

# The bedding materials directory



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Photography: ADAS, CW marketing and Heather Walker.

# Introduction

There is a variety of bedding materials available for housed livestock.

Cereal straw has been the material of choice on most beef and sheep farms in the past, but availability and cost are becoming an increasing concern in some areas of the country where fewer cereals are grown.

Modern cereal varieties and straw shorteners have reduced straw yields, while high fertiliser prices have seen arable farmers preferring to chop and plough straw back into the soil. In some areas, straw is also being sought as a biofuel.

This short supply, along with high haulage costs, has forced many farmers to seek alternatives. Bedding has a significant bearing on animal health and welfare. Livestock kept in badly managed housing with poor environmental conditions will not grow well and will be more susceptible to disease.

When contemplating a new bedding material, consider the following:

- Will it keep animals dry and clean?
- Will it maintain a healthy environment for the stock?
- Will it provide a comfortable, safe bed?
- Is it readily available?
- Is it cost-effective?
- Is it easy to store?
- Will it produce manure that can be applied to land?
- Will it produce manure that can be composted?

A good bedding material should be:

- Comfortable
- Non-abrasive
- Non-slippery
- Highly absorbent to soak up water and urine
- Low in environmental bacteria

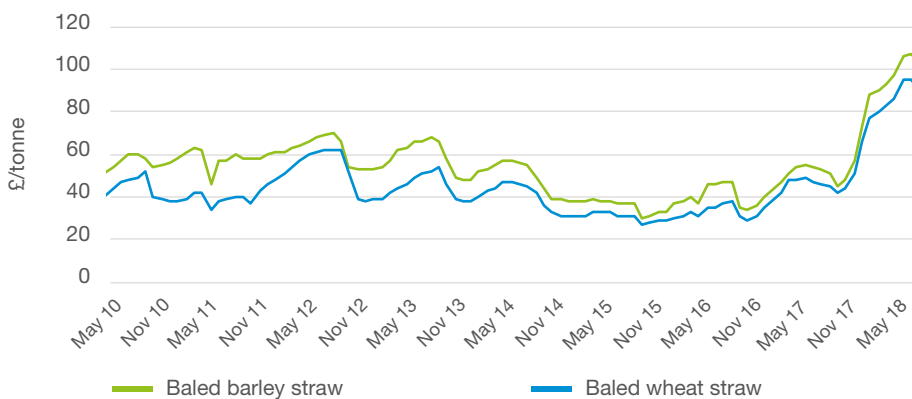


Figure 1. Big square baled straw prices

# Cereal straw

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Straw is the most commonly used bedding material. It has good thermal properties and moderate absorption capacity, which makes it an ideal choice. Barley, wheat and oat straw are the most commonly used, although rye and triticale straw may be available in some areas.

## Cost in 2018

- Barley straw £85–102/tonne ex field
- Wheat straw £75–91/tonne ex field
- Oat straw £85–100/tonne ex field

## Availability

Barley and wheat straw is the most abundant in the UK. The land area committed to oats is increasing and so availability may improve.

## Absorbency

Good-quality straw generally has a moisture content of no more than 15–20 per cent. Oat straw is the most absorbent at 2.86 L/kg, followed by wheat, then barley straw, which are 25 per cent and

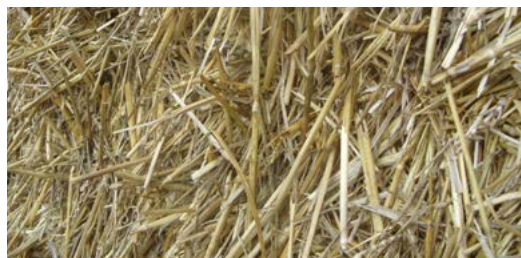
33 per cent less absorbent, respectively. Oat straw is also 10 per cent more absorbent than sawdust.

## Quantities

Deep litter bedding is preferable – topping up as needed. Barley straw is robust and lasts longer than wheat straw, which is brittle and breaks down easily. Barley and oat straw are palatable, so a proportion will be eaten.

## Benefits

Straw is still the most abundant material used. It creates a warm, comfortable bed, and can be a palatable forage.



**Storage**

Straw should be stored under cover, if possible. Wet straw has little absorptive capacity.

