

# Potential litter amendments for Australian growers



**Litter amendments are commonly used overseas to control the ammonia concentration in meat chicken sheds, particularly when reusing litter. Litter amendments can also provide antimicrobial and environmental benefits and increase the nutrient value of spent litter.**

While litter reuse is not widely practiced in Australia currently, the increasing cost of litter is making litter reuse and litter amendment products more attractive.

For farms that reuse litter or are considering reusing litter, this fact sheet explains the benefits and challenges of using litter amendments, how different types of amendments work and other strategies to control ammonia



Litter amendments can be an option to reduce ammonia levels in sheds with reused litter. However, managing ventilation and minimising litter moisture are the leading ways to reduce the ammonia levels in meat chicken sheds.

**Always check the product label and manufacturers recommendations and consult with your integrator company or veterinarian before using new products in poultry sheds.**

## Litter amendment benefits

- Lower ammonia emissions with fewer associated risks
- Lower operating costs when combined with litter reuse, compared to new bedding
- Lower costs associated with heating during brooding when combined with litter reuse
- Lower counts of disease, virus and food safety-related pathogens
- Higher nitrogen content and fertiliser value of spent litter

## Litter amendment challenges

- Chemical exposure when not applied appropriately (wrong timing or uneven application)
- Requirement for longer downtime between grow-outs when combined with reused litter
- Litter reuse combined with litter amendments requires additional preparation of bedding compared with full litter clean-outs and using new bedding

## Litter types

There are different types of litter amendments, which work in different ways to reduce ammonia. They all interfere with the normal process of how ammonia forms in litter. The types of amendments are:

- acidifiers
- adsorbents
- inhibitors
- biological products.



### Acidifying agents

Acidifying agents are the main type of products used. These products work by making the litter more acidic (pH below 7), which reduces the amount of ammonia gas produced. Reducing the amount of nitrogen converted to ammonia, results in more nitrogen retained in the litter as ammonium salts, potentially increasing the fertiliser value of the spent litter.

The most common acidifiers used in poultry farms are dry acids and include:

- sodium bisulfate
- ammonium sulfate (alum)
- ferric sulfate (Iron III sulfate)

*These products take a different amount of time to activate in the litter and it is best to apply them before chicks are placed. Reapplication may be required depending on the product. Always check the manufacturers recommendations prior to use.*

### Adsorbents, inhibitors and biological products

Adsorbent litter amendments work by binding the ammonia to the surface of the litter, which reduces the amount of ammonia released into the air. Several naturally occurring products, such as clay and peat might be effective at adsorbing ammonia, but research has shown mixed results. Using adsorbents can also be expensive due to the large amount of material required.

Inhibitors could also help reduce ammonia formation by restricting microbial activity. Some have been found to be marginally effective, and expensive.

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Biological products are promoted as 'seeding' the litter with beneficial microbes. These microbes convert nitrogen into a more stable form but may still release some ammonia soon after application. If you're considering this type of product, any potential short-term release of ammonia will require careful planning when timing product application so that ammonia is low by the time chicks are placed.

While adsorbents, inhibitors and biological products have shown some reduction of ammonia in trials, more research is needed to assess their effectiveness under Australian conditions.

### Other strategies to control ammonia

Litter amendment products are not the only way to manage ammonia in meat chicken sheds. A common practice in Australia is brooding on fresh bedding material, which reduces ammonia-related issues during this time.

Managing litter moisture levels and utilising ventilation to remove moisture and ammonia from the shed is a very effective method to keep ammonia levels low. This involves monitoring and managing litter, ventilation, heating, evaporative cooling, drinking systems, and other production and environmental factors during the grow-out period.

#### More information

- [AgriFutures final report](#)
- [Journal paper](#)
- [Webinar presentation](#)

