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Balancing Input Costs and Cow Performance

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Introduction

Cow-calf producers are continually challenged to maintain the profitability of their operations despite the dynamic nature of cattle markets and the cost of input commodities and services. Since the turn of the century, weaned calf prices have stayed relatively high...until recently. However, input costs have maintained a more constant increase. With high production costs and weaned calves generally trading at less than $110/cwt, it is more important than ever to balance, or in most cases minimize, input costs relative to the income generating potential of the cow-calf enterprise.

Future sustainability for most cow-calf enterprises will likely be dependent upon the ability of individual managers to make a multitude of small decisions that collectively keep costs low relative to the value of the weaned calves they produce. This will not be an easy task. Those producers with the knowledge of their current and/or past unit cost of production will be best prepared to succeed.

This paper will discuss the impact of key cow herd performance criteria on the net income of cow-calf enterprises in the Southwest. In addition, examples will be presented utilizing Standardized Performance Analysis (SPA) benchmark information in attempt to estimate the impact of some management decisions might have on key cow performance criteria and net income.

The Financial Picture

Calf prices have been relatively high since 2000; however, average net income for cow-calf herds in the Southwest SPA database during this period was still below breakeven (-$48/cow exposed; table 1). During this period, some cow-calf enterprises have been highly profitable (figure 1). Production systems across Texas, New Mexico, and Oklahoma can vary greatly; however, those herds in the top net income quartile (average profit = $142/cow exposed) generated not only greater gross income from calf sales relative to the other 75 percent of the 206 herds (figure 2), but also had the lowest production costs. The bottom line is that highly profitable herds generally yield more income and have lower costs.

From table 1 it is evident that grazing costs and purchased feed constitute a significant portion of total annual cow costs (38% of breakeven costs). However, there are other costs that are not delineated in this report that are extremely important to keep in mind when making management decisions (i.e., depreciation, payroll, supplies). With this information in mind, it becomes easier to identify areas within the enterprise that, if altered, could have a relatively high

impact on profitability. The key is being able to predict the impact of cost reductions on cowherd performance.

Producers interested in being among the top net income quartile are encouraged to continuously ask themselves the following two questions:

1. Where can I further reduce costs while maintaining performance and animal well-being?
2. How can I cost-effectively increase productivity of my cowherd and the value of cattle that I sell?

Key Performance Criteria

There are numerous performance measures that impact profitability, but generally none of those measures are more important than the percent calf crop weaned (# calves weaned ÷ # cows exposed to produce a calf). Additionally, the total value of calves weaned is a function of the weight of calves at weaning, which is most significantly impacted by the average age of calves at weaning. Percent calf crop weaned and average age of calves at weaning are somewhat related because management changes that improve reproductive performance will likely decrease the post-partum anestrous period and therefore increase average calf age at weaning. These two criteria are very important responses to consider and monitor when making management decisions because of the potential impact each has on profitability.

Value of Reproductive Performance

The average weaning rate among ranches participating in the Southwest SPA program is 81.5 percent, and the average calf weaning weight is 521 pounds (table 1). Using these statistics as a foundation, and assuming that 521-pound calves are worth $99/cwt (average SPA price from 2000-2007), we can calculate that the value of a single percentage unit change in weaning rate is about $5.13/cow exposed (calculation: 521 lbs * 1% * $99/cwt = $5.13). Based on this example using the benchmark SPA dataset, if weaning rate is increased by a single percentage unit, all other performance and market characteristics remain constant, and additional input costs are less than $5.13/cow exposed, then net return will increase. In this example, it may also be possible to increase net returns if more than $5.13/cow exposed is saved by discontinuing a practice or input, while weaning rate declines no more than one percentage unit.

Value of Calf Age at Weaning

Similar to the previous example (base of 521-pound calf valued at $99/cwt) we can estimate the value of a given period of time if a few assumptions are made. If we assume a $6.50/cwt price slide and that calves gain 2.0 pounds each day just prior to weaning, then using the benchmark SPA dataset we can calculate that if all other factors are held constant (breeding season dates, weaning date, etc.) changing average weaning age by a single day makes a net income difference of $1.30/cow exposed. Increasing average calf age at weaning by one week increases net income by an estimated $8.99/cow exposed.