**Animal health and welfare**

Mould spores can produce dust, which may cause respiratory problems, particularly in young animals. In wet years, the amount of mycotoxins produced by moulds present on the straw may be high.

Around 300 harmful mycotoxins have been identified. Growing wheat after maize, poor growing conditions and poor storage can increase the risk.

Ruminants are considered less sensitive to mycotoxins than pigs and poultry, but intake over a prolonged period may affect reproduction and growth. In acute cases, clinical symptoms include weight loss, low milk production and lowered immune status.

Straw and muck can harden onto hooves, particularly between the claws, enabling pathogens to infect the foot more easily.

**Disposal**

Straw breaks down readily and can be spread on farmland after use.



Table 1. Standard figures for farmyard manure (FYM) taken from AHDB Nutrient Management Guide (RB209)

Feed type	Total (kg/tonne)		
	Nitrogen (N)	Phosphate (P)	Potash (K)
Wheat/ barley straw	5.0–6.0	1.2–1.5	9.5–12.5
Sheep FYM	6.0	3.2	9.4
Cattle FYM	7.0	3.2	8.0

Note: Actual figures may vary depending on the diet fed and the dry matter of the manure



# Woodchip

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Woodchip can create a good free-draining bed for housed sheep and cattle on relatively dry diets, provided the woodchip has less than a 30 per cent moisture content. A moisture content of 20 per cent is preferable to maximise absorbency.

Research has shown that woodchip offers many animal health and welfare benefits, with limited bacterial growth and less dust than straw.

## Cost in 2018

£40–80/tonne dependent on treatment and location.

## Availability

Home-grown wood can be used but should be dried for 6 to 12 months beforehand. Most seasoned hard and soft woods work well for bedding.

Larch is unsuitable because of its tendency to splinter. Moisture content and type of chipper used can also affect the amount of splintering.

Bulk woodchip can be supplied but may be green and have a high moisture content, requiring extra drying and space. Woodchips from virgin timber are not classed as waste and are not, therefore, subject to waste controls when used as animal bedding.

Virgin timber includes whole trees (or the woody parts of trees) and any off-cuts, shavings or sawdust produced from this material.

Woodchips from untreated waste wood, for example packing crates and single-use pallets are classified as waste, but can be suitable for animal bedding. Waste wood must be classified as grade A.

Untreated recycled wood is cheaper but must be screened for nails and other sharp objects.

Treated timber is not permitted for bedding because of the risks to animals, the human food supply chain and problems of dealing with the soiled bedding.

A waste exemption has to be registered with the Environment Agency to use waste wood as animal bedding. The appropriate exemption is U8. Further details can be found on the EA website [gov.uk/guidance/waste-exemption-u8-using-waste-for-a-specified-purpose](https://www.gov.uk/guidance/waste-exemption-u8-using-waste-for-a-specified-purpose)

## Absorbency

The woodchip must be below 30 per cent moisture for maximum absorbency.

Larger chips drain freely, allowing liquid to pass through. The bottom layer absorbs moisture well, leaving the upper layers relatively dry and friable.



There are several options for sourcing woodchip. Home-grown wood or some types of recycled wood that can be chipped on the farm are most cost-effective.

If purchased, woodchip may be more expensive than straw, depending on transport costs and total amount used. However, it can be used for several seasons.

### Quantities

A shallow 10 cm depth is preferable, applying a fresh top-up layer as required. Typically, this will be every 2–3 days for cattle on a silage-based diet, or every 7–10 days for sheep on a dry diet. Frequency will be affected by DM content of the diet.

### Benefits

Can be reused for many winters. Animals stay clean. There is little dust, so this is a high-welfare bedding. It is readily available and does not require spreading as the animals move it around when walking.

### Storage

Must be stored under cover and kept dry. Chipped product takes up a lot of space.

### Animal health and welfare

Animals are as clean as on straw, and health and welfare is equally as good.

Less risk of mould development and dust, resulting in fewer respiratory problems. Untreated recycled wood may contain nails, staples or glass, which may cause injury. Only buy from a reliable source.

