

Beef Business Basics: How Much and Where Should I Spend My Money?

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Either as a cattle farmer or an economist, you have barely scratched the surface of beef cattle economics if you haven't been thoroughly confused, depressed, frustrated, and even angry. The intricacies of the beloved beef cattle enterprise are overwhelming. Highly fluctuating levels of performance, input prices, output prices, weather, governmental policies and regulations, and the multiplicity of goals of a given operation make the task of assessing the economics of the beef enterprise extremely difficult. Due to these numerous and highly uncertain parameters, it is no small surprise that economists often document poor economic returns for many beef cattle operations.

Additionally, economic analyses of beef cattle operations are further complicated by the type of beef cattle enterprise, production system utilized, soils and environment, climatic conditions, time period evaluated, type of available resources, calving seasons, forage programs, supplemental feed programs, genetics, labor use, availability of financial and herd records, single or diversified enterprises, etc. Given the wide array of potential resources, production parameters, and levels of management, it should be obvious that evaluating the economics of the beef cattle enterprise is indeed not simple.

Next, your job as an economist has barely begun after you document the poor economic returns of beef cattle operations. The defense of your findings will be center stage as cattlemen, animal scientists, agronomists, agribusiness representatives, governmental agencies, trade organizations, veterinarians, etc. respond to your pessimistic estimates of profitability with the question of "Then, how come we have so many cattle farms and cattle?" Or more assertively, they declare that "we simply do not believe that cattlemen are poor business managers." "They would not have all of those cows if they were not making money with them." At this point, you either make a cowardly exit or attempt to staunchly defend your analyses.

This paradox of poor financial performance versus a very popular choice for a farm enterprise is but the first of many issues the economist will face once he attempts to inject order into the chaotic economics of the beef cattle enterprise. Other issues that need to be examined include the lackadaisical adoption of "approved management practices" such as financial and herd record keeping, a defined breeding season, herd health program, performing calf management practices, rotational grazing, stockpiled grazing, improving forage composition and production, increasing forage utilization, minimizing feed waste, genetic selection, etc.

Given the poor adoption rate of these approved management practices, perhaps the beef cattle enterprise could be better explained by the physical, recreational, spiritual, and/or therapeutic attributes gained from raising cattle. These attributes may be difficult to measure, but they are often mentioned as reasons for having a beef cattle enterprise. The inclusion of these “values” would likely make the majority of cattlemen feel better about the results too.

How Much Money Should I Spend?

A frequent topic of conversation is “what does it cost to carry a brood cow per year?” As previously eluded to, the cost to carry a brood cow per year is based on the tremendous differences in the types and quantities of inputs used and their corresponding input prices. Thus, the cost to carry a brood cow per year varies widely among cattle farmers. The current carrying cost for most Alabama cow-calf farmers ranges from \$300 - \$700 per brood cow per year. The magnitude of these costs is extremely important because the level of production costs per cow and the revenue generated per cow determines the level of profitability per cow. As can be seen from the wide range mentioned above, an average cost of \$500 to carry a brood cow per year is not very meaningful. However, your specific cost to carry a brood cow per year is extremely important. It is one part of the equation that determines your level of profitability. Unfortunately, not many cattlemen determine their costs to carry a brood cow and, if they do, it is generally at the end of the year. As such, there is little one can do to manage production costs (make input changes) after they are incurred.

An alternative approach is to determine an estimate of what the cost to carry a brood cow would be prior to the beginning of the production year. This estimate can be attained by estimating the expected revenue per brood cow for next year, then subtract your desired level of net farm income per brood cow, add an adjustment of \$xx per brood cow for cull animal revenue, and the remaining value is the maximum production costs you can spend per brood cow per year.