With estimates of the monetary value of a single percentage unit change in weaning rate and a single day change in average weaning age, it becomes easier (but not simple) to evaluate

the impact of management decisions on profitability prior to the implementation of changes. The following examples are based upon actual scenarios addressed by Extension specialists at NMSU. Calculations are made using the Southwest SPA benchmark data. These scenarios are intended to demonstrate how a manager might approach balancing input cost with animal performance to improve profitability.

Cost Reducing Scenarios

Reducing Feeding Frequency

It is well-documented that high-protein supplements (>30% CP) can be fed as infrequently as once or twice per week with cow performance maintained at a level comparable to feeding the same weekly amount of supplement on a daily delivery basis.

Scenario: I feed 2 pounds of a 32% protein supplement on Monday, Wednesday, and Friday, but really only need to check waters twice a week. If I can maintain performance, how much will it cut costs to change to feeding only two times per week?

Assumptions: Table 2 is a calculation of the comparison of feeding supplement 2 times vs. 3 times per week. If we extrapolate these estimates to a 200-head cow/calf operation, and assume that trips to the pasture are reduced from 3 trips/week to 2 trips/week for only 12 weeks of the year, we can estimate the savings per cow. It is recognized that during many weeks, this less frequent delivery of feed may not be a benefit because of other management needs like breaking ice, repair work, etc., that require trips to the pasture during the time of year supplement is normally fed.

Calculations:

12 weeks * $33/week	= $ 396/year savings
$396/year ÷ 200 cows	= $1.98/cow exposed

Under the assumptions of this scenario, changing protein supplement delivery from Monday, Wednesday, and Friday to feeding only on Monday and Friday would reduce costs of feeding by $33 per week…almost $400 per year. If performance is maintained and other costs held constant for a 200-head cow herd, net income would improve by $1.98/cow exposed.

Reducing Mineral Supplementation Costs

The price of mineral supplement has increased dramatically during 2007 and 2008, impacted mostly by the rise in phosphorous (P) price. In fact, one percentage unit change (eg, 10 % P vs. 11% P) in P content of a mineral supplement is equivalent to a price difference of about $50/ton of mineral if all other components are unchanged.

Scenario: Can I maintain cow performance and save money on mineral by reducing the P content of the mineral I buy? I am considering lowering P from 8% to 5%, but continuing to feed my protein supplement (1.0% P) during the winter.

Assumptions: Lowering the P content by 3 percentage units saves $150/ton, and average yearly intake of the mineral is about 3 ounces/day.

Calculations:

3 oz/day * 365 days ÷ 16 oz/lb	= 68.44 lbs mineral/cow exposed
68.44 lbs ÷ 2000 lbs/ton	= 0.34 tons/cow exposed
0.34 tons * $150/ ton savings	= $5.10/cow exposed

Based on the assumptions in this scenario, and the above calculations, IF herd performance is maintained, reducing P content of mineral by 3 percentage units would improve net income by $5.10/cow exposed.

Cost savings practices should be approaches strategically so that cow performance is not negatively impacted such that income is reduced by more than the amount saved. For example, in the mineral supplementation scenario, it would not be logical to reduce P supplementation when cows have had limited opportunity to graze green forage because the cow's P stores (mostly in bones) may be too low. On the other hand, following an above average summer growing season when green forage intake has been high and when P is expensive (i.e. $50/unit), this type of strategy may be a reasonable approach to cutting costs.

Strategic Input Scenarios

Evaluating Increased Inputs to Improve Weaning Rate

It is difficult to cost-effectively improve reproductive performance by feeding energy to an entire cowherd that may be only a little thinner than desired; but, by focusing inputs on the females that are the highest risk of calving late or not calving at all, it may be possible to improve net income.

Situation: I don't have problems getting my heifers bred to calve at two years of age, but about 30 percent of them do not breed back to have their second calf. This age class makes up 15 percent of my cow herd.

Assumptions: The producer runs 200 cows and all other factors are equivalent to the Southwest SPA average from 2000 to 2007.