### Disposal

To compost the used material, it should be heaped and turned every four to six weeks. The resulting material can be sieved, with any remaining coarse woodchips reused as bedding next winter and the compost spread on land or composted for a further two to three years. Sieving adds an additional cost (approximately £5/tonne) and works only with hardwood chips.

Data from the Woodchip for Livestock Bedding project suggests that the nutrient level of woodchip compost is lower than straw-based composts.

If using woodchips produced from virgin timber, the resulting manure is not classified as waste and can be spread on the land in accordance with Nitrate Vulnerable Zone (NVZ) rules and the Code of Good Agricultural Practice (COGAP).

If using recycled woodchips, a waste exemption must be registered with the Environment Agency – see page 16.



# Paper products

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Paper makes absorbent bedding, with a moisture content of approximately 10 per cent. It is not dense and is easily displaced by heavy animals and, unless shredded into small pieces, tends to leave bare patches of floor.

It is difficult to obtain directly from paper mills but can be bought ready prepared by bedding companies at a higher cost.

Waste shredded paper and cardboard, dried paper sludges and plasterboard backing paper, can all be used for animal bedding. As these are considered wastes, a waste exemption must be registered before using them – see page 16.

## Paper crumb

Paper crumb is a by-product from the paper industry, whereby short fibres are removed to produce a sludge-like material, which is then rolled to remove excess moisture at source.

Typically, the moisture content is around 50 per cent, but it can be kiln-dried to reduce the moisture content to less than 10 per cent. While this process significantly increases the moisture absorbency of the product, the cost also rises.



## Lime ash (paper sludge ash)

Lime ash is produced from paper sludge, or the short fibres that are washed out when paper is recycled. The slurry contains

lime, which is a filler and whitener used in the paper-making processes. This is burnt, filtered and has 15 per cent water added to produce a product that resembles a sand-like material.

It has been sold throughout the UK as a bedding desiccant and should not be used as a bedding by itself. Lime ash has a high pH of 9.4 to 12.9 and so must be used with other bedding materials to prevent animals from being burnt.

It has been mainly used in the dairy sector as it can help prevent mastitis but it can also be applied to beef and sheep housing, if mixed with straw, shavings or sand.

Lime ash requires a waste exemption (U8) to be registered if this is to be used as animal bedding. For more information, see [gov.uk/guidance/waste-exemption-u8-using-waste-for-a-specified-purpose](https://gov.uk/guidance/waste-exemption-u8-using-waste-for-a-specified-purpose)

## Cost in 2018

- Prepared bedding at 10 per cent moisture content is £90–100/tonne
- Crumb from source at 50 per cent moisture content is £10–15/tonne
- Lime ash (depending on area) is £20/tonne

## Availability

Shredded paper direct from source is difficult to find. Prepared paper bedding products are widely available but incur a higher cost. Paper crumb from source is available in most areas of the UK, with the price dependent on haulage costs. Lime ash is readily available throughout the UK.

## Absorbency

Highly absorbent if kiln-dried to below 10 per cent moisture content. The raw product is significantly less absorptive. Lime ash is highly absorptive and needs moisture adding to prevent bedding sticking to the animals.

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## Quantities

For prepared paper bedding, beef cattle and sheep require a depth of 10 cm at the start of the winter. It can be used under straw at a depth of around 5–10 cm, which reduces straw requirement by up to 25 per cent.

Raw paper crumb can be used at a similar depth but may need replenishing more frequently. Lime ash can be added at a similar depth to paper crumb but must be mixed with another material.

## Benefits

Prepared kiln-dried bedding has high absorbency, good thermal properties, is comfortable, produces little dust and degrades quickly. It also tends to have low spore and pathogen levels.

Raw crumb is less absorbent but much cheaper as a bedding source so can be used more liberally. Lime ash is readily available and cheap. High pH reduces pathogen loading.

## Storage

Dried paper products must be stored under cover in dry conditions.

Lime ash can be stored outside but must be on a free-draining surface. It appears to form a surface crust that rain runs off, leaving the inside of the heap dry.

When stored under cover, moisture content levels continue to drop and the material can become very dusty, making it more difficult to handle.

## Animal health and welfare

Prepared bedding may help reduce/control pathogen levels. Animals are kept warm, clean, and low dust levels reduce respiratory problems.

