

# PERFORMANCE REPORT

## BEEF LOGIC

by Bob Long

### Evaluating Slaughter Cattle for Fatness

In beef cattle composition, we are concerned with only three tissues — fat, muscle and bone. Of these, bone varies least. For all practical purposes in cattle of typical slaughter weights the amount of bone is not an important factor. Also, the skeletons are all proportional and individual bones are identical in shape.

The fact that cattle skeletons vary so little in proportion and shape should not be alarming. On the contrary, it is most fortunate. We really are interested in the amount and proportion of fat and muscle.



Bob Long

To measure anything, you must establish reference points — a place to start and a place to stop. Therefore, we can use the constant architecture of the skeleton to help measure fat and muscle.

We also know the number and location of every muscle in cattle is identical and they do not increase in number or change location as a steer grows. These muscles are all

so attached to the skeleton at the same points in all cattle. We can always depend on a specific muscle to be located at the same place on the skeleton. This predictability of anatomy is true in all animals within a specie and explains why a surgeon operates with confidence.

Now let us use the fact that the skeleton and muscles are put together in a constant and predictable way and establish reference points for the measurement of fat by touch or handling.

The skeletal reference points for fat measurement are:

1. The point of the shoulder (junction of the shoulder blade and arm bone) — This is a point where the skeleton comes to the surface and is not covered by muscle. If one handles a steer at this point he can determine whether the bone is covered or not and if so the amount of covering. Since there is no muscle at this point we know the covering is fat.
2. Over the back ribs — This is another reference point which is not covered by muscle.
3. Down the center of the back, particularly over the rump — Here the tips of the spinous processes of the backbone are not covered by muscle and any covering is fat.

Touching or handling cattle at any other point on the body is a waste of time since both fat and muscle occur and we cannot determine what is fat and what is muscle. Remember tissue found at these reference points is not an indicator of fat — it is fat — and unless cut off during slaughter will be found on the carcass.

Of course, when you are working with cattle off the halter, as in the feedlot or stockyard, it is not practical to touch the cattle and so we must use visual methods of measurement. Here again we can depend on our knowledge of skeletal and muscular arrangements to determine the amount of fat a beast is carrying. The lower surface of the sternum or breast bone is always even with a horizontal line three-fourths of the distance from the knee joint to the elbow.

We also know this breast bone has practically no muscle over it — only the tips of two thin flat muscles. Therefore, if the lower surface of the brisket is less than three-fourths of the distance up this forearm bone we know this space is occupied with fat. Likewise, if we view this region from in front, any tissue found in this space is fat.

Now, move on back to the rear flank region. Here is another area where there is little muscle and no skeletal structure at all. Found in this region are a few thin sheets of muscle and a layer of tough connective tissue. These tissues act as a support for the intestines and other organs and curve rapidly upward to above the stifle joint.

If we remove the skin and fat from this region, in any beef animal, that animal will be 'cut up' in the flank. Depth of flank is merely an extra fold of skin and if this region is thick and full that fold is filled with fat. Viewed from the side, any depth of body in the brisket or fore and rear flank is simply a deposit of fat or fat and skin. This depth does not indicate either more meat or greater feeding and breeding capacity. In fact, cattle that carry more fat in these areas almost always have more internal fat which results in reduced capacity.

The same is true when we look at cattle from the rear. Cattle are never meated down to the hock as we often hear stated and extreme depth in the twist is not muscle — it is fat.

Smoothness is another frequently used term that needs analysis. It is true a uniform covering of about .25 inches of fat over the carcass is desirable but smoothness does not guarantee desirability. A steer may be perfectly smooth and carry two full inches of outside fat which is certainly not desirable. Further, a steer may be rough because of rolls of fat at the loin edge or around the tail which is bad. On the other hand, a steer may be rough in certain locations because of heavy muscling which is good. We must always distinguish between fat and muscle to obtain any useful information.

In the October issue of the *Angus Journal* I will discuss how to evaluate cattle for muscling.



