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R. E. Taylor
Colorado State University

T. G. Field
Colorado State University

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R. E. Taylor and T. G. Field
College of Agricultural Sciences
Department of Animal Sciences
Colorado State University

INTRODUCTION

A few years ago a NCA task force committee made the following statement:

> "Low-cost producers (in all segments of the production chain) will survive in this system of competitive markets. Others [high-cost producers] will eventually be unable to compete and will exit the business."

Initially, this pointed summary statement fell on deaf ears as cattle prices were relatively good and many producers said they couldn't reduce costs as each year their costs were increasing. Currently, the high-cost producers are exiting the cattle business or depleting assets. Other cow/calf producers have positioned or are positioning themselves as low-cost producers. An increased number of producers are finding that low-cost production is not only possible but exciting and essential.

CREATING THE VISION

Most important in effective cow/calf management is developing a progressive attitude and motivation to be a low-cost producer. This personal desire makes effective management decisions become more understandable and easier to implement.

Most low-cost producers have a written management plan that identifies their vision statement with specific goals to accomplish the plan. Two examples of vision/mission statements are noted:

(1) "Produce low-cost/high-profit cattle that yield competitively priced, highly palatable, lean products."

(2) "Manage the available resources (optimum, low-cost combination) for maximum continuing net profit, while conserving and improving the resources."

Specific, measurable goals might be: (1) "Reduce annual cow cost $10 per cow per year for the next 5 years," or (2) "Reduce the weaned calf breakeven price from $0.80/lb to $0.60/lb in 2 years."

A big challenge for most cow/calf producers in meeting these vision statements and goals is developing a cost-effective financial and production records system. Nationally, it is estimated that only 5-10% of cow/calf producers actually calculate cost of production. It is difficult to manage what is not measured.

THE PROFITABILITY FORMULA

Cow/calf producers who are low-cost/high-profit have necessary records to compute and manage the following profitability formulas:

Profit or <Loss> = (pounds x price) - costs

Profit or <Loss> = [(% calf crop x weaning wt) x price] - costs

Breakeven price (per pound of weaned calf):

$$\text{Breakeven Price} = \frac{\text{(annual cow cost - value of cull cows/bulls sold)}}{\text{average weaning wt x \% calf crop}}$$

Management decisions should focus on decreasing costs while optimizing percent calf crop, weaning weight, and market price. Obviously, the manager wants to identify the most profitable combination of decreased costs with increased production. Note this combination for low-cost producers in Table 1.

Optimum is defined as the most favorable end result especially under relatively fixed conditions or under implied restrictions. The two mission statements previously noted in this paper express the conditions or restrictions for the optimum. The best measure of optimum appears to be sustainable low-cost production as measured by low breakeven prices at weaning, feedlot and carcass endpoints.

A distinction should be made between being a low-cost producer and lowering production or input costs. A low-cost producer has a low breakeven price with the intent of maximizing long-term profitability. Lowering input costs (annual cow cost) is desirable if it stabilizes or increases net return. Additional expenses are encouraged if they decrease breakeven price and increase net profit.

COMPARING LOW-COST AND HIGH-COST PRODUCERS

Table 1 shows cow productivity, annual cow costs and calf breakeven prices for average, low-cost, and high-cost producers in the NCA-IRM-SPA Database.

Table 1. Cow/Calf Producer Profiles by Cost Group

	Cost Group		
	Average	Low⅓	High⅓
Percent calf crop	85%	83%	84%
Weaning weight	514 lb	527 lb	498 lb
Calf weight per cow exposed	438 lb	441 lb	418 lb
Cost per cow (financial)[a]	$377	$268	$490
Calf breakeven price[a]	$0.86	$0.61	$1.17

[a]Before non-calf revenue adjustment
Source: NCA-IRM-SPA Database (1995 NCA Cattlemen's College)

There is nearly a $250 per cow difference in net income when comparing low-cost producers ($61/cwt breakeven) with high-cost producers ($117/cwt breakeven). Table 2 shows that most of this $250 difference is due to financial cost per cow. While pounds weaned per cow is important, its contribution to net income is far outshadowed by cost per cow. This difference shows producers where management decisions should first be focused.

Table 2. Comparing Major Differences in Net Income

Item	High-cost	Low-cost	Difference
Financial cost per cow	$490	$268	$222
Pounds weaned per cow	441	418	$ 26
			$248

Source: NCA-IRM-SPA Database (1995 NCA Cattlemen's College)

Low-cost producers in the NCA-IRM-SPA Database were requested to identify the primary factors that determined their low breakeven prices (Table 3).

