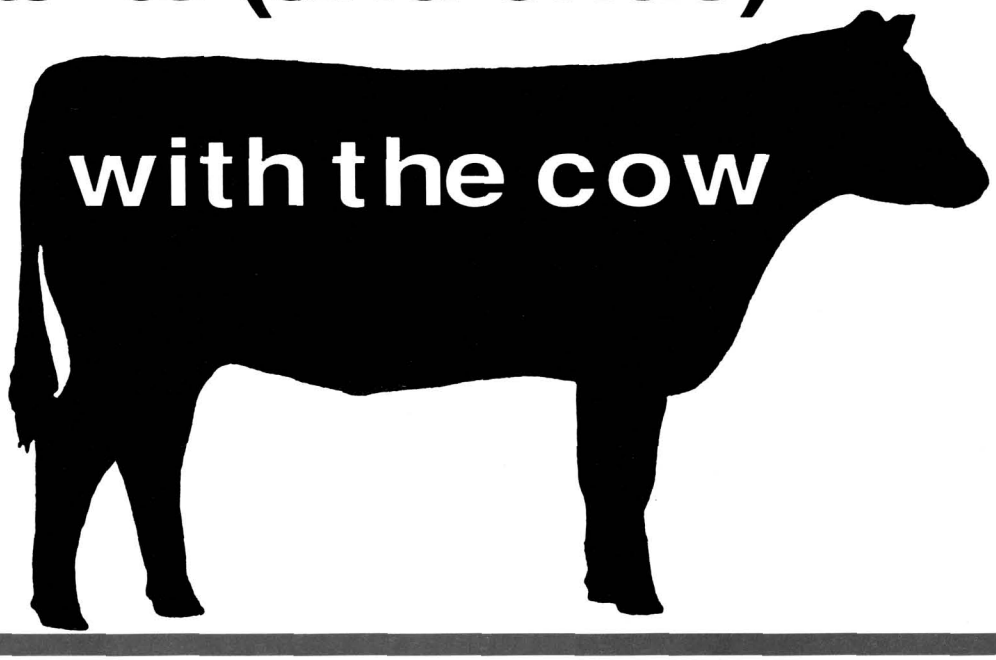
It all starts (and ends)



By Dr. Jim Gosey
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(Presented at the National Angus Beef Profit Conference, Billings, Mont., September 15, 1988.)

The beef chain does start with the cow herd, but if we think about all the signals we receive in terms of consumer demand for beef, it also ends with the cow herd. We have all this information coming back at us and put together and sort. Some of it really isn't very useful and some of it is very useful. Up and down the line, the buck ultimately stops with the cow herd.

Bill Haw, CEO, National Farms Inc. commented at the Colorado Cattle Feeders Association meeting that the cow-calf industry was largely a part-timer business, a hobbyist business and is dominated by people not keeping score. These comments certainly strike a nerve and grab the attention of cattlemen.

If we look at what Mr. Haw was saying, in the United States, 68 percent of the cattle operations have less than 50 head of cattle. Thirty-two percent of the cattle are controlled by people who have less than 100 head of cattle in their herds. This has a substantial impact on our markets and is an element when talking about value-based marketing. Even in Montana, 11 percent of the cattle are in herds less than 100 head. The lowest state is Wyoming with seven-eight percent of the cattle in herds less than 100 head. Our challenge is pretty clear. WE need to be so near perfect in efficiency that nobody can compete unless cattle is their first enterprise.

A few thoughts about profit and financial records. You may keep inventory and financial reports in your little notebook just as good as some do on their computers. High-technology can be in terms of thinking and not number-crunching. The message needs to hit home that good old-fashioned thrift is okay.

Being a low-cost producer is more than just not spending money. The whole approach is to know where to put the dollars. The "cowboy law of preference" says it's a lot more fun to do the things in ranching that we like to do. We often don't spend enough time doing the things our operation really needs. We need to give more attention to planning and "work smarter" but not necessarily "work harder."

COWBOY LAW OF PREFERENCE
We spend too much time on jobs we "like to do",
and spend too little time on jobs we "need to do".

Once you have your action plan, you need to discipline yourself to work the plan through entirely. Problems are not necessarily what you want them to be. Sometimes we find good solutions for problems that may not be very important.

In Nebraska, we have worked with nine herds to improve profitability. Some of the big changes that were made include:

1. Taking better care of wintering of young cows. In many cases, the body condition was too poor on the coming three-year-old cows after the weaning of their first calf. We were losing some of these young cows as open cows because they did not have enough body condition when they calved.

