

# Risk Management and the Cost of Production

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Most economists are predicting lower prices for feeder cattle and calves for the foreseeable future. Because of this considerable impact on the profitability of beef cattle operation, many producers are looking for ways to manage their risk and lower their cost of production.

Thus, the objective of this paper and presentation is to give cattlemen some concepts and concrete suggestions that they can focus on to manage their risk and lower their cost of production. This paper and presentation will begin with an overview of risk, risk management concepts, and ways that producers can manage their price risk. The second section addresses ways that cattlemen can manage production and financial risks through reducing costs.

## Risk Management

One of the more popular shows on TV these days is poker. Even if one is not inclined to gamble in the gaming environment, there are three basic concepts that successful poker players utilize that can be helpful to us in the beef business. They are:

1. Always know the odds.
2. Never risk more than you can afford to lose.
3. Never risk a lot to gain a little.

With those three notions in mind, it is time to begin implementing a risk management strategy.

An effective risk management plan is one that correctly identifies those risks posed to an operation, minimizing or managing those risks that can be controlled, and accepting or transferring those risks that cannot be controlled.

It is also important to note that risk and uncertainty are NOT the same. Uncertainty simply means we do not know what will happen within a given time period. Risk, even though it includes uncertainty, means that there is a negative result if one or more uncertain events occur. For instance, the chance of precipitation tomorrow may be 50%. For most folks this is merely uncertainty, not risk. However, if someone is preparing to cut hay or work cows, a 50% chance of precipitation becomes a risk. Another example may be uncertainty regarding weaning weights. For a cow-calf producer with 40 cows, a reduction of 25 pounds in weaning weights does not pose the same risk as it does for a producer with 5,000 cows.

## Identifying Risk

The first step in risk management is risk assessment. That is identifying those areas that pose the biggest risk. Producers face five types of risk: production, price, financial, legal, and human resources. Production risk is the risk that producers face due to losses in production. Examples of production risk are drought, calf crop percentage, weaning weights, death loss, etc. Most cattlemen know what measures they need to take to manage production risk. However, many fail to do all they can because they do not realize the impacts to their bottom line.

Price risk is the risk faced by producers due to declining output prices or increasing input prices. Many cattlemen are familiar with some of the more traditional price risk management tools such as hedging, options, forward contracting, etc. However, there are additional ways that producers can manage their price risk. For cow-calf producers the main way they can manage their price risk is to produce the type of calf the market wants. In addition to doing this, they can manage their price risk by considering retained ownership whether that be through preconditioning/backgrounding,

stockering, or custom feeding. Although some may consider retaining ownership as actually increasing price risk, when feeder cattle prices are as close to fed cattle prices as they are today, retaining ownership makes much more economic sense. However, cow-calf producers should always consider any profits they have made in a weaned calf before they attempt to capture any additional returns.

## Managing the Cost of Production

The first step in managing the cost of production is KNOWING the cost of production. Many cattle producers mistakenly think of cost of production in terms of dollars per cow (\$/cow). While \$/cow cost estimates have a place in managing the beef herd, the most important cost item to know is dollars per hundredweight (\$/cwt) For commercial cow-calf producers, the \$/cwt formula is:

$$\$/\text{cwt} = \frac{\text{Variable cost} + \text{Fixed cost}}{\text{Hundredweights produced}}$$

more specifically,

$$\$/\text{cwt} = \frac{\text{Variable cost} + \text{Fixed cost}}{\text{Number of cows} \times \text{Weaning percentage} \times \text{Average weaning weights}}$$

Once this number is calculated, ranchers can go about managing their costs.

In any enterprise, the first priority is to cover variable costs. Variable costs are those items that will fluctuate or vary with production, hence the name variable costs (VC). Variable costs are also called direct costs or “cost of production” and include items such as feed, hay, seed, fertilizer, fuel and oil, etc. It is important to cover VC, otherwise there is nothing to contribute toward covering fixed costs. The first thing economists are taught is that if you cannot cover variables costs then you cease production. In other words, if you cannot cover your VC, you cannot “make it up on volume” because what you are actually doing is increasing your losses.

Assuming you can cover VC, the next step is to

cover fixed or overhead costs. These are costs that will occur regardless of if you have 0, 1, or 400 cows. Examples of fixed costs include taxes, insurance, capital replacement (cows, equipment, and facilities), and interest or loan payments. In an ideal world you would be able cover both variable and fixed costs but that seldom happens. However, in years like this past and coming, producers do well to cover their VC and contribute as much as they can to fixed costs.

