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### **Focusing On The Bottom Line Of Alabama Cow-Calf Producers**

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#### **Introduction**

Focusing on the bottom line of Alabama cow-calf producers sure sounds catchy and may even seem like a simple thing to do. However, the key words in the title are “focus” and “bottom line.” What most of us fail to realize is that many cow-calf producers here and elsewhere are not interested in the bottom line and are focused on other aspects of the cow-calf enterprise. In addition, the notion of a bottom line measurement conjures up an infinite number of measurements and methods. Many of which are not useful. Thus, the challenge in this paper is to identify some basic bottom line measurements, provide estimates of bottom line measurements, and tell how they may be used.

#### **Bottom Line Measurements**

There are many bottom line measurements that can be calculated for cow-calf operations. Obviously, there are far too many to be addressed at this Beef Short Course. Therefore, we will direct our attention to four basic bottom line measurements. The bottom line measurements used most in the cow-calf industry include 1) unit cost of production, 2) returns over cash expenses, 3) net farm income, and 4) net profit. Each of these four bottom line measurements has advantages and disadvantages.

#### **Unit Cost Of Production (UCOP)**

How many times have you wondered, “What does it cost me per hundredweight to produce feeder calves?” Keeping accurate and detailed financial and production records is the best way to know what it cost per hundredweight to produce feeder calves or what is better known as the “Unit Cost of Production (UCOP)” for your cow-calf operation. However, if you do not keep detailed financial and production records, here is a simple method to help you estimate the unit cost of production for your cow-calf operation.

This simple method to estimate your cow-calf production cost and your unit cost of production uses production and financial data from your operation. Three years of data are used to calculate averages for production and financial measurements. The use of the averages for the production and financial measurements provides an estimate of your “average cow-calf production cost” and “average unit cost of production.” For most cow-calf operations, the number of inputs and outputs vary from year to year (due to weather, prices of inputs used, market conditions, tax management, etc.). An average of three years of production and financial information is sufficient to provide a good estimate of the unit cost of production for most cow-calf operations. However, you can simply include data for additional years if you feel it is needed.

## **Animal Production Information**

The animal production information used in this analysis includes the beginning inventory of exposed cows, the total number of weaned calves, and the total weight of all weaned calves, as shown in Table 1. The beginning inventory of exposed cows may be taken from herd records or estimated for each year. Most producers who sell at weaning should have access to the number of weaned animals and weaning weights from their sales receipts. If some of these animals were retained for replacement heifers or for the feedlot, then estimates of these numbers will be necessary. This minimal level of production information will help us estimate the cost to carry a cow for one year, cost per weaned calf, and unit cost of production (cost per hundredweight of calf production).

## **Financial Information**

The financial information used in this analysis includes five pieces of information for each of three years. The first piece of financial information is “Total Expenses” which you can find on your annual Federal Income Tax Return, Schedule F, Line 35 (refer to Table 1). Of course, this represents the total expenses for all agricultural enterprises. If you have more than one agricultural enterprise on your farm, you will need to estimate the expenses associated with them and make an adjustment, which is the second piece of financial information needed. Otherwise, if you have a single enterprise farm (cow-calf), the adjustment will be zero. You may need to contact your Regional Extension Agent for an enterprise budget that can be used to develop an estimate of the costs of your other enterprises. The third item is the adjustment for non-calf revenue. This would include both purchased and raised breeding animal (replacement heifers, cows, and bulls). This information is available on the Federal Income Tax Return, Form 4797, or cull animal market receipts. The fourth item is an adjustment for the opportunity cost of owned capital. This adjustment for opportunity cost on owned capital provides the producer some return on owned assets such as land, buildings, livestock, etc. and may be calculated by multiplying the value of owned assets by a reasonable rate of return. For example, if the value of your owned assets amount to \$120,000 and your next best return on capital was 3 percent, the adjustment would be \$3,600 ( $\$120,000 \times 0.03$ ). The fifth item is an adjustment for your unpaid management and labor. This item may be estimated based on the amount of time you spent with the cow-calf operation in hours multiplied by an hourly rate that represents a market rate paid for your labor.

After collecting and/or estimating the data described above, you can now use items one through five to calculate your adjusted cow-calf production costs (item one minus item two minus item three plus item four plus item five). An average of the three years provides an average adjusted cow-calf production costs. The average adjusted cow-calf production costs divided by the average number of mature cows provides an estimate of your average cost per cow. Likewise, the average adjusted cow-calf production costs divided by the average number of calves provides an average cost per calf. Lastly, the average adjusted cow-calf production costs divided by the average total weaning weight provides an estimate of your unit cost of production (this is your average cost per pound of calf production or if multiplied by 100 is your average cost per hundredweight of calf production).

Table 2 provides a data sheet to collect and analyze the necessary production and financial information. The calculations are simple and can be accomplished with pencil and paper. A Microsoft Excel spreadsheet version is also available at <http://www.ag.auburn.edu/dept/aec/faculty/spreadsheets.htm> that you may download and use to calculate the unit cost of production for your cow-calf operation.

Enter data for items hi-lited in blue.

Table 1. A simple method to estimate your cow-calf production costs.

1

Item	Year 2002	Year 2003	Year 2004	3-Year Average	Per Cow Average	Per Calf Average	Per Lb. Average <sup>2</sup>
<b>PRODUCTION</b>							
Beginning inventory of exposed cows (hd) <sup>3</sup>	118	126	129	124	NA	NA	NA
Total number of calves weaned (hd)	104	110	116	110	0.88	NA	NA
Total weight of all calves weaned (lbs)	52,140	56,430	48,960	52,510	423	479	NA
	*	*	*	*	*	*	*
<b>FINANCIAL</b>							
Schedule F total expenses (line 35, \$)	\$40,155	\$46,490	\$42,285	\$42,977	NA	NA	NA
- Adjustment for other enterprise expenses <sup>4</sup> (\$)	\$6,475	\$7,739	\$6,991	\$7,068	NA	NA	NA
- Adjustment for non-calf revenue <sup>5</sup> (\$)	\$6,137	\$7,257	\$5,962	\$6,452	NA	NA	NA
+Adjustment for oport. cost on owned capital <sup>6</sup> (\$)	\$3,600	\$3,600	\$3,600	\$3,600	NA	NA	NA
+ Adjustment for unpaid labor / mgt. (\$)	\$10,000	\$10,000	\$10,000	\$10,000	\$80	\$91	\$0.19
Cow-calf production costs <sup>7</sup> (\$)	\$41,143	\$45,094	\$42,932	\$43,056	\$346	\$391	\$0.82

<sup>1</sup>A more precise estimate of your cow-calf production costs may be obtained by using the Cow-Calf SPA procedures.