Calculations:

30% open first-calf heifers * 15% of the cowherd = 4.5% of the cow herd is open first-calf heifers

Breakeven on input to get this 4.5% pregnant:

4.5 % pregnant * $5.13 per unit	= $23.09 / cow exposed
200 cows exposed * $23.09 / cow exposed	= $4,618 breakeven

Allowable investment:

$4,618 ÷ 30 first-calf heifers	= $153.93 / first-calf heifer

For the producer in this example, if all the first-calf heifers get pregnant for less than $153 in additional input (feed, labor, equipment use, depreciation, etc) per first-calf heifer, it is a good investment. Plus, the additional nutritional input would likely stimulate many of the first-

calf heifers to cycle earlier in the breeding season. Therefore, average weaning age and weight of the calves from all first-calf heifers would likely increase.

To better demonstrate the impact of this strategic input, let's also assume that the producer gets all first-calf heifers to breed back for $90/head in additional input, and that the improved nutrition stimulates the first-calf heifers to breed back earlier so their calves are 3 weeks older at weaning. Based on these assumptions and the value of reproductive performance noted above, we can estimate the return on this $2,700 investment (30 first-calf heifers * $90) would be $1,918 ($4,618 breakeven - $2,700 input cost), or $9.59/cow exposed ($1,918 ÷ 200 cows exposed). Additionally, the 30 calves that averaged 21-days older at weaning with a marginal value of gain of $65/cwt (assumed value) would generate an additional $819, or $4.09/cow exposed. Collectively these performance increases raise net income by an estimated $13.67/cow exposed ($9.59 from increased weaning rate + $4.08 increased calf age weaning).

Cost-Effectiveness of Calfhood Implants

Calfhood implants are known to improve calf performance from branding (when the implants are administered) to weaning...even in the Southwest. Research from the NMSU Corona Range Livestock Research Center shows that implanted calves had a 17-pound weaning weight advantage over non-implanted calves (3 yrs of data); however, implanted calves will not be eligible for a "natural" premium.

Situation: I do not sell calves as "natural," but don't implant them either. Will it be cost-effective to implant my steer calves and the light half of my heifers at branding?

Assumptions: Implanted calves will weigh 17 pounds more at weaning than non-implanted calves. All other factors are equivalent to the Southwest SPA average from 2000 to 2007. Cost of implants and implanting is $1/head. Marginal value of calf weight gain is $65/cwt.

Calculations:

17 extra lbs * $0.65/extra lb	= $11.05/implanted calf sold
$11.05/ implanted calf - $1 implant	= $10.05 additional net/implanted calf
$10.05/ implanted calf ÷ 75% implanted	= $7.54/calf weaned
$7.54/calf weaned ÷ 81.5 % calf crop	= $6.14/cow exposed

In this scenario, implanting steer calves and the light half of heifer calves increases net income by an estimated $6.14/cow exposed. Granted, a "natural" premium may generate more income. However, if the calves in this example will be marketed into a conventional marketing channel, implanting is calculated to be a very cost-effective input.

Conclusions

Producers searching for ways to make their enterprises more profitable are encouraged to consider the impact of management changes on weaning rate and age of calves at weaning. Although beef production systems vary from one ranch to the next, and from one region to another, a commonality across beef enterprises is that each manager has a whole host of decision

to make each year. Most of these decisions have an impact on short and/or long-term profitability.

The examples presented above are offered for the purpose of demonstrating how small decisions may impact a "typical" operation in the Southwest. These are examples based on real questions from producers from different ranches, but if a single operation implemented the changes considered according to the assumptions, the collective result would be a net income increase of more than $25/cow exposed. This is the type of approach that many of the producers in the top net income quartile employ. It is also important to recognize that several other factors like marketing approaches, number of employees/cow, depreciation of equipment, etc., have a substantial impact on profit. Nevertheless, future sustainability for most cow-calf enterprises will likely be dependent upon the ability of individual managers to make a multitude of small decisions that collectively keep costs low relative to the value of the weaned calves they produce. Changes in input costs must be considered against potential changes in cow herd performance.

