The University of Georgia

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Cooperative Extension

Poultry Housing Tips

Power Usage of Dimmed Incandescent Light Bulbs

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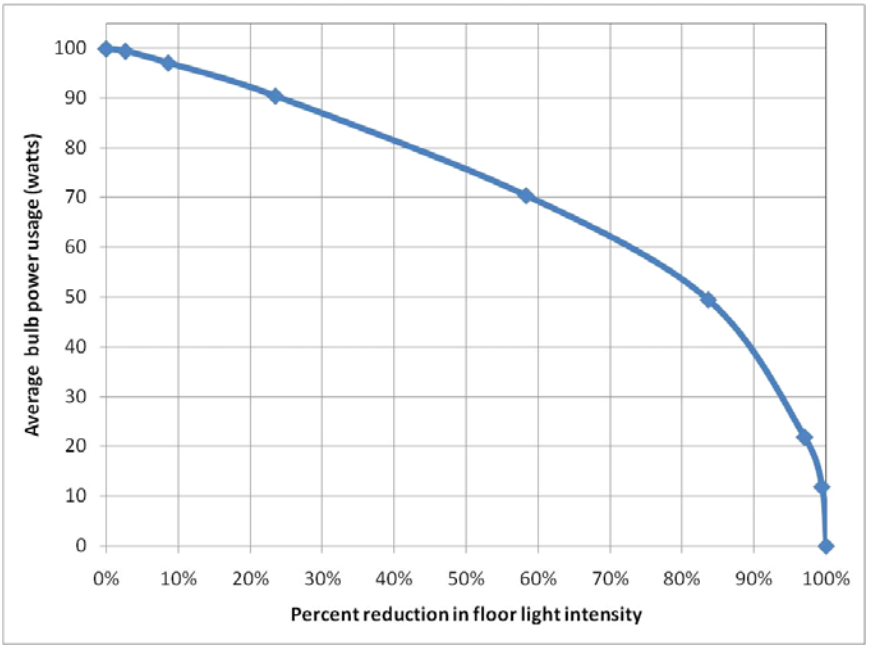

Figure 1. Average power usage of a 100 watt incandescent bulb as it is dimmed using an electronic dimmer.

Electronic dimmers have proven over the years to be an indispensable tool allowing poultry producers to precisely control lighting levels over the course of a flock. Though very effective in dimming incandescent light bulbs, many producers wonder if electronic dimmers are as effective in reducing lighting costs as they are in reducing lighting intensity. The fact is that power usage is does go down as incandescent lights are dimmed. The only problem is that the reduction in power usage is not proportional to the reduction in light intensity. That is, a 50% reduction in house light intensity, doesn't result in a 50% reduction in power usage.

Figure 1 is a fairly typical representation of how the power usage of a 100 watt incandescent light bulb is affected by a modern electronic dimmer. The graph was developed by measuring the total power usage of an entire house of 100 watt light bulbs, as well as the electronic dimmer, divided by the number of bulbs to obtain an average per bulb power usage. From the graph, it can be seen that power usage of a bulb doesn't drop off as fast as the amount of light produced as it is dimmed. For instance, a 50% reduction in floor light intensity only reduced the power usage of the 100 watt bulbs to approximately 75 watts, only a 25% decrease in power usage.

Figure 2 presents the information in Figure 1 in a slightly different fashion. In Figure 2 the reduction in power usage is graphed as a function of the floor light intensity. From this graph, it can be seen that a 25% reduction in floor light intensity will result in a 10% reduction in incandescent bulb power usage. A 80% reduction in light intensity will reduce power usage by approximately 45%. So though a dimmer does reduce power usage, as a general rule, the reduction in power usage is roughly half the reduction in light intensity. This relationship holds true no matter what wattage incandescent bulb you are dimming with an electronic dimmer.

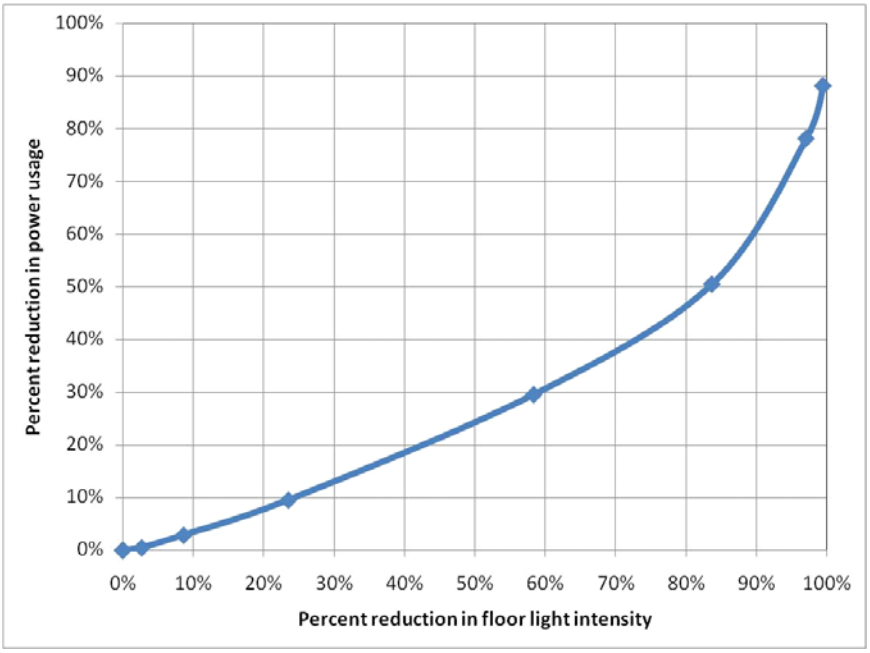

Figure 2. Power usage as a function of floor light intensity.

It is important to realize that the dimmer itself uses a negligible amount of power at any setting. In fact, the typical dimmer uses less than 50 watts of power (interestingly enough, it uses the most amount of power when it is dimming the least). Dimmers can appear to be consuming a significant amount of power due to the heat the internal electronics tend to produce. Though it may seem to be a significant amount of heat, it is typically less than that produced by a single 60 watt incandescent light bulb.

So the good news is that though those 30, 100 watt incandescent light bulbs you use during brooding may be costing you $5 a day operate, when you dim them down 80% or so for the remainder of the flock you are at least cutting their power usage in half. If you dim them further, your power savings will be even greater.

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