<sup>2</sup>If your goal is to be profitable 10 years out of 10, then your "cow-calf production costs per hundredweight of calf production" must be lower than the lowest market price received during the 10 year period ( $\$43,056 / 52,510 \text{ lbs} = \$0.8200/\text{lb}$  or  $\$82.00/\text{cwt}$ .)

<sup>3</sup>The beginning inventory of exposed cows was the number of cows exposed to the bull the previous year.

<sup>4</sup>The adjustment for other enterprise costs includes costs associated with other enterprises (such as stockers, cotton, wheat, etc.) that were included on the Schedule F expenses.

<sup>5</sup>Non-calf revenue includes the revenue from cull cows, heifers, and bulls (refer to Form 4797).

<sup>6</sup>The adjustment for opportunity cost on owned capital provides the producer some return on owned capital (i.e.  $\$120,000 * 3 \text{ percent} = \$3,600$ ).

<sup>7</sup>Cow-calf production cost is equal to Schedule F total costs minus the adjustment for other enterprise costs minus the adjustment for non-calf revenue, plus the opportunity cost on owned capital, plus the adjustment for unpaid labor and management (i.e. for 2001,  $\$40,155 - \$6,475 - \$6,137 + \$3,600 + \$10,000 = \$41,143$ ).

Table 2. Data sheet and calculations for a simple method to estimate your cow-calf production costs.<sup>1</sup>

Item	Year 2002	Year 2003	Year 2004	3-Year Average	Per Cow Average	Per Calf Average	Per Lb. Average <sup>2</sup>	
Column Row	"A"	"B"	"C"	"D"	"E"	"F"	"G"	"H"
<b>PRODUCTION</b>								
"1"	Beginning inventory of exposed cows (hd) <sup>3</sup>	_____	_____	_____	* Calculated * $(B1+C1+D1)/3$	NA	NA	NA
"2"	Total number of calves weaned (hd)	_____	_____	_____	* Calculated * $(B2+C2+D2)/3$	Calculated $E2/E1$	NA	NA
"3"	Total weight of all calves weaned (lbs)	_____	_____	_____	* Calculated * $(B3+B4+B5)/3$	Calculated $E3/E1$	Calculated $E3/E2$	NA
* * * * *								
<b>FINANCIAL</b>								
"4"	Schedule F total expenses (line 35, \$)	_____	_____	_____	* Calculated * $(B4+C4+D4)/3$	NA	NA	NA
"5"	- Adjustment for other enterprise expenses <sup>4</sup> (\$)	_____	_____	_____	* Calculated * $(B5+C5+D5)/3$	NA	NA	NA
"6"	- Adjustment for non-calf revenue <sup>5</sup> (\$)	_____	_____	_____	* Calculated * $(B6+C6+D6)/3$	NA	NA	NA
"7"	+Adjustment for opport. cost on owned capital <sup>6</sup> (\$)	_____	_____	_____	* Calculated * $(B7+C7+D7)/3$	NA	NA	NA
"8"	+ Adjustment for unpaid labor / mgt. (\$)	_____	_____	_____	* Calculated * $(B8+C8+D8)/3$	Calculated $E8/E1$	Calculated $E8/E2$	Calculated $E8/E3$
"9"	Cow-calf production costs <sup>7</sup> (\$)	Calculated $B4-B5-B6+B7+B8$	Calculated $C4-C5-C6+C7+C8$	Calculated $D4-D5-D6+D7+D8$	* Calculated * $(B9+C9+D9)/3$	Calculated $E9/E1$	Calculated $E9/E2$	Calculated $E9/E3$

4

<sup>1</sup>A more precise estimate of your cow-calf production costs may be obtained by using the Cow-Calf SPA procedures.

<sup>2</sup>If your goal is to be profitable 10 years out of 10, then your "cow-calf production costs per hundredweight of calf production" must be lower than the lowest market price received during the 10 year period ( $\$43,056 / 52,510 \text{ lbs} = \$0.8200/\text{lb}$  or  $\$82.00/\text{cwt.}$ )

<sup>3</sup>The beginning inventory of exposed cows was the number of cows exposed to the bull the previous year.

<sup>4</sup>The adjustment for other enterprise costs includes costs associated with other enterprises (such as stockers, cotton, wheat, etc.) that were included on the Schedule F expenses.

<sup>5</sup>Non-calf revenue includes the revenue from cull cows, heifers, and bulls (refer to Form 4797).

<sup>6</sup>The adjustment for opportunity cost on owned capital provides the producer some return on owned capital (i.e.  $\$120,000 * 3 \text{ percent} = \$3,600$ ).

<sup>7</sup>Cow-calf production cost is equal to Schedule F total costs minus the adjustment for other enterprise costs minus the adjustment for non-calf revenue, plus the opportunity cost on owned capital, plus the adjustment for unpaid labor and management (i.e. for 2001,  $\$40,155 - \$6,475 - \$6,137 + \$3,600 + \$10,000 = \$41,143$ ).

### Items That Skew The Cost Estimates

Items that skew the cost estimates generally occur as a result of inconsistent management practices, weather, tax management, etc. For instance, cost estimates may be skewed if you make large purchases of inputs that are used over a long period of time. Some of these items include:

- Buying inputs for future time periods to reduce your current taxable income.
- Accelerated depreciation
- Large increases or decreases in input prices (fertilizer, hay, feed, etc.).
- Weaning calves earlier or later than normal.
- Abrupt changes in cattle inventory (expanding or liquidating).

### Ways To Use “Unit Cost of Production” Data – Comparing W/ Market Prices

The estimate of your unit cost of production is used by many cow-calf producers to compare it with the market price of the class of feeder cattle produced. If the market price is greater than the unit cost of production, then the operation is profitable. If the market price is less than the unit cost of production, then the operation is unprofitable and the producer either needs to look for ways to lower the unit cost of production, ways to increase the market price, or consider retain ownership through an additional phase of beef production.

