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Mini Review

# Effect of Lighting in Broiler Production

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## Abstract

Many physiological and behavioural aspects of broiler is affected by lightening. light is essential for vision and color discrimination. Certain essential function of broiler like body temperature, feeding, metabolism and digestion is directly or indirectly affected by light. Light also controls the activities of different hormones and affects growth maturation and development of organism. The physical activity of broiler can be affected by intensity, color and duration of light. The increase in physical activity leads to overall development of broiler because of which broiler producer must consider high upon light management activities.

**Keywords:** Broiler; Light; Intensity; Growth

## Introduction

Physiological and behavioral processes of bird is externally controlled by lighting. Among the external factors affecting growth and development light is of major consideration. Color vision of birds is due to light [1]. Metaboic activities that include feeding and digestion is coreleated with lighting. Hormonal activities in bird that control growth, maturation and reproduction is controlled by light. The way how the birds are produced in various places are different. The variety production system include outdoor enclosures, production house of various sizes and, and very large homogeneous houses. Greater environmental complexity in poultry rearing activities leads to increase in productivity and resolve the welfare concerns [2].

The parameters of light that affects bird include; intensity, duration, and wavelength which affect physical activity of broiler. The increased in physical activity of broiler improves bone development, and improve the health of birds. Light entering the eyes of birds induces response in the hypothalamus which in turn through releasing factor affects the rate of secretion of gonadotropic hormone for the anterior pituitary gland. Gonadotropic hormone affect the affects the activity of gonads and in turn the reproductive behavior of birds. Age of sexual maturity and rate of egg production are affected by pattern of lightening in the laying house but this does not have power to either stop or start these reproductive processes. Light is generally provided by filament. In general, light intensity ranging from 1 to 150 lx has been found to not affect BW, feed consumption, and feed: gain ratio [3]. The significant effects of low light intensity generally have deleterious effects on poultry production and welfare. Deleterious effect include reduced meat quality and quantity, decreased uniformity, increased incidence of leg disorders.

Now a days genetic modification activities has developed high yielding broiler that gets market weight in short time based on fast growth rates and improved feed conversion. Rapid and accelerated growth from genetic modification has several health and welfare concerns. Disease from skeletal system and circulatory system are common in improved genetic broilers. About 2% of broilers are condemned or down-graded during processing due to leg abnormalities [4]. The potentiality of broiler is not met due to environmental factors. Therefore associate improvement of the assembly and its protency only depends on the standard of environmental management.

### Light intensity

Broiler behavior is powerful of candle power. Generally, brighter light increases the activity of broiler, while lower light intensity can lead to cannibalism [5]. Producers often use trendy electronic system to extend candle power for brief periods throughout grow out to extend exercise and thereby cut back skeletal and metallic disorders. Young chick generally prefers brighter light. The growth and development is better in blue or green light over red or white light.

### Light duration

Lighting duration that is photoperiod is the second major aspect of light that alters broiler performance. Most analysis involving light-weight management has targeted on this issue. The study showed better broiler performance at continuous lighting [5]. Lighting length is generally dependent upon the age of chickens concerned and sort of housing in use. Research and discussion continue in an attempt to define the optimal photoperiodic regime suitable for chickens. However, broilers need to be provided four hour for sleep, but they, may require higher hours at certain points of growing period.

### Darkness

Study has shown that darkness is as vital to growth and health of broilers as light-weight. Darkness in early in life can cut back feed intake and steady growth [6]. Reduced early growth that enhanced leg strength was planned because the explanation of this result. Broilers reared under longer periods of darkness are found healthier than under long daylight conditions. Melatonin, secretion from the epiphysis is concerned with rhythms and digestion, and secretion of lymphokines. Daily dark periods are necessary to ascertaion traditional humor patterns of integral secretion. Melatonin is released during darkness. Birds grown in spare darkness have fewer health issues, including certain death, spiking mortality and leg problem than those maintained in continuous or near continuous light.

### Constant light

If photoperiod is maintained constant, shorter day length is related to slower growth. The slower rate of growth is due to reduced feed due to shorter daylight. Even if the sufficient photoperiod is not provided broiler eats at dark. Continuous light disrupts the diurnal behavior and may have some benefits. Further, continuous light will be stressful and results in greater mortality. However introduction of a moderate day length of 16 hour results lower physiological stress, improved reaction, increased sleep, increased overall activity, and improvement in bone metabolism and leg health. Furthermore, lighting schedules also reduce growth-related mortality including sudden death syndrome and improve productivity.

### Color

Color of light exerts variable effects on broiler performance. There is somewhat equal distribution of wavelengths in day. Birds sense light through their eyes and through photo sensitive cells in the brain. Blue light weight stimulates growth in chickens while orange red stimulates reproduction. Light of various wavelength has varied stimulatory effects on the tissue layer and might end in activity changes that may have an effect on growth and development. The four most vital visual skills of poultry area unit spectral and flicker sensitiveness still as accommodation and acuity. Domestic fowl have variety of diversifications to their color equipment not shared by humans. The additional photoreceptor in fowl is a double cone, but its function is not clear, though it does respond to incident light. Broilers under blue and green light became significantly heavier than red or white zone. Green light accelerates muscle growth and stimulates growth at an early age, whereas blue light stimulates growth [7,8].

## Conclusion

Light management is the vital element of broiler production. Wavelength and intensity area unit are vital in activity modifications whereas exposure of broilers to darkness is crucial to bird health. It is very important to understand how light affects broiler production. More importantly poultry producers need to manage light more crucially. Using light weight as some way to discourage birds from giving birth eggs during bound space has conjointly verified to be very effective. Many broiler firms might not be experiencing the complete result of restricted light weight regimes as a result of the programs don't seem to to be applied systematically. Much is understood regarding the consequences of the lighting on production; however the welfare of birds could also be affected is lacking. To assess this meaningfully, it is important to understand iluminance and photoperiod effects on functional development of eye and vision. Thus we must understand the response to light environment before lighting in broiler houses for poultry well being.

## Bibliography

1. Olanrewaju., *et al*. "A review of lighting programs for broiler production". 5.4 (2006): 301-308.

2. Deep A., *et al*. "Effect of light intensity on broiler production, processing characteristics, and welfare". *Poultry Science* 89.11 (2010): 2326-2333.

3. Buyse J., *et al*. "Effect of intermittent lighting, light intensity and source on the performance and welfare of broilers". *World's Poultry Science Journal* 52.2 (1996): 121-130.

4. Rahimi G., *et al*. "The effect of intermittent lighting schedule on broiler performance. 4.6 (2005): 396-398.

5. Cherry P and Barwick MJBPS. "The effect of light on broiler growth: II. Light patterns". *British Poultry Science* 3.1 (1962): 41-50.

6. Cravener T., *et al*. "Broiler production under varying population densities". *Poultry Science* 71.3 (1992): 427-433.

7. Beane W., *et al*. "The effect of light on body weight and feed conversion of broilers". *Poultry science* 41.4 (1962): 1350-1351.

8. Classen H., *et al*. "Effects of increasing photoperiod length on performance and health of broiler chickens". *British Poultry Science* 32.1 (1991): 21-29.

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