Raw paper crumb has had no adverse effects on livestock health or welfare on the farms using it, although no clinical trials have been performed.



Lime ash is highly alkaline and should not be used without a top layer of straw or other material, as the powder cakes on their skin and the high pH can scald their noses and teats.

## Disposal

Paper products can clump together, making spreading or composting difficult. If clumps can be broken down, effective composting and spreading can be achieved.

Lime ash is non-organic and does not degrade when composted. It can be spread on fields but, because of its alkaline nature, test soil beforehand to check pH.

Analysis: Paper crumb at 40 per cent DM has N 2.0, P 0.4, K 0.2 total kg/tonne.

If composted, paper crumb requires an exemption to be registered under T23 – see [gov.uk/guidance/waste-exemption-t23-aerobic-composting-and-associated-prior-treatment](https://www.gov.uk/guidance/waste-exemption-t23-aerobic-composting-and-associated-prior-treatment) and an exemption to spread under U10 – see [gov.uk/guidance/waste-exemption-u10-spreading-waste-to-benefit-agricultural-land](https://www.gov.uk/guidance/waste-exemption-u10-spreading-waste-to-benefit-agricultural-land)

# Sawdust and wood shavings

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When screened and dried, sawdust can make a good bedding. However, it can be highly variable, depending on the source of the timber. Sawdust is widely available throughout the country. Some very fine products, especially those coming from hardwood, can be dusty and may pose a risk to health. Fine sawdust may contaminate fleeces and is less suitable as sheep bedding.

Wood shavings are used extensively in the poultry and equine industries.

## Cost in 2018

- Sawdust (bulk) £50–137/tonne, type of sawdust and volume dependent
- Kiln-dried small bales (20kg) wood sawdust £190–275/tonne kiln-dried
- Wood shavings (bulk) £125–140/tonne

## Availability

Sawdust products are widely available throughout the country. Small, pre-packed bales of shavings are sold but are much more expensive than bulk deliveries. Bulk supplies of wood shavings mixed with small woodchips are also available.

## Absorbency

Limited data from literature suggests sawdust has absorbency of 1.5–2.5 L/kg and shavings 1.5–2.0 L/kg. Softwood products are reported to be more absorbent than hardwood.

## Quantities

For cattle, the suggested approach is to use 30–60 cm initially and muck out completely every four to eight weeks. Drainage is reported to be good initially but can become very poor over time. Sawdust can be used successfully in combination with straw, alternating the two materials.

It can also be used in combination with mattresses in cubicles.



## Benefits

Sawdust produces a comfortable, clean bed, if managed carefully, with a dry top layer, and is useful for bedding individual animals, such as ewes in lambing pens.

## Storage

Sawdust should be stored under cover. Care should be taken with damp sawdust, which can heat in store, increasing the risk of combustion.

## Animal health and welfare

Sawdust from treated wood must not be used to bed livestock. Damp sawdust can harbour moulds, and high coliform counts have been linked to an increased risk of mastitis in dairy herds.

Anecdotal reports have shown that wet sawdust bedding can increase the risk of foot problems such as scald in cattle and sheep. There is a potential health risk to humans of using very dusty sawdust, especially from hardwood.

## Disposal

Sawdust and shavings from virgin wood are not classed as waste and the resulting manure can be spread on the land. If sourced from recycled wood, refer to the waste regulation section on page 16.

Woody materials such as sawdust and shavings have high carbon content and can 'lock up' nitrogen.



Sand is a clean, dry, inert bedding material often used on dairy units in cubicles and loose housing.

The nature and composition of sands can vary considerably (e.g. sea sand versus river or quarried sand), particularly in particle size, consistency and organic content. The most appropriate sand will depend on individual circumstances.

## Cost in 2018

£10–20/tonne depending on area, delivery costs on top of this.

## Availability

Widely available. Depending on location, sand may be described as animal bedding sand or sea sand.

## Absorbency

Limited data suggests an absorbency of approximately 0.3 L/kg.

## Quantities

In deep-bed systems, farmers using sand report starting with an initial 20–30 cm of sand and replenishing, as necessary. Sand may need levelling/raking where cattle dig their feet into the beds.

## Benefits

Produces a clean, dust-free and well-drained bed. Reported to be beneficial in dairy housing systems for reducing mastitis.