Table 3. Top 5 Ways Low-Cost Producers Reduce Costs

1.	Reduce supplemental feed costs (40%*)
2.	Rotational grazing (better pasture management (30%*)
3.	Right genetics (27%*)
4.	Reduce labor costs (25%*)
5.	Strong herd health program (19%*)

*percent of respondents
Source: NCA-IRM-SPA Database (1995 NCA Cattlemen's College)

Even though these "top 5" are ranked as most important, the other, or miscellaneous costs, should not be overlooked. These smaller expense items (i.e., fuel, machinery, repair, supplies, utilities, taxes, etc.) account for less than 20% of an average budget. Yet, they make up over 40% of the difference in cow cost between high-cost and low-cost producers. These smaller expense items should be compiled and evaluated on a regular basis.

REDUCING FEED COSTS

Feed costs comprise approximately 60% of the annual cow costs in many cow/calf operations. Since feed cost is the largest component cost and different feeds have varying costs, this area must receive high priority in assessing production costs.

Most low-cost producers have reduced their feed costs by increasing the number of days cows graze while decreasing the amount of harvested and purchased feed fed per cow. Extending the grazing season and feeding less hay has been accomplished primarily by:

(1) matching calving season with green forage production. For the west and northern Great Plains, several low-cost producers are calving in April rather than February and March. High nutrient demands of the cow and calf are less costly if forage is grazed rather than feeding hay or other harvested or purchased feed.
(2) extending the green grazing through intensive and rotational grazing systems. This also can increase carrying capacity (more cows for the same land area) which reduces the fixed cost per cow.
(3) improving range/pasture forage production and utilization through burning, reseeding, interseeding, and grazing a mixture of grasses and legumes where possible.
(4) stockpiling forage for late fall, winter and early spring grazing.
(5) weaning calves earlier (i.e., 5 months of age) so cows can increase in body condition score (BCS 6 or 7) prior to the winter months. Less feeding of harvested feed occurs because cows in this condition can lose 75-150 pounds prior to calving and still maintain excellent reproductive performance.

Equipment and fuel costs are significantly reduced when cow/calf producers develop forage programs where cows graze more days during the year and less harvested feed is fed.

UTILIZING THE "RIGHT GENETICS"

Low-cost producers understand the importance of matching the most functional type of cow to a low-cost environment consisting primarily of grazed forage. These "right genetics" imply effective sire selection for cost-effective biological type of cow while utilizing heterosis by crossing two or more breeds or using a composite breeding program. Most cow/calf producers describe the biological type of cow that best fits this low-cost environment as noted in Table 4.

Table 4. Biological Type of Cow for Low-Cost Production

Trait	Description
Mature cow size	Moderate (1000-1200lb; BCS 5)
Milk	Moderate (can wean 475-550 lb calf with an average forage supply)
Muscling	Moderate (average thickness through the stifle area; progeny of same biological type have 11-14 sq. in. ribeye)
Fatness	Fleshing ability (can increase BCS during late summer and early fall grazing); progeny of same biological type have yield grades from 2.5-3.5 at 700-750 lb carcass weights
Longevity/Stayability	Cow produces a calf each year (365 days) beyond 9 years of age. This trait appears to be influenced primarily by cost-effective fleshing ability (BCS). Most cows leave the herd early because of poor reproduction. They are culled primarily as two-to-four year olds because they are open or late breeders--their cost-effective BCS is usually below 5.

Table 5 shows bull selection criteria that produces the biological type of cow identified in Table 4. Table 5 also identifies bulls that will sire low-cost progeny in the feedlot in addition to low-cost cows.

The emphasis on increased frame size, growth rate and mature size during the past 15 years has significantly increased dystocia (calving difficulty). It is estimated that dystocia, primarily due to birth weight, costs the beef industry $850 million each year. This large cost can be reduced by selecting bulls that sire lighter birth weights and by saving replacement heifers with low birth weights (<90 lb) and from bulls with birth weight EPDs less than 0 (Angus base). Calves with moderate birth weights (Table 5) can have excellent growth (weaning weights, feedlot gain and yearling weights) by emphasizing the appropriate selection criteria (Table 5).

