



## **Animal Health & Nutrition Specialists!**

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### **Meat Quality and Nutrition**

Meat quality is greatly affected by the nutrition of the beast through out its life. Beef is judged by its taste, tenderness and appearance. The ideal qualities will vary with the targeted market. Domestic consumers prefer a leaner steak while the Japanese market prefers marbling which is visible intramuscular fat.

The pivotal role that nutrition plays in meat quality is in the age at slaughter. Younger stock have more tender beef and as the animal ages it lays down more connective tissue which makes the beef tougher. By improving nutrition to increase growth rate, target weights will be reached earlier. Animals that have had a setback early in life can recover some of the lost ground through compensatory gain and will be at similar tenderness at the same age, however they will always be behind animals that have not suffered a set back and so will be older at target weights. HGPs have been linked to slightly tougher meat at the same age in MRC research. When cattle were compared at the same slaughter weight the growth rate advantage of the HGPs produced tenderer meat. There has been some work done on breed difference for tenderness but age at slaughter has a much greater affect on tenderness than any breed affect.

Post slaughter muscle tissue undergoes changes as glucose reserves are converted to lactic acid. This process is necessary to give the meat a desirable bright red colour, an acidic pH and allows it to retain moisture and not dry out upon cooking. Good levels of glycogen (stored glucose) are necessary to minimise negative affects on meat quality post slaughter. Stress and transport lower glycogen levels while a good plane of nutrition allows these levels to be replenished. Minimising stress and feeding a diet with an energy concentration above 10MJ ME/kg in the last few weeks prior to slaughter will reduce the incidence of dark cutters.

Pre slaughter transport can cause dehydration which reduces carcass yield and quality. Providing water in lairage will allow the animal to rehydrate although the right electrolyte mix will hasten rehydration as water is moves back into the animal's tissues and not just into plasma.

Yellow coloured fat is not a desirable quality. Yellow colouring comes from carotenes in grass that accumulates in the fat. Grain fed beef has whiter fat as fat laid down in the grain fed period dilutes any yellow colour in previous fat. Younger stock have whiter fat as they have not accumulated as much carotene.

Marbling is a trait highly desired by the premium Japanese market. Marbling is thought to be associated with tasty tender beef. Marbling is simply visible deposits of intramuscular (inside the muscle) fat. This fat is the last to be deposited after fat is laid down under the skin and between muscles. Therefore to achieve high levels of marbling, cattle must be grain fed for long periods.

Good nutrition produces a younger animal at slaughter, therefore improving the quality and tenderness of the beef produced. By producing a younger animal with less teeth meat quality is improved and the price received at the works will be higher.