

The importance of good light control

by Nick Simons, consultant, British United Turkeys, Chowley Five, Chowley Oak Business Park, Tattenhall, Cheshire CH3 9GA, UK.

With summer fast approaching good light control in breeder rearing houses is of the utmost importance to ensure that your turkey hens come into lay at the correct time and achieve good egg production, both in terms of peak lay and persistency of lay. This article seeks to review the important features of good light control, highlighting areas where things may go wrong.

Background

Seasonal breeding birds at hatch do not have the ability to respond to changes in light intensity and day length, known as juvenile photorefractoriness or PR for short.

Exposing birds to a period of short day length can override PR, a natural mechanism to prevent wild birds breeding when their young would have a poor chance of survival (in winter months) and to stimulate birds to breed in the spring (when it is warmer and there is a plentiful supply of food).

Birds need to be exposed to at least 10-12 weeks of artificial short days before they will respond to an increase in photoperiod (day length) and light intensity and start laying



eggs. In turkeys this is generally at 29 weeks of age when the females are transferred to the laying barns. This period of short days is known as the 'conditioning period'.

With turkeys we can use this natural mechanism to our advantage; firstly we can stimulate females into sexual development at an appropriate age, secondly, we can produce eggs on a year round basis, and finally we can synchronise reproductive development with transfer to the laying farm.

For good egg production it is essential that we follow a well designed lighting programme and pay close attention to detail.



Fig. 1. Light leakage through air inlets.

A lighting programme is a combination of important factors that describe the light intensity, duration and light source(s) applied within the rearing.

Practical considerations

During the 'conditioning period' at 18-29 weeks, it is vital to maintain the short days and a minimum light intensity of at least 50-60 Lux.

The light level stipulated is mainly to provide a bigger contrast with any extraneous light, which may be a feature of inadequately dark proofed houses, and to encourage females to adopt only six or seven hours of artificial light as their day. It also helps promote activity during the short hours of daylight, helping to keep birds fit.

If light intensity is allowed to fall below 50 Lux for any length of time during the conditioning period, it is possible that females will come into lay slowly and not achieve a good peak.

It is essential that no light enters the house during the hours of dark to avoid sexual maturation. This can be a major problem during the spring and particularly summer

months (for example, when natural days are long with high light intensity).

If light leakage occurs during the conditioning phase or the day length is extended, either on purpose or inadvertently, the extra light is likely to cause unwanted photo-stimulation.

This will inevitably cause females to squat prematurely before transfer to the laying farm.

To prevent this happening all fans and air inlets must be dark proofed. Attention should also be given to cracks and gaps around doors and any other hatches/openings in the building.

To check for light leakage close all doors in the house and turn the lights out, identify all places where light can be seen entering the house. Fig. 1 and 2 demonstrate poor light control in a turkey house.

This may reduce egg numbers and size, with more small eggs being laid, and may even decrease peak production and possibly fertility levels during the lay period.



Fig. 2. Light leakage through a roof fan with no light proofing.

The consequences of early photo-stimulation can be very costly and all efforts should be made to avoid accidental exposure to light or increased day length (for example, through entering the house during the dark period when it is light outside).

It is good practice to ensure that all stock inspections and any other tasks (for example, vaccinations or equipment maintenance) are planned so they can be accomplished within the light period.

Avoid the temptation to leave the lights on for an extra hour to get the job finished. A good way to avoid accidental entry to houses during the dark period is to fit an external warning lamp, which comes on

Continued on page 17

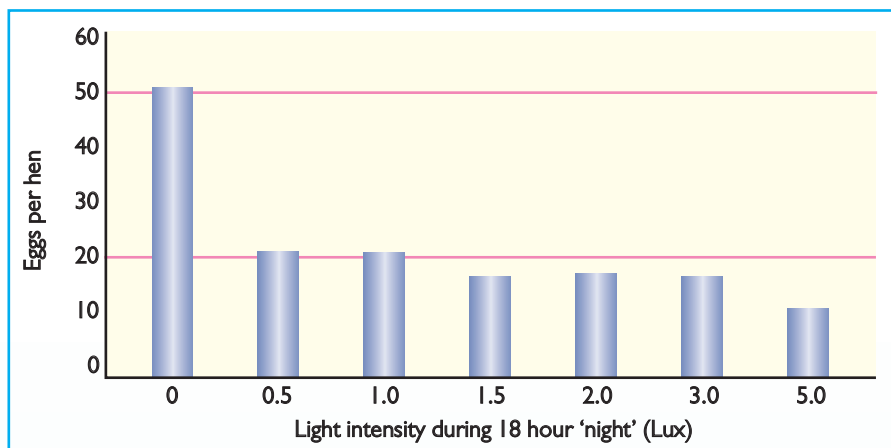


Fig. 3. Effect of pre-laying intensities of light during the 'night' period on subsequent egg production. (Reproduced with kind permission from Lewis & Morris, 2006).

Continued from page 15 when the house lights are off. It is also worthwhile posting warning notices at the house entrance showing the times when it is permitted to enter the house safely.

Finally, time clocks, which control switching of the house lights on and off, should be regularly checked for correct time, on/off settings and function and be aware that even where time clocks appear to be set correctly, faults may occur where the clock is not switching the lights on and off as intended.

If at any time during the conditioning phase birds are seen to be squatting, this is an indication that there is a problem that needs rectifying either by improving the light proofing, checking the lighting system (particularly time clocks) or that management procedures are not negating the short day length.

The importance of light control and sensitivity of the female to premature photo-

stimulation is demonstrated in further work by Lewis & Morris (2006) in a trial in which turkeys were given six hours of light at 650 Lux and 18 hours of darkness or dim light at various intensities from 0.5 Lux to 5 Lux.

Any dim light given during the 'night' had a dire effect on subsequent egg production (see Fig. 3).

Finally, we should not forget that an often inconvenient consequence of effective dark proofing is that it will impair ventilation efficiency. Fan cowls, back-draught shutters and light baffles can reduce fan efficiency by 40% or more. Furthermore, efficiency can also be lost at the air inlet as the air makes its way through the several twists and turns of light baffles to reach the inside of the house.

These inefficiencies must be factored into the ventilation system to ensure that mature birds are not compromised by inadequate ventilation during hot weather when maximum ventilation is required to prevent heat stress. ■