## Storage

No special requirements as sand is readily available throughout the year. Additional quantities can be purchased as necessary, reducing the need for extensive storage facilities.

## Animal health and welfare

Reported to be beneficial when used in cubicles for dairy cattle, although fine-washed sand is recommended as coarser material can be too abrasive. Not generally recommended for use at calving as it sticks to the newborn calf.

## Disposal

Sand is an abrasive substance and can accelerate wear in slurry/muck handling equipment and on concrete surfaces.

The resulting manure can be spread on the land. Depending on the type of sand used, the manure may have a liming effect. Cornish sea ‘shell’ sand has a neutralising value of 30–40 per cent, although the material is slower acting than ground limestone.

Sand may also act as a soil improver if spread on heavy land.



# Bracken

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Bracken has been used as livestock bedding for centuries. Harvesting the fronds in late summer/autumn when die-back starts naturally, is considered to produce the highest yield and most easily dried crop. Bracken spores are known to have carcinogenic properties and the material should be handled with care.

## Cost in 2018

Costs usually consist of on-farm cutting, baling and transportation. Bracken is not typically sold off-farm.

## Availability

Readily available in certain geographical areas. Harvesting may be difficult on some terrain.

## Absorbency

It is suggested that bracken is at least as absorbent as cereal straw, with a moisture content of around 20 per cent.

## Quantities

Quantities used are similar to conventional straw.

## Benefits

Freely available in certain areas and can be harvested using conventional machinery. Creates a comfortable and durable bed. Can be stored easily. Stock don't usually eat it.

## Storage

No specific storage requirements, similar to conventional straw bale.

## Animal health and welfare

Studies suggest bracken may cause bladder lesions or carcinomas in cattle and can lead to blindness in sheep. It is also thought to cause haemorrhages, with cattle more susceptible.

The toxicity of bracken varies with plant growth stage, but is highest in young leafy material and lowest at the optimum cutting stage in the autumn.

There is little information on how these risks can be reduced. It may be useful to observe animals after bedding down. If animals are eating the bracken, an alternative bedding may be required to minimise the risk of health problems.

## Disposal

Bracken breaks down more readily than straw so can be spread on land and used as fertiliser. Analysis: Composted bracken bedding: Total kg/t. N 3.86, P 1.5, K 8.



# Pea haulm

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Pea straw is often used as a forage feed due to its high protein content. It tends to be brittle and breaks up easily, making it difficult to bale. It is reported to make poor bedding because it is less absorbent.

## Cost in 2018

£65/tonne plus delivery costs.

## Availability

Available from larger straw merchants. However, only small amounts are grown in certain regions so not widely available in large quantities.

## Absorbency

Reputed to have poor absorbency but no definitive figures are available.

## Quantities

Pea straw should be used initially in the same quantity as other cereal straws. However, it may need replenishing more frequently due to being so brittle.

## Benefits

Can be used as forage. Good drainage. Can use under cereal straw to reduce usage by up to 30 per cent, aids drainage and provides structure to bed, due to its 'stemmy' nature.

## Storage

Must be stored undercover as it starts to degrade rapidly when damp.

## Animal health and welfare

Due to poor absorbency, animals quickly become dirty.

## Disposal

Pea straw breaks down readily and the resulting manure can be spread on land. Analysis: Pea straw (fresh weight): Total kg/t. N 1.2, P 3.9, K 20.0.

If it is being composted it will need an exemption to be registered under T23 and an exemption to spread under U10.



# Rape straw

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Oilseed rape straw is readily available and has a high oil content so is in demand as a biofuel. It has a stalky structure and is best used as a bottom layer with cereal straw on top.

## Cost in 2018

£70/tonne ex field.

## Availability

Readily available in some arable areas.

## Absorbency

There are no figures available on absorbency but it appears to be free-draining more than absorbent.

## Quantities

It is suggested that putting around 50–60 cm of rape straw in the base of a bed with cereal straw on top can reduce straw requirement by up to 30 per cent.

## Benefits

A cheaper alternative to cereal straw. It is a free-draining bedding material and readily available in some areas of the UK.

## Storage

Similar to cereal straw. However, some reports suggest that round rape straw bales need handling carefully as they are less robust, and have also been reported to be difficult to roll out.

