



# Food Animal Initiative

ENVIRONMENTS FIT FOR ANIMALS FIT FOR THEIR ENVIRONMENT

## FAI Technical Datasheet Po4 - Litter management in free range poultry systems - Update August 2005

Litter management is a vital component of managing the welfare of birds as ammonia release from poor litter can lead to conditions such as breast blister, hock burn, pododermatitis and respiratory disease. Management of litter in free range systems presents problems, particularly in winter when the weather is cold and birds are walking in and out of the house with wet, muddy feet. It has been found necessary to litter up regularly during the winter months in order to reduce ammonia levels and maintain a dry litter surface.

### 'the facts.....'

Levels of ammonia above 10ppm (some research show 5ppm) in the air impair birds' ability to fight respiratory disease and when birds sit on the litter the ammonia causes irritation to the skin resulting in pododermatitis, breast blister and hock burn.

A significant number of broilers and the majority of turkeys have pododermatitis at slaughter. Pododermatitis has been shown to be a painful condition as the lesions extend into sensitive tissue regardless of their size.

Bacteria in litter require a source of nitrogen and carbon in order to grow. Carbon is provided by the litter breaking down and nitrogen in the faeces from the poultry. When stocking densities are higher and/or litter is composted or reused the amount of these nutrients is higher.

30% moisture is needed to support the growth of the ammonia producing bacteria and above 30% the growth accelerates rapidly. At levels of 60-75% moisture the ammonia is trapped in the litter by becoming dissolved in the moisture and the activity of the bacteria is reduced.

Adding dry litter has an immediate effect on ammonia production as it provides a dry, physical barrier which prevents ammonia release into the air. New litter also has a larger particle size and thus it is more difficult for the bacteria to extract carbon than from the older more broken down smaller particles.

Temperatures below 18C discourage ammonia producing bacteria from growing. Working litter will have a temperature of 27C or above and produces significant quantities of ammonia. In cooler conditions such as in free range houses in the winter litter 5C above that of the air temperature in the house will be producing ammonia. In order to gauge conditions litter temperature should be measured 1cm below the litter surface.



### '.... the FAI response!'

In free range systems under certain conditions it is not possible to have working litter as in intensive broiler houses. Techniques which have successfully been applied to keep the litter surface dry have included:

- Good insulation for all houses - condensation is one of the greatest sources of excess moisture.
- Topping up litter immediately when wet/capped
- Management of the ridge to prevent condensation dripping onto the litter without restricting ventilation
- Management of drinkers to keep litter dry without restricting smaller birds

The amount of litter used varies according to weather conditions i.e. higher in wet, cold conditions.

Houses for 600+ broilers are littered up using 6 bales and 4 additional bales are placed, one in each corner. These are then used as necessary during the 6.5 weeks the birds are out on the range (birds are brooded in separate accommodation and currently reared to 81 days) and replaced if necessary. This means that litter usage in free range broiler systems is higher than conventional systems. This is one of the many additional costs of this system. Further practical methods are being trialled at FAI to improve the management of litter while using reduced quantities and without compromise to bird welfare.

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DEFRA Website: [www.defra.gov.uk/animalh/welfare/farmed/meatchks/pb1739/littetoc.htm](http://www.defra.gov.uk/animalh/welfare/farmed/meatchks/pb1739/littetoc.htm)

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