IOWA BEEF COW BUSINESS RECORD
(based on 106 herds 1982-1987)

INPUT COST ($)	35 HIGH PROFIT HERDS	DIFFERENCE	35 LOW PROFIT HERDS
Feed & Pasture	139	40	179
Capital	73	27	100
Labor	37	16	53
Operating	34	20	54
Depr., Taxes, Insur.	18	21	39
Total	301	124	425

2. Culled late breeding cows and tightened the breeding seasons.

3. Fertility tested bulls.

4. Herd health programs were better planned. Some were spending too much on their vaccination program.

5. Worked harder on sire selection for a specific purpose. However, the bull batteries in these herds overall was good.

An Iowa study of 106 herds for a one-year period showed a difference of $124 per cow between low profit and high profit herds. The high profit herds had more output per cow with higher weaning weights and a higher calf crop weaned percentage. They also used more corn stalks as low-cost winter feed which had a significant impact on profitability. Maintenance cost of the mother cow is a major share of the total costs in the production of beef.

Data from the U. S. Meat Animal Research Center at Clay Center, Neb., showed that the total annual energy intake of the Angus-Hereford cross-type cow was less than those requirements of a heavier milking cow. Even after weaning, the maintenance charges were higher for several months. This is due to the higher metabolic activity in the heart, lung, liver and spleen. The total amount of visceral organ content as a percent of their fasted body weight was 23 percent in Angus and 19.8 percent in Herefords. This is part of the explanation why you have Angus cows that traditionally milk at higher levels and are a bit more productive than Hereford cows.

Higher producing cows have more visceral organ weight and metabolic active tissues which is one reason maintenance costs are higher.

We need to look at cow output as well as input. Efficiency can be defined by calf weight gain divided by total amount of feed input costs that go into the cow and the calf. In the MARC studies, the Angus-Hereford type of cow was three percent more efficient than average, the Brown-Swiss type one percent less than average and the Chianina-type were about five percent less efficient than average. The differences are smaller when you look at both output and input rather than just input.

MATURE COW VISCERAL ORGAN % *

BREED GROUP	HEART	LUNG	LIVER	TOTAL
Angus	5.1	6.3	11.7	23.1
Hereford	4.6	5.5	9.7	19.8
A x H	4.5	5.3	10.0	19.8
B. Swiss	5.0	7.7	11.0	23.7
B. Swiss x AH	5.0	5.9	10.7	21.6

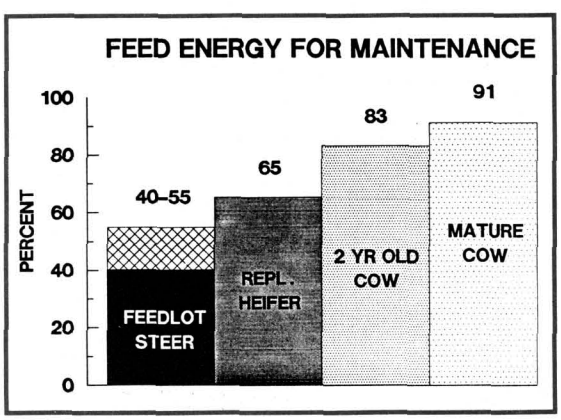
* % of fasted slaughter wt.

OUTPUT / INPUT AMONG DIVERSE COW BREED GROUPS

ITEM	A x H	RP-X	B. Sw-X	Chi-X
Calf Gain	97	99	103	98
Feed	106	102	99	99
Cow Wt.	98	91	97	107
Milk	85	101	118	82
Fat	124	101	91	101
Feed	91	96	105	104
Calf Gain/ Cow-Calf Feed	103	103	99	95

* Ratio percentages of overall means

We need to consider economic efficiency as well as biologic efficiency. More pounds per calf does not always lead to more profit. Data from Colorado State University (CSU) on maintenance costs of four age groups: mature cows, two-year old cows, replacement heifers and feedlot steers, indicate the highest maintenance requirements of those groups is the mature cow. The differences between her and the two- and three-year-olds is very significant. Biologically, it would be more efficient not to have any mature cows; so why is longevity important and why do we keep mature cows?



Even without the tax considerations, longevity has value because an older cow sells for less per pound and if we sell all those older cows, we would take quite a bit on cull cow prices.

Should we feed those younger cows out and sell them for slaughter after having one or two calves? This is an example of some of the conflicts we can run into between biological and economical efficiency and how important it is to try to understand economic efficiency.