Table 1 describes the maximum production costs per brood cow per year based on various levels of desired net farm income, calf weight, weaning percent, and estimated 2009 calf price. The calf weight, weaning percent, and estimated 2009 calf price provides an estimate of the expected revenue per cow. The maximum production costs may be calculated by subtracting your desired annual net farm income per brood cow from the expected revenue and adding an adjustment of \$75 per brood cow to account for cull animal revenue. For example, if you expect an average weaning weight of 500 pounds per calf, weaning percent of 90 percent, and an average calf price of \$1.00 per pound, your expected revenue would be \$450 per brood cow (500 lbs/calf * \$1.00/lb. * 0.90). From the expected revenue of \$450 per brood cow, subtract a desired net farm income of \$50 per brood cow which results in \$400 per brood cow. Next, add \$75 per brood cow for cull animal revenue. This results in the maximum production cost of \$475 per brood cow per year. You can use this methodology to calculate a table of your maximum production cost per brood cow for your cow-calf operation.

Table 1. Maximum production costs per cow per year based on various levels of desired net farm income, calf weight, weaning percent, and estimated 2009 calf price*.

Desired Annual Net Farm Income Per Brood Cow	Calf Weight -----> Weaning Percent --> 2009 Calf Price ----->	400 90% \$1.12	450 90% \$1.05	500 90% \$1.00	550 90% \$0.96	600 90% \$0.93
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	Maximum Production Costs (\$/Cow/Year)*					
\$0	\$478	\$500	\$525	\$550	\$577	
\$10	\$468	\$490	\$515	\$540	\$567	
\$20	\$458	\$480	\$505	\$530	\$557	
\$30	\$448	\$470	\$495	\$520	\$547	
\$40	\$438	\$460	\$485	\$510	\$537	
\$50	\$428	\$450	\$475	\$500	\$527	
\$60	\$418	\$440	\$465	\$490	\$517	
\$70	\$408	\$430	\$455	\$480	\$507	
\$80	\$398	\$420	\$445	\$470	\$497	
\$90	\$388	\$410	\$435	\$460	\$487	
\$100	\$378	\$400	\$425	\$450	\$477	

*Assumes an adjustment of \$75 per brood cow for cull cow revenue.

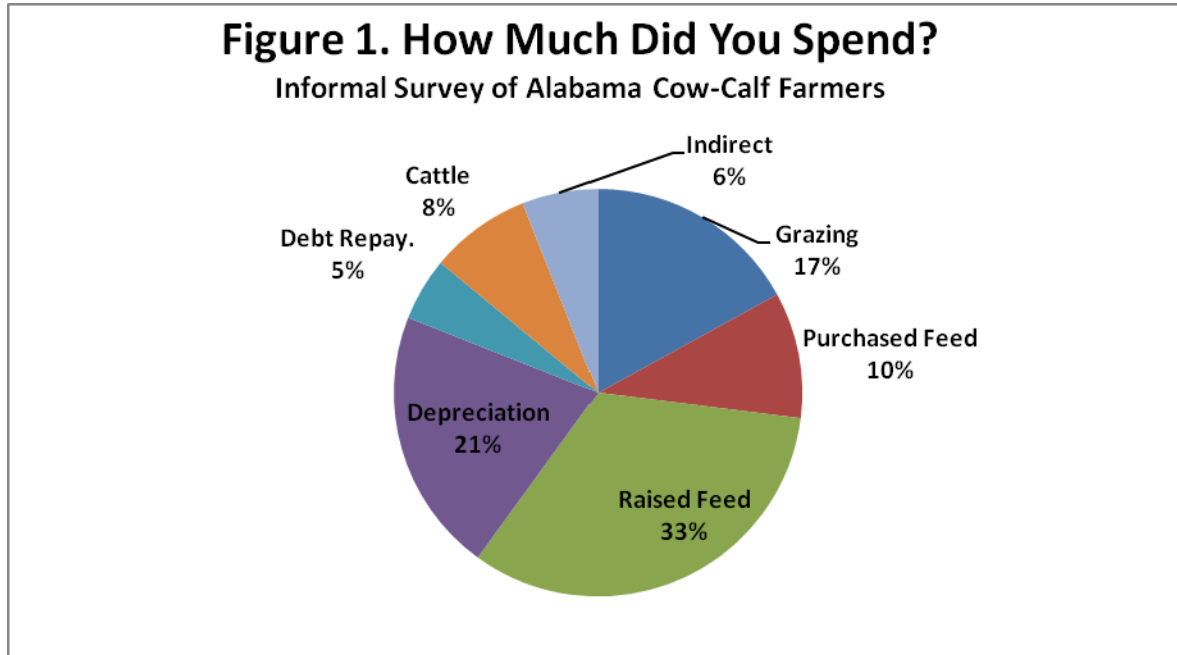
Where Should I Spend My Money?

