

Grain poisoning

What causes grain poisoning?

Grain poisoning (acidosis, also known as grain overload) occurs when grain and finely ground carbohydrate (such as is found in pellets) is rapidly fermented by bacteria in the rumen, producing large quantities of lactic acid, which lowers the pH in the rumen, decreasing the numbers of useful bacteria and increasing the number of acid-producing bacteria (causing further build-up of acid in the rumen). Any factor that causes variation in the intake of grain, or variation in the availability of

carbohydrate (e.g., crushing or cracking grain by a hammermill), may lead to grain poisoning.

Cases are often seen when there is a sudden change in feeding regimen or in the grains being fed; accidental access to grain stores or piles around silos; sheep being off feed (e.g., due to transport or poor weather) gorging feed the next day; access to stubble paddocks where there may be spilled grain or unharvested areas; or sheep supplementary fed or put on feedlot rations without being gradually introduced.

What you will see

	Behaviour	Manure	Feet	Death
Any sheep	Impact seen after 24 hours: depression, stop eating, lie down (head to flank)	Diarrhoea	Lame for many weeks after recovery (due to laminitis)	Die within 24 hours of going down

Strategic prevention

Seek professional advice on a grain introductory program which covers timing and quantities. If you need to enable rapid grain feeding or extend the feeding interval, seek professional advice on rations and whether specific treatments are necessary (e.g. antibiotics).

To minimise the risk of grain poisoning:

- Train sheep on to grain before supplementation is needed. This takes at least two weeks of daily feeding.
- Avoid sudden periods off feed or limit the time off feed.
- Actively monitor animal behaviour to identify shy feeders and poor doers. Remove these animals and feed them preferentially.

- Provide a minimum feed space of 3 cm/head for ad lib feeding systems (e.g. self-feeders) and at least 15 cm/head for restricted feed access systems (e.g. daily trough feeding).
- Diets for productivity should include 10-30% roughage, with a minimum of 30% neutral detergent fibre (NDF) in the total ration to ensure continued rumen function.
- Ensure plentiful and easy access to good quality water (no more than 3,500 parts per million soluble salts). Provide a minimum of 30 cm plus 1 cm/head water trough length.

Tactical response

Seek veterinary treatment for severely affected valuable individual sheep.

If mildly affected, increase roughage or remove sheep from grain and feed good quality hay.

Likelihood

Triggers for grain poisoning are:

- Introducing grain too fast to a sheep's diet.
- Using high-starch grains.
- Providing insufficient dietary roughage.

If sheep are not trained on to grain, just 1 kg of grain for weaners and 2 kg for small adult sheep can be fatal. The risk increases when a sheep is introduced to grain after being off feed or off grain for a short period (e.g. during a cold snap).

Wheat, triticale, rye and barley have the highest starch content and poisoning risk, followed by corn/maize, beans and peas. Oats and sorghum are lower risk. Cracked, crushed or pelleted forms of grain are also higher risk.

Impact

- Many sheep can be affected at once (at any age).
- Treatment is usually unsuccessful for severe poisoning.
- Mild poisoning can reduce appetite leading to pregnancy toxaemia, hypocalcaemia and grass tetany.



TIPS AND INFORMATION

- **Modify the rumen micro-organisms by training sheep onto grain and include roughage in the diet.**
- **If early signs of poisoning are seen, reduce or remove from grain and increase roughage.**

Resource links

[AWI Drought resources](#)

[MLA Production feeding for lamb growth](#)

New South Wales

[Feedlotting lambs](#)

[Grain poisoning of cattle and sheep](#)



[Queensland](#)

[Feeding grain to sheep](#)

South Australia

[Sheep diseases – the farmers' guide](#)

Western Australia

[Grain overload, acidosis, or grain poisoning in stock](#)