Sheep CRC Practical Wisdom
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SHEEP CRC

QUALITY SHEEP MEAT—REDUCING DEHYDRATION IN SLAUGHTER LAMBS

Dehydration is common in slaughter lambs, particularly sucker lambs.

Dehydrated lambs have lower meat yields due to loss in muscle weight.

Losses in muscle weight mean reduced returns to both the producer and the processor.

Dehydration in slaughter lambs can be reduced.

Introduction

Figure 1. Lambs in lairage

Recent work jointly funded by the Australian Sheep Industry Cooperative Research Centre (Sheep CRC) and Meat and Livestock Australia has found that dehydration in slaughter lambs is common in Australia. Two abattoirs, one in Western Australia and one in Victoria, were monitored over twelve months and about 50% of lambs were found to be dehydrated.

Dehydration was measured by monitoring the concentration of the urine. When a lamb is dehydrated, the urine concentration will be high with a urine specific gravity greater than 1.045.

Sucker lambs are more susceptible than carry-over lambs. Dehydration increases as the time off water increases. Perhaps surprisingly, dehydration in slaughter lambs was found to be more prevalent during the cooler months of the year.

Lambs can show signs of dehydration after 24 hours off water. Whilst current recommendations are that feed and water are to be provided when animals are on consignment for more than 24 hours, provision of water in yards does not guarantee that animals will drink.

Why is dehydration a problem?

Dehydration reduces the amount of water in muscle tissue and decreases muscle weight. Under experimental conditions, a 48 hour water deprivation in crossbred lambs caused losses of 0.5kg (about 2.5%) hot carcase weight at 1mm GR fat, and 4% of individual muscle weight. However, under commercial conditions the effect of dehydration will vary. Bone and fat tissue weight do not change with dehydration and these may mask the muscle changes within a carcase.

Dehydration may cause meat to be darker in colour and less attractive to consumers. However consumer testing has shown no effect of dehydration on the qualities of tenderness, juiciness, flavour or overall liking for lamb meat.

Dehydration may be an indicator of stress because hormonal changes initiated by stress increase urine output and may depress the desire of lambs to drink water. Increased urine output and reduced water intake in lairage will prevent rehydration after the curfew and transport periods.

What is the cost?

Losses in muscle weight are a direct cost to both the producer and the processor. A loss of 0.5% of carcase weight due to dehydration is equal to 100 grams lost per lamb weighing 20 kg. At a price to the producer of $3.50/kg and a wholesale price of $5.00/kg, the value of this loss will be 35 cents per lamb to the producer or 50 cents per lamb to the processor. With about 50% of lambs slaughtered assessed as dehydrated, the annual cost across the industry is in the order of $4.5 million.

What can be done to reduce dehydration in slaughter lambs?

Further research is required to find practical solutions that do not compromise processing efficiency and hygiene. However, simple steps that can be taken now include:

- When sending lambs to slaughter, care should be taken not to exceed curfew times and to minimise time off water.
- Lambs may become dehydrated because they don't drink when yarded, even when given the opportunity. This may be due to lack of accessibility of water troughs, a lack of familiarity with troughs or even a change in water quality. Therefore, on-farm it may be worthwhile to ensure that sucker lambs in particular have easy access to water and are familiar with drinking from troughs.

Unfortunately under commercial conditions, feed and water additives including salt, betaine and electrolytes have not been effective in preventing dehydration in lambs prior to slaughter.

What are the implications for the future?

Codes of Practice for animal welfare for saleyards, transport and abattoirs all have specific recommendations for supplying water to lambs. However, even when these practices are adhered to, dehydration can occur if lambs fail to drink in lairage yards. There is a drive within the lamb industry to extend farm curfew times to comply with processing requirements from developing overseas markets. This will increase dehydration in slaughter lambs and the associated losses.

Hydration status may be useful, with other more direct indicators of stress, to monitor lamb welfare during consignment to slaughter. Monitoring hydration status may also assist with finding causes of dark meat colour and low carcase weights.

Take home messages?

- About 50% of lambs are dehydrated at slaughter.
- Losses in muscle weight due to dehydration means losses to both the producer and processor.
- Sucker lambs are most susceptible.
- Water additives do not solve the problem.
- Dehydration may be reduced by ensuring curfew times set by Codes of Practice are not extended and that water is easily accessible whilst yarded.
- Sucker lambs may need to be trained on-farm to drink from troughs.

Further information

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This is one in a series of Practical Wisdom notes available from the Sheep CRC aimed at improving the quality of Australian sheep meat. Other titles discuss a wide range of innovations and improvements that industry can profitably adopt. They can be found at www.sheepcrc.org.au/pw.

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