After you know how much money you have to spend per brood cow, you need to determine where you should spend this amount of money to attain the level of production you specified in Table 1 which will provide you with your desired level of net farm income per brood cow. Making these decisions correctly takes time, knowledge, skill, and some luck. If you do not attain the level of production you specified in Table 1, your net farm income per brood cow will be reduced. Alternatively, if the attained level of production exceeds that specified in Table 1, your net farm income per brood cow will be increased. Most cattle farmers will want to be conservative when estimating their average weaning weight and weaning percent (when multiplied, these represent the level of production per brood cow) as well as the expected calf price. If these parameters turn out to be larger than expected, the resulting net farm income per brood cow will be larger.

Most cattle farmers find it difficult to decide how to allocate the money they wish to spend per brood cow. Admittedly, there are not any hard rules that will make this task easy. The most logical approach is to rank the type of costs by order of importance and begin by estimating how much each item will cost for that category. Add them up and if the total costs per brood cow is less than the maximum production costs per brood cow that you estimated from Table 1 you are in good shape. However, if the total costs you allocated are greater than the maximum production costs per brood cow you estimated, then you need to review each cost category to determine if you can reduce the level of inputs, find cheaper inputs, find cheaper substitute inputs, or do without this input. This stage of the decision-making process is where cattle farmers can significantly improve their level of profitability even before the production year begins.

Alternatively, you can also take the percentages of how much you spent last year by cost category to begin making the allocations of how much to spend next year. Figure 1 describes the results of an informal survey of Alabama cow-calf farmers about what percentages they spent of their total production costs by cost category. These percentages are not necessarily the levels that

you should try to attain. They simply represent a starting place for you to begin studying whether these allocations will work for you. It is imperative that you examine the costs in each cost category and try to lower them.



Based on the maximum production costs identified in Table 1 of \$475 per brood cow (assumes an average calf weight of 500-pounds, 90 percent weaning, an average calf market price of \$1.00 per pound, \$50 per brood cow net farm income, and \$75 per brood cow in cull animal revenue) and the allocation percentages indicated in Figure 1, we can estimate how much we should spend per brood cow by cost category. The next step is to examine each cost category and determine if you can keep your projected expenditures below this amount. If you can, then this is a profitable production cost plan. Again, you should always strive to lower your production costs since this action results in higher levels of profit. That is, assuming that lower production cost levels do not adversely affect production performance (weaning weight and weaning percent) and the market price received. Alternatively, if your projected expenditures exceed the estimated maximum production costs (Table 1), then it will be necessary to further examine input selection, the level of input use, and input prices, to determine if there are ways to lower these costs. If you cannot identify ways to lower these costs, you will have some tough decisions to make. Do I subsidize my cows, and if so, for how long? Do I increase/decrease the number of brood cows to be profitable? Do I consider changing enterprises? You may want to consult with other cattle farmers, your Extension Livestock Agent, and other professionals for suggestions on how to make your beef cattle operation profitable. This process will involve examining your entire beef/forage program and making the necessary adjustments that will improve profitability.

