



# Beef Logic

by R.A. "Bob" Long

## Muscling's contribution to carcass composition

Muscle is beef, so beef production must emphasize muscling. Therefore, the criteria for the evaluation of cattle for breeding purposes, for use as feeders or for immediate slaughter must include muscle.

The muscles are attached to the skeleton and to each other, and they make it possible for cattle to stand and to move about as the muscles contract and relax.

All cattle have exactly the same number of muscles, and these muscles are attached to the same places on the skeleton. This fact eliminates the common reference to "muscle pattern" differences, since all cattle have the same muscle pattern. And it points out the inaccuracy of such statements as "muscled down closer to the hock."

**Even though the muscle pattern** is the same in all cattle, large differences occur in total muscularity or in muscle-to-bone ratio. Two steers of identical frame size may have an entirely different amount of muscle. It is not uncommon among steers of the same frame size to have one carrying twice as much muscle as another.

Among British and Continental breeds, the heavier the muscling the less the subcutaneous fat. Likewise, heavier-muscled cattle tend to be trimmer and tighter-hided with less fat in the brisket, along the underline, in the flanks, twist and around the tail. Obviously, such cattle have a more desirable yield grade resulting from larger ribeyes per unit of weight, less fat at the 12th rib and a more uniform fat-deposition pattern.

Dairy breeds, on the other hand, carry little subcutaneous fat but are light-muscled and have tremendous amounts of kidney, pelvic and heart (KPH) fat along with heavy fat deposits on the intestinal mesenteries.

**Not only do all cattle** have the same muscle pattern, the muscle weights are in the same proportion. Therefore, the phrase

"more weight (or more meat) in the high-priced cuts" becomes invalid. This statement originated years ago when some cattleman decided that more muscle in the rib, loin and round and less in the rest of the carcass would be desirable.

It might be desirable, but it is just not possible. Research data from this country, Australia and Canada agree that different breeds of domestic beef cattle (British, European, Zebu), dairy breeds, wild cattle and even water buffalo have essentially the same relationship between the various muscles.

This doesn't mean we can't increase or decrease muscle. It simply means we can't change one muscle or one group of muscles without changing all muscles by the same percentage. Stated another way, each muscle in an animal's body represents a constant percentage of its total muscle mass, and this percentage is the same for all cattle. The correlation is essentially perfect (see Table 1).

**Table 1: Correlation coefficients for weight of certain muscles or muscle groups with total weight of muscle in the carcass**

Muscle	Correlation coefficient
<i>Biceps femoris</i>	0.99
<i>Longissimus dorsi</i>	0.99
Forearm muscle group	0.98
<i>Infra-spinatus</i>	0.98

This same principle is observed in the case of the various cuts of a carcass (see Table 2). Note that there is no range of percentage represented by each wholesale cut, but rather a specific percentage. This holds true in all carcasses — good or bad, old or young.

**Table 2: Percentage of carcass weight of major wholesale cuts**

Chuck	26%
Rib	9%
Loin	15%
Round	19%

This situation should not be discouraging. Indeed, it is most fortunate. If one can measure or see the amount of muscle in one part of an animal's body, one can depend on proportional development in all other parts. Therefore, the muscling of cattle can be accurately estimated by looking at the width, thickness and bulge of the forearm where there is no covering of fat. If the steer is well-developed at this point, we know he is well-muscled throughout his body.

**A word of caution.** In the search for leaner carcasses with more muscle, other factors that contribute to the efficiency of beef production must be considered. An ideal carcass with cutability and quality is not enough. It must have been produced by a strain of cattle with reproductive efficiency, milking ability and longevity. Further, the carcass must have come from an animal that made rapid and efficient gains.

Selection programs for breeding stock must consider every factor that affects the lower right-hand corner of the profit-and-loss statement or else true breed improvement will not result.

### WE WELCOME YOUR INPUT

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