Figure 1 describes the monthly average prices of feeder steers, 400-500 pounds, medium and large frame, number one muscling, sold through Alabama auction markets during 1994-2003. These ten-year average monthly prices may be used to determine if the cow-calf operation is profitable on average. For instance, let’s use the previously calculated unit cost of production of \$82 per hundredweight (\$0.82/Lb.) and compare it with the \$85 per hundredweight average monthly market price for October. Since the \$85 per hundredweight market price is greater than our \$82 per hundredweight unit cost of production, this cow-calf operation is profitable when using average costs and market prices. In addition, this monthly price trend information will also allow a cattle producer to evaluate when to market feeder calves.

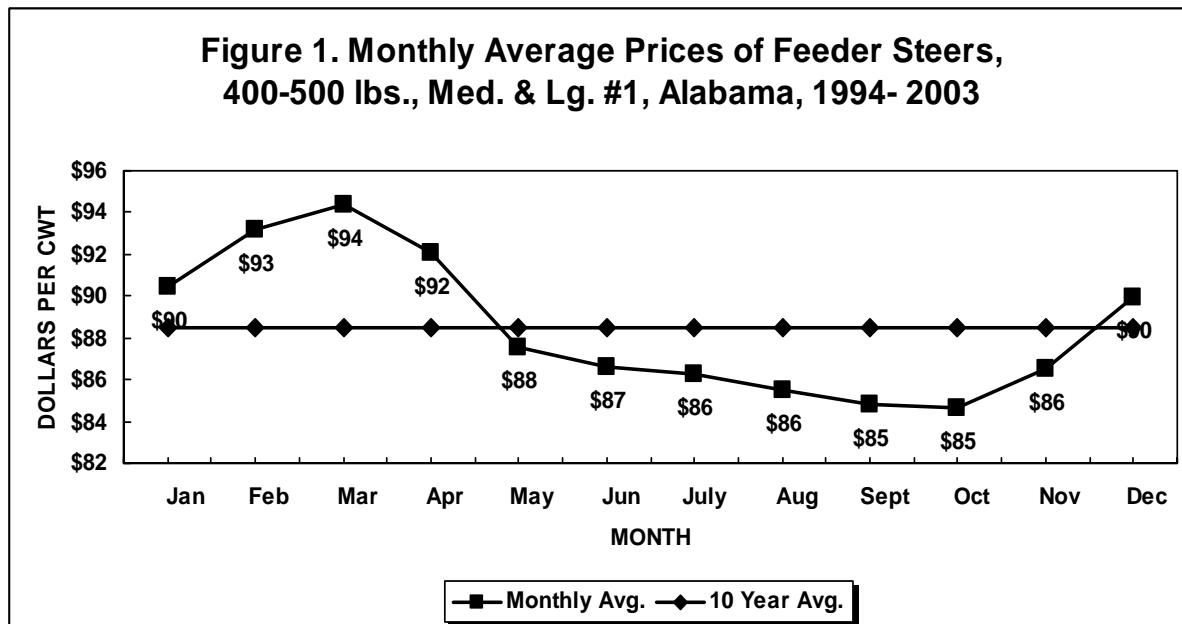


Figure 2 shows the October average feeder steer prices, 400-500 pounds, medium and large frame, number one muscling, sold through Alabama auction markets during 1994-2003. This monthly

average price by year for the month of October allows the cow-calf producer to determine how many years out of ten the operation would be profitable if similar market prices were realized during the next 10 years. In this situation, the October market price exceeds \$82 per hundredweight in 6 years out of 10 (1997, 1999, 2000, 2001, 2002, 2003). Thus, if the cow-calf operator desires to be profitable more than 6 years out of 10, the operator must either seek to lower the unit cost of production or increase the market price received.

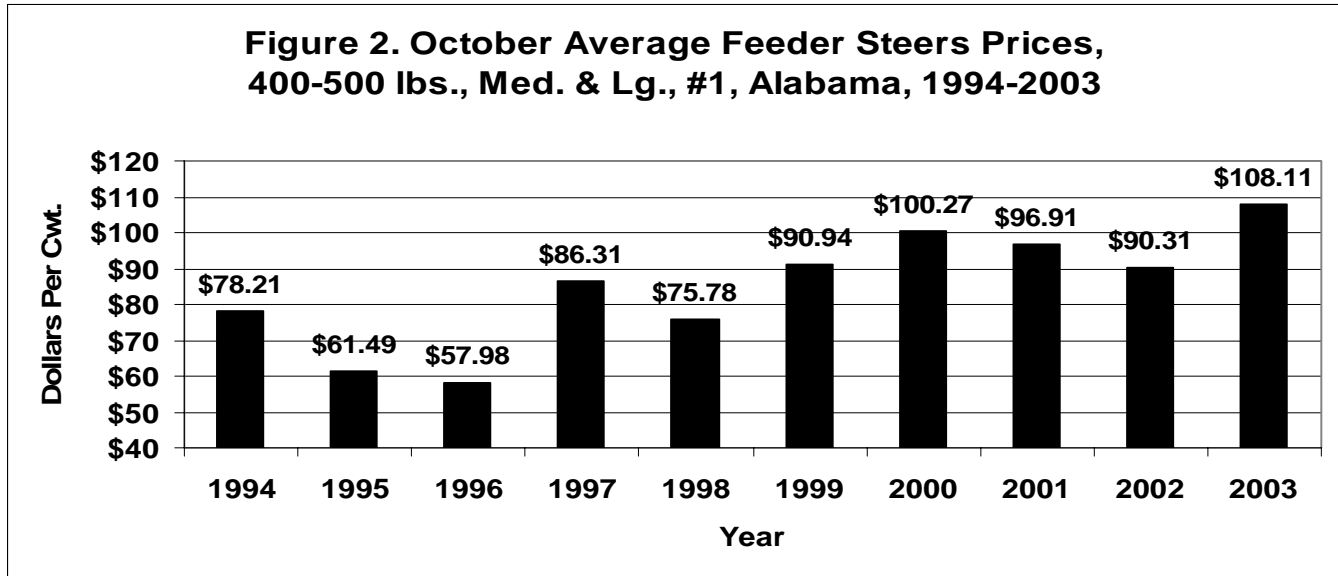
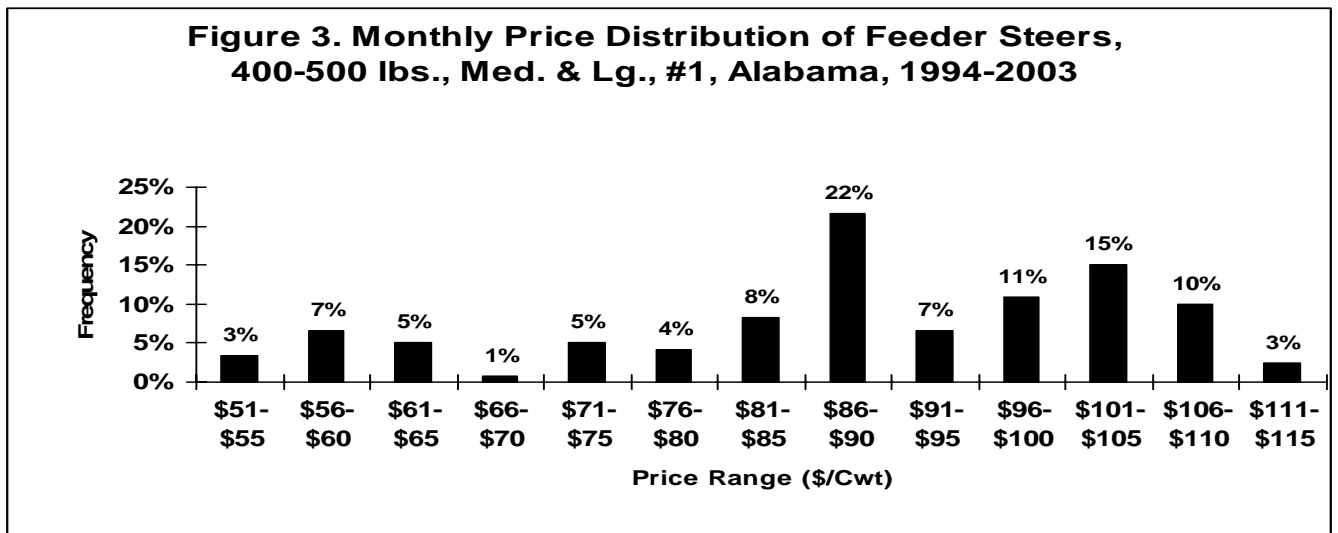