Table 2. How much should I spend per cost category per year?*

Estimated Percent** -->	17%	10%	33%	21%	5%	8%	6%	100%
Units	Grazing Costs	Purchased Feed Costs	Raised Feed Costs	Depreciation Costs	Debt. Repay. Costs	Cattle Costs	Indirect Costs	Total Costs
\$/Cow/Year	\$81	\$48	\$157	\$100	\$24	\$38	\$29	\$475
Total \$	\$8,075	\$4,750	\$15,675	\$9,975	\$2,375	\$3,800	\$2,850	\$47,500

*Assumes average calf weight of 500 lbs., 90% weaning, \$1.00/lb. calf price, and \$50 net farm income per brood cow (net farm income equals gross revenue minus cash costs minus depreciation) and cull animal revenue of \$75 per brood cow. **Informal survey of Alabama Cow-Calf Farmers, 2007.

Table 3 provides some cow-calf benchmark production and financial data for three profit groups from the Central Alabama Farm Analysis Association during 2007. These cow-calf operations were separated into thirds based on their level of net operating income. This comparison is one source of information and professional assistance that could help provide some guidance about what works and what doesn't work. A quick review by line item provides some insight that may be beneficial. Let's look at the first line; "Feeder Calf Produced (Lbs/Calf)" denotes the average level of output produced by each group. The level of output for all three groups is very similar at about 650-pounds per calf produced. However, the second line, "Feeder Calf Produced (Lbs/Cow)" shows a marked difference of about 56-pounds of calf production per cow between the top 1/3 and bottom 1/3 of the cattle farmers. The 56-pounds if marketed at \$0.90 per pound would generate an additional \$50.40 per brood cow. For a group of 30 cows, this would be an additional \$1,512 in revenue. This increased level of production for the top 1/3 group was attained from a higher weaning rate. Line three, Hay Fed (Tons/Cow) shows that the top 1/3 fed about 0.7 tons/cow less hay (1,400 lbs/cow less) than the bottom 1/3. If hay is priced at \$80 per ton, this is a cost savings of \$56 per cow. For a group of 30 cows, this would be a savings of about \$1,680. Line four, "Seed, Fertilizer, Chemical (\$/Cow)" shows a cost saving of \$41 per cow between the top and bottom 1/3. For a group of 30 cows this is a cost savings of \$1,230. Line five, "Purchased Feed (\$/Cow)" shows a cost savings of \$51 per cow between the top and bottom 1/3. For a group of 30 cows, this is a cost savings of \$1,530. Line six, "Breakeven Price (\$/Lb)" shows the top 1/3 is \$0.47 per pound lower than the bottom 1/3. Line seven, "Net Operating Profit (\$/Cow) shows the top 1/3 is \$178 per cow more profitable than the bottom 1/3. For a group of 30 cows, this amounts to \$5,340 of additional net operating income due to making better management decisions. These data suggests that high levels of weaning weight and weaning rate, lower levels of hay fed per cow, seed, fertilizer, chemicals per cow, and purchased feed per cow results in more profit. You may want to compare your production levels and production cost parameters with these data to see if you are competitive.

Table 3. Cow-Calf Data, Central Alabama Farm Analysis Association, 2007*.

Item	Top 1/3	Middle 1/3	Bottom 1/3	Top 1/3 - Bottom 1/3
Feeder Calf Produced (Lbs/Calf)	650	642	657	-7
Feeder Calf Produced (Lbs/Cow)	576	528	520	56
Hay Fed (Tons/Cow)	1.6	1.8	2.3	-0.7
Seed, Fertilizer, Chemical (\$/Cow)	\$78	\$91	\$119	-\$41
Purchased Feed (\$/Cow)	\$64	\$91	\$116	-\$51
Breakeven Price (\$/Lb.)	\$0.82	\$0.99	\$1.29	-\$0.47
Net Operating Income (\$/Cow)	\$137	\$47	-\$41	\$178

*Source: Central Alabama Farm Analysis Association

Feed costs (grazing, hay, and supplemental feedstuffs) are often the largest costs incurred by most cattle farmers. As can be seen in Figure 1, feed costs represented 60 percent of the total costs reported by those Alabama cow-calf farmers surveyed. Given that feed costs represent more than half of the cost to carry a brood cow, much time and effort should be spent on managing these costs. Don't be afraid to request help from fellow cattle farmers, your accountant, Extension livestock agents, Alabama Beef Cattle Improvement Association, Alabama Farm Analysis Associations, agribusiness representatives, etc. for ideas and management practices to lower these feed costs.