Table 1. Southwest Cow-Calf SPA Key Measures Summary

States:	New Mexico, Oklahoma, Texas	**Herd Sizes:**	12 to 12,662 head
Years:	2000 through 2007	**Total Cows:**	138,243 head
Number of Herds:	206 herds		

Production Measures	*Average*
Herd Related Measures	
Pregnancy percentage	88.7
Calving percentage	83.8
Calving death loss based on exposed females	2.9
Calf crop or weaning percentage	81.5
Actual weaning weight, steers and bulls	533.9
Actual weaning weight, heifers	506.2
Average weaning weight	520.9
Pounds weaned per exposed female	425.5
Other Physical Performance Measures	
Grazing feed acres per exposed female	25.8
Pounds weaned per acre utilized by the cow-calf enterprise	48.2
Pay Weight Prices Per Cwt.	
Weaned calf pay weight price - steers/bulls	101.68
Weaned calf pay weight price – heifers	95.30
Weaned calf pay weight price - weighted average	98.53

Financial Measures	
Investment and Returns (ROA)	
Total Investment Per Breeding Cow - cost basis	$3,433
Percent Return on Assets - cost basis	-0.19 %
Total Investment Per Breeding Cow - market value	$5,190
Percent Return on Assets - market value	-0.30 %
Financial Performance	----$----
Raised/Purchased Feed Cost per cow	86.94
Grazing Cost per cow	94.19
Total Cost Before Noncalf Revenue Adjustment per cow	515.03
Total Cost Before Noncalf Revenue Adjustment per cwt	123.96
Total Cost Noncalf Revenue Adjusted per cow (BREAKEVEN)	**472.54**
Total Cost Noncalf Revenue Adjusted per cwt - Unit Cost	113.77
Net Income After Withdrawals per cow	-47.65
Net Income After Withdrawals per cwt	-15.71

Figure 1. Profitability of Southwest Herds Grouped in Quartiles by Net Income
(208 Herds, 2000-2007 SPA Data)

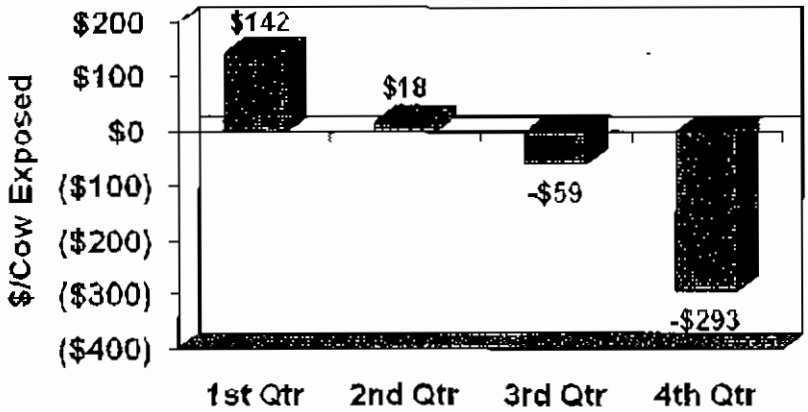

Figure 2. Breakeven and Calf Income of Southwest Herds Grouped in Quartiles by Net Income
(206 Herds; 2000-2007 SPA Data)

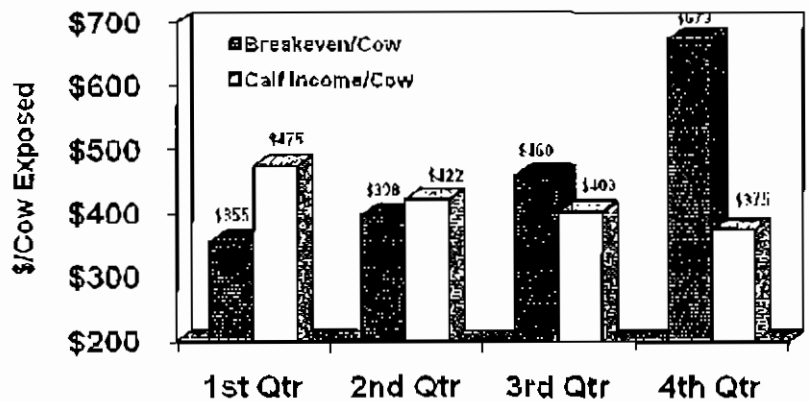

Table 2. Cost comparison of delivering supplement three vs. two times per week

	Feeding Frequency		
Cost	**3X per week**	**2X per week**	**Savings**
Vehicle Cost[a]	$ 45	$ 30	$ 15
Labor Cost[b]	$ 54	$ 36	$ 18
Total Weekly Cost, $	**$ 99**	**$ 66**	**$ 33**

[a]Vehicle cost of $0.50/mile; assume 30-mile round-trip ($15/trip).
[b]Labor cost of $9.00/hr. Feeding requires 1 hr driving and 1 hr feeding ($18.00/feeding).