Figure 3 describes the monthly price distribution of feeder steers, 400-500 pounds, medium and large frame, number one muscling, sold through Alabama auction markets during 1994-2003. Note the wide price range (highest price range, \$111-\$115, is roughly twice the lowest price range, \$51-\$55). This monthly price distribution information tells us that 3 percent of the 120 months (10 years \* 12 months per year) the monthly average prices were between \$51-\$55/Cwt, 7 percent of the time the monthly average prices were between \$56-\$60/Cwt, and so on. The most important aspect of this figure is to note the wide range in possible market prices received during a 10-year period for this class of livestock. This price information helps you prepare for even the worst of market prices.



## Ways To Use “Unit Cost of Production” Data – Managing UCOP

The most common use of unit cost of production data is to look at alternative ways to lower your unit cost of production. Once you have completed Table 2, you are ready to examine alternatives that will lower your unit cost of production (cost per hundredweight of calf production). There are four basic alternatives that will allow you to lower your unit cost of production (Prevatt, 1998). They include:

1. Maintain the same pounds of calf production while lowering production costs.
2. Maintain the same production costs and increase the pounds of calf production.
3. Lower production costs by more than you lower pounds of calf production.
4. Increase pounds of calf production by more than you increase production costs.

A good starting place when attempting to lower your unit cost of production is to examine individual categories of production costs such as purchased feed, raised feed, grazing, cattle, interest, indirect expenses, etc. You may find that some of these inputs are either not being used, being used inefficiently, may be procured at lower costs, or substitute inputs may be procured at a lower cost. If there is an opportunity to correct one or more of these areas, this will lower cow-calf production costs and your unit cost of production. Table 3 describes the effect of reducing cow-calf production costs on the unit cost of production. For this example analysis, a 5 percent reduction of the initial cow-calf production costs results in a dollar reduction of \$2,153. The resulting cow-calf production costs would be \$40,904 (\$43,056-\$2,153). To calculate your unit cost of production, you simply divide \$40,904 by the 3-year average pounds of calf production (52,510 pounds) which would be \$0.78 per pound. Therefore, the unit cost of production is reduced from \$0.82 to \$0.78 per pound.

**Table 3. The effect of reducing cow-calf production costs on the Unit Cost of Production (UCOP)<sup>1</sup>.**

<b>\$43,056 Initial Cow-Calf Production Costs<sup>2</sup></b>								
<b>Percent Reduction In Cow-Calf Production Costs</b>								
<b>0%</b>	<b>5%</b>	<b>10%</b>	<b>15%</b>	<b>20%</b>	<b>25%</b>	<b>30%</b>	<b>35%</b>	<b>40%</b>
<b>Resulting Dollar Reduction In Cow-Calf Production Costs</b>								
<b>\$0</b>	<b>\$2,153</b>	<b>\$4,306</b>	<b>\$6,458</b>	<b>\$8,611</b>	<b>\$10,764</b>	<b>\$12,917</b>	<b>\$15,070</b>	<b>\$17,223</b>
<b>Resulting Cow-Calf Production Costs</b>								
<b>\$43,056</b>	<b>\$40,904</b>	<b>\$38,751</b>	<b>\$36,598</b>	<b>\$34,445</b>	<b>\$32,292</b>	<b>\$30,139</b>	<b>\$27,987</b>	<b>\$25,834</b>
<b>Resulting UCOP From Reducing Cow-Calf Production Costs (\$/LB Of Calf Production)</b>								
<b>\$0.82</b>	<b>\$0.78</b>	<b>\$0.74</b>	<b>\$0.70</b>	<b>\$0.66</b>	<b>\$0.61</b>	<b>\$0.57</b>	<b>\$0.53</b>	<b>\$0.49</b>

<sup>1</sup>UCOP is the unit cost of production expressed in dollars per pound or dollars per hundredweight of calf production.

<sup>2</sup>The initial cow-calf production cost is the 3-year average from Table 1. Pounds of calf production are assumed to remain constant.