Table 4 is an example of a feed budget for a winter calving, North Alabama cow-calf enterprise with mixed grass pastures and stockpiled fescue grazing. This table describes the feed used for three designated feeding periods. It is important to note that the largest cost feeding period is from 1/16-4/15 at about \$2.01 per head per day. When converted on a total cost per head, this amounts to \$181 per head. Here lies the Achilles heel of the cow-calf operation. Winter feed costs are extremely expensive and we must find cheaper ways to adequately feed the cows. The total feed cost of \$346 per head is simply too large when compared with the revenue generated with cow-calf production. If these costs cannot be reduced given the feeder calf production levels and market prices we currently face, cow-calf farmers will need to examine other production systems (spring calving, more winter grazing acres per cow, etc.) or alternative enterprises.

It is important to remember that the nutritional requirements of the beef cow have not changed. Regardless of the level of calf market prices, the cow must receive an adequate level of nutrition if she is to be productive. Anything less will adversely affect the production level per brood cow and herd health. A review of alternative calving seasons and stocking rates for your operation is a good starting place to examine how to economically meet the nutritional requirements of your brood cows.

Table 4. An example feed budget for a cow-calf enterprise with mixed grass pastures and stockpiled fescue grazing, winter calving, North Alabama.

	----- Feeding Period -----			Total	
	Dates -->	4/15 - 11/15	11/16 - 1/15		1/16 - 4/15
	Days -->	215	60		90
----- \$ Per Head -----					
Mixed Grass Pasture		\$88		\$88	
Stockpiled Fescue Grazing			\$60	\$60	
Hay				\$135	
Supplement				\$41	
Mineral & Salt		\$14	\$4	\$6	
Total Cost Per Head		\$101	\$64	\$181	
Total Cost Per Head Per Day		\$0.47	\$1.06	\$2.01	

Strategies to Lower Your Unit Cost of Production (UCOP)

Cattle farmers need to seek ways to lower their unit cost of production (UCOP) if they want to improve profitability. The unit cost of production (UCOP) of feeder calves may be calculated by summing the total production costs, subtracting cull animal revenue, and dividing by the total pounds of calf production. See the equation listed below and some strategies that will help accomplish this worthy objective:

$$\text{Est. UCOP} = (\text{Total Production Costs} - \text{Cull Animal Revenue}) / \text{Total Pounds of Calf Production}$$

1. Decrease total production costs –
 - A) Implement a sound fertilizer and lime program to achieve an economical quantity of forage production – Use legumes to provide nitrogen and store P & K in the ground during profitable years
 - B) Shop around for fertilizer bargains (price by element used, broiler litter, bio-solids)
 - C) Increase the number of days of grazing (limit, mob, strip, rotational, etc.)
 - D) Reduce hay costs – (days fed, cost of hay, hay waste, hay fed, and/or number of animal fed)
 - E) Reduce supplemental feed costs – (days fed, cost of supplement, supplement waste, supplement fed, and/or number of animals fed)
 - F) Reduce labor expenditures – partner with your neighbors
 - G) Reduce fuel costs – quantity used and price paid
 - H) Minimize capital purchases (depreciation, interest, & debt)
 - I) ???

2. Increase cull animal revenue –
 - A) Identify preferred market windows to market cull animals (Winter & Spring)
 - B) Add value to cull animals – quality grade, weight gain, breed them, dehorn, etc.
 - C) Cull all open cows, cows with defects, cows producing less than xx percent of their body weight
 - D) Sell animals with breeding value that don't fit your production program
 - E) ???