Table 5. Bull Selection Criteria Contributing to Low-Cost Production

Evidence that this bull and other similar breeding:

(1) Performed in one or more low-cost commercial cow-calf operations where the calves have been evaluated in the feedlot and carcass. Performance specifications in these low-cost herds:
   (a) Weaning breakeven price below $0.65/lb (includes all costs).
   (b) Feedlot performance of calves
      · Rate of gain of minimum 3.2 lb/day from 500-600 lb to slaughter weight (1100-1300 lb); slaughter age 13-15 months.
      · Feedlot cost of gain (<$.50/lb with $2.50/bu corn or <$.60/lb with $3.00/bu corn).
   (c) Carcass performance of calves
      · >70% choice
      · Yield grade 2.0-3.5
      · Satisfactory tenderness (i.e., WBS < 8.5)

(2) Longevity and stayability of daughters--they remain in the herd beyond 10 years of age (highly related to fleshing ability and early rebreeding of two and three year old cows under low-cost production).

(3) Performance specifications for individual bulls (prefer to also see half-brothers to this bull having similar specifications) - EPDs are Angus based:
   (a) Birth Wt. EPD: Maximum of +1.5 (< 0 for heifers); bull needs to sire actual birth weights as follows: heifers' calves (65-80 lb) and cows' calves (75-90 lb).
   (b) Weaning Wt. EPD: +15 to +25 lb
   (c) Milk EPD: Under +15 lb
   (d) Yearling Wt. EPD: +30 to +50 lb
   (e) Scrotal Circumference EPD: Above +0.3 cm and/or minimum yearling scrotal circumference of 34 cm.
   (f) Yearling Frame Score: Maximum 5.9 (prefer bull's mature wt. near 2000 lb and cow's mature wt. below 1200 lb based on body condition score of 5).
   (g) Pedigree (parents and grandparents) stacked for specifications noted in (a) through (f) and many of those noted in (h)
   (h) Additional evaluations needed: (1) disposition, (2) PAP (high altitude), (3) adaptability to varying weather and feed conditions, (4) reduction of variation in a given trait (i.e., smaller standard deviation in birth wts. of heifers' calves), (5) other measures of calving ease.

Source: Colorado State University

Using the "right genetics" also implies the cost-effective use of heterosis. Heterosis is defined as an increase in the pounds of calf weaned per cow exposed. It can range from a 5% to

30% increase above the average of the breeds included in the cross. It appears that optimal levels of heterosis are in the 10% to 15% range. Simple breeding programs such as composites retain optimal levels of heterosis. They are cost-effective by reducing the number of breeding pastures which enhances most forage management programs.

Attempting to maximize heterosis may increase production costs above optimal cost levels of birth weight, milk production, weaning weight and mature cow weight. The primary value of heterosis in low-cost cow herds is (1) increased calf survival and (2) increased cow longevity--best measured by lifetime performance of cows. One research study demonstrated that by 12 years of age crossbred cows produced 1.6 more calves and 875 lb more calf weaning weight than straightbred cows (Sacco, et al., 1989).

Bull costs can range from $10-$85 per cow as determined primarily by initial purchase price and bull-to-cow ratios (Table 6). There is ample evidence that the "right genetics" can be purchased for $1000-$1500 per bull and that bull-to-cow ratios can be increased to 1:40 in many operations.

Alliances between seedstock breeders, cow/calf producers and cattle feeders could reduce the breakeven price for yearling bulls to below $1000. This cost reduction of several hundred dollars per bull could be shared so profitability is enhanced for all three groups in the alliance. What is needed to implement this cost reduction is vision and commitment. Alliances will encourage appropriate priorities to reproduction, growth and carcass traits so that the antagonisms between these traits can be avoided and effectively managed.

Table 6. Bull Cost Per Cow Based on Varying Bull Purchase Prices and Bull-to-Cow Ratios

Bull Purchase Price	Total Bull Cost(4yrs)[a]	Bull-to-Cow Ratio[b] 1:20	1:30	1:40
		---Bull Cost Per Cow---		
$1000	$1590	$22.08	$14.72	$11.04
2000	3130	43.47	29.98	21.74
3000	4670	65.86	43.24	32.43
4000	6210	86.25	57.50	43.12

[a] Assumes $750 salvage value, $200/yr bull cost (feed, maintenance, etc.), 10% risk (based on purchase price), 11% interest for 4 years.
[b] Assumes bull is used for 4 years; 90% conception rate each year.
Source: Colorado State University

REDUCING LABOR COSTS

It is common to find cow-calf operations of similar size with varying numbers of employees. For example, a 300 cow/calf operation may have 1-2 employees while another of the same size has 3-4 employees. In this example, labor cost per cow in one operation is two to four times higher than that of the other operation.

