

tips & tools

MEAT STANDARDS AUSTRALIA



MSAS4

The effect of breed and age on sheepmeat eating quality

The effect of breed on eating quality

Research shows sheepmeat eating quality is not greatly affected by breed. Due to the historical success of the wool industry, around 70% of Australian sheep genetics are Merino. Other breeds are increasingly promoted for meat production because they generally have better growth rates, better reproductive performance and more heavily muscled carcasses which are better suited to meat production.

The key factors to optimised eating quality from all breeds is good nutrition and stress minimisation prior to slaughter.

It should be recognised that whilst the eating quality of Merino lamb and sheepmeat can be as good as other breeds, they do require more careful pre-slaughter management than other breeds, with key factors being good nutrition and stress minimisation prior to slaughter.

The Merino breed has an increased sensitivity to stress which also extends to Merino crosses. This is further explained in figure 1 where the loss of muscle glycogen between farm and post-slaughter is compared between two cuts for three genotypes handled under identical conditions. Merinos lost more glycogen than crossbred lambs, with the first cross being affected proportionately which subsequently resulted in higher pH meat. In low-stress pre-slaughter conditions, Merino lambs can perform as well as crossbreds with no differences in glycogen, meat colour or pH.

Provided that nutrition is adequate and animals are finished to a minimum fat score of 2, the intramuscular fat concentration of Merinos is either the same or higher than that of other breeds.

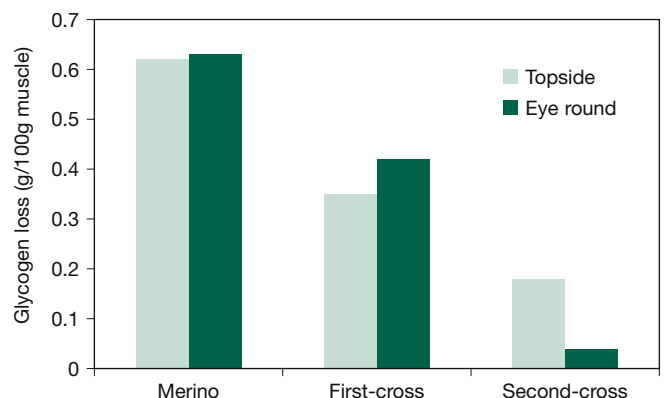
There is also some evidence that some genes for increased muscling may lead to a significant reduction in eating quality through reduced tenderness,

More information on the requirements for reducing stress when handling sheep can be found in other components of MSA Tips & Tools.

Key points

- Sheepmeat eating quality is not greatly affected by breed.
- An increase in the proportion of Merino genes increases an animals sensitivity to stress prior to slaughter.
- Research has shown that processing regimes can improve eating quality and consistency of all classes of sheepmeat.
- Lamb has the best sheepmeat eating quality when comparing like-for-like (eg same cuts, same processing method, same cooking method).
- Mutton loin can have a similar eating quality to hogget loin.

Figure 1: Loss of muscle glycogen between farm and slaughter for Merinos and crossbreds



Source: *Improving lamb and sheepmeat eating quality – a technical guide, 2006*





The effect of animal age on eating quality

The eating quality differences between lamb, hogget and mutton are based on:

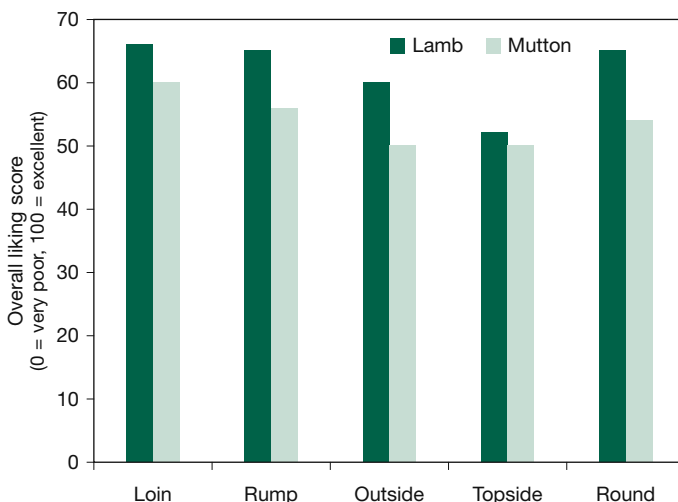
- the toughening of connective tissue
- adverse flavours accumulating in fat as a result of age
- the darkening of meat colour with age

Connective tissue is visible as sinew, 'silverskin' and 'gristle' within meat. As the animal ages, this invisibly permeates muscle. In older animals, 'tougher' connective tissues do not melt as easily with cooking, so are more easily detected as the 'background toughness' in meat.

This effect is shown in figures 2 and 3, which summarises data from large numbers of Australian consumers who tested grilled cuts from lamb and mutton. Better cuts of meat, like eye of loin, have less connective tissue but these also become tougher as sheep get older.

Hogget loin cuts, when processed under optimal conditions, have only slightly lower eating quality than lamb loins.

Figure 2: 'Overall liking' of eating quality of five grilled cuts from lamb and mutton



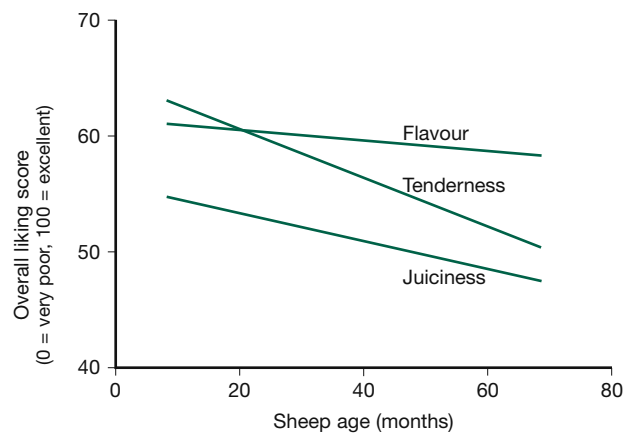
Source: *Improving lamb and sheepmeat eating quality – a technical guide, 2006*

Note: Optimal processing used: electrical stimulation + 5 days ageing; no stimulation + 10 days ageing; or tenderstretch + 5 days ageing

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Research found that lamb remains the premium product and has the best sheepmeat eating quality when comparing like-for-like (eg same cuts, same processing methods). Some cuts of hogget and mutton also show potential for high eating quality.

Figure 3: Change in eating quality attributes with sheep age



Source: *Improving lamb and sheepmeat eating quality – a technical guide, 2006*

For more information

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