So, with these thoughts in mind, what can producers do? Referring back to the \$/cwt formula given above, producers need to find ways to lower the \$/cwt number. Lessons learned in grammar school arithmetic would tell us that if we want make \$/cwt smaller, we either need to make the numerator (top number) smaller or the denominator (bottom number) bigger, all things being equal.

So, how does a producer do this? Begin by breaking the variable and fixed costs apart and determining which costs are the largest ones within the two categories and focusing on those general areas. For instance, in most commercial cow-calf operations, variable costs comprise most of the total cost; and feed, hay, and pasture costs account for most of the variable expenses, followed next by labor, repairs and maintenance, and interest. In this case, a producer would then want to analyze the purchased feed, hay, and pasture components of the feeding sector of their operation and see which areas could be improved.

Since every operation is different, some general cost-cutting recommendations for cow-calf producers this year are:

1. Cull open cows.
2. Cull cows that are not covering their variable expenses.
3. Compare replacement female economic alternatives.
4. Consider the economics of hay production.
5. Consider alternative feeds.

## Cow Considerations

The beef cow is the basic production unit on cow-calf operations. As a result, the better job cattlemen do managing the financial aspects of the cow herd, the more successful they will be at increasing profits in their operation. It is highly unlikely that every cow in the operation is a money-maker. So, the best thing to do is to identify those cows that are money-losers and eliminate them. After that, identify the least profitable cows and eliminate them if possible. To help maintain focus, examine the simplified profitability equation for individual cows.

$$\text{Net cow income} = \text{Calf value} - \text{Annual cow cost}$$

or,

$$\text{Net cow income} = (\text{Calf weight} \times \text{Sales price}) - \text{Variable cow cost} - \text{Cow fixed cost}$$

The first item of business is to cover variable costs then fixed costs. To conduct a thorough analysis three things are needed: calf revenue, cow variable costs, and cow fixed costs. However, since short-run decisions only involve revenue and variable costs, only revenue and variable costs should be considered at this point.

The first question when deciding on keeping a cow should be, did the cow wean a calf? If the answer is no, then the cow was a major money-loser as she generated ZERO revenue. Obviously not all calves born alive make it to weaning and that is not always the dam's fault. However, a pattern of calving but not weaning is good cause to cull a cow because she only has one job; wean a live, healthy calf once a year. A cow that failed to breed needs to be culled, period.

Second question, if a cow did wean a calf, was it profitable? In an ideal world, we would know the exact cost for each cow. The reality is we don't, so we have to make our best estimate. The most straightforward way to do this is to take the actual calf weight times sales price minus annual average cow cost. *Note, this is the only time that cow cost is more important than \$/cwt cost.*

If this number is greater than zero the cow was profitable, if it is less than zero she was not. To determine average variable costs, total all the variable costs and divide by the number of cows.

For instance, if a producer has 50 cows and his total feed, hay and pasture, vet, labor, marketing, and other out of pocket expenses total \$20,000 for the year, then his average cow variable cost is \$400/cow. If one cow weans a 500 pound calf that sold for \$90/cwt, her net returns were \$50 ( $\$450 - \$400 = \$50$ ). Conversely, if this same cow weaned a 400 pound calf that sold for \$98/cwt, she lost \$8.00 for the year ( $(400 \times .98) - 400 = -\$8$ ).

Obviously there are limitations to the application of this practice. If calf prices are \$60/cwt there will be very few profitable cows. However, if a cow consistently has calves that are below the group average in revenue, then it is time to cull her.

There will also be some variation in actual cow cost. So, some discretion should be exercised in culling cows based on net income. For instance a four-year-old cow that had a slight negative income should probably be afforded a second chance while a 12-year-old cow that lost money should probably be culled. Some producers may also choose to cull the oldest 20-30% of the cows in the herd since their calves will generally be lighter and the odds of the cow becoming lame or unmarketable are increased.

Finally, body size as it relates to economic efficiency could be considered. One way to measure this is pounds weaned as a percentage of body weight. For example, if two cows, weighing 1,000 pounds and 1,200 pounds weaned calves with 205-day adjusted weaning weights of 500; the lighter cow was more economically efficient as she weaned a calf that was 50% of her body weight ( $500/1,000$ ) as opposed to the heavier cow that only weaned 40% of her body weight ( $500/1,200$ ).

In addition to determining profitability of individual cows, 2007 may also be a good year to revisit replacement female alternatives. Historically, most producers have raised their own replacements.

However, in recent years increasing numbers of cattlemen have begun procuring most if not all of their replacement females through either some type of custom development arrangement or by purchasing bred heifers. Space limits a full-discussion of these alternatives, but a useful tool for ranchers evaluating the economics of raised versus purchased heifers is the “UGA Replacement Female Calculator” available at <http://www.ces.uga.edu/Agriculture/agecon/cmpdec.htm>.

