MEASURING CATTLE

THE ENERGY AND EFFICIENCY ISSUE

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We do have an energy crisis--gasoline, oil. Like coal, fossil fuels are hydrocarbons and are exhaustible. Expect higher prices. That means higher costs for producing hay, grain and all other feedstuffs. Grains--wheat, corn and others--are now being converted into gasohol. Electric energy is under increasingly heavier demand, but more costly to produce.

There are four points I want to make here:

1. That all kinds of energy are exchangeable--sunshine, gasoline, wheat, electricity, hay and cottonseed cake are all a part of one big energy picture.
2. Cattlemen in the future, barring some catastrophic reduction in world population, can expect to pay higher prices for energy in all forms.
3. Turning hay, grain and grass into the high energy meat source that Americans like so very much is inescapably going to feel the energy squeeze and higher costs.
4. We in the cattle business are just beginning to learn something about the efficiency of cows as converters of the sun's heat through grass and other plants into energy for human food. Of course, we know that percent calf crop, i.e., the number of normal live calves raised per year for each 100 cows of breeding age on a farm or ranch, is the number one factor in energy efficiency. I contend that no one knows for sure what's second. If your calves don't grow as fast as the average in your area of for your type of operation, then rapid growth ability may well be second to calving percent; but if your calves are larger than the average in your

area, maybe disease resistance, disposition, size, longevity, or body shape are more important than rate of gain, per se. If your herd is plagued with defects or any factor which reduces normal foraging, reproductive life, or consumer (market) acceptance, then something here may be economically second on your improvement list.

The point is that you have to keep records of your operation and your cows individually in order to know your priorities and options for profitability.

For our consideration here today, I'd like to talk about measuring or evaluating this thing so many people refer to as efficiency. I want to think about measuring or evaluating beef animals from four points of view:

1. In terms of an animal's total efficiency as a converter of some specific combination of raw materials into meat.
2. The evaluation of individual animals as a means of taking a more meaningful inventory.
3. Measurement as a management tool.

There are many different meanings for that term "efficiency" in the literature and in common usage today. Some definition or refinement of the term seems essential if we are to understand each other at all. Some of the terms used in reference to efficiency today are: rate of gain or gain index, pounds of lean per day of age, weaning weight, yearling weight, mature size, long bodied, rugged, heavy or smooth-muscled, thick-bodied, tall,

masculine or feminine, mothering ability, ease of calving, efficient converters of feeds, etc. I'm a cattleman and I use these terms, too, in discussing efficiency; but I'm keenly aware also that as this business we're in comes under greater pressure from consumers, greater economic pressures on every side and greater social pressure from groups with interests far different from ours in public lands, water, and environment, the day is at hand for us to tighten our ship. As a starter we need to make the language we use more precise, not only so we can communicate more meaningfully with the general public, but also in order to speak more clearly to each other. Is mature size related to efficiency? Is tallness? How do we communicate to anyone else? Worse yet, how do I as a breeder or rancher convince either my spouse or my banker that it's in our best interest to earmark $50,000 for adding more length of body or easier calving to my herd? We need better measurement tools and a more precise language!

The term I'm going to use for efficiency is not just rate of gain or tallness or any other such term; rather, it is "total efficiency". I think if we could for a few minutes look past the current fads and fashions of cattle shows and magazine sales pitches, and focus on the real situation on every farm and ranch where cows are kept, not for prestige, artistic or hobby value, but because they appear to be the best alternative for converting grass, roughage and grain into human food, then the term efficiency can be examined in its greater totality. Start your calculations with a specific ranch or farm where cattle are to be produced. It may be 500 acres of irrigated or bottom land, or

10,000 acres of dryland grass, a steep, rough mountainside, or any combination of these. In every case, that's your basic resource and where your efficiency as a production unit must finally rest.

I think we all have some sense of what total efficiency means and that rate of gain, size, or tallness, or cow size are not the same thing as the ultimate or total efficiency of the beef enterprise. But, I think too that all of us to some extent get our eyes set on some such criteria and, for a time at least, proceed as if they were identical to total efficiency.

I think one has to consider the total energy concept to really understand total efficiency. For example, any time a man has to put a cow in the barn at night, turn on the electric lights and pull a calf, then the extra man hours of labor and perhaps the verterinarian's costs, plus the cost of light and the extra bedding and handling equipment have to be deducted from that cow's efficiency rating. Very probably there are a few bull debits in this case too. Similarly, any time you have to use four men instead of two, take a couple of extra hours to do the job, or add another rail or strand of wire to the top of the fence; or repair three more gates because your cows have become bigger; taller or wilder, then these costs must be subtracted from your efficiency ledger. If you must provide extra supplements to help cows breed or rear a calf in some years, then just be sure you're not forgetting these costs when you're figuring efficiency. If the shallower, taller cows are harder keepers,

then the extra maintenance required to keep them breeding regularly and producing enough milk represents an additional cost which you pay for that shallower body or taller type. But again it's obvious these shape and type differences don't exist in our records unless these differences are noted, recorded and related to fertility, number of calves raised, and other factors involved in total efficiency.