Modeling of economic efficiency done at CSU show several interesting points. The value of selection for birth weight, yearling weight, milk production and mature weight under a standard cost situation was considered. In one situation, you take the calf off the cow and put it directly into the feedlot. Selection for early and rapid growth for yearling weight was a plus for economic efficiency. The big negative that cannot be ignored was birth weight. The correlation between the two must be dealt with.

The one place where an increase in milk production really had impact was where the concentrate or grain costs were doubled or were substantially higher when taking calves directly off the cow to the feedlot. In that situation, it may be cheaper to feed cows to milk the pounds on the calves rather than feed it on after the calf is in the feedlot. At least the value of the milk production is higher when grain is expensive.

On a yearling system, the value of milk production is not nearly as great as it is in the previous system.

When we try to determine the optimal type of cow, it really does change with changing breed types, management systems, and feed costs. The

price ratio between cow-herd feed and feedlot feed is terribly important in determining what level of milk you should be operating at.

Selection for milk level production for a commercial herd, beyond healthy, thrifty calves, depends on how you market your cattle. If you sell calves as yearlings, you have to question the amount of extra milk production that you really need in that herd.

Efficiency is a delicate balance of many traits. Three major traits are net reproductive rate, rapid growth per unit of feed, and composition of growth.

We have selected for biological efficiency and stressed weaning and yearling weights with some recent attention on calving ease, birth weight and milk production. Growth and calving ease run counter to each other at times.

ADAPTABILITY / CONVENIENCE TRAITS

- Longevity
- Foraging Ability
- Fleshing Ability
- Structural Soundness
- Temperament
- Calving Ease
- Survivability
- Calf Vigor
- Maternal Behavior
- Disease Resistance
- Pest Tolerance
- Heat/Cold Tolerance

Fleshing ability and marbling could be in the same bracket. Fertility and milk production probably are not genetic antagonists in a good feed environment, but may well be at odds in a poor feed environment. In addition, trade-off between productivity, maintenance requirements, fleshing ability, carcass leanness, and calving ease must be dealt with.

An Australian study looked at the antagonism between productivity and maintenance requirements. As a result of selection for growth rate, under high stress conditions (no treatment for parasites, flies nor heat protection) showed the cattle had a higher heat tolerance, lower maintenance requirements, and a greater resistance to disease.

These same cows were then compared to other cows who had been in a lush environment. The harsh-environment group of cows when subjected to the lush environment, did have lower birth weights and lower growth than the cows continuously selected in the lush environment. This seems to indicate that adaptability is extremely important from the standpoint of fitness to a giv-

Variation allows rapid change.

If rapid change isn't needed, variation isn't needed.

en selection environment.

Points that are important but are not involved in our EPD Sire Summaries include:

1. **Longevity**
2. **Temperament**
3. **Adaptability**
4. **Heat tolerance**
5. **Pest tolerance**

Variation allows rapid change. Uniformity and predictability, however, are on the verge of replacing rapid change as the breeding goal that we need. We need to think about growth selection within a

Optimal cow size and milk level changes with genotype, management system and feed costs (cow herd and feedlot).

given mature size. It would be great to have an EPD on mature size or some measure of mature size.

Growth rate per unit of mature size is really what it's all about. Growth rate that leads to increasingly larger mature size is not necessarily the kind of growth

All seedstock breeders should . . .

- **feed a pen of "reputation" cattle**
- **calve a set of heifers bred to "easy-calving" bulls.**

rate that will do the beef industry the most good. We need to think about bracketing growth rate within the constraints of some mature cow size level, some calving ease level, and maybe even some level of milk production. Within those brackets, you want as much growth rate as those brackets will allow.

How will we know if we have achieved our goals if we don't know what our goals are? We need to decide what targets we want for major traits and work toward those targets. Many cattle may already be about as good as they can get for their current environment.

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Avoid lean beef traps, says Gosey of selection

"If we start breeding a leaner and leaner package and reduce the fleshing ability of cows, we've made an error."

Gosey says cow-calf operators can't sacrifice the ability of cows to survive a cold winter in the attempt to make a product that is leaner.

And if they breed only for cutability, they will sacrifice marbling which may be needed for palatability.

In a talk before cow-calf operators attending Beef Day of South Dakota State University in Pierre, Gosey tried to point out some myths and misconceptions in current discussion of beef, shed some light on research data, and give beef breeders some guidance in the changing demands of the consumer and the packer.