## Animal health and welfare

Rape straw should be dried to below 20 per cent moisture content to prevent moulds spoiling the product and causing animal health issues. This may prove difficult in UK conditions.

Rape straw is very stalky and may not be suitable for young lambs or calves.

If using oilseed rape straw, consider where the manure is going to be spread afterwards and check which herbicides, if any, were applied to the crop the straw

came from. If the active ingredient aminopyralid remains in the manure, it can affect crops on the land where it is spread.

## Disposal

Breaks down readily and the resulting manure can be spread. Analysis: Rape straw (fresh wt): (Total kg/t) N 7.0, P 2.2, K 11.5.



# Miscanthus

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Miscanthus, or elephant grass, is a perennial grass usually grown as a biomass crop.

It is tall and stalky and, when harvested, has a high moisture content. It must be chopped and dried before use. Used increasingly in the equine and poultry industries, bedding companies chop the straw, dry it, and sell it in pre-packed, small bales.

## Cost in 2018

£300/tonne for small quantities of prepared pre-packed bales. Large bales of miscanthus at 20 per cent moisture content may be available in some areas at £40–50/tonne.

## Availability

Prepared bedding is available nationally. However, large dried bales may only be available in certain areas.

## Absorbency

Miscanthus is stated to be highly absorbent, able to absorb approximately three times its own weight in moisture, once dried to below 25 per cent moisture content.

## Quantities

A good depth of 30–50 cm to start with, topped up with fresh bedding, as needed.

Initially, the bed is not very dense and is easily displaced by stock, leading to bare patches. Practical experience suggests adding a small amount of moisture helps prevent this.

## Benefits

High DM yield, can be grown on poorer quality land and is highly absorbent. Creates a comfortable bed with good thermal properties. Animals remain clean and warm.

## Storage

Must be kept dry.

## Animal health and welfare

Miscanthus straw bought from a bedding merchant is free of dust and mycotoxins. However, farmers may struggle to dry the product sufficiently to stop moulds forming.

## Disposal

The resulting manure degrades quickly and can be spread onto land.



# Waste regulations

Some alternative materials require a waste exemption to be registered with the Environment Agency before they can be used as animal bedding. The appropriate exemption is U8 and further details can be found on the Environment Agency website: [gov.uk/guidance/waste-exemption-u8-using-waste-for-a-specified-purpose](https://gov.uk/guidance/waste-exemption-u8-using-waste-for-a-specified-purpose)

The relevant agricultural waste exemptions are free of charge and can be registered online or on a paper form: [gov.uk/guidance/register-your-waste-exemptions-environmental-permits](https://gov.uk/guidance/register-your-waste-exemptions-environmental-permits)

Contact the Environment Agency customer service centre on 037 0850 6506 for further guidance and copies of the relevant forms.

The Environment Agency has a position statement that allows for the composting or anaerobic digestion of soiled bedding materials that have been used in accordance with U8 exemption: [gov.uk/guidance/waste-exemption-t23-aerobic-composting-and-associated-prior-treatment](https://gov.uk/guidance/waste-exemption-t23-aerobic-composting-and-associated-prior-treatment)

## *Farm Assurance Standards*

Farm Assurance Schemes set rules on the use of alternative bedding materials. Ensure that materials used are permitted by Farm Assurance Standards.

Records of deliveries of waste material may need to be kept, for example, a Waste Transfer Note to comply with Red Tractor Standards. This information may be useful in demonstrating compliance with the law, exemptions, and dealing with any problems that may arise with unsuitable loads.



# Reducing bedding requirements

To reduce bedding requirements there are a number of things to consider:

- Extend grazing period or consider outwintering where appropriate
- Store bedding in a dry place, preferably in buildings or under heavy-duty sheeting
- Ensure any water from gutters or water troughs cannot enter the bedded area
- Consider having a scraped (concrete) feed area that is cleaned out a few times a week. This can reduce the amount of bedding needed considerably, as up to 40 per cent of cattle waste is excreted while feeding
- Site water troughs on the scraped area
- Ensure buildings are well ventilated to eliminate moist air and help keep bedding dry
- Ensure buildings are free from leaks which may spoil bedding
- Ration type can have a big effect. Requirements are higher for animals on silage-based diets than those on concentrate or straw-based diets. Excessive salt intake can also cause animals to drink more and increase bedding requirements

- Ensure there are adequate space allowances for feeding, drinking, loafing and lying down, to minimise heavily soiled areas. Ensure stocking densities conform to Farm Assurance Scheme standards

## *Slatted floors can remove the need for bedding material*

To comply with Red Tractor Assurance standards, non-slatted lying areas must be provided for breeding cows, in-calf heifers and calves.

