



Cows Which Are Adapted To My Environment And Still Produce Calves Desired By The Customer

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Introduction:

Several beef cattle industry leaders were asked to respond to this question “How do we produce calves the customer wants as well as maintain cows which are matched to my ranch environment?” This article summarizes their responses as well as a review of articles they have recently written.

Current Challenges:

Dr. R.J. Lipsey, CEO of American Simmental Association suggested that ranchers desire a cow herd with 1) low costs (or at least controlled costs), 2) reasonable performance (minimal dystocia but explosive growth of calves), 3) cull cows with value, and 4) market demand for the calves (top of market and/or everybody wants your calves).

In 1985 the average rancher spent \$267 a year to maintain each cow in his herd. By 1995 cash costs increased to \$322 per cow and could reach \$357 by 2002. This expense places today’s cash costs fully \$90/cow higher than 15 years ago (up 34%; Brink, 2001). In 1985 the breakeven cost for a 450 lb weaned calf was estimated to be \$.67/lb compared with \$.90/lb for that same 450 lb weaned calf in 2001. Duane Griffith from Montana State University has tracked 60 Montana ranches for the past decade to determine costs of production and profitability. Table 1, shows the differences between the top and bottom 25% of producers in this database.

Table 1. Comparison of Total Costs Per Cow Per Year, Breakeven Calf Costs and Net Income for MT Ranches^a

Measure	Top 25% of Ranches	Bottom 25% of Ranches
Total cost/cow/year	\$223	\$550
Breakeven cost/cwt	\$49.68	\$112.82
Net income/cow	\$135	-\$223

^aData provided by D. Griffith, MSU Department of Ag Economics and Economics

These data reveal that the top 25% of ranches in this survey could produce a calf for approximately \$.50/lb while the bottom 25% of the ranches required \$1.13/lb to produce a calf. Expressed another way, the top 25% of ranches were making a profit with their calves (\$135/cow) compared with a significant loss for the bottom 25% of ranches (-\$223/cow).

How is the money spent in maintaining a cow? The following table presents a generalized accounting for yearly cash expenses.

Table 2. Generalized Cash Expenses for Maintaining a Beef Cow

Expense	Cost/year
Forage	\$125
Additional feed	\$86
Veterinary/medical	\$17
Labor	\$29
Interest	\$21
Other Costs	<u>\$77</u>
Total cow costs	\$356

The largest expenses were for feed (60 % of total). Brink (2000) believes that operating a profitable cowherd breaks down into following three basic rules:

- Rule 1. Hold your annual cow-carrying costs to \$300 per cow (cash expenses) or less,
- Rule 2. Keep your calf-crop weaned calf-crop percentage at 88% of exposed cows or higher,
- Rule 3. Wean calves that are average or above for weaning weight (at least 475 lbs.).

Biological Factors Influencing Profitability. The profitability of a cowherd is directly related to the reproductive rate of the herd (Hutcheson, 2000). Although feed costs play the major part of overall cow costs, keeping a beef cow in adequate body condition at calving has been shown to have a large impact on reproductive efficiency. If we assume that a beef cow needs to be in moderate body condition at calving (score of 5), then we can predict how much feed will be necessary if we also understand the relationship between cow weight and frame size (Table 3).

Table 3. Relationship Between Cow Frame Size and Weight at a Body Condition Score of 5

Frame Size	Cow Weight at a Body Condition Score of 5
3	1025
4	1100
5	1175
6	1250
7	1325
8	1400
9	1475

Hutcheson, 2000

A cow with a frame score of 5 will weigh approximately 1175 lbs at a body condition score of 5 while a frame score 8 cow will weigh 1400 lbs in the same body condition.

The main reason for getting a cow into a body condition score of 5 at calving is so she will have a high probability of rebreeding within 90 days. Cows in adequate body shape at calving will have the best chance of rebreeding and producing a calf each year (Table 4).

