Improve beef housing for Better Returns

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EBLEX Beef Better Returns Programme

QUALITY STANDARD
beef
English

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8 Ventilation
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10 Diseases affecting housed stock
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It is all too easy to take stockyards and buildings for granted. In fact, they are an important part in the whole beef production system and influence profitability.

Well-planned housing will make stockmanship easier, encourage optimum livestock production and play a very important part in ensuring good disease management. All this adds up to improvements on the bottom line.

In recent years, our understanding of best practice and design in livestock buildings has increased significantly. This booklet, the latest in our series of Beef Better Returns manuals, brings together the latest thinking and aims to prompt you to take a fresh look at your own set up.

Stock housing represents a significant investment. If you are in a position to invest in new buildings, then this booklet will give you some useful tips as you plan construction.

However, you do not need to replace buildings. Many older buildings are sound, but with some thought can be significantly improved in terms of layout and, critically, ventilation. Investing some time in reviewing your housing and some money and effort in renovation will also pay dividends.

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Look at the big picture

Housing brings stock together in a relatively confined environment and possibly in new social groups. Therefore, conditions must be right to minimise undue stress on livestock or stockpersons.

Take a fresh look at your buildings, or ask someone else to do so. It may well be that there are simple ways to make big improvements.

On many farms there is scope to make changes to stock buildings and layout that will deliver big benefits to efficiency of labour, use of feed and animal performance.

Building improvement does not necessarily require large capital investment or major reorganisation. What it needs is some thought and a willingness to try out new approaches.

Visit successful units and see how others are making good use of their buildings.

Machinery access for feeding and cleaning out will make a big difference to time consuming activities.

Ventilation is perhaps the most critical issue to reduce the risk of disease build-up.

Water access must be adequate to ensure all stock can drink without bullying.

Staff access must enable easy access without climbing fencing or opening cumbersome gates.

Ensure lighting is adequate to inspect stock at all times.

Pen sizes should be adjusted to reduce stress and make it easier to manage matched groups of animals for optimum performance.

Drainage avoids build up of stagnant water and leaving animals on damp bedding.

Feeding areas can be improved to reduce both animal stress through bullying and feed waste.

Joined up layout makes movement of animals simple and stress free.

Windproof against the prevailing wind.

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The following checklist will help you look afresh at your buildings. Be brutally honest!

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<tbody>
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Above all, are you running your housing? Or, is your housing running you?

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<tr>
<td>Is ventilation generous throughout your buildings? <em>Look for good inlets to bring in fresh air and good outlets for stale air.</em></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Air space</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Does the space exceed the minimum welfare requirements?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lighting</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Is the current lighting sufficient to ensure all cattle can be inspected day or night?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Handling facilities</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Are these adequate for safe and easy handling of all categories of stock you manage? See EBLEX Beef BRP Manual 3: Improving cattle handling for Better Returns</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Equipment condition</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you regularly inspect and maintain barriers, gates, pens, floors, etc to ensure stress free handling and avoid injury to staff or stock?</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you have sufficient capacity to meet routine needs such as quarantine and to deal with crises, such as infections?</td>
<td></td>
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Above all, are you running your housing? Or, is your housing running you?

The Rural and Industrial Design and Building Association can provide advice on good design: www.ridba.org.uk
Understanding the volumes of air in your buildings is critical to meeting welfare standards and assessing the ventilation needs of the building.

### Measuring up your building

#### What is the volume of the building?

It is important to measure any livestock building to ensure that floor space and air volume are adequate for the number of animals you intend to house.

### Assessing your roof volume

Roof volume = roof height (D) x floor area

### Assessing your main building volume

Main building volume = height (C) x floor area (A x B)

### Assessing your floor area

Floor area = length (A) x width (B)

(This will give the ground area in square feet or metres, depending on whether you prefer to measure in metres or feet.)

Total building volume = main building volume + roof volume

### Height

Height is important in providing adequate volumes of air. Ideally, the height of the eaves in buildings for beef animals should be at least 4.5m high. This also ensures good access for modern farm machinery.

Also, check that the ridge opening is adequate for the width of your building. Ensure the inlet opening below the eaves is at least four times more than the ridge outlet space to ensure a steady supply of fresh air.

### Temperature

Temperature within a livestock building should never be controlled by restricting ventilation – either inlets or outlets.

### Is your building adequate?

There are rules of thumb for both air space and ventilation area:

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<th>Air space (cu metres)</th>
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<tr>
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<tr>
<td>Larger animal 150kg +</td>
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NOTE: Estimates are perfectly adequate, do NOT attempt to climb on roof when measuring up, or exceed safe working heights on ladders or platforms.
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Understanding the volumes of air in your buildings is critical to meeting welfare standards and assessing the ventilation needs of the building.

NOTE: Estimates are perfectly adequate, do NOT attempt to climb on roof when measuring up, or exceed safe working heights on ladders or platforms.
Testing your ventilation

How well air flows through your building is critical to protecting against disease and respiratory disorders. An open ridge will always be an outlet for stale air. This is why it is vitally important to have a generous opening.

Testing can be conducted using smoke pellets, which are inexpensive and can be obtained from most builders merchants and plumbing suppliers. These pellets provide a cool, dense smoke. Check both how quickly smoke clears from a building and whether there are areas where smoke lingers. An early, muggy morning is best for smoke testing. This is when the worst conditions can be observed.