3. Increase pounds of calf production – (weaning percent and weaning weight)
 - A) Implement a breeding season
 - B) Shorten your breeding season
 - C) Select cow and bull genetics to increase calf muscle and/or frame scores
 - D) Determine pregnancy, calving, and weaning rates – correct any problems
 - E) Implement a sound herd health program
 - F) Wean feeder calves between 7-9 months of age
 - G) Perform calf management practices (implant, deworm, fly control, etc.)
 - H) Pre-condition feeder calves when profitable
 - I) ???

Table 5 provides the breakeven feeder calf prices for various weaning weights, weaning percentages, and calf production costs. Breakeven prices may also be called your unit cost of production (UCOP). This number simply represents what it costs you to produce a pound of feeder calf. Cattle farmers should always seek opportunities to lower their breakeven price (UCOP). The lower the breakeven price, the more profitable your beef operation will be.

Given the recent higher levels of feed, fertilizer, and fuel input prices, it will be very difficult to lower your production cost per brood cow. However, small, steady progress on genetic selection, management practices, etc. can help to increase weaning weights and weaning percentage which will help you lower your breakeven feeder calf price.

Table 5. Breakeven feeder calf prices for various weaning weights, weaning percentages, and calf production costs.*

Weaning Weight	Weaning Percent	Calf Prod. /Brd. Cow	Production Costs Per Brood Cow*							2009 Projected Average Price
			\$400	\$450	\$500	\$550	\$600	\$650	\$700	
<u>Lbs.</u>	<u>%</u>	<u>Lbs./Cow</u>	<u>Breakeven Feeder Calf Price, \$/Lb.</u>							<u>\$/Lb.</u>
450	75%	338	\$1.19	\$1.33	\$1.48	\$1.63	\$1.78	\$1.93	\$2.07	\$1.05
500	75%	375	\$1.07	\$1.20	\$1.33	\$1.47	\$1.60	\$1.73	\$1.87	\$1.00
550	75%	413	\$0.97	\$1.09	\$1.21	\$1.33	\$1.45	\$1.58	\$1.70	\$0.96
600	75%	450	\$0.89	\$1.00	\$1.11	\$1.22	\$1.33	\$1.44	\$1.56	\$0.93
450	80%	360	\$1.11	\$1.25	\$1.39	\$1.53	\$1.67	\$1.81	\$1.94	\$1.05
500	80%	400	\$1.00	\$1.13	\$1.25	\$1.38	\$1.50	\$1.63	\$1.75	\$1.00
550	80%	440	\$0.91	\$1.02	\$1.14	\$1.25	\$1.36	\$1.48	\$1.59	\$0.96
600	80%	480	\$0.83	\$0.94	\$1.04	\$1.15	\$1.25	\$1.35	\$1.46	\$0.93
450	85%	383	\$1.05	\$1.18	\$1.31	\$1.44	\$1.57	\$1.70	\$1.83	\$1.05
500	85%	425	\$0.94	\$1.06	\$1.18	\$1.29	\$1.41	\$1.53	\$1.65	\$1.00
550	85%	468	\$0.86	\$0.96	\$1.07	\$1.18	\$1.28	\$1.39	\$1.50	\$0.96
600	85%	510	\$0.78	\$0.88	\$0.98	\$1.08	\$1.18	\$1.27	\$1.37	\$0.93
450	90%	405	\$0.99	\$1.11	\$1.23	\$1.36	\$1.48	\$1.60	\$1.73	\$1.05
500	90%	450	\$0.89	\$1.00	\$1.11	\$1.22	\$1.33	\$1.44	\$1.56	\$1.00
550	90%	495	\$0.81	\$0.91	\$1.01	\$1.11	\$1.21	\$1.31	\$1.41	\$0.96
600	90%	540	\$0.74	\$0.83	\$0.93	\$1.02	\$1.11	\$1.20	\$1.30	\$0.93

*Production costs per brood cow is total cow-calf production costs less cull cow and bull revenue divided by the total number of brood cows.