Bedding must be provided on slatted floors for newborn and young lambs.

Slats can be covered with rubber to increase comfort.



# Summary table

The list of bedding materials described in this booklet is not exhaustive and other materials may be available.

Many of the alternative bedding materials discussed here work well when combined with traditional cereal straws, either forming a free-draining base layer underneath straw, for example rape straw, or in the case of paper or sawdust, mixing it in with it.

It is important to ensure that any bedding material has been screened to remove contaminants such as nails, metals, glass and plastic that could cause injury.

***Products that must not be used for livestock bedding***

These include:

- Poultry litter. Animal by-product regulations prevent the use of this because of the risk of diseases such as Salmonella
- Recycled rubber. It is illegal to spread this on the land as a fertiliser
- Woodchip produced from treated timber. This poses risks to animals, may impact on food chain safety and cause disposal problems
- Waste Gypsum and waste plasterboard are illegal to use as a bedding material. These materials can be applied to the land as a soil conditioner with a waste exemption

Table 2. Summary of bedding materials

	Cost per tonne	Availability
Straw	£75–102	Widely
Woodchip	£40–80	Widely
Sawdust	£50–275	Widely
Wood shavings	£120–220	Widely
Sand	£10–20	Widely
Paper products	£40–85	Widely
Bracken	On-farm harvesting	Niche
Pea haulm	£65	Limited
Oilseed rape straw	£70	Limited
Miscanthus Prepared bedding	Up to £200	Prepared bedding – limited

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Absorbency	Benefits	Animal health	Disposal
Moderate	Abundant	Mould spores	Rots down and spreads easily
Low	Abundant	Must be below 30% moisture content	Can be composted and reused in subsequent years or spread on the land
Moderate	Abundant	Mould spores in damp sawdust. Can be dusty	Easily spread to land. Can 'lock up' nitrogen
Moderate	Clean, can be dust-free	None if kiln-dried and dust extracted	Easily spread to land. Can 'lock up' nitrogen
Low	Hygienic bedding material for cubicles	Coarse sand may be too abrasive	Causes excessive wear on slurry/muck handling equipment and can settle out in slurry systems
Low to high depending on product	Liming effect, abundant and cheap depending on product sourced	May cause teat scald when using lime ash	May clump and cause difficulty spreading, may increase nitrogen requirement
Moderate	Cheap, warm	Potentially carcinogenic	Rots down and spreads easily
Low	Palatable forage	Animals become wet and dirty quickly	Rots down and spreads easily
Low	Clean, dust-free	Very stinky material	Rots down and spreads easily
High	Clean, dust-free	None	Rots down and spreads easily

# Beef and sheep BRP Manuals

<b>Manual 1</b>	Improving pasture for Better Returns
<b>Manual 2</b>	Assessing the business for Better Returns
<b>Manual 3</b>	Improving soils for Better Returns
<b>Manual 4</b>	Managing clover for Better Returns
<b>Manual 5</b>	Making grass silage for Better Returns
<b>Manual 6</b>	Using brassicas for Better Returns
<b>Manual 7</b>	Managing nutrients for Better Returns
<b>Manual 8</b>	Planning grazing strategies for Better Returns
<b>Manual 9</b>	Minimising carcase losses for Better Returns
<b>Manual 10</b>	Growing and feeding maize silage for Better Returns
<b>Manual 11</b>	Using medicines correctly for Better Returns
<b>Manual 12</b>	The bedding materials directory

See the AHDB Beef & Lamb website [beefandlamb.ahdb.org.uk](http://beefandlamb.ahdb.org.uk) for the full list of Better Returns Programme publications for beef and sheep producers.

Produced for you by:

## **Better Returns Programme**

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