Managing re-used litter

Re-using litter for multiple flock grow-outs can reduce costs and improve environmental sustainability within the chicken meat industry.

This practice must be managed well to maintain production quality and minimise potential adverse effects. This fact sheet discusses management practices and potential implications of litter re-use relating to:

- odour and dust
- ammonia
- food safety pathogens
- control of poultry diseases.

Currently, 86% of meat chickens in Australia are reared on single-batch litter, despite litter re-use being a common practice in other countries (e.g. USA). In Australia, litter is generally only re-used in the non-brooding section of the shed for three to five growth cycles. This is a practice known as 'partial litter re-use' and involves applying fresh bedding to the brooding area while re-using litter in the rest of the shed.

Advantages of litter re-use

- Lower fresh bedding and transport requirements.
- Warmer floor and improved moisture absorption during brooding.
- Higher agronomic value of spent litter due to nutrient content.
- Generally dryer than fresh bedding.

This fact sheet was developed as part of the *Training and extension for the Australian chicken meat industry* project (PRJ-011920). This project supports the adoption of innovation and research and development outcomes for the Australian chicken meat industry.

Litter heaping and windrowing heat treatment

Heaping or windrowing litter before it is re-used enables heat generated from microbial activity to kill pathogens and viruses. Allowing sufficient time is vital for the heat treatment process to have the desired effects. The following management strategies should also be implemented:

- remove excess caked and wet litter between growth cycles
- leave until litter temperature reaches 55 °C
- turn the outside of windrows into the centre to ensure the outer material also reaches 55 °C
- spread out and till/turn the litter four to five times and pre-heat and ventilate the shed for several days to complete the drying process and release ammonia before the next flock is placed.

Litter quality implications

It is commonly perceived that litter re-use increases odour, dust, ammonia, food safety pathogens and poultry diseases. Research referenced in *Litter reuse: an evidence-based guide to reusing litter* details the following results:

Odour and dust

There was no significant difference in odour emission rates between birds that were placed on single use or partial re-use litter. Dust emissions of re-used litter were within an acceptable range, however dust levels were found to be higher than with fresh bedding material. This is possibly related to the lower moisture content of re-used litter.

Ammonia

Ammonia concentration is likely to be higher for re-used litter and particular care should be taken, especially during winter. Tilling the litter multiple times before chick placement releases ammonia, and when combined with adequate ventilation is an effective technique for keeping ammonia concentrations low.

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Food safety and disease-causing pathogens

Another concern relating to litter re-use is the potential carry-over of poultry and food safety pathogens such as *Campylobacter* and *Salmonella* across multiple growing periods. The heat treatment provided by heaping or windrowing has been found to effectively reduce pathogen loading between each grow-out period.

Most poultry pathogens become inactive after a sufficient time of heaping or windrowing. This can be up to 10 days with windrow turning (refer to the Standard operating procedure for litter pasteurisation for more detailed information about pathogen die-off during pasteurisation).

Re-spreading litter and preparing for the next flock

Once the litter has undergone a period of heating in the windrows, it should be spread evenly throughout the growing area. If using the partial re-use strategy, new bedding will be placed in the brooding section. Pre-heat and ventilate the shed before introducing the chicks onto re-used litter to reduce risks associated with ammonia. Litter amendments can also reduce ammonia emissions but currently have limited use in Australia (refer to the Potential litter amendments for Australian growers fact sheet).

If required, fresh bedding can be added to the re-used litter to achieve minimum depth requirements.

Summary

Re-using litter can improve chicken meat production by reducing costs and decreasing environmental impacts, but requires additional management and preparation practices.

Practices to prepare litter for re-use have been developed and tested during research trials and through industry experiences, and reduce risks associated with ammonia and pathogens.

More information

Read the Standard operating procedure for litter pasteurisation.

Download the full report Litter reuse: an evidence-based guide to reusing litter (PDF, 1.3MB).

Watch the video on Litter re-use.

Download the Potential litter amendments for Australian growers fact sheet (PDF, 840KB).

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