

Good practice in the provision of quality feed and clean fresh water can improve growth rates and eating quality

FACTSHEET 7

Ongoing access to clean, cool water and quality feed is critical to maintaining animal welfare and optimising production.

Key points

- Irregular feeding or long periods without feed and water can cause shrinkage plus severely affect the health of the rumen and reduce animal growth.
- Allowing animals to maintain hydration by providing continuous access to fresh water improves live weight gain, feed conversion ratios, carcass weight and meat yield and quality.
- Identifying and feeding to meet particular production requirements for growth rate and fat cover will help ensure the provision of feed and water which optimises animal welfare and production.
- Cool, clean water is essential for optimal rumen function and maximum weight gain.
- Feed rations should be carefully designed to meet production requirements and optimise feed conversion into muscle.

Why water and feed quality are important

Water quality

Water is critical for the digestion of feeds as rumen microbial attachment to feed particles is largely facilitated by the rumen fluid matrix. More water allows increased rumen microbe binding and a faster more efficient breakdown of feedstuffs leading to greater feed efficiency and weight gain.

Water intake has also been shown to directly affect grazing and feeding habits. Cattle with clean water trough access spend more time feeding or grazing compared to those with contaminated water such as that from dirty troughs or dams. Grazing cattle with a dam water source which typically contains silt and contaminants had a 23% reduction in weight gain compared to those with clean trough water access (Willms et al. 2002). Water quality is also likely to play a role in dark cutting due its impact on overall feed intake, weight gain and glycogen storage.

Feed quality

Excretory shrinkage is the loss of contents from the rumen, digestive tract and bladder. A degree of this type of shrinkage will occur during the first few hours of transport, or when cattle are taken off food and water and is unavoidable during the pre-slaughter period. Small amounts of excretory shrinkage do not harm animals. Acceptable levels of excretory shrinkage are from 2-6% of initial live weight. Livestock usually recover quickly from excretory shrinkage once provided with rest, food and water.

Tissue shrinkage

Tissue shrinkage occurs when the rumen, digestive tract and bladder are empty and the animal is dehydrated. Animals will then start compensating for the loss by drawing moisture and nutrients from tissues (muscle and fat). Tissue shrinkage can occur as a result of extensive sorting, standing, trucking or when cattle are held off feed and water for long periods of time (more than 12 hours).

Tissue shrinkage causes:

- a. A detrimental effect on the immediate health of ruminants. After 24 hours off feed and water, rumen microbes die resulting in animals not able to digest feed and a long recovery to pre-handling weights. This recovery period can be from 3-30 days.
- b. Lower carcass weights and lower dressing percentages. The loss of water from fat and muscle tissue during the pre-slaughter period causes carcasses to be lighter, reducing the quantity of product that can be sold and impacting net profits

When animals are exposed to stress, both excretory and tissue shrinkage starts to occur at the same time. Combined shrinkage of over 6% is preventable and costly.

Factors that impact shrinkage

Many factors impact the degree of shrinkage that livestock may experience but those related to feed and water include:

- **Time off feed**
Longer periods of time off feed will increase excretory and tissue shrinkage.
- **Feed type**
The type of feed the livestock are consuming will affect the rate and amount of shrinkage. There is a negative relationship between high moisture feeds (green grass) and excretory shrinkage. Sudden changes in diet can also influence the amount of excretory shrinkage.
- **Time off water**
The time off water will impact on the hydration and bladder fill of the animals. Hence longer time off water will increase excretory and tissue shrinkage
- **Transit time**
Transit time and the duration of stationary confinement, particular where feed and/or water is withheld, should be minimised to limit animal shrinkage.

Reducing stress will minimise shrinkage and maximise earnings

Good practices required by conformance or quality management programs improve welfare and reduce shrinkage

Reduced shrinkage can be achieved by following good practices required under conformance or quality management programs which include ensuring that:

- Cool, clean water is available and accessible to all animals at all times including throughout lairage.
- Feed of sufficient quality and quantity is provided to all animals held for longer than 12 hours in lairage.



Keeping feed and water facilities clean is essential to minimising shrinkage

Benefits of good practice

The economic benefit of reducing animal shrinkage comes in two forms:

1. Reduction in live weight lost due to implementation of a conformance or quality management program.
2. Increase carcass yield and dressing percentage by reducing time off feed to less than 12 hours and having constant access to water.

The daily cost saving due to increases in carcass yield = Daily kill number * Reduction in hours of curfew * Increase in yield per hour * Average carcass weight * c/kg sale price.

Example of increased production income due to reduced lairage time of sheep from 36 to 12 hours:

$$= 800 * 24 * 0.1\% * 23\text{kg} * \text{AUD } 6.50\text{c/kg}$$

$$= 800 * 0.024 * 23 * 6.5 = \text{AUD } \$2,870.40 \text{ per day}$$

Example of increased production income due to reduced lairage time of cattle from 48 to 12 hours:

$$= 500 * 24 * 0.02\% * 250\text{kg} * \text{AUD } 7.10\text{c/kg}$$

$$= 500 * 0.0048 * 250 * 7.1 = \text{AUD } \$4,260.00 \text{ per day}$$

Further reading

- *Factsheet 1: Good practice can reduce dark cutting for better meat quality and higher returns*
- *Factsheet 2: Good practice can reduce stress and improve eating quality*
- *Factsheet 3: Good practice can reduce acute stress and water loss from meat*
- *Factsheet 4: Good practice can reduce bruising resulting in less trimming and less carcass wastage*
- *Factsheet 5: Good practice delivers benefits from improved infrastructure*
- *Factsheet 6: Good practice can reduce animal stress and shrinkage for increased profits*
- *Factsheet 8: Good practice in reducing slipping and falling can improve hide cleanliness and carcass hygiene*
- *Factsheet 9: Good practice avoids mixing unfamiliar livestock which can reduce stress and improve eating quality*
- *Factsheet 10: Good practice in traceability delivers health and safety control and improves management decisions*
- *Factsheet 11: Good practice reinforced through training*
- *Factsheet 12: Support and training in good practice*
- McAllister TA, Bae HD, Jones GA, and Cheng KJ (1994). *Microbial attachment and feed digestion in the rumen*. *Journal of Animal Science*, 72(11), 3004-3018.
- Willms WD, Kenzie OR, McAllister TA, Colwell D, Veira D, Wilmshurst JF and Olson ME (2002). *Effects of water quality on cattle performance*. *Journal of Range Management*, 452-460.