## Forage and Feed Costs

Two-thirds of the annual variable costs in a cow operation are pasture, hay, and feed. As a result, if a producer is going to appreciably decrease cost, these areas make the best starting place. The run-up in fuel and fertilizer prices has increased pasture and hay costs considerably. To illustrate this point, consider the actual per acre costs for hay production at the Southwest Georgia Experiment Station (SWGES) in Plains (Figure 1). In 2005, costs were more than double what they were in 2000. Even though costs moderated some in 2006, they are again expected to reach almost \$400/acre in 2007.

So what are some alternatives? Granted, every situation is different: however some general recommendations regarding pasture and hay production for 2007 include: soil testing, comparing sources of nitrogen fertilizer, revisiting the economics of legumes where appropriate and examining the economics of controlled and/or rotational grazing.

Regarding hay production, cattlemen who routinely make their own hay should revisit this topic to determine their true cost of raising hay. Many cattlemen like to think their cost of hay is a good bit lower than it actually is. Using the cost and yield information from the SWGES (Figure 2) we can see that the actual cost of production is actually closer to \$100/ton than the \$40-\$50 that many cattlemen think they are achieving.

In addition to calculating the cost of hay

production, stockmen are also encouraged to examine appropriate forage alternatives. In recent years a growing number of cattlemen are raising silage as opposed to hay or they are producing baleage/haylage as an alternative to hay. Both of these alternatives certainly have their advantages and disadvantages. However, with increasing fertilizer costs and the uncertainty of weather, it certainly pays to at least consider the alternatives to hay production.

Finally, regardless of how hay is produced or procured it is still more expensive than it used to be. Therefore, it pays to consider ways to reduce hay wastage. From storage to feeding methods, every facet of the hay feeding process should be scrutinized.

Another way that producers can reduce their feed costs is to utilize some of the commodity feeds and byproducts that are available now. Oftentimes, the hold-up to utilizing feeds are concerns about additional facilities and operational costs. To help producers work through the math of this decision, the “UGA Alternative Feedstuffs Calculator” was created. The idea of this Excel spreadsheet is to allow a producer to enter their current feeding program (e.g. hay and purchased feed) and compare it to an alternative feed (e.g. hay and corn gluten/soy hulls). Users are allowed to enter current feed cost, alternative feed cost and any additional equipment, facilities or other costs associated with the alternative feeds. Results are then calculated on herd and per cow basis. The program is available at <http://www.ces.uga.edu/Agriculture/agecon/cmpdec.htm>.

## Summary

2007 will be a very interesting year. Higher prices for fuel, fertilizer, and feed will make profit margins much smaller. Beef cattle producers should focus on cost reduction measures that reduce the cost per cwt, not cost per cow. To do this they should cull open cows, cull cows that are not covering their variable expenses, compare replacement female economic alternatives, consider the economics of hay production, and consider utilizing alternative feeds in their operation.

Figure 1. Actual production costs for hay (\$/acre), Southwest Georgia Experiment Station (Plains, GA), 2000-2006.

