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Poultry Housing Tips

Dimmable Fluorescent Lights

Volume 10 Number 11 **October, 1998**

There is a new compact fluorescent lighting system on the market for broiler houses which has generated a significant amount of interest among both poultry companies and producers. The reason for the interest is that the new compact fluorescent light bulbs are said to be dimmable, produce more light, use less electricity, and emit a green light which is claimed to improve bird performance.

The new compact fluorescent light bulbs and ballasts look similar to those used by the poultry industry for the last ten years. A nine-watt fluorescent U-tube snaps into a ballast which then screws into a conventional incandescent light bulb fixture. Unlike compact fluorescent used in the past, the new lighting systems operate off of 240 volts instead of 120 volts, which requires some rewiring of houses. Though the bulbs look like conventional fluorescent U-tubes, when turned on they emit a light green light. The light bulbs are wired through a transformer which controls light intensity and has three settings: high, medium and low.

As with any new product there are a number of questions about the claims made by the manufacturer:

1) ***Are the new compact fluorescent light bulbs truly dimmable?***
Yes, you can dim the light bulbs, but not very much. Tests conducted at the University of Georgia found that the medium setting reduced light output by about 10%. Going from the high setting to the low setting only reduced light intensity by approximately 20%. Considering that most producers that dim their lights try to reduce light intensity by 50% or more when going from a brooding setting to a growout setting, it is highly questionable whether the system dims an adequate amount.

2) ***Does the new lighting system produce more light?***
The new lighting system was tested with both nine-watt green light tubes and conventional nine-watt white light tubes. The green light tubes produced approximately 50% more light than the conventional white U-tubes. It is important to note that just because the green U-tubes lights produce more light does not necessarily mean that the birds think the house is brighter than it is using the dimmer white U-tubes. The human eye is different than the chicken eye in terms of how it reacts to light of different wavelengths (colors). Our eyes may respond more to green light than those of the chicken. In a house with green fluorescent light bulbs we may think it is brighter because we see better in green light than a chicken does. The chicken may actually think the house is darker with the "brighter" nine-watt green lights than in a house with conventional nine-watt white lights. For instance, chickens may perceive the light produced by the green nine-watt U-tubes as a 60-watt light bulb dimmed down 70%.

One advantage of this difference in how humans and chickens perceive green light is that a grower can walk through the house with green lights and see very well to check on feeders and waterers as well as to pick up daily

mortality and the chickens will remain calm because they perceive the house as being darker.
The problem with the green nine-watt U-tubes is that the research has not been done to know how to equate green light with white light. Is the light a green nine-watt U-tube produces the "same" amount of light as a 15-watt incandescent light, or a 40-watt incandescent light? Right now all we can do is guess.

3) Does the new lighting system use less electricity?

Fluorescent light bulbs use approximately 75% less power to produce the same amount of light as incandescent light bulbs. Therefore, switching from an incandescent lighting system to **ANY** fluorescent light system will significantly reduce a grower's electricity bill. The difference in electricity usage between the new fluorescent lighting system and traditional compact fluorescent lighting systems would be minimal if any.

4) Because the light bulbs produce more light, are fewer needed?

Even though the green fluorescent light bulbs produce more light than traditional white light bulbs, you probably should not reduce the number of light bulbs from what you are presently using. The farther apart light bulbs are spaced, regardless of how much light they produce, the more variation in light intensity you will have on the floor of the broiler house. Increased variation in light intensity will mean that there will be dark and bright spots in your houses which may cause production problems.

5) Do birds perform better with green light?

This is probably the most controversial claim of the new lighting system. Birds do appear to be less active when grown in a house with green lights than they do when grown in a house with traditional white lights. This appears to be true even if the light intensity is higher in the house with green lights than it is in the house with conventional white lights. But, has this reduction of activity been scientifically determined to result in increased bird performance? One would expect better bird performance with decreased bird activity, but scientific studies on the use of green or alternate color lights have shown varying results. Some studies have indicated some benefits while about an equal number if not more have shown no effect. There do not appear to be any studies which have indicated any significant negative effects.

Some points to consider when evaluating any new product:

1) *Scientific papers.*
   If someone claims scientific studies have been conducted on their new product, insist on seeing a full and complete copy of the original written report of the study. Read the report carefully to determine exactly what the researchers have found. You may want to contact a poultry scientist or engineer at a university to get their input and opinion on the scientific soundness and validity of the study.

2) *Field trials.*
   Was the study conducted on a farm with identical houses (same house age, construction, ventilation and heating system).

   At an absolute minimum, the study should be conducted on a farm with at least four houses (one half of the houses with new product or system, one half with the old product or system).

   All birds on the farm should come from the same breeder flock or same mix of breeder flocks.

   Results should be repeatable over multiple flocks.

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