Gosey said he resents it when meat packers tell producers they are doing it wrong. "There has been a disincentive for producing leaner beef carcasses for years" when the packer buys cattle. A leaner carcass has meant a producer will sell less pounds and make less money under traditional purchasing methods, Gosey said.

What about marbling? Gosey said everything he's seen indicates the consumer wants a quality product. He said he's seen nothing that would indicate the consumer is ready to buy lean beef at the expense of palatable, tasty, flavorful, juicy beef.

Gosey said that beef is unique in that its position in the market is related to flavor and juiciness. Gosey conceded that there are a variety of markets for beef, but "nobody wants to buy beef that tastes like shoe leather."

Research shows that marbling is about 40 percent heritable, meaning 40 percent of the differences found in marbling could be attributed to genetic differences.

He also showed the expected change in marbling or retail growth if one selected for either or both. If one selected for marbling alone, it would increase marbling by about one-third of a degree, and it would decrease retail product by three-fourths of one percent.

If one selected for retail product, it would lower marbling a little, but would gain substantially in retail product–about 1.5 percent.

Looking at the combination of the two, the process would be slow. Making an Angus like a Chianina or vice versa would take about 30 years of selection.

"The two traits run counter to each other and it would be difficult to have your cake and eat it too," Gosey said.

Citing a 1986 study in Texas, Gosey pointed out researchers charted an increase in palatability as marbling increases due to juiciness and flavor, up to a point where the line flattens out. "Once you're in that window of acceptability in terms of marbling, do you need to go beyond that point?" Gosey asked.

That point in these charts was at six or seven percent intramuscular fat. Gosey contends the industry doesn't need to go much beyond that level of palatability for the retail trade, but may have to for a very high quality product, such as the restaurant trade. At the other end, might be a very lean type of market, Gosey said.

In terms of quality grade, something at the bottom end of choice with a small amount of marbling and about five percent chemical fat, might do the job. Average-choice cattle might have about seven percent fat and be consistent with a modest amount of marbling.

"Maybe that's the window that is necessary to achieve palatability."

Turning to cattle selection, Gosey spoke of "genetic antagonism," the relationship between growth potential and calving ease, or fleshing ability and marbling versus carcass leanness.

"If we start breeding a leaner and leaner package and reduce fleshing ability of cows, we've made an error," Gosey said. "We can't sacrifice the fleshing ability of cows to survive a cold winter to make a product that is leaner." To the extent that leanness and marbling conflict, "we've got to let the cow rule," Gosey declared.

Gosey said that recent analyses in Angus and Hereford carcass data indicate correlations between outside fat and marbling at less than ten percent. "We used to think the two were highly correlated. If that is true, it gives us great hope. We can have cattle with adequate internal marbling, yet without high levels of outside fat."

Another genetic antagonism is that high-muscling cattle also tend to be later reaching puberty and mature size, which would affect maintenance requirements.

Fertility, milk, muscle, and marbling are four traits breeders will have to be concerned about as they go in the direction the consumer and the packer seem to be pointing.

As packers criticize fat cattle coming to market, Gosey responds by saying "carcasses are not born," they come from calves. Packers say they want to buy yield-grade-two cattle. I say they were all yield-grade-two before they got to yield-grade-five. You just didn't like their weight when they were yield-grade-twos.

"There is tremendous variation in the cattle that go to market."

He added that packers, in their attempt to start a value-based buying system, run into the problem of variation. "When they can't get around variability, they pay an average price for an extremely variable set of cattle."

He told feeders, "If you have uniformity of kind and don't make an error in marketing, you're going to come out with a very good product."

Gosey contends that if rapid change in types of cattle demanded by the consumer and the packing industry are not necessary, then producers don't need the variety in their herds to select from.

"If you've got fertility, growth rate, adequate milk and size, why do you need to continually tinker with your breeding program? If rapid change in major traits isn't needed, variation isn't needed."

Gosey said he thinks uniformity and predictability will replace rapid change as breeding goals of the future.

The animal scientist said selection toward growth ought to be bracketed within a given mature size by selecting for relative growth rate, not absolute growth rate.

If the industry wants uniformity and predictability, then perhaps breeders should select for growth rate within a bracket of mature size, birth weight and calving ease. The industry may not need the variation for major traits it has in the past.

Sire summaries are going to be more and more important as producers need information on marbling and percent of retail product and will be vital to the progressive cattle producers of the future, Gosey concluded.

Our thanks to Jerry Leslie, News Editor, South Dakota State University.

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