Litter tilling

Shavings, sawdust, straw and rice hulls

The Australian litter survey found chicken growers tend to use bedding materials they can source locally.

The below table outlines the properties and management requirements of shavings, sawdust, straw and rice hulls.

Regardless of the litter type, growers should pre-heat the shed for one or two days before chick placement to warm the shed floor and ensure the litter is dry. Sheds with concrete floors need more pre-heating than sheds with earth floors.

Table 1: Properties and management requirements for shavings, sawdust, straw and rice hulls (adapted from Best practice litter management manual for Australian meat chicken farms)

Bedding material	General description and poperties	Moisture exchange	Litter tilling and management requirements	Limitations
Shavings and sawdust	- Low density - Small to medium particle size - Soft and compressible - Low thermal conductivity - Absorbent - Dries rapidly - Good friability and less susceptible to caking than straw.	- Sawdust has a higher density than shavings so will hold more water. - Shavings are typically received with low moisture content, while sawdust may be received wet or dry.	- Ensure shavings and sawdust are completely dry before introducing chickens. - Litter tilling is likely to be required to address caking.	- May be received wet. - If it contains larger particles, it may be more susceptible to caking. - May contain long, sharp splinters.
Straw - chopped to 10-20 mm	- Very low density - Medium particle size and needs to be chopped or crushed - Soft and compressible - Low thermal conductivity - Prone to matting and caking - Slower drying rates	- Frequently caked surface limits moisture exchange. - Reducing the particle size by chopping the straw improves absorbency and reduces matting and caking. - Holds less water than sawdust. Moisture content fluctuates more rapidly.	- Chop and crush straw to 10-20 mm. - Blending with other bedding materials (such as a sawdust) reduces caking. Blending is recommended during winter in southern states. - Straw requires tilling frequently and earlier in the batch than other bedding materials.	- Straw requires more tilling than other materials. - It can be susceptible to mould growth.

Bedding material	General description and poperties	Moisture exchange	Litter tilling and management requirements	Limitations
Rice hulls	- Low density - Medium particle size - Low thermal conductivity - Good drying rates - Consistent product - High friability if actively managed and kept dry - Less susceptible to caking than straw.	- Lower water absorbency (with water being held between particles rather than in them). - Water tends to saturate right through the material. - With a large surface area, it dries rapidly.	- Litter tilling is likely to be required to address caking. - If water soaks through to the floor, tilling is required to bring water to the surface for evaporation.	- Water tends to saturate right through the material.

Growers' experiences

Straw and rice hulls - Nathan, Griffith NSW

Straw and rice hulls are the most used bedding materials in the Griffith growing region of NSW, where Nathan works as a farming manager.

"We find there are minimal differences between these in terms of management practices, although straw tends to cake easier," Nathan said.

"Therefore, growers start litter tilling a few days earlier than they would with rice hulls. Other than that, the different experiences of the bedding materials are because of their properties."

Straw

- Absorbs moisture efficiently and the moisture tends to stay at the litter surface. This starts the caking but also helps us dry it out with ventilation.
- When you spread straw in the shed, it can be dusty for about a week. However, this eases once there is some moisture in the straw. Workers use personal protective equipment (PPE) to protect them from the dust.
- Straw can become soaked through—especially under the drinker lines during winter—so requires removal and top dressing.

Rice hulls

- Rice hulls are easier to spread evenly across the shed floor before a batch.
- They can be dusty while being spread, but not as dusty as straw. Workers use PPE to protect them from the dust.
- Rice hulls tend to absorb moisture differently than straw. Water runs right through and can be seen sitting on the floor.

Rice hulls, oat hulls, wood chips and straw – Andy, VIC

Andy, a farming manager in Victoria, has had experience with 4 types of litter over the years: rice hulls; oat hulls; wood chips; and straw. Each has its own challenges and management strategies.

Rice hulls

Andy finds rice hulls to be one of the best bedding materials all year round.

"Often you receive a consistent dry product each batch, providing a good start to your litter management," he said.

"Less moisture within the product means the litter won't need to be tilled until around day 7, then weekly depending on conditions."

Wood chips

While wood chips are Andy's second favourite litter material, they have presented challenges.

"If we received larger chips that were damp, it was a very poor product to work with right from the start, resulting in instant caking and the need to till the litter more," he said.

"However, if the product received was dry and finely chopped, it was as good as rice hulls. This inconsistency made it more difficult to manage and could create endless challenges, especially when received wet."

Straw

Andy has invested in a 'Haybuster' to finely chop straw, creating a loose, dry product.

He says circulation fans have also been key to his success with straw.

"Weather in our area isn't perfect in winter and can be very unpredictable," he said.

"Thanks to circulation fans we achieve really good litter conditions throughout the batch despite the outside weather.

"Using finely chopped straw and circulation fans, we can achieve litter conditions that are as good on day 18 as day one in winter, often without any litter tilling."

Andy says straw is one of the hardest products to work with if you don't have good litter and ventilation management at the start of a batch.

His operation has invested in developing a solid management system that delivers results.

"With any bedding material, it comes down to how well you manage other aspects—such as ventilation, drinker height and pressure—to ensure the success of your litter.

"Keeping the litter dry from day one, aided by circulation fans, means we don't need to till the litter until day 14-18, and then it only needs tilling one or two more times during the batch."

Key points

- The moisture of the product when it goes into the sheds impacts the success of litter management.
- Climate and seasons influence litter management. There can be more moisture and caking in winter months, requiring more ventilation and litter tilling. Circulation fans have been found to keep the litter drier and reduce the need for tilling.
- Regardless of the bedding material, effective management practices (ventilation, drinker height etc.) are essential for good litter conditions.

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More resources

- An industry survey on litter management and re-use practices of Australian meat chicken growers. https:/doi.org/10.1071/AN21222
- Best practice litter management manual for Australian meat chicken farms
- Review of Fresh Litter Supply, Management and Spent Litter Utilisation Final Report
- Fact sheet: Assessing litter conditions
- Fact sheet: Litter tilling
- Fact sheet: The elements of drying litter
- Fact sheet: Preheating and drying litter before chick placement