*Is biotechnology diverting funding and interest away from other vital or unsolved areas of animal science research?*

*The following guest editor is from Keith Schillo, animal scientist at the University of Kentucky. He addressed this issue at the 1994 American Society of Animal Science meeting in Minneapolis, Minn.*

Biotechnology is a new science that's attracting a lot of interest. In addition to questioning whether it's moral or ethical, we need to look at what biotechnology is going to do and whether it's doing what we want it to do.

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Some institutions are making some powerful statements about what will be accomplished with biotechnology. I'm concerned that biotechnology could overwhelm an institution to a point that other worthwhile pursuits fall by the wayside.

For example, many livestock growth and metabolic processes are not fully understood, but we have researchers looking for the genes that control those individual processes. I think we are in danger of losing our whole-animal perspective to research.

If that happens, universities may be straying from their mission to serve the public. An over emphasis on biotechnology could undermine this obligation. It's almost to the point with some institutions that good science is believed to be only that which involves molecular biology.

The availability of funds from government and corporations attracts interest in pursuing biotechnology research. When you're a scientist and your evaluation is based on the ability to attract funds, there's a powerful incentive to do biotechnology research. And once you're in that research you need to justify the money being spent. There's pressure for universi-

## PERFORMANCE POSTCARD



*Viewlawn Herds, Mabel Minn., served as hosts of the 1994 Minnesota Beef Cattle Improvement Association tour. Pictured (l to r) are : Bob, Chris, Matt, Andy and Larry Miller. They are the fourth and fifth generation to raise Angus cattle at Viewlawn.*



**TO: American Angus Association  
St. Joseph, Missouri**

ties to develop patents and for biotechnology-based products. Our purpose has changed from educating the public to following incentives to develop products.

Because of the high cost of the research, corporate involvement may be necessary, but the funding comes with additional pitfalls. Often, corporate-funded research is kept confidential. Research traditionally has been in the public forum and open to peer review. Openness is

what makes our system work.

Also, most research is conducted with a mixture of public and private funds. How do you separate the two? We face a conflict of interest because we have the public supporting the development of a product that is sold back to them at a profit.

Corporate involvement in biotechnology research also impacts the educational

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efforts of universities. In our classrooms we begin teaching from a corporate viewpoint. But students need to take into account the cultural, political and ethical considerations of their actions. They need training in critical thinking. In many cases, faculty aren't thinking about those considerations themselves, much less teaching their students to think about them.

I'm concerned what this emphasis on biotechnology is doing to us as animal scientists, especially those of us who are civil servants working in land grant universities. Are we serving the narrow interests of corporations, or the broader interests of individuals such as livestock producers, consumers and students?

### Pearson Land and Cattle Tops Two Steer Categories

Pearson Land and Cattle Company, Rich Hill, Mo., was the winner of two of the three awards in the steer category of the Missouri Beef Cattle Feedout. Pearson's Angus sired steers won both the carcass quality and net profit awards.

The Missouri Cattlemen's Association and the University of Missouri Extension Service sponsor this annual event. GM Feedlot of Appleton City and Manken Cattle Company of Salisbury are the host feedlots.

Producers may enter multiples of five steers or heifers each November. Individual animal feedlot performance and carcass quality data is obtained and the information is passed on to the producers. This allows producers to make more informed decisions for future genetic selection and management practices for their herd. Educational objectives for this program better enable producers to:

1. Evaluate the genetic potential of their herds for feedlot performance and carcass quality.
2. Gain experience in the cattle feeding industry.
3. Evaluate the potential of retaining ownership of their calves through the finishing phase.
4. Focus attention on Missouri feeder cattle production and the cattlemen's goal of improving the quality and reputation of cattle from Missouri.

The 1994-95 feedout will start this November. For further details and registration information interested parties can contact: Missouri Cattlemen's Association in Ashland; Eldon Cole, Extension livestock specialist, Mt. Vernon; Al Decker, Extension livestock specialist, Butler; David Lalman, University of Missouri Extension service, Columbia; GM Feedlot; or Manken Cattle Company.

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*Al Decker Extension livestock specialist, Butler, Mo., presents the awards for carcass quality and profitability. Pictured (l to r) are: Roger Reeves, GM Feedlot manager; George Perry, GM Feedlot president; Al Decker; Steve Pearson, owner Pearson Land and Cattle Company; and Carl Steiger herdsman, Pearson Land and Cattle Company*