



IMPACT OF TARP COLOR ON POULTRY LIGHTING

INTRODUCTION

Around the world, many chicken farms are open sided without solid walls. These houses usually have curtains or tarps to help block the sunlight, control the temperature, adapt behavior, improve ventilation, or a combination of reasons. Many different color curtains have been observed in use; however there is not always scientific reasoning for the color of curtain utilized. In recent years, the impact of light color, spectrum, and bulb style have been shown to impact growing pullets and laying production.



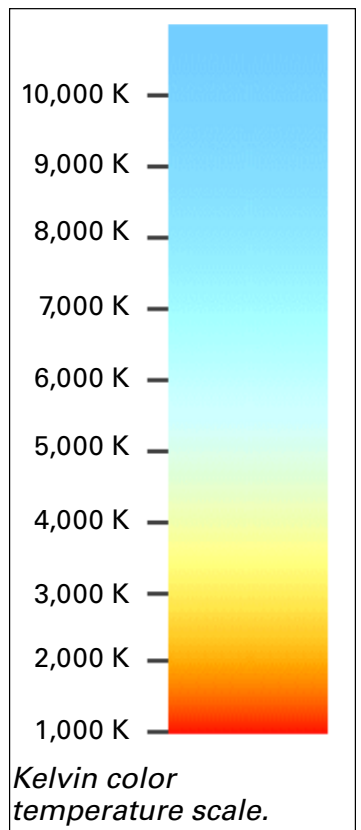
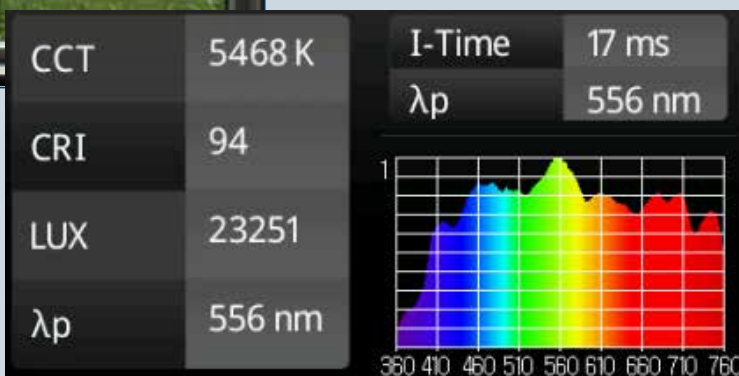
In general, research has proven that cool lights (4000–6000K) with a more blue-green color spectra help increase pullet growth, while warm lights (< 3000K) with more red-orange color spectra help increase egg production. All of the research was done with different color and different style light bulbs. Curtains act as a filter for sunlight coming into the house, and this filtered light may have an impact on pullet or layer performance.

The impact of curtain color depends on both the type of bulb used inside the house (if one is used) and the amount that the light filtering through is used for lighting the birds. The goal of this technical bulletin is to better understand the impact curtain color has on sunlight, and discuss how this might influence the flock's growing and laying performance.

SUNLIGHT



- Bright day with a few light clouds
- May 31, 2016
- The window glass and angle of the sunlight dimmed the light from > 100,000 lux down to around 23,000 lux



