

# Good practice avoids mixing unfamiliar livestock which can reduce stress and improve eating quality

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## FACTSHEET 9

Conformance and quality management programs incorporate control and traceability requirements and segregation guidelines which assist supply chains in avoiding mixing livestock from different social groups resulting in improved meat quality and higher profits.

### Key points

- When unfamiliar livestock are placed together in a group there is an increase in aggressive dominance behaviour as social hierarchies are re-established.
- Dominance behaviour causes stress which adversely affects eating quality and can lead to dark cutting.
- Bruising and injuries often occur due to dominance behaviour resulting in animal welfare issues and financial penalties.
- Where the mixing of livestock is unavoidable, horned animals should be kept separate from non-horned or polled animals to minimise dominance behaviour and bruising.
- Conformance and quality management programs require livestock to be controlled and traced through the supply chain meaning groups of livestock can be easily identified and managed as social groups.

### Why maintaining social groups is important

Cattle and sheep are gregarious meaning they tend to establish and maintain social groups. They will generally move from facility to facility and tolerate new environments quite happily provided these social groups are not disrupted. If these groups are broken up or unfamiliar livestock are mixed, it takes several weeks for a new social structure to be established. During this period, dominance behaviour is often exhibited, compounding an already stressful situation and increasing the risk of injury and bruising.

Bruising will cause damage to muscle resulting in pooling of blood under the skin. This can be exacerbated if horned cattle are mixed with unhorned cattle. Bruising will result in financial losses due to trimming and wastage of bruised product.

The stress involved in mixing groups of unfamiliar animals decreases muscle glycogen, increases meat pH and changes meat colour resulting in 'dark cutting'. This meat is visually unattractive, has poor water holding capacity, reduced shelf life and a sticky texture.

Meat with low water holding capacity is dry to eat resulting in a poor eating experience. The increased release of the hormones adrenaline, nor-adrenaline and cortisol during this stress period also negatively affects the tenderness, juiciness and flavour of the final product.

## Conformance or quality management programs to prevent mixing

Conformance or quality management programs generally include recommendations and requirements regarding the mixing of animals. The implementation of these recommendations and requirements is supported by control and traceability elements within the conformance or quality management program.

The control and traceability principles allow facilities to manage their livestock effectively and prevent the stress, bruising and subsequent meat quality issues associated with mixing unfamiliar livestock.

- **Control**  
There must be control demonstrated of all supply chain arrangements for livestock transport, management in lairage and at slaughter. With this control comes the ability to maintain social groups and avoid mixing unfamiliar animals.
- **Traceability**  
All livestock must be able to be traced through the entire supply chain, facilitating the management of social groupings.

## Benefits of good practice

Many benefits stem from maintaining social groups throughout the supply chain. These include reduced bruising and dark cutting as well as improved eating quality due to reduced stress. These benefits carry significant financial advantages which are discussed earlier in this series of fact sheets.



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**Reduced mixing of unfamiliar social groups results in improved eating quality, reduced stress and dark cutting**

## 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 7: Good practice in the provision of quality feed and clean fresh water can improve growth rates and eating quality*
- *Factsheet 8: Good practice in reducing slipping and falling can improve hide cleanliness and carcass hygiene*
- *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*
- Mohan Raj AB, Moss BW, Rice DA, Kilpatrick DJ, McCaughey WJ and McLauchlan W (1992). *Effect of mixing male sex types of cattle on their meat quality and stress-related parameters*. Meat Science, 32(4), 367-386.
- Warriss PD (1990). *The handling of cattle pre-slaughter and its effects on carcass and meat quality*. Applied Animal Behaviour Science, 28(1990), 171-186.