Some large, low-cost operations have reduced labor cost by having one employee responsible for 800-1000 cows with some labor-intensive activities (i.e., branding and weaning) shared by several employees. Some smaller operations can improve their forage management and increase the number of cows by 20-30% on the same land area. This increased carrying capacity can decrease labor cost per cow.

The well-proven 80-20% rule of business tells labor/management to do the "right things" first before doing "things right." Work activities should receive priority that answers the question, "How can my time be spent most effectively in lowering cost of production by concentrating on $100/hour activities before $5/hour activities?" Generally this means more time spent on financial, forage, and human resource management prior to cattle management. Cattle management should not be overlooked, however, as cattle that are more problem-free (i.e., ease of calving, good dispositions, good mothering ability, etc.) require less labor--thus being more cost effective.

Less labor is usually required by improving grazing management and decreasing dependence on mechanical harvesting of forage. Some operations have reduced labor and equipment costs through contracting these services.

MAINTAINING A STRONG HERD HEALTH PROGRAM

Low-cost producers do not cut corners on herd health programs, yet they manage herd health costs and returns very carefully. Most low-cost producers realize that cattle death loss is typically a small part of total health-related losses. In many herds, sickness of cows and calves is very costly because of lower reproduction rates, reduced weight gain, poor feed conversion, and high health costs associated with clinical cases of sickness. Subclinical illnesses in cattle are difficult to identify, however, they are costly as animal performance is reduced while input costs remain high.

Most cost-effective herd health programs focus on preventing: (1) reproductive diseases in the cows, (2) calf scours , and (3) respiratory diseases in the calves. Specific herd health programs and their associated costs depend on risk factors such as (1) health history of the herd and other herds in the immediate area, (2) nutritional program, (3) exposure to other animals, (4) stress factors associated with the environment, (5) marketing program, and (6) mismanaged cattle (vaccinations and treating animals are not substitutes for poor management).

Strong herd health programs can reduce feedlot costs (lower costs of gain, less death loss and lower health treatment costs) and reduce carcass losses through proper administration of

health products. These health strategies can enhance profits, especially in retained ownership programs.

Herd health is usually less costly when preventative plans are developed and implemented with a veterinarian rather than the higher costs of treatment when "crisis" health problems occur.

SUMMARY

Cow/calf producers with a vision of long-term profitability, will have an optimum combination of cattle productivity (reproduction, growth, and end product) and low-cost production. Even with retained ownership programs, economic priorities for the most profitable cow/calf producers should be:

(1) Cost of production (keeping breakeven prices of calves near $.60/lb or lower). This assumes all costs are measured and effectively managed while achieving optimal levels of percent calf crop and weaning weight.

(2) Reproduction (optimum levels of percent calf crop--typically in the mid 80% to low 90% for most cow/calf operations--based on calves weaned per 100 cows exposed). Optimal levels of reproduction are achieved under low-cost, extended grazing programs.

(3) Growth (moderate average weaning weights in the 475-550 lb range for 7-month old calves, assuming an average forage availability; feedlot gain for calves in the 3.0-4.0 lb/day range).

(4) End product (700-800 lb carcass weights; 2.5-3.5 yield grades, while avoiding discounts on yield grade 4s; quality grade of >70% choice).

Cost of production and maternal traits (primarily reproduction) are far more important than growth and end product in determining cow/calf profitability. Therefore, cow/calf producers should have vision and motivation to keep a focus on "first things first." Alliances between seedstock, cow/calf and feedlot producers will encourage optimal combinations of cow, feedlot and carcass traits for low-cost/high-profit cattle production.

REFERENCES

Burleson, W. Are Your Cattle on Welfare? Western Beef Producer, Feb. 1995.

Cow/Calf Focus. Cattle-Fax, P.O. Box 3947, Englewood, CO 80155.

Fields, M. J. and Sand, R. S., 1994. Factors Affecting Calf Crop. Boca Raton, FL: CRC Press.

McGrann, J. and Walter, S. PE102 Reducing Costs With IRM/SPA Data. 1995 Cattlemen's College, Nashville, TN.

Ritchie, H. D. The Optimum Cow: What Criteria Must She Meet? Feedstuffs, Aug. 21, 1995.

Sacco, R. E., et al., 1989. Lifetime productivity of straightbred and F_1 cows of a five-breed diallel. J. Anim. Sci. 67:1964.

Simonds, G. Matching Cattle Nutrient Requirements to a Ranch's Forage Resource. Intermountain Cow Symposium, Jan. 4-5, 1995, Twin Falls, ID.

Taylor, R. E., 1994. Beef Production and Management Decisions. New York: Macmillan Publishing Co.