Table 4. Effect of Condition Score at Calving on Rebreeding Interval

Condition Score at Calving	Rebreeding Interval, days
3	80-95
4	60-80
5	50-70

How does frame score influence the amount of hay required to raise a cow from a body condition score of 4.5 to 5.5 during the last three months prior to calving?

Table 5. Effect of Frame Score and Body Weight on the Amount of Medium Quality Grass-Legume Hay Required During the Last Trimester of Pregnancy

Cow Frame Score	Weight	Hay required/day	Hay required/ 3 months
6	1250	32 lbs	2880 lbs
8	1400	34 lbs	3060 lbs
<i>Difference</i>		<i>6% more</i>	<i>180 more lbs</i>

A cow with a frame score of 8 with a body condition score of 4.5 will require at least 6% more hay than a cow with a frame score of 6 and a similar body condition score.

How does your cowherd production compare to what the industry is requesting?

Green and Dolezal (2000) summarized the desired reproductive, growth and carcass traits, which were proposed by the late Robert Taylor from Colorado State University (Table 6).

Table 6. Production and Marketing Specifications for Beef Cattle

Trait	Optimum Ranges
<i>Reproductive</i>	
Age at puberty	12-16 months
Age at first calving	23-25 months
Birth weights	
Calves from cows	75-95 lbs
Calves from heifers	60-80 lbs
<i>Growth</i>	
Mature cow weight	900-1300 lbs
Feedlot gain of calves	2.5-3.5 lbs/day
Feedlot feed efficiency	5-7 lbs of feed/lb of gain
<i>Carcass</i>	
Carcass weight	600-800 lbs
Quality grade	Select+ to Choice+
Yield grade	1.5-3.5
Tenderness score, lbs	Below 8 lbs

Dr. Taylor suggested that a mature cow should weigh between 900 and 1300 lbs. (*editorial observation: I suspect many ranchers have mature cows that weigh more than 1300 lbs*). With regard to feedlot and carcass requirements, it is interesting to compare the results of the 2000 Ranch to Rail program sponsored by Utah State University Extension (Zobell and Chapman, 2000) to this table. The following table summarizes the performance of 144 steers from 21 ranches located throughout Utah.

Table 7. Comparison of Feedlot Performance of 144 Utah Steers from 21 Ranches Enrolled in Ranch to Rail Feeding Program

Item	Average	Range	Ranges Suggested by Taylor from Table 6
Feedlot daily gain, lbs/day	3.29	1.65 to 4.57	2.5 to 3.5
Feed cost of gain, \$/cwt	45.24	\$42.00 to \$49.70	-
Net return/head, \$	-6.75	81.20 to -159.65	-
Carcass Weights, lbs	688	539-868	600 to 800
Quality Grades, %			
Prime	.71		Select+ to Choice +
Choice	70.92		
Select	28.37		
Yield Grade	2.10	.7 to 3.44	1.5 to 3.5

Zobel and Chapman, (1999-2000 Utah Ranch to Rail Summary Report, USU Extension).

Seventy percent of the calves gained more than 3.0 lbs/day while slightly more than 9% gained less than 2.5 lbs/day. Seventy two percent of the steers graded choice or better with an average yield grade of 2.10. But, fifty-two percent of the feeder cattle had a negative return and ranged as high as a negative \$159 loss. However, 48% of the cattle had a positive net return and ranged as high as \$81/head. If the industry is seeking more consistency in types of cattle produced, then these results are a good example of the variation that exists within the industry and that there is still opportunity for improvement in both feedlot and carcass performance.

Recently, the NCBA (2001) recommended several goals for making beef a better product. Among the recommendations were:

- Eliminate USDA Standard-grade carcasses
- Develop and implement a voluntary, industry-driven and standardized electronic ID system
- Develop an information system that allows each producer to conduct a quality audit of his or her own cowherd.
- Continue to improve the eating quality of beef.

