

Environmental factors crucial in preventing pneumonia

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The environment can have a big influence on the prevalence of pneumonia and the levels of disease challenge within a group of animals. The key environmental factors affecting levels of disease are humidity, draughts/temperature and air quality.

Humidity levels cannot be assessed accurately without proper equipment, but it is possible to gain an idea from how wet the floor is, how wet the animals' coats are and how much condensation there is on the roof sheets.

Humidity is an important factor because the bugs that cause pneumonia have to "swim" – they cannot "fly". The more droplets of moisture in the environment for the bugs to cling to and swim around in, the more likely it is for an animal to breathe those bugs in.

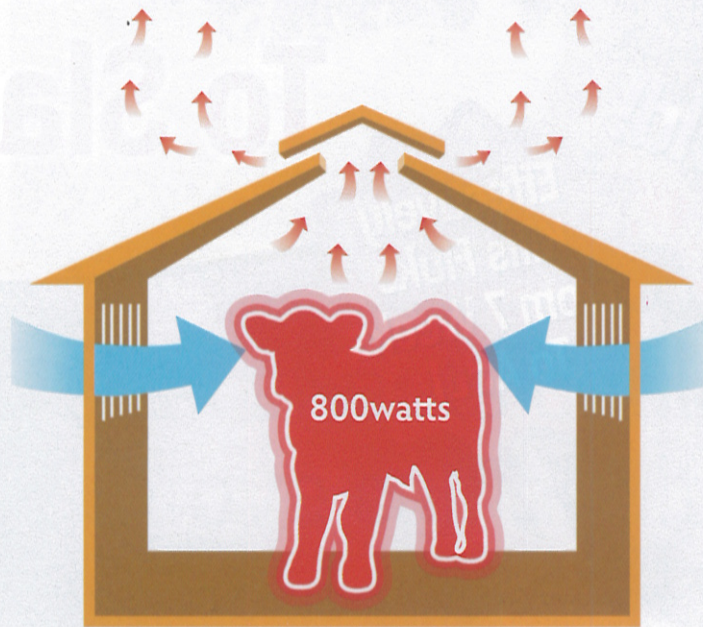
Draughts can have a chilling effect (similar to a wind-chill factor) and thus at animal level there should be no draughts. Cattle have a "thermonutral zone" in which they are most comfortable. Go below this rate and maintenance energy requirements increase, go above this and intakes drop.

Air quality refers to the particles that can be present in the air that the animals breathe and must be kept to an absolute minimum. These particles can include dust (from straw) and chemicals (ammonia, formalin).

Natural ventilation can help control all of the above factors to help lessen the disease challenge from pneumonia.

STACK EFFECT

For the ventilation in a building to function at its best we rely on a



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phenomenon known as the "stack effect". Heat produced by livestock rises as it leaves the building and cooler air is drawn in from the outside (see diagram above). The absence of an outlet will prevent stale air from escaping and being replaced by fresh air. Ventilation needs to work effectively in a "worst-case scenario", for instance on a still day with no wind.

The lack of a ridge outlet is the primary reason for poor ventilation of a building.

Outlet areas must be balanced by inlets. A good rule of thumb is to have twice the inlet area to outlet area. In some cases, significant improvements can be made by simply opening the outlet ridge.

Multi-span buildings are becoming more common as livestock

buildings increase in size. The provision of good ventilation throughout these buildings is often difficult because the lack of opportunity for inlets creates "dead spots" within the centre of the complex.

Ways to address these and improve natural ventilation include spaced, slotted and raised, breathing roofs.

1 Spaced roof sheeting

A gap of up to 12mm is recommended. Rain entry is usually minimal when livestock are present because of the up-draught created, but this technique is not recommended for buildings storing hay or straw, as some rain can enter directly through the gap. The advantages of this technique include extra natural light, a lack of condensation on the underside of roofs and a so-called general "fresh air feeling".

2 Slotting an existing roof

This is best suited to upgrading existing corrugated roofs. The basic procedure involves cutting slots up to 12mm wide, roughly every fourth corrugation. Slots should be cut in the crown of the profile. Farmers should take every safety precaution and use a profes-

Ventilation key points

- The environment can have a big influence on prevalence of pneumonia through humidity, draughts and air quality.
- Natural ventilation can help control these factors and lessen the disease challenge.
- The lack of a ridge outlet is the primary reason for poor ventilation of a building.
- Multi-span buildings in particular can be difficult to ventilate due to lack of outlet and "dead spots".
- Solutions to address this can involve spaced roof sheeting, slotting an existing roof and creating a breathing roof.
- If you are considering making changes to a roof, always consult with a roofing contractor.

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■ XLVets is a group of farm animal-committed vet practices that work together, alongside commercial research and manufacturing companies. They aim to share best practice on advice and disease-prevention initiatives.

sional to install. Improvements using this technique are usually dramatic, creating a breathing roof with increased air movement and higher natural light levels.

3 Creating a breathing roof using spacers

This option is most appropriate for a new roof over livestock accommodation, which could at times be used for feed or bedding storage. A minimum end lap of 150mm is advised, increasing to 300mm in exposed conditions to minimise penetration of rain or snow into the building. It is not necessary to place a roof spacer at every sheet lap, even just two or three spacers a side for a wide portal building will significantly improve air distribution.

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