Table 6 provides the estimated profit per cow for various weaning weights, weaning percentages, and calf production costs. Given the lower 2009 projected average feeder calf prices and the higher levels of production costs, the majority of Alabama cow-calf operations will likely be unprofitable. This table suggests that profits exist only for those cow-calf farmers with the lowest level of production costs and highest weaning percent.

There are basically five ways to improve your profit level per cow. First, you may want to add value to your feeder calves (genetics, uniformity, quality, preconditioning, etc.) to improve the average price received. Second, you should try to increase the value of the cull animals you sell. Third, try to improve the weaning weight of the feeder calves you produce. Fourth, try to increase the weaning percent from your brood cows. And fifth, try to lower the production costs per brood cow. Accomplishing any or some combination of these items will help you become more profitable.

Table 6. Estimated profit per cow for various weaning weights, weaning percentages, and calf production costs.*

Weaning Weight	Weaning Percent	Calf Prod. /Brd. Cow	Production Costs Per Brood Cow*							2009 Projected Average Price
			\$400	\$450	\$500	\$550	\$600	\$650	\$700	
Lbs.	%	Lbs./Cow	Estimated Profit Per Cow, \$/Hd.							\$/Lb.
450	75%	338	(\$46)	(\$96)	(\$146)	(\$196)	(\$246)	(\$296)	(\$346)	\$1.05
500	75%	375	(\$25)	(\$75)	(\$125)	(\$175)	(\$225)	(\$275)	(\$325)	\$1.00
550	75%	413	(\$4)	(\$54)	(\$104)	(\$154)	(\$204)	(\$254)	(\$304)	\$0.96
600	75%	450	\$19	(\$32)	(\$82)	(\$132)	(\$182)	(\$232)	(\$282)	\$0.93
450	80%	360	(\$22)	(\$72)	(\$122)	(\$172)	(\$222)	(\$272)	(\$322)	\$1.05
500	80%	400	\$0	(\$50)	(\$100)	(\$150)	(\$200)	(\$250)	(\$300)	\$1.00
550	80%	440	\$22	(\$28)	(\$78)	(\$128)	(\$178)	(\$228)	(\$278)	\$0.96
600	80%	480	\$46	(\$4)	(\$54)	(\$104)	(\$154)	(\$204)	(\$254)	\$0.93
450	85%	383	\$2	(\$48)	(\$98)	(\$148)	(\$198)	(\$248)	(\$298)	\$1.05
500	85%	425	\$25	(\$25)	(\$75)	(\$125)	(\$175)	(\$225)	(\$275)	\$1.00
550	85%	468	\$49	(\$1)	(\$51)	(\$101)	(\$151)	(\$201)	(\$251)	\$0.96
600	85%	510	\$74	\$24	(\$26)	(\$76)	(\$126)	(\$176)	(\$226)	\$0.93
450	90%	405	\$25	(\$25)	(\$75)	(\$125)	(\$175)	(\$225)	(\$275)	\$1.05
500	90%	450	\$50	\$0	(\$50)	(\$100)	(\$150)	(\$200)	(\$250)	\$1.00
550	90%	495	\$75	\$25	(\$25)	(\$75)	(\$125)	(\$175)	(\$225)	\$0.96
600	90%	540	\$102	\$52	\$2	(\$48)	(\$98)	(\$148)	(\$198)	\$0.93

*Production costs per brood cow is total cow-calf production costs less cull cow and bull revenue divided by the total number of brood cows.

Final Thoughts

Many cattle farmers are frustrated by all of the changes facing them today. Lower revenues due to declining feeder calf prices coupled with higher feed, fertilizer, and feed costs have most cow-calf farmers confused about which production management prices pay and which ones do not. These dramatic changes have challenged our current beef production systems and will likely lead to a new beef/forage era where less emphasis will be given to supplementation with feed and more attention will be focused on growing, managing, and harvesting forages with cattle. The time you spend now in planning, monitoring, and effective management will likely be key factors in making your beef cattle business successful in the future.