As described in Table 3, a wide range (0-40 percent) of reduction in cow-calf production costs is possible. A 40 percent reduction may be unreasonable for your operation, but most cow-calf operations can easily reduce their cow-calf production costs by 5-20 percent with a little effort and the desire to lower costs.

The second alternative that may be used to lower your unit cost of production involves increasing the pounds of calf production without changing the level of production cost. Table 4 shows the effect of increasing calf production on the unit cost of production. There are two ways to increase the pounds of calf production, increase the weaning percent and increase weaning weight. For instance, assuming the base weight of 479 pounds per calf, if we increase the weaning percent from 88 percent to 90 percent, then we reduce the unit cost of production from \$.82 to \$.80 per pound. The weaning percent for many Alabama cow-calf operations is well below 88 percent, and thus they would have a

significant opportunity to lower their cost of production. Likewise, we can lower our unit cost of production by increasing weaning weight of the calves. For example, if we increase the weaning weight of the calf crop by 10 percent, the average weaning weight would improve from 479 pounds to 527 pounds per calf. The resulting unit cost of production would decrease from \$.82 to \$.74 per pound. If it is possible to increase both weaning percent and weaning weight, a significant reduction may be realized in the unit cost of production. By increasing the weaning percent from 88 percent to 92 percent and increasing the weaning weight from 479 to 527 decreases the unit cost of production from \$.82 per pound to \$.71 per pound of calf production.

**Table 4. The effect of increasing production on the Unit Cost Of Production (UCOP)<sup>1</sup>.**

Weaning Percent	Base Weight 479	Increase In Weaning Weight					
		5%	10%	15%	20%	25%	30%
		503	527	551	575	599	622
		----- \$/Lb. -----					
88%	\$0.82	\$0.78	\$0.74	\$0.71	\$0.68	\$0.65	\$0.63
89%	\$0.81	\$0.77	\$0.74	\$0.70	\$0.67	\$0.65	\$0.62
90%	\$0.80	\$0.76	\$0.73	\$0.70	\$0.67	\$0.64	\$0.62
91%	\$0.79	\$0.75	\$0.72	\$0.69	\$0.66	\$0.63	\$0.61
92%	\$0.78	\$0.75	\$0.71	\$0.68	\$0.65	\$0.63	\$0.60
93%	\$0.77	\$0.74	\$0.70	\$0.67	\$0.64	\$0.62	\$0.60
94%	\$0.77	\$0.73	\$0.70	\$0.67	\$0.64	\$0.61	\$0.59
95%	\$0.76	\$0.72	\$0.69	\$0.66	\$0.63	\$0.61	\$0.58
96%	\$0.75	\$0.71	\$0.68	\$0.65	\$0.62	\$0.60	\$0.58

<sup>1</sup>Assumes cow-calf production costs are held constant.

Options to increase the weaning weight may include selling calves that are older, selecting better bulls and replacement cows that have adequate frame and muscling, creep feeding, and by increasing the number of calves calving in the first two cycles (first 42 days of calving). Increasing the weaning percent may be accomplished by providing adequate nutrition to brood cows, improving your herd health program, culling older brood cows, and using bulls that have passed a breeding soundness exam.

The third alternative that may be used to lower your unit cost of production involves increasing your calf production by more than you increase your production cost. Table 5 shows the effect of increasing production by more than you increase your cost of production on the unit cost of production. For example, a 10 percent increase in production (5,251 pounds) coupled with a 5 percent increase in the cost of production (\$2,153) results in lowering your unit cost of production from \$.82 to \$.78 per pound.

**Table 5. The effect of increasing production by more than you increase cost of production on the Unit Cost Of Production (UCOP).**

Percent Increase Cost of Production	Dollar Increase Cost of Production	Resulting Total Cost of Prod.	Base Weight 52,510#	Increase In Production (Lbs.)					
				5% 55,136#	10% 57,761#	15% 60,387#	20% 63,012#	25% 65,638#	30% 68,263#
				----- \$/Lb. -----					
Base		\$43,056	\$0.82	\$0.78	\$0.75	\$0.71	\$0.68	\$0.66	\$0.63
1%	\$431	\$43,487	\$0.83	\$0.79	\$0.75	\$0.72	\$0.69	\$0.66	\$0.64
2%	\$861	\$43,917	\$0.84	\$0.80	\$0.76	\$0.73	\$0.70	\$0.67	\$0.64
3%	\$1,292	\$44,348	\$0.84	\$0.80	\$0.77	\$0.73	\$0.70	\$0.68	\$0.65
4%	\$1,722	\$44,779	\$0.85	\$0.81	\$0.78	\$0.74	\$0.71	\$0.68	\$0.66
5%	\$2,153	\$45,209	\$0.86	\$0.82	\$0.78	\$0.75	\$0.72	\$0.69	\$0.66
6%	\$2,583	\$45,640	\$0.87	\$0.83	\$0.79	\$0.76	\$0.72	\$0.70	\$0.67
7%	\$3,014	\$46,070	\$0.88	\$0.84	\$0.80	\$0.76	\$0.73	\$0.70	\$0.67
8%	\$3,445	\$46,501	\$0.89	\$0.84	\$0.81	\$0.77	\$0.74	\$0.71	\$0.68

In order for this alternative to be feasible, the cow-calf producer needs to be confident that the percentage increase in production is greater than the percentage increase in cost of production. As you can see from the table, a 5 percent increase in production costs paired with a 5 percent increase in production does not reduce your unit cost of production. In addition, keep in mind that not all increases in production costs will result in an increase in production.

The fourth alternative that may be used to lower your unit cost of production involves decreasing your cost of production by more than you decrease pounds of calf production. Table 6 shows the effect of decreasing production cost by more than you decrease the pounds of calf production on the unit cost of production. For example, an 8 percent reduction in production cost combined with 4 percent reduction in pounds of calf production results in lowering the unit cost of production from \$.82 to \$.79 per pound.

