

## Can blue light be your key to increased yields? The potential benefits of blue light and Stomata manipulation.



The Stomata are the pores usually found underneath in the outer layer, or epidermis, of the leaves. They function as the plants lungs by taking in CO<sub>2</sub> and releasing oxygen and water, thus controlling gas exchange and photosynthesis. The Stomata open in the morning and close up over the course of the day. Knowing how the Stomata function allows growers to use them to improve plant health and biomass.

First, the Stomata respond to blue light. At the CEAC LED Symposium in Tucson, AZ we learned about exposing crops to a moderate level of blue light for ~30 minutes before the normal photoperiod begins. Doing so allows for the stomata to open fully and “get ready for business.” The plant can start the gas exchange the moment they are exposed to full spectrum light. This proves especially helpful in growing environments using CO<sub>2</sub> to increase yields.

**If you want to begin testing stomata manipulation by introducing a 30 minute wake up period, one would need to pay close attention to humidity, a potential slight increase in potassium levels (K<sup>+</sup>), and available water to the roots. Increasing the intake of CO<sub>2</sub> will increase transpiration, also controlled by the stomata, and eventual water uptake from the roots. Thus, in times of limited water the plant will sacrifice CO<sub>2</sub> intake and slow photosynthesis. It is therefore important that growers find a balance between water, CO<sub>2</sub> and stomata manipulation.**

### **A second noted benefit of