All over the world, every kind of bird, insect and animal has developed under natural selection to fit some special ecological niche. Their size and shape as well as their biological functions have been fashioned by nature to fit <u>that</u> climate, <u>that</u> type of soil and feed, etc. There is a reason the native people in Africa were black, while Scandinavians generally are light-skinned. As we pursue total efficiency in our cattle, we will certainly have to give greater consideration to selection for that size, shape, color, etc. that's best adapted to the kind of country where we expect them to perform.

I would be less than honest if I were to imply that "total efficiency" is always the same as maximum profitability. There are literally hundreds of examples, and all of you will remember some of them which certainly could not quality as maximally energy efficient, but which for a time at least were profitable. Breeding dwarfy or double-muscled or color-fad cattle was profitable for a while and just as certainly did not represent long-term, efficient operations. Most fads, like mellow yellow in Herefords, tallness, size, or simply gain per day, do in fact

tend to reduce our awareness and emphasis on maximizing the total efficiency of the beef enterprise on a specific ranch or farm.

Now, if you're seriously and primarily interested in "total efficiency," you don't care what breed, size, shape nor color your energy converters (i.e., cows) are, except as some of these may be related to "total efficiency" under your circumstances.

Obviously the place to start is to take inventory of the family lines, sizes, shapes, fertility and any other factors thought to be related to productivity of the various cows we're now raising and seeing how each of these factors relate to your specific total efficiency concept.

Why measure? Because the eye is simply not accurate enough. Here are the barest essentials if you hope to make progress:

1. Accurate indentification and measurement. Any factor thought to be related to efficiency must be measured as accurately as is practical and identified with a particular animal.
2. Each measurement must have a high repeatability. The goal here is to have each measurement or other observation such as structural soundness represent as accuratley as possible the animals' true genetics. Just as we correct all weaning weights to 205 days, we need to adjust all measurements for age, sex, etc. Repeatability means the ability to measure the same animal over and over during the same day or through-

out its life, and keep coming up with essentially the same answers. When a measurement is highly repeatable, the animals within your herd ought to stay ranked in about the same order if they were all remeasured again soon or many months later. If the measuring technique is a good one, hopefully the animals would remain in the same rank order, regardless of who does the measuring.

3. Heritability. Genetic improvement is, of course, dependent upon how heritable the trait is in which you are interested. Heritability simply is a measure of how much you get in each generation of what you grab for example, you breed a bull that you thought represented 40 lbs. more at weaning than your average to some select heifers just as good, you seldom get a 40-lb. jump in weaning weight. You may get 10 lbs. of the 40 lbs. you tried for. In other words, only 20 lbs. or 25% of the 40 lbs. came through in the calf crop.

Now why measure? If you're only guessing at calf weights, or if your old scales don't break on less than 20 lbs., your calf weights very probably weren't very accurate. It may well be that 40-lb. heavier bull that you bred those select heifers to was actually only 20 lbs. heavier than your average. So heritability figures are always produce poorer estimates of heritability. If you want to make rapid and sure genetic progress, or to correlate any trait to profitability, accurate and repeatable measurement is absolutely essential.

4. Relationship of traits to "total efficiency". No measurment such as tallness, heart girth, length of body, pelvic area, cow size, thickness, nor rate of gain means anything at all, unless it makes a net contribution (with all costs subtracted) to total efficiency or net profitability. So in the same way that Texans in the deep south have learned that about one-quarter Brahman blood is essential for their area, the most progressive cattle breeders in every geographic and climatic niche need to know much tallness, how much thickness, what size birth weights, etc. are optimum for them.

Some cattlemen who have been measuring their herds for three or more years are heralding the value of measurements as a marketing tool. There is concrete evidence that a breeder is really trying to apply modern technology to produce a better product. A breeder can quickly show a prospective buyer the average height, length or rate of gain, etc. of any sire or dam's offspring. He can show in understandable language how tall or how long, how fertile, or show the ease of calving for the whole herd or any sire group. There seems to be developed a sense of greater confidence, greater dependability, and more honesty when the things a buyer is looking for are measured. Of course, it's easier to advertise or sell by mail when the language is universal and can be verified in concrete terms.

As economic conditions continue to change at an accelerating rate, the priorities among qualities you want in your herd probably change too. If a herd is measured for at least most of the factors affecting "total efficiency," if you've checked the repeatability and heritability under your conditions, then your ability to redesign your cow herd to meet the new demands would be both much faster and much cheaper. Getting there first would also provide you with a tremendous marketing edge.

Genetic Profiles, Inc. through these measuring seminars is demonstrating a new concept in measuring designed as a state-of-the-art tool for highly accurate, highly repeatable, economical and mobile measuring. Two other aspects of the program must be mentioned. First, is the expertise of a highly sophisticated computer center dedicated to the whole cattle measuring concept, and a set of cards for you to keep for every animal on your place. It's designed for ranchers; it's a quick inventory of your herd for every characteristic, plus any other traits you personally may wish to add. We believe much significant know-how has and will continue to come from the people closest to the cows.

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