

Poultry House Lighting Tips

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The poultry industry continues to see lighting problems related to a variety of issues including farm wiring, screw shells, lamp style, light dimmer incompatibility, and quality of LED lamps. However, the problem is not as complicated as we are making it out to be. Let's think about this for a minute.

First, **you get what you pay for**. LED lamps designed for home usage are ALL omnidirectional (give complete room coverage; walls, ceiling, and floor) and are low-priced. That works fine in a less demanding environment such as a home or office. However, these lamps do not work well in a harsh, more demanding poultry house environment where all the light needs to be directed to the floor (where the chickens are), the low light level requirement of the poultry industry challenges lamps and dimmers, and we are constantly dealing with dust, humidity, moisture, and ammonia. If a grower purchases LED lamps designed for home use and puts them in a chicken house, expect problems because they were not made for that purpose. For best performance in the chicken house, choose lamps with a directional beam angle that places nearly all the light on the floor, allows full dimming capabilities, and are rated for agricultural use.

LED lamps rated for agricultural use are heavier because they have a better heat sink and use more expensive components to increase life expectancy, offer 100 percent dimming, and withstand the harsh poultry house environment. Know what you need when you visit the poultry supply store and make sure that is what you get. Look at the box and make sure the wattage and Kelvin rating is correct. Don't just ask for an LED lamp and expect to be handed what you need.... check to make sure you have what you need!! Don't mix wattages, Kelvin ratings, or lamp brands. You won't be happy with the results if you do.

Second, **all light dimmers and all LED lamps are NOT compatible.** Early on, we never gave this much thought and we now have multiple combinations of lights and dimmers out there. Unfortunately, we now know that **many of these combinations were never meant to be combined** and simply do not work well together. Dimmers that were great at dimming incandescent style lamps are often not compatible with modern LED lamps. These older dimmers are often Leading Edge dimmers and are not designed to handle LED technology.

LED lamps in a poultry house should only be paired with a Trailing Edge light dimmer. Trailing Edge dimmers are much newer and more sophisticated than Leading Edge dimmers and provide smoother dimming control with less interference. They have been designed specifically for use with low-wattage LED lamps. What this means is that, if you are using LED lamps, with a Leading Edge dimmer, you may experience lamp problems. You should switch to a Trailing Edge dimmer NOW! Switching will solve a multitude of problems associated with strobing, flickering, uneven dimming, excessive lumen depreciation, and premature lamp failure. If you're not sure what dimmer you have, ask; there are folks that can help you. Talk to other growers, live production personnel, and Extension Service folks who have experience with multiple LED lamp and dimmer brands.

Also, realize that LED lamp manufacturers are now aware that Leading Edge dimmers and LED lamps are NOT compatible. Some lamp manufacturers have already informed distributors that **lamp warranties are void unless light dimmers are upgraded** and compatible with LED lamps. Growers using anything other than a pure Trailing Edge dimmer may find it difficult to maintain their lamp warranty. Be aware that for dimmers with both Leading and Trailing edge capabilities, lamp manufacturers may likely choose to void the warranty because they cannot verify if lamps are being operated on a Leading or Trailing edge dimmer channel.

Often a grower, service tech, or catch crew will switch levels or dimming curves on the dimmer trying to find the best low-level dimming, unaware that, if they end up on a Leading Edge channel, they may be damaging the lamps.

Third, **retrofitting an older farm with LED lamps may require a wiring system inspection and/or upgrade**. Moisture and ammonia over the years may have corroded fixtures and screw shells. Have a professional electrician check the wiring, connections, and screw shells. Understand that **nickel plated brass screw shells are best** to deliver optimum LED performance. Poultry house conditions are extremely hard on equipment and if keyless sockets are more than about three years old...particularly if they are not nickel plated...they should, at a minimum, be inspected, and may likely need to be replaced. Lighting programs are a critical part of broiler production today. It's important not to leave money on the table because of wiring issues, faulty sockets, an incompatible dimmer, or the wrong LED lamp. LEDs are proven, big-time money savers. However, for them to do that for us, we must take care of them.

Fourth, **light leakage near cool cells and tunnel fans can have a negative effect** on even the best lighting programs. However, providing the optimum lighting environment is critical to bird welfare, physiological processes, and production efficiency. Light leakage at the fan end may affect the lighting program in much of the house. Fan shades should be considered as a possible remedy to this lighting problem.

The following are tips to assist growers with their poultry house lighting program:

1. **Have an electrical professional check your farm and poultry house wiring** (annual check-up). Be sure all connections are secure. Many farm/house wiring systems are in need of service or upgrade. Make sure that lighting circuits have their own dedicated neutrals (not a common neutral) and good earth grounds.

2. **Be sure your screw shells are not corroded and fixtures are intact and tight.**

Nickel plated brass screws shells should be used for best LED lighting performance.

Understand that one malfunctioning keyless socket on the line will affect the lighting operation of the entire house.

3. **Closely follow your company's lighting program.** Intensity of light vs. days of age in the grow out are constantly changing and must match the birds' genetics and feed.

4. Don't trust your eyes to be sure the light level is correct. **Buy an approved light meter and learn how to use it.** Frequently check light levels at floor level between feed and water lines periodically during the grow out.

5. Understand that **all dimmers and lamps are not compatible.** The old Edison bulb dimmer is not compatible with modern LEDs. Be sure your LED lamps and dimmers are fully compatible and operate smoothly from maximum intensity to lowest intensity. Poultry house dimmers should be Trailing Edge (reverse phase) to avoid LED lamp damage and promote longer lamp life.

6. Most **big box store LED lamps are designed for homes**, with two goals in mind: Complete room coverage (omni-directional) and low price (typically inexpensive components, sketchy dimming performance, and shorter life). In a poultry house's harsh environment, our goals are to direct nearly all light to the floor where the birds are, dim much lower and longer than in a home, and maintain longer LED lamp life by using LED lamps with a directed beam angle.

7. Light intrusion and light leakage are huge problems which can totally spoil the good effects of a solid lighting program. Light intrusion occurs through various leaks and cracks, through vent boxes that do not have some sort of shades, and during tunnel ventilation when tunnel fans are running. Multiple tunnel fans running can destroy your lighting program for at least 30 or 40 percent of your house. **Consider fan shades on all tunnel fans** to help brown out the tunnel end of you your house.