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MEAT STANDARDS AUSTRALIA

# 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. The apparent exception is the Merino, which is more susceptible to the high pH condition. 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 carcases which are better suited to meat production.

The eating quality of Merino lambs can be as good as other breeds, but they do require more careful pre-slaughter management than other breeds, with key factors being good nutrition and stress minimisation prior to slaughter. More information on the requirements for reducing stress when handling sheep can be found in other MSA Tips & Tools in this booklet.

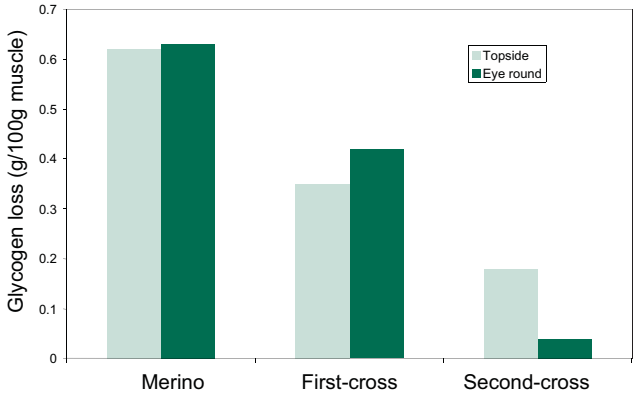
The Merino breed sensitivity extends to Merino crosses, when stressed. This is shown in figure 1 where the loss of muscle glycogen between farm and post-slaughter is compared between two cuts for three genotypes handled under identical conditions. Merinos suffered more than the other two genotypes and the first-cross suffered proportionately.

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. Recent research has shown that if Merino producers select rams with a positive estimated breeding value for the 'yearling eye muscle depth' trait, this will help reduce the incidence of high pH syndrome. It seems that animals selected for muscle potential actually look after muscle better.

## Key points

- Sheepmeat eating quality is not greatly affected by breed.
- Merinos require more careful pre-slaughter management to reduce effects associated with stress.
- 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 crossbreeds*



## The effect of animal age on eating quality

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.

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

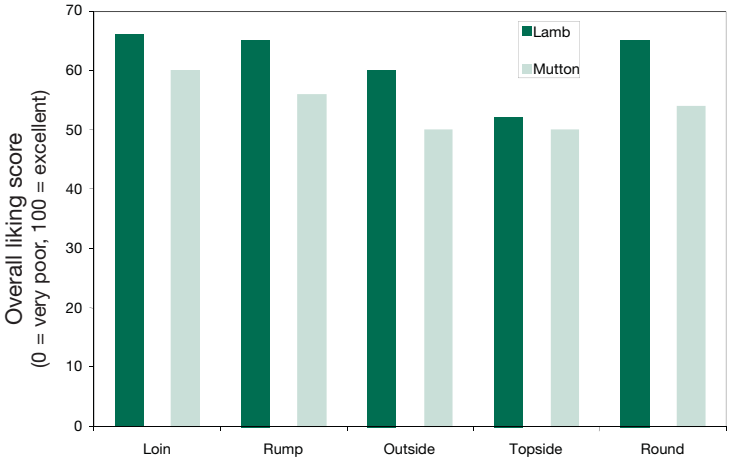
The eating quality differences between lamb, hogget and mutton are based on:

- 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.

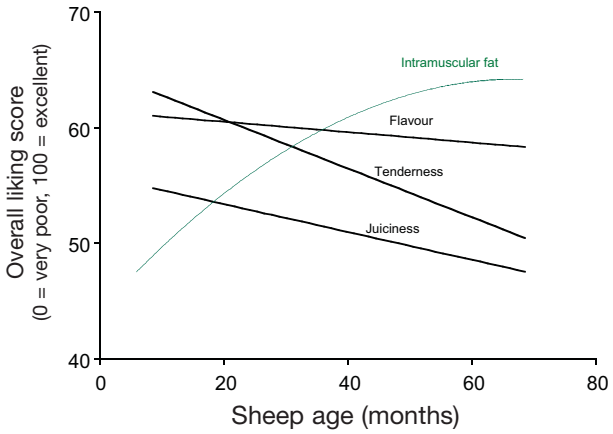
This effect is shown in figure 2, which summarises data from large numbers of Australian consumers who tested grilled cuts from lamb and mutton. Better cuts of meat, like eye of loin, have less connective tissue but these also become tougher as sheep get older.

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




*Note: Optimal processing used: stimulation + five days ageing; no stimulation + 10 days ageing; or tenderstretch + five days ageing)*

*Figure 3: Change in eating quality attributes with sheep age*




Flavour and juiciness are particularly dependent on intramuscular fat. As seen in figure 3, the intramuscular fat content of meat increases with age in ewes, which explains why flavour and juiciness scored relatively better with increasing age.

## For more information

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