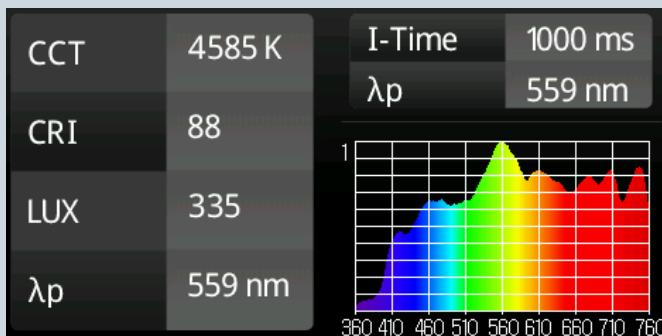
> 4000K: cool, dominant blue spectrum

3500K: neutral and balanced with red, green and blue spectra

< 3000K: warm, dominant red spectrum

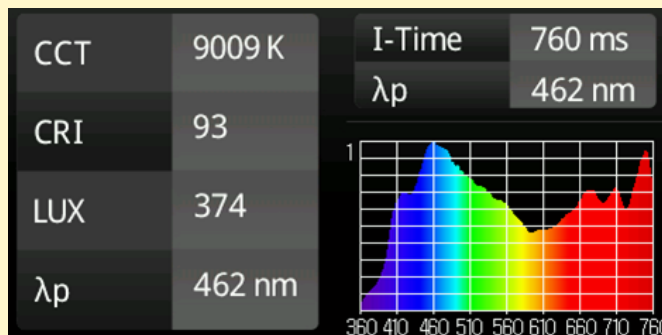
Technical Update – IMPACT OF TARP COLOR

SUNLIGHT WITH BLINDS



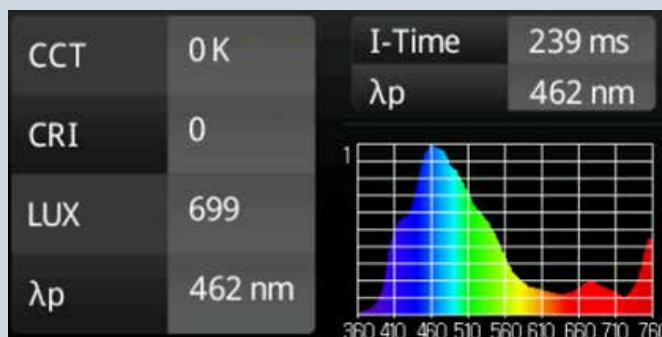
- Closing the blinds most of the way removes some of the blue spectrum
- Overall the spectrum looks very similar to sunlight
- The light intensity is 2 log lower

SILVER/BLUE



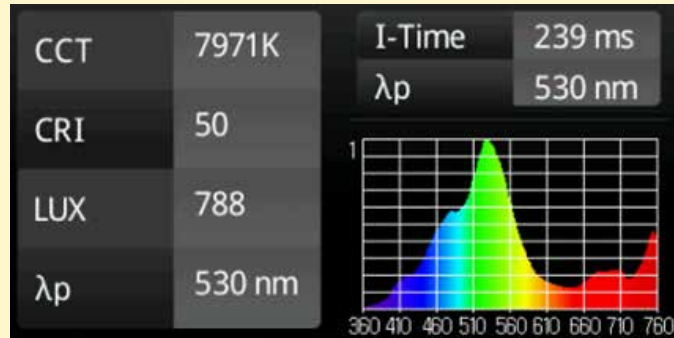
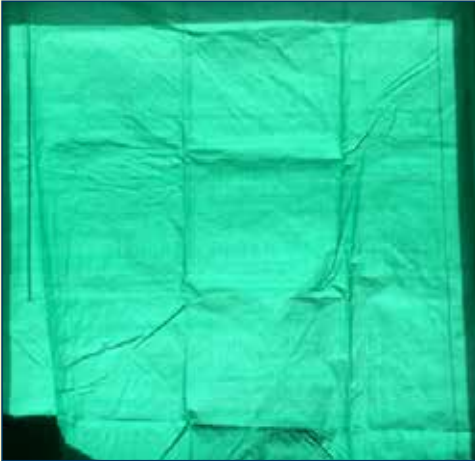
- The silver blue tarp has two peaks of light with both blue and red coming through
- Allows a full spectrum of light through while providing good dimming from the full sun
- Good tarp for layer houses or pullet houses

BLUE



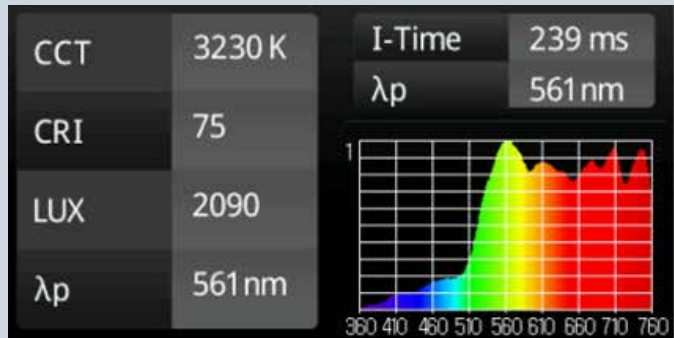
- Removes almost all of the red spectrum
- May be good for calming birds but red spectrum is vital for keeping good egg production
- Not recommended as sole light source for a layer house
- Would be excellent for use in a pullet house