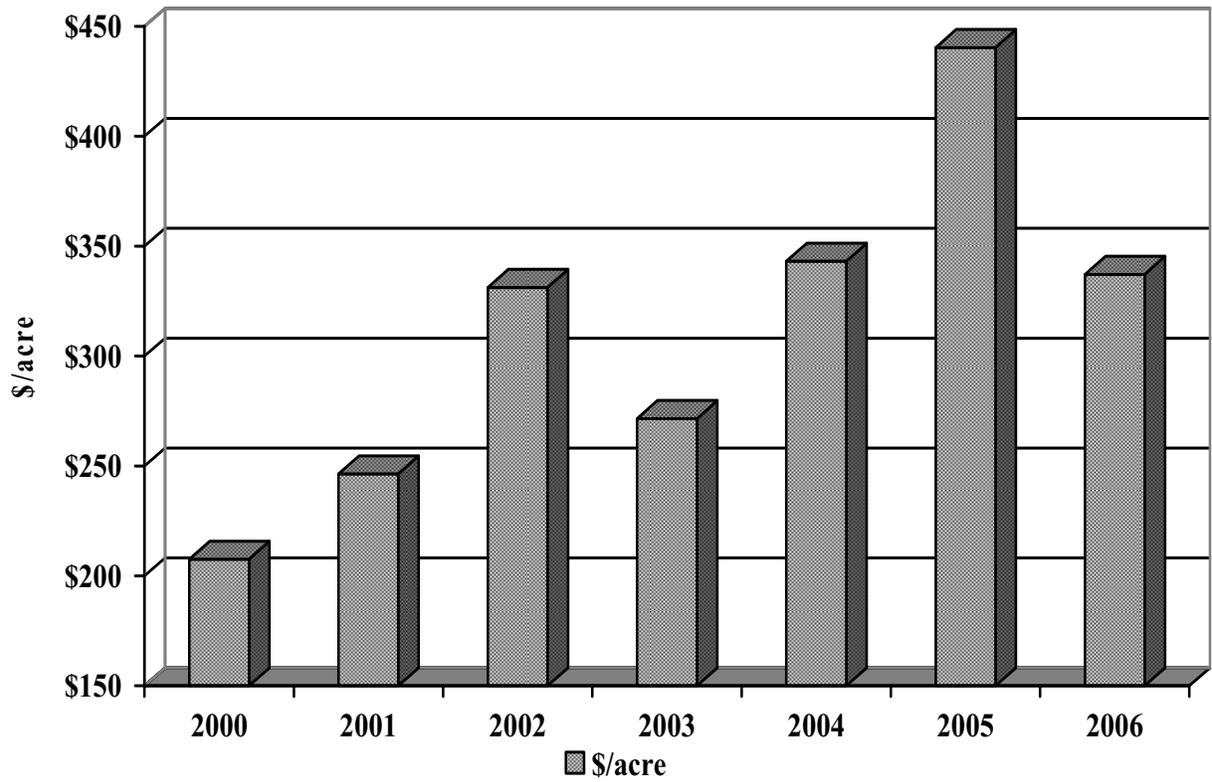
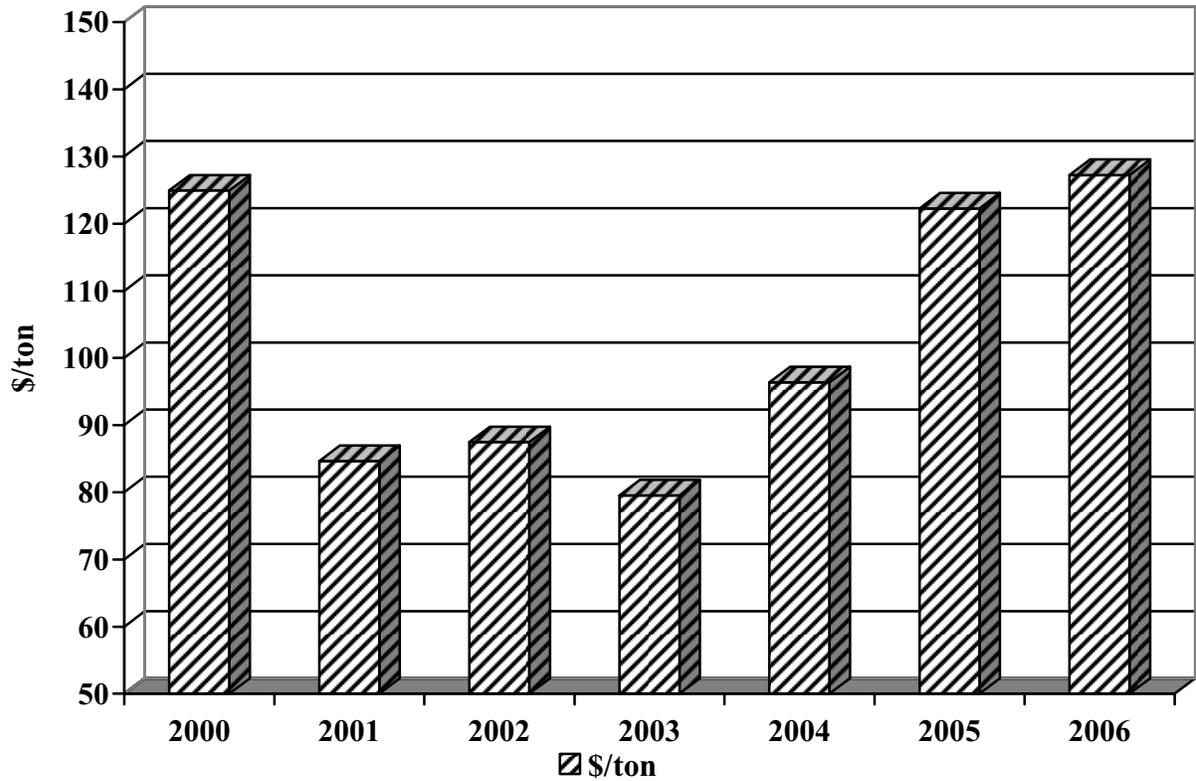


Figure 2. Actual production costs for hay (\$/ton), Southwest Georgia Experiment Station (Plains, GA), 2000-2006.



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