What are the reasons for not consistently providing cattle to meet the specifications outlined in Table 6? Green and Dolezal (2000) suggested that the reasons for inconsistency of the product has included:

- Too much emphasis on matching the cow to the production environment vs. matching the calf to the marketing environment,
- Fierce pride in producer individuality and independence vs. strategic alliances and cooperative relationships,
- Commodity based marketing vs. value based marketing,
- Consumer preference vs. producer preference, and
- Systematic crossbreeding vs. mongrelization of the cowherd.

The value of heterosis in a crossbreeding program has been known for many years, and the additional return has been estimated to be between \$50 to \$100 (Ishmael, 2000). However, the quote by Ishmael that crossbreeding “may be like managing a three-ton gorilla in a creep feeder represents the attitude of many ranchers”. Why? Field and Cundiff (2000) summarized the thoughts of the late Bob DeBaca who believed that the reason many crossbreeding programs failed was because:

- The overuse of individual beef cattle breeds that have too much in them- too much growth, milk, birth weight or mature size.
- The use of poor quality bulls in a crossing system that did not yield desired results.
- Seedstock producers failed to develop the expertise and service orientation to assist their clients in development of effective crossbreeding programs.

As an example, Harlan Ritchie from Michigan State University describes a common breeding scheme, often mistaken for planned crossbreeding. It is using a Continental bull on some English cows cross breeding seasons and crops of replacements. The percentage of the Continental blood in the females rises to the point the producer figures he needs an English bull. So, the biological type of the calf crops swing from extreme to extreme with everything in between, making it difficult to optimize either production or marketing (Ishmael, 2000). On the other hand, Dr. Jim Gosey from the University of Nebraska was recently quoted to say “Many commercial herds have stacked black bull on top of black bull and have become high percentage Angus herds; herds which have lost heterosis and have also lost retail product, yield, muscle and pay weight” (Peck, 2001).

So how do we get to where we need to be? Dr. R.J. Lipsey, responded that there are at least six areas to concentrate breeding efforts on:

- The herd needs high fertility females (high puberty, high re-breeding and great longevity with low maintenance requirements and environmentally adapted).
- Respectable growth of calves with at least 25% Continental blood
- Respectable carcass values; (70% choice; 70% yield grades 1 & 2; no out cattle
- Convenient cattle; polled, quiet disposition, pigment, frame, teats/udder, eyes, feet and easy to replicate.
- These cows will be crossbreds just like 100% of the sows and hens in the U.S.

Specifically, ways to achieve these goals would be to purchase replacement females and breed to terminal bulls such as an Angus x Waygu (a cross for high marbling) or Simmental or Gelbvieh x Angus for all purpose calves, or Charolais x Piedmontese for a lean market. According to Don Schiefelbein the executive director of the American Gelbvieh Association “What’s so difficult about branding a hybrid, documenting the performance and parentage, then offering it to commercial producers in a simple, easy-to-use system (Ishmael, 2000

A producer needs to stabilize the ideal percentages of breeds you need by purchasing, contracting or making the sires yourself. Examples would be SimAngus, Balancers (Gelbvieh x Red Angus), Leachman Stabilizers (1/4 Simmental, ¼ Gelbvieh, ¼ Angus and ¼ Hereford) or Rangemakers (Red Angus, South Devon and Continental). The key is to make it easy and maintain at least 70% of maximum heterosis and use one composite breed. Breeding plans must be developed, by geo-climatic region, for matching of breed resources to environments. Seedstock suppliers (of both maternal and terminal sire lines), commercial multipliers, and feedlot professionals must become better integrated and aligned to make use of value-added genetics (Green and Dolezal, 2000). The speed at which the beef industry is changing is breath taking. It would appear that one of the areas which has the greatest opportunity to add profitability to a cowherd is the use of planned crossbreeding to meet both maternal requirements for your environmental conditions and also provide calves with excellent growth and carcass characteristics for the feedlot and packing plant segments.

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