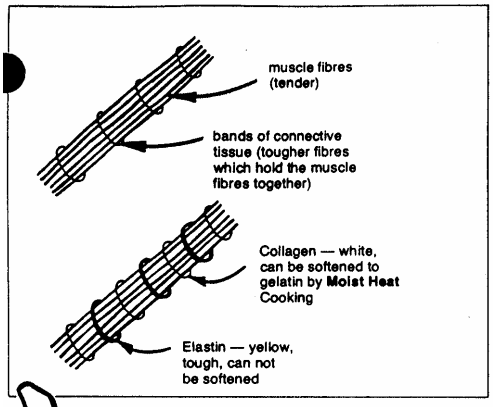
THE STRUCTURE OF BEEF

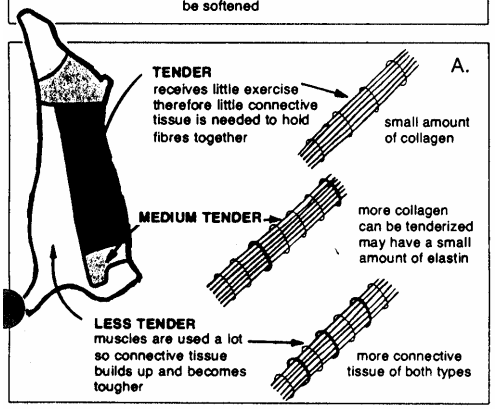
Beef is made up of muscle fibres held together in bundles by tougher fibres called connective tissue. There are 2 types of connective tissue — one called collagen which can be tenderized and a tougher type called elastin which can not be tenderized.



FACTORS AFFECTING THE TENDERNESS OF A CUT OF BEEF

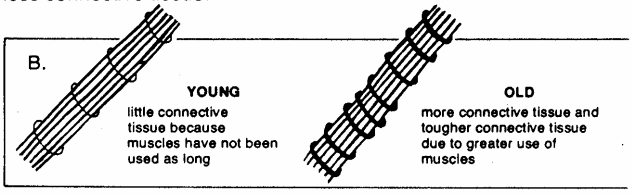
A. Location of Cut on the Carcass:

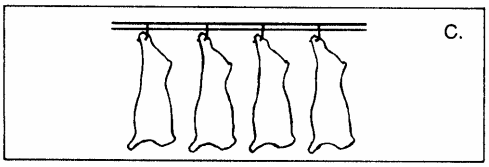
Not all cuts of beef are equally tender. Some areas of the animal are used or exercised more than others, and therefore become tougher since a greater amount of connective tissue is necessary in these hard working muscles.



B. Age of the Animal:

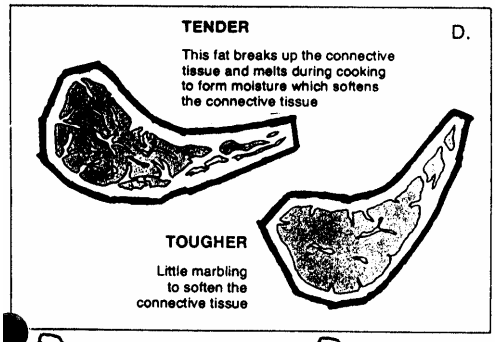
Beef from younger animals will be more tender due to less connective tissue.





C. Length of Aging Time:

Carcasses are allowed to hang 7 to 10 days (approximately). Enzymes in the beef help to tenderize the connective tissues.

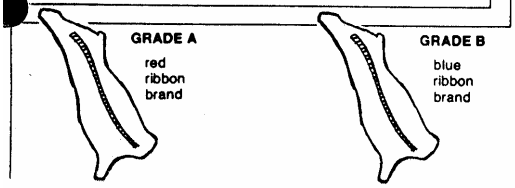


D. Amount of Marbling
(Streaks of fat throughout the lean)

The more marbling the beef has, the more tender it will be.

E. Quality of the Beef:

The higher the quality of beef, the more tender it will be.



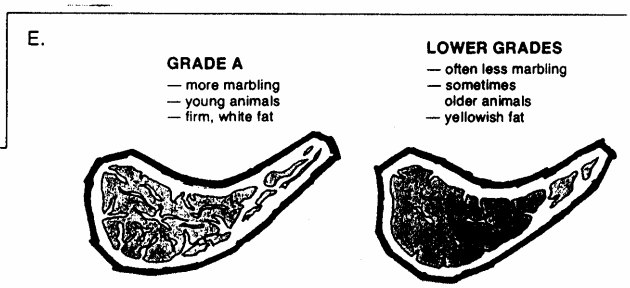


Figure 1: Factors affecting the quality of a cut of beef.

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Factors Affecting the Quality of a Cut of Meat (Beef)

Figure 155 presents graphically the known factors affecting the quality of a cut of domestic beef. These factors and their effect on meat quality will now be explained.

- **The age of the animal**: Generally the older the animal gets the tougher the meat.
- **The sex of the animal**: Generally the meat produced from a mature male is tougher than the meat coming from a young male or female.
- **The location of the muscle**: The active muscles tend to be tougher, see the previous figure.
- **Aging:** Aged meat is generally more tender.
- ***Post Mortem* Changes**- the onset of *rigor mortis*: If the carcass is frozen before the completion of *Rigor Mortis* the meat tends to be tough.
- **Method of cutting the meat**: Always cut meat across the muscle or at right angles to the direction of the length of the muscle, when the meat is cut along the length of the muscle when it is cooked it is tough to eat.
- **Marbling**: When the cut of meat is well marbled [i.e. when it has fat distributed throughout the muscle] it can be easily baked or grilled. Meat that is not well marbeled must be baked or grilled using moist heat cooking or must have fat or oil added to it during the cooking process. Without the fat or oil the meat would be quite dry when cooked. The meat of the Peccary is low in fat and there does not seem to be the evidence of marbling.
- **Castration:** Generally the meat from castrated males tends to be more tender than the meat from uncastrated males. However, see the note below with respect to the peccary.

A Note on the Effect of Castration on Meat Quality

Coser- Junior *et al* (2002) reported that castration had no effect on the carcass traits and meat quality of the Collared Peccary. These animals were reared in captivity and were killed at 300 days of age and weighed 17kg live weight. So they were not very old, which could have influenced the meat quality.

Effect of pH on meat quality - water-holding

The pH of meat generally declines after slaughter as the lactate accumulates as a by-product of the process which releases energy in an attempt to keep the cell alive. This also decreases the water holding capacity of the meat.

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