd so that you can determine if you are operating a high-cost or low-cost herd.

4. Putting It All Together

An examination of the problem indicators from your beef farm or ranch business can help you focus your limited management time on the right things in these good times (see Table 2). First, evaluate each problem area in your business by circling the appropriate evaluation answer. Then, look at each problem area where you've circled "not a problem," pat yourself on the back and try to capitalize on these strengths. Make sure that your future management plans take advantage of these strengths when prices again turn downward.

As a second step, examine the serious problem column. Any "serious problem" circled should be addressed immediately. Next, examine the "caution" items circled. These are items that have room for improvement, and, if addressed, should improve your long-run business performance and long-run business financial survival.

Table 2: Problem Indicator Summary

Problem Area	Measures	Not A Problem	Caution	Serious Problem
Liquidity	Current Ration	>2.0	1.0 - 2.0	< 1.0
	Net-cash-flow	Large Positive	Small	Large Negative
Solvency	Debt-to-asset Ratio	< 40%	40% - 60%	> 60%
	Net Worth	Large	Moderate	Small
	Change in Net Worth	Positive	Small	Large Negative
Unit Costs of Production	Cost Per Cwt Of Calf Produced	< \$62	\$75 - \$80	>\$80

You now know if liquidity, solvency, or unit costs of production are "red-flags" for your herd. How quickly these red flags will show up in your beef cow business during the downturn phase of the cattle cycle depends on (1) the economic efficiency of your operation, (2) your cost control program, and (3) the debt structure associated with your beef cow herd. When prices are good, you have an opportunity to formulate a management action plan now to prevent future "red-flags" from showing up during the next downturn.

Summary

Beef farmers or ranchers who are serious about increasing economic efficiency and building a financial reserve, should first replace perceptions about the business with business facts. This is done by collecting and analyzing the "facts" on the business. When a beef farmer or rancher collects and analyzes his own business facts, perceptions will be left behind and reality will be the focus. The second step in increasing economic efficiency and building a

financial reserve is being receptive to making modifications to the business during the good times.

Section I of this fact sheet laid out the cattle cycle's impact on beef cow profits and projects a profit pattern for the rest of this decade. Beef farmers and ranchers are encouraged to increase economic efficiency and to build a financial reserve. Section II of this fact sheet described three recommended herd business management tools specifically identified for increasing a beef cow herd's economic efficiency. Section III focused on three total business management tools recommended for the total beef farm or ranch business.

Your state Cooperative Extension Service, state IRM Team, and your own local Learning Team¹⁰ can help with the collection and analysis the herd's production and economic facts. Beef farmers and ranchers should then use the services of these same professionals to help increase economic efficiency and to build a financial reserve in anticipation of the next tough times.

¹ For a more detailed discussion on cattle cycles are available including other articles in this series and <http://www.ag.ndsu.nodak.edu/cow/new/dvmpt1.pdf> and

<http://www.ag.ndsu.nodak.edu/cow/new/dvmpt2.pdf>.

² Data source: North Dakota's Farm Business Management Summaries published by North Dakota State University.

³ In 1999 all IRM herds analyzed were former IRM Cooperators with 1 to 7 years of IRM Experience. No new Cooperators were accepted in 1999.

⁴ Year 2000 data is not yet available.

⁵ The cash costs of growing farm-raised feeds fed to the beef cows are taken into account in the cash flow business management tool. (This is different than on the net-value-added side of the business). If the cow consumes the feed harvested from an acre, it is assumed that the beef cow has to pay the cash costs of producing that acre of feed including any debt service (interest and principal) associated with that acre.

⁶ General Accepted Accounting Practices (GAAP) is used to generate the net-financial- return account for the beef farm or ranch.

⁷ Some simulation work suggests that when debt service is too high on a beef cow operation, that it goes bankrupt in the second cattle cycle. It appears that a high debt service ranch will make it through the first cyclical downturn because expenses can be

postponed until prices come back up. All the income generated in the next good time is used to pay past bills. Then, when the next cyclical downturn comes, there are no financial reserves to get them through that 2nd downturn.

⁸ It is the collective sell off of breeding females in times of low prices and severe cash flow that typically causes the cattle cycle numbers to turn downward. The cattle number turn-down is triggered by selling breeding animals for cash, which, at first, amplifies the price downturn, but later, facilitates the price upturn in beef prices. Now as prices are going up, these same producers are holding back more heifer calves rather than selling them for the higher calf prices. This is what causes cattle cycles.

⁹ North Dakota's simulation research on beef operations in the 1980s tended to lose all equity through the second beef price cycle if the initial debt-to-asset ratio was above 40 percent. This suggested, at least to us, that beef operations might be more sensitive to debt-to-asset ratios than other type of commercial agricultural businesses.

¹⁰ To learn more about the Learning Teams, see another fact sheet in this series entitled "IRM Learning Teams."