**Table 6. The effect of decreasing production cost by more than you decrease pounds of calf production on the Unit Cost Of Production (UCOP).**

Percent Decrease Cost of Production	Dollar Decrease Cost of Production	Resulting Total Cost of Prod.	Base Weight 52,510#	Decrease In Production (Lbs.)					
				-1% 51,985#	-2% 51,460#	-3% 50,935#	-4% 50,410#	-5% 49,885#	-6% 49,359#
				----- \$/Lb. -----					
Base		\$43,056	\$0.82	\$0.83	\$0.84	\$0.85	\$0.85	\$0.86	\$0.87
-2%	-\$861	\$42,195	\$0.80	\$0.81	\$0.82	\$0.83	\$0.84	\$0.85	\$0.85
-4%	-\$1,722	\$41,334	\$0.79	\$0.80	\$0.80	\$0.81	\$0.82	\$0.83	\$0.84
-6%	-\$2,583	\$40,473	\$0.77	\$0.78	\$0.79	\$0.79	\$0.80	\$0.81	\$0.82
-8%	-\$3,445	\$39,612	\$0.75	\$0.76	\$0.77	\$0.78	\$0.79	\$0.79	\$0.80
-10%	-\$4,306	\$38,751	\$0.74	\$0.75	\$0.75	\$0.76	\$0.77	\$0.78	\$0.79
-12%	-\$5,167	\$37,890	\$0.72	\$0.73	\$0.74	\$0.74	\$0.75	\$0.76	\$0.77
-14%	-\$6,028	\$37,028	\$0.71	\$0.71	\$0.72	\$0.73	\$0.73	\$0.74	\$0.75
-16%	-\$6,889	\$36,167	\$0.69	\$0.70	\$0.70	\$0.71	\$0.72	\$0.73	\$0.73

In order for this alternative to be feasible, the cow-calf producer needs to be confident that the percentage decrease in production cost is greater than the decrease in pounds of calf production. However, as you can see from table 6, a 6 percent reduction in production cost paired with a 6

percent reduction in pounds of calf production does not reduce your unit cost of production. This alternative may be used in situations where cattle producers have exceeded the economic levels of production, such as weaning 800+ pound calves, cows with body condition scores of greater than 7, extremely high weaning percents.

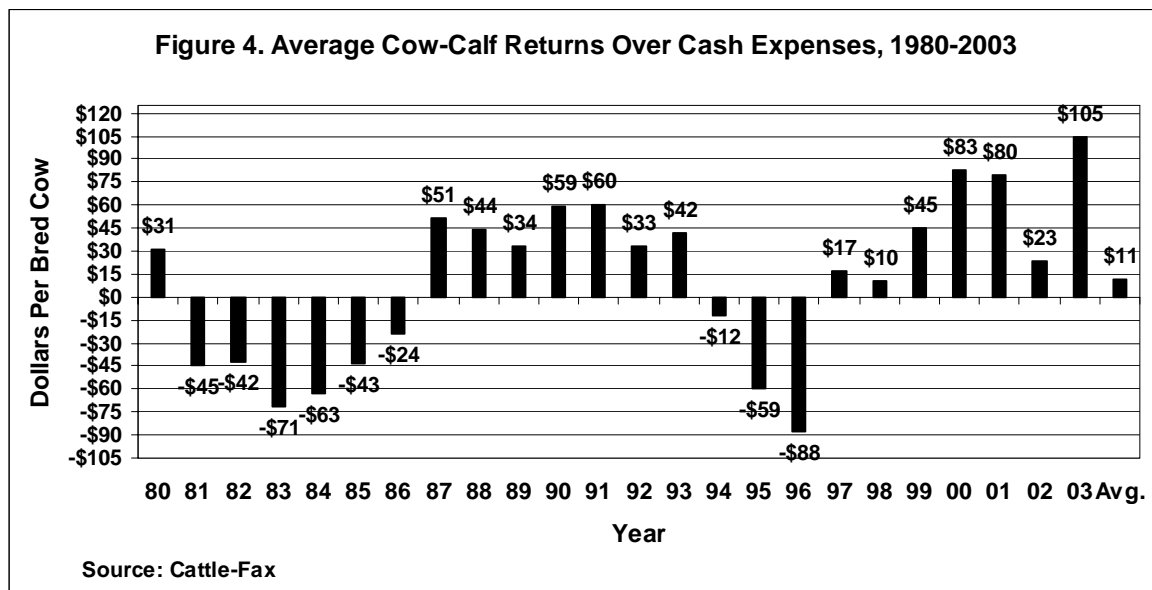
Detailed financial records are the most accurate way to know your cost of production. However, everyone does not keep detailed financial records. By incorporating your basic production and financial data into this simple table, you can easily estimate your average cow-calf production cost. Knowing these cost estimates will be helpful in making profitable management decisions on your farm.

### Returns Over Cash Expenses (ROCE)

A frequent bottom line measurement used in the cow-calf industry is Returns Over Cash Expenses (ROCE). Most cow-calf producers keep records of gross revenues and cash expenses which may be used to estimate ROCE. This bottom line measurement is simple to compute and provides a rough idea about the profitability of the enterprise. In addition, most cow-calf producers are willing to respond to surveys and share this information.

One such survey has been conducted by Cattle-Fax for more than 20 years. Cattle-Fax is an independent organization supported by members from the various segments of the U.S. cattle industry. Cattle-Fax provides its members with cattle and beef industry statistics and market and economic analysis.

Figure 4 describes the average cow-calf returns over cash expenses from 1980-2003 for the respondents of the Cattle-Fax survey. The years with positive returns imply that gross revenues exceeded cash expenses and there was money left over to be allocated to depreciation, labor, land, and the use of owned assets. The years with negative returns imply that gross revenues did not exceed cash expenses and this value provides an estimate of how much money is needed from outside sources to keep the cow-calf operation viable. It also provides an indication about the magnitude that the cow-calf producer needs to lower production cost if market prices do not improve in order to attain a breakeven ROCE. Also, you should note the cyclical nature of the returns over cash expenses which closely coincide with the cattle cycle.