GREEN



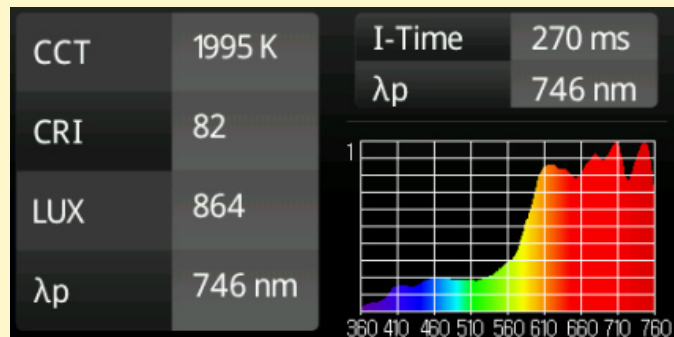
- Allows some blue spectrum and very little red spectrum
- Some yellow and orange spectrum comes through (not ideal for the sole light source of a layer house)
- Excellent for use in a pullet house

YELLOW



- Allows full spectrum of yellow, orange, and red light through while blocking blue and part of green
- Yellow curtains were least effective at dimming the light; measured light intensity was more than twice that of any other tarp
- Would not provide enough light blocking to be used in a layer house even though the spectrum is ideal

ORANGE



- Allowed the second-most light through, but was still more than half of the yellow tarp
- The yellow tarp started allowing light to pass the curtain around 560 nm, while the orange tarp starts around 610
- Would be a good layer curtain if more light was blocked

RED



- Red curtains provide the most dimming of incoming light
- The first peak of light is around 636 nm, which is ideal for stimulating laying hens
- The combination of light blocking and red spectrum makes this a very good tarp choice for laying hens

SUMMARY

The curtain color exerted a significant effect on the intensity and color spectra of incoming sunlight. This study illustrates that curtain color should be an important consideration in house design.

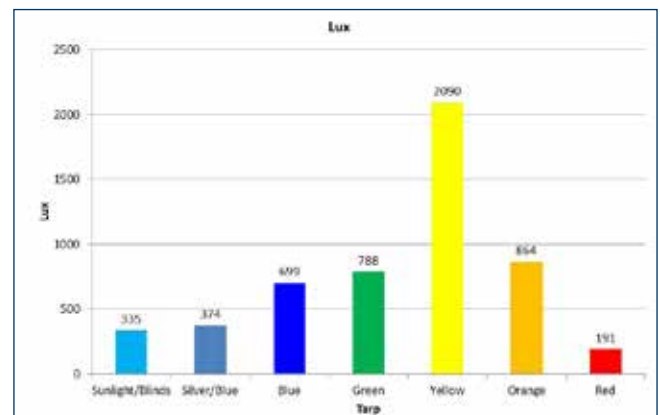
Tarp colors providing a color spectra that would benefit pullets: blue, green, silver-blue.

Tarp colors providing a color spectra that would benefit layers: orange, red, silver-blue.

We did not test white or black tarps because of the variation in materials used in production of those tarps. It would be expected that a white tarp will not block any spectra, but will create various levels of shade. A black tarp would be expected to completely block any sunlight from coming through the curtain.

Overall, it is important to understand the light dimming ability of the curtains you are using. Due to tarps differing in thickness, test a tarp with a regular light meter to see how much light is being blocked. Additionally anticipate a logarithmic scale difference in light intensity if curtains are raised and lowered throughout the day/week/month/year.

Finally, understand the difference in light intensity between light coming through the tarp and light from the light bulbs. If the light coming in from the tarp is far greater than what is from the light bulbs, this may have an impact on production. Furthermore, LED lights can be selected to provide a more compatible spectrum with tarp light than compact fluorescent lights (see the "Understanding Poultry Lighting" technical bulletin at www.hyline.com).



Light intensity with different colored tarps.

