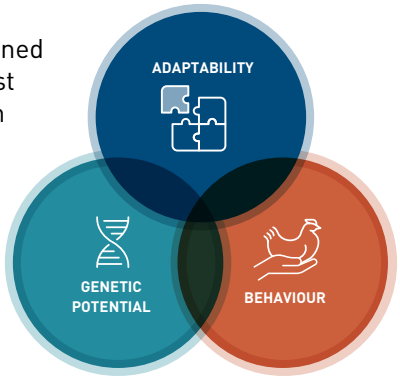
NOVOFOCUS

THE ROLE OF LIGHT INTENSITY IN A POULTRY HOUSE

The recent development of cage free system, together with the change from incandescent bulbs or fluorescent tubes to Light-Emitting Diode (L.E.D.), has sometimes resulted in an important fluctuation in light intensity to birds, especially in the free-range systems with an outdoor access. Recent investigations have demonstrated a strong relationship between light intensity, physical activity and feather loss. The high intensity not only results in a higher Feed Conversion Ratio (F.C.R.) but also in an increased mortality.

GENETIC POINT OF VIEW

Our R&D program is designed to select birds with the best adaptability, allowing them to perform well across all production systems. The good behaviour of our strains is an advantage in supporting the natural lighting conditions, which are inherently challenging to manage.

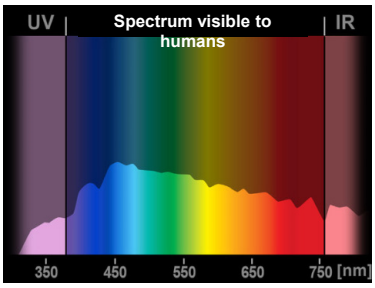


ORIGIN

Light intensity can vary significantly throughout a house depending on the light source and its location. Often measured in lux, clux, or foot candles, this can more easily be described as brightness

Light has a huge influence on liveability, and any mistake in this criterion could increase stress levels, leading to expression of undesirable behaviours that could potentially increase the mortality rate. Liveability is influenced by multiple factors and remains challenging to optimize in all production systems. Nevertheless, in cage-free production, it tends to be lower than in cage. This is mainly due to flock size but is not solely determined by it.

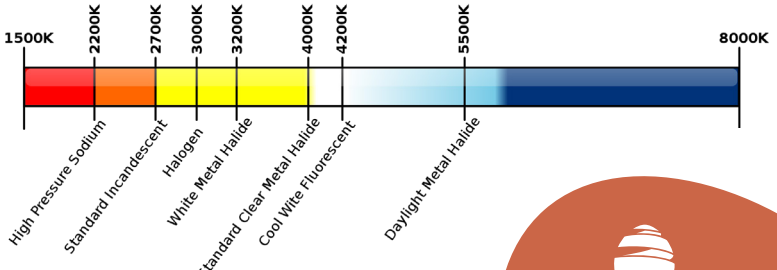
Because of the chickens' sensitivity to light and its importance in regulating behaviours, light is used as a management tool to optimize productivity. Light, as an environmental factor, consists of three aspects that can affect the physical activity of chickens :



- Photoperiodic regimen or light duration
- Light intensity
- Color spectrum

MEASURES TO BE DONE

- Measure the light intensity at various points with a light meter
- Measure light fluctuation, if L.E.D. is used
- Check the length of the light, for L.E.D it is reccomended to use less than 2700 Kelvin
- Ensure that the birds are not exposed to direct sunlight.



Kelvin Temperature Chart

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REQUIRED INTENSITY, REARING PERIOD

A higher light intensity during the brooding period will encourage growth by promoting higher levels of activity of the flock and a higher feed intake. It is thought that pullets raised with greater portions of blue and green light show enhanced growth. Laying hens should have sufficient red spectrum as red light is vital for stimulating sexual maturity and egg production. Red light can penetrate the skull to stimulate extra retinal photoreceptors. It does this up to 50 times more efficiently than blue, green and yellow-orange light

After 2 or 3 weeks and according to the behaviour of the chicks, the light intensity may be reduced to match the field conditions and the light intensity the birds will be exposed to during the production period (degree of darkness of the rearing house and the laying house).

Light intensity from transfer time should be managed to avoid any dramatic and sudden decrease or increase of light intensity. Otherwise, that will be a huge stress.

According to our Management guide, it is recommended to follow the light intensities below

- 1st week between 40 to 20 lux
- 2d week between 20 to 10 lux
- 3 to 16 weeks of age between 10 to 5 lux, but could be 20 to 10 lux in alternative systems (or more if pullets go outside)

REQUIRED INTENSITY, PRODUCTION PERIOD

After reaching the peak of lay, it is possible to gradually reduce the artificial light intensity. This may limit feed wastage, excessive activity of the birds and reduce the risk of mortality, consequently improving the F.C.R. under lower light intensity. Please take into account that light intensity should remain uniformly distributed all over the house. The following are the recommendations:

- Maintain at light intensity between 5 to 10 lux in dark house
- Ensure that there is a smooth transition between rearing and laying houses, avoiding drastic changes and utilizing the same lighting system.
- Pay close attention to light fluctuations at low intensity levels as they can have a significant negative impact on the birds.

HOW TO REDUCE MORTALITY WITH LIGHT?

Light intensity is a crucial tool. If there are any signs of feather eating or pecking, consider reducing the intensity. If it is impossible, consider:

- Changing the light colour from white to green or red
- Installing dark curtains in open houses
- Avoiding any direct sunlight or light entrance such as adding baffles to avoid light entrance by fans in dark houses.
- Using all nutritional strategies available to make the birds calm.

CONCLUSION

The luminous intensity provided to the birds can affect the productive performance, so it is necessary to adapt the type of the lamp, taking into account the chromatic intensity oscillation, the temperature, the illuminance distribution, and the quantity of lux

Lighting program must be adjusted according to specific situations. It is a management tool like the light duration. Whether in alternative system or in cage system, managing light intensity is crucial and it may vary between two flocks.

For more details, you can visit our Novocenter where all of our guides are available.