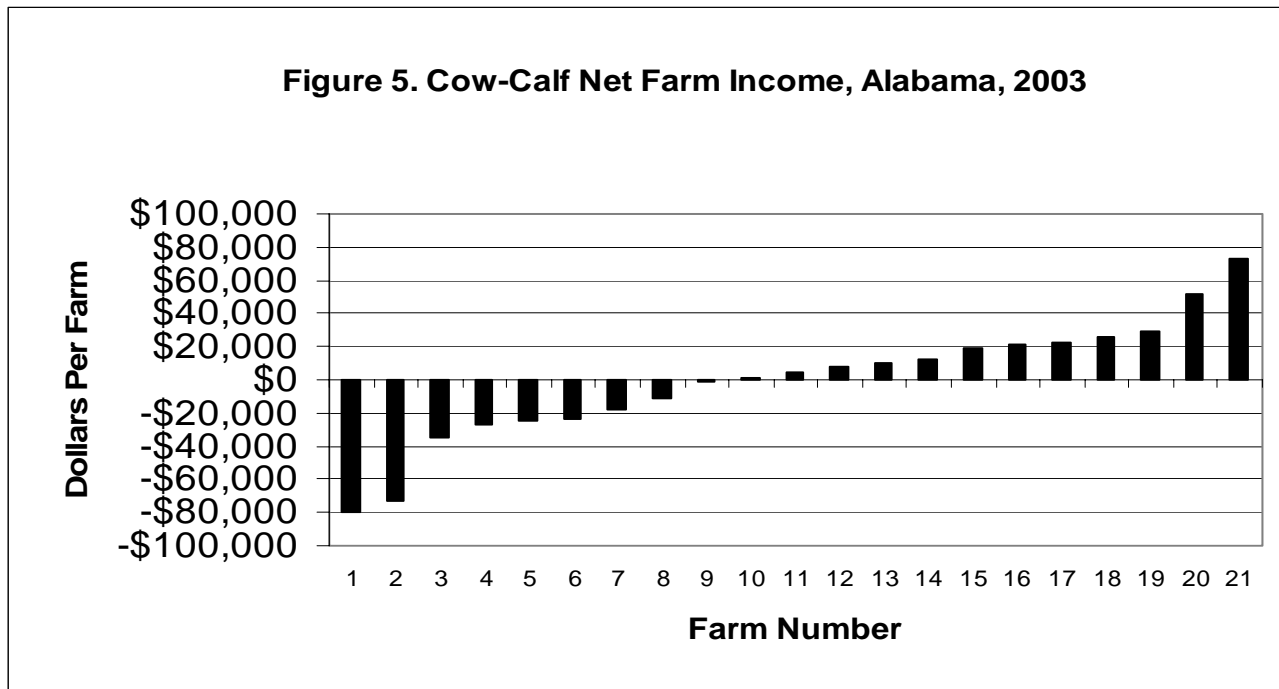


Unfortunately, this bottom line measurement does not include any charge for depreciation of assets, labor and management supplied by the operator, and the use of owned assets provided by the operator. Thus, this bottom line measurement can be misleading and may contribute to poor decision making. In addition, should any of the above mentioned unpaid factors be no longer provided to the operation, this additionally could have a disastrous effect on the cow-calf enterprise.

### Net Farm Income (NFI)

Cow-calf net farm income (NFI) was calculated for 21 Alabama cow-calf operations which participated in Alabama Farm Business Analysis Associations during 2003. Extension Economists of the Alabama Cooperative Extension System utilized accepted standardized accounting principles to determine the net farm income for each cow-calf cooperator. Net farm income is simply the return to the owner-operator's labor, management, and owned assets. In more technical terms, it is gross farm returns less total feed cost, total non-feed cost, depreciation, and plus or minus a capital account adjustment.

Net farm income among the 21 farms was positive on 12 farms (57 percent) and negative on 9 farms (43 percent). These results are for the 2003 calendar year which was a good year for both beef production and market prices. Net farm income ranged from -\$80,125 to +\$72,954 per farm and the average net farm income was -\$793 per farm (Figure 5). Obviously, there were some big differences in their goals and/or management that led to such a marked difference in net farm income.



Given the wide distribution in net farm income among the 21 cow-calf operations, one would expect major differences in management practices, performance, and costs. Table 7 ranks ten major factors that affected net farm income for these cow-calf operations. These estimates were ranked based on their coefficient of variation (standard deviation of the factor divided by the mean of the factor). This measurement allows the factors to be ranked from least to most variable. The higher the coefficient of variation for a given factor implies more variation was observed among 21 estimates for that factor of production.

For these farms, the first three factors: calf price, calf weight, and calving percent were less variable and similar in the amount of variation expressed for each factor. At least in this dataset, these

producers appear to have better adopted these production factors that Extension agents and specialists have been teaching for years.

The next four factors: herd size, other operating cost, culling percent, and hay cost were also similar with a coefficient of variation ranging from 0.70 to 0.76. Thus, the estimates of these factors were considerably more variable than the first group.

The last three factors: depreciation cost, grazing cost, and other feed cost exhibited the most variation in this dataset with the coefficient of variation ranging from 1.19 to 1.47. The higher level of variation among these factors suggests that a wide range of input use and/or costs are being incurred among the 21 farms. Therefore, further examination is necessary to determine if these cost factors can be managed more carefully and whether a given farm may need to increase or decrease the use of the inputs in question. Beware that net farm income can be improved by either making adjustments in over or under-utilizing the inputs associated with these cost factors.

Factor	Average Estimate	Level of Variation	Coefficient of Variation
Calf Price, \$/Cwt.	\$85	Low	0.14
Calf Weight, Pounds/Calf	560	Low	0.17
Calving Percent, %	82%	Low	0.25
Herd Size, Cows	147	Moderate	0.70
Other Operating Cost, \$/Cow	\$630	Moderate	0.70
Culling Percent, %	11%	Moderate	0.71
Hay Cost, \$/Cow	\$127	Moderate	0.76
Depreciation Cost, \$/Cow	\$85	High	1.19
Grazing Cost, \$/Cow	\$53	High	1.35
Other Feed Cost, \$/Cow	\$62	High	1.47

Another approach to improve cow-calf net farm income is to group the farms based on net farm income into the lower one-third, middle one-third, and upper one-third (see Table 8). If you are in the lower one-third or middle one-third, you need to identify cost-effective strategies that will move your operation into the middle or upper one-third. If you are already in the upper one-third, you should maintain your current inputs and management practices while continuing to look for opportunities that will improve your estimate of this factor of production. Sometimes it may be a simple management adjustment to move a producer from the lower one-third to the middle or upper one-third (wean heavier calves, adjust marketing date, increase grazing acres, reduce wasted feed, conduct a bull breeding soundness exam, etc.). And in a few rare situations, spending a little more money on a badly needed input (such as mineral, vaccinations, implants, nutrition, etc.) could move your operation to the middle or upper one-third in net farm income.