If smoke clears completely within 2-3 minutes and there are no corners where it lingers, the building can be considered fit for purpose as far as its ventilation is concerned.

Wherever and whenever smoke lingers in a building, it indicates areas where the organisms causing pneumonia and respiratory disorders will linger and spread from animal to animal. If smoke lingers, look at the options to improve the exhaust of stale air. The removal of roof ridges will often remedy the problem.

Be sure to observe safe working practices, or employ specialists, to work on the roof.

Some farmers use damp straw to generate smoke. However, this will not accurately test ventilation. The smoke will be hot and rise readily of its own accord.

Lighting straw in a stock building carries considerable risk of fire!

Ventilation

Correct and adequate ventilation is one of the most important features of any livestock building to ensure efficient production and, vitally, minimise health disorders.

Most UK farm buildings are poorly ventilated due to inadequate ridge ventilation, which prevents stale air from escaping. The result is damp, humid conditions in which a range of respiratory diseases thrive.

Ridge space requirements

In any pitch-roofed stock building, the ridge opening is critical:

Sealed ridge
Ventilated ridge
Raised ridge
Open ridge

One of the best ways to improve any livestock building is to remove the ridge, leaving open space. This will improve ventilation markedly and lead to improved animal performance. The 'chimney' effect prevents significant rain entering the house. Even over a wet winter housing period the amount of extra moisture entering through an open ridge will be small compared with that produced by housed stock – less than 5%.

Assessing your ventilation outlet area?

Assess length and width of ventilation. Ventilation space = length (E) x width of opening (F)

Example: a building width of 24m requires a ventilation width of 400mm.
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\[ E = \text{Length of roof} \]
\[ F = \text{width of ridge ventilation opening} \]

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Diseases affecting housed stock

Pneumonia

Pneumonia is the biggest threat to housed livestock production. Even chronic infections can lead to reduced daily liveweight gain and impaired carcase quality.

Pneumonia leads to infected lobes within the lungs of infected animals, even if there are no clinical symptoms. Trials assessed the impact of numbers of affected lobes post-mortem and the effect on daily liveweight gain and the impact of infection on average carcase prices. The results show that even light infections reduced liveweight gain, while more serious infections reduced payment premiums.

Respiratory diseases

In addition to pneumonia there are a range of other respiratory diseases mainly caused by viruses, including:

- respiratory syncytial virus (RSV)
- parainfluenza type 3 (Pi3) virus
- infectious bovine rhinotracheitis (IBR) virus

Severity can be increased by secondary infections of bacteria and myoplasma.

The viruses can spread in droplets of water over considerable distances.

Where infections occur, consult your vet for advice on appropriate antibiotics.

Lice

External parasites, such as lice, spread more readily between housed cattle. In addition, the denser winter coat and cooler weather favour lice survival.

Lice cause skin irritation leading to biting, scratching and rubbing which can lead to damage to building fabric.

While the effect on production and growth rates is subject to debate, the potential reduction in the value of hides is very costly to the leather industry.

Most insecticides will deal with adult or nymph lice. However, it is important to distinguish if infestations are of sucking or biting lice before choosing a treatment.

Stress

Stressed animals will perform poorly and housing can impact directly on stress levels.

Over-crowding can mean:

- reduced access to food for weaker animals
- increased bullying
- injury from trampling
- higher risk of disease spread

For more information on handling see EBLEX Beef BRP Manual 3: Improving cattle handling for Better Returns.
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* Williams, P & Green, L (2007) Cattle Practice, Vol 15, part 3, 244-249
Spot the faults

There are a range of errors that occur all too often:

A – lack of ridge ventilation
B – inadequate lighting
C – no quarantine
D – poor drainage
E – excess draughts
F – inadequate food/water
G – excess heat
H – lack of isolation for sick animals
J – lack of rodent control
K – mixed pen sizes
L – lack of feed hygiene
M – leaking water pipes
N – low eaves
P – overcrowding
R – broken fittings
S – poor maintenance
T – severe roof condensation

Housing checklist

Quite small investments can make big differences to the health, welfare and performance of housed cattle. However, if you are in a position to invest in new buildings consider the following:

**Housing system**
- ensure system suits your farm and farming policy
- visit other units to see good and bad practice
- keep systems simple and cost-effective
- ensure ready access to feed and water
- ensure labour demands minimised
- make new buildings adaptable and capable of expansion

**Good drainage**
- keep lying areas as dry as practical
- Replenish bedding regularly
- Avoid roof, pipe and trough leaks
- Maintain gutters and drains regularly

**Effective feeding and watering**
- store feed in properly-designed facilities
- distribute feed effectively
- use barriers that minimise waste
- utilise low-cost water, eg borehole or roof run-off

**Site choice**
- seek proximity to services, water, roads, etc to reduce cost
- keep away from watercourses and beware slurry run-off
- take account of prevailing winds to minimise draughts
- choose sunny site with plenty of fresh air

**Good working practices**
- provide handling facilities for all treatments
- provide safe, effective races, pens and ramps
- provide ready access for transport

**Healthy environment**
- ensure generous natural ventilation
- keep group numbers small
- ensure generous airspace and high eaves
- avoid dusty feed and bedding
- control rodents and prevent bird access
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