A comparison of the factors affecting net farm income of 21 cow-calf farms in Alabama during 2003 is provided in Table 8. Significant differences exist for some factors (calving percent, herd size, other operating cost, hay cost, depreciation, grazing cost, other feed cost), while minimal differences are noted for several factors (calf price, calf weight, culling percent). By calculating estimates of

each factor for your operation, you will be able to identify areas where you need to study what changes can be made to improve net farm income.

**Table 8. A Comparison Of The Factors Affecting Net Farm Income of 21 Cow-Calf Farms, 2003.**

Item	Net Farm Income			Overall Average
	Lower One-Third	Middle One-Third	Upper One-Third	
Calf Price, \$/Cwt.	\$84	\$88	\$82	\$85
Calf Weight, Pounds/Calf	578	524	579	560
Calving Percent, %	78%	80%	87%	82%
Herd Size, Cows	103	107	230	147
Other Operating Cost, \$/Cow	\$982	\$527	\$381	\$630
Culling Percent, %	13%	7%	13%	11%
Hay Cost, \$/Cow	\$192	\$97	\$93	\$127
Depreciation, \$/Cow	\$143	\$40	\$71	\$85
Grazing Cost, \$/Cow	\$76	\$43	\$39	\$53
Other Feed Cost, \$/Cow	\$105	\$41	\$39	\$62
Net Farm Income, \$/Cow	-\$522	\$25	\$154	-\$114

If you are not currently keeping production and financial records for your cow-calf operation, now is a good time to get started. You can get help from your Regional Extension Agent and Extension Farm Economist. They can be an excellent source of information on cow-calf production and financial records and management.

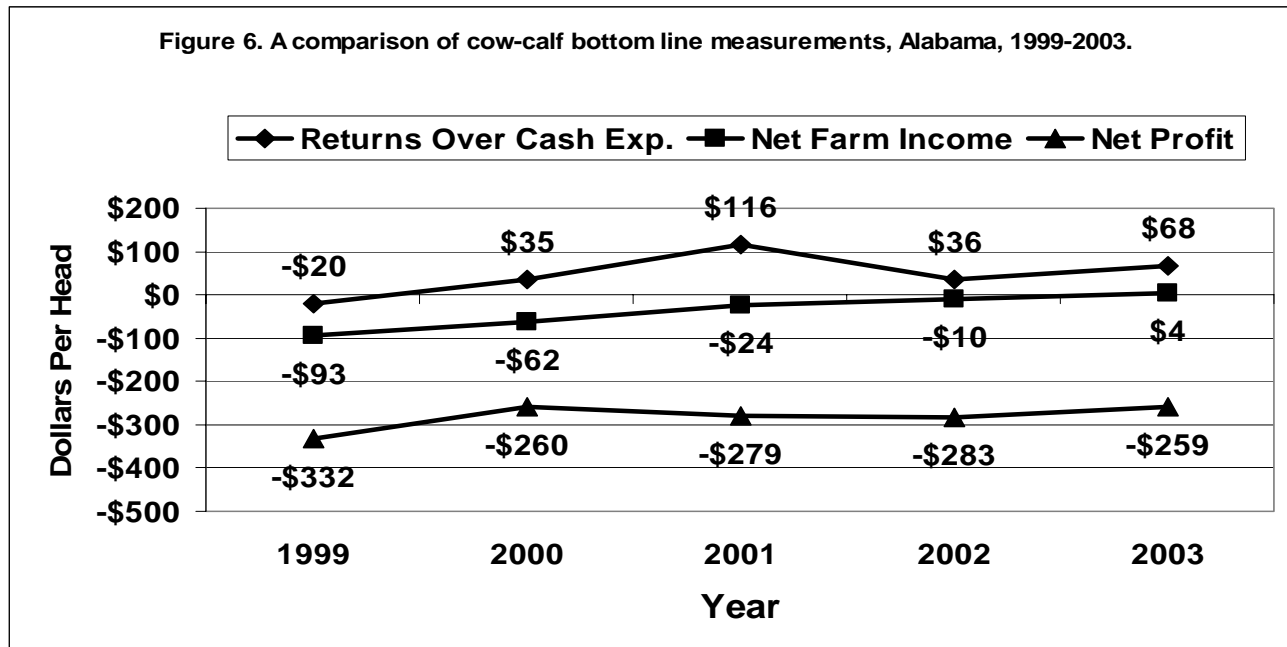
### Net Profit

The term net profit is frequently used in the business world, but its definition varies widely. Net profit in this paper is net farm income less unpaid labor and interest on equity capital (opportunity costs on owned assets). The term total farm management returns as computed in the Alabama Farm Analysis Association Report is comparable to the above definition of net profit.

The Alabama Farm Business Analysis Associations computed net profit (total farm management returns) for a few selected cooperating cow-calf operations. The average net profit for the cow-calf operations ranged from -\$332 to -\$259 per head between 1999 and 2003 and averaged at about -\$282 per head (see Figure 6). These negative net profit values indicate that on average these cow-calf operations are not paying for all of the factors of production. Hence, they are being subsidized with unpaid labor and the use of owned assets (land, buildings, improvements, machinery and equipment, etc.). Therefore, should the unpaid labor and owned assets used by the cow-calf operation be needed

by another enterprise or investment that will pay for their use, the cow-calf enterprise would be eliminated.

Additionally, Figure 6 provides a comparison of the bottom line measurements for the selected cooperators of the Alabama Farm Business Analysis program during 1999-2003. Graphically you can see the difference between these three bottom line measurements. The difference between returns over cash expenses and net farm income is usually less than \$100 per head. This difference is due to depreciation and any adjustments in inventory accounts. The difference between net farm income and net profit is more than \$200 per head. This difference is due to unpaid labor and the interest on equity capital (opportunity cost on owned assets). New entrants with goals based on profitability will not be attracted to the cow-calf enterprise unless net profit more closely approaches a positive value.



### Conclusion

The focus of Alabama cow-calf producers spans a wide range of goals such as making a profit, maintaining the cattle farming tradition, rural living, spending time with family and friends, holding the land for appreciation or future generations, recreation, etc. The bottom line measurements used by Alabama cow-calf producers range from none to a thorough financial analysis of the cow-calf enterprise. Therefore, as best as I can measure, the focus and the bottom line of Alabama cow-calf producers is as varied as the stars in the sky. Regardless of whatever the goals of your cow-calf operation are, focusing on the bottom line is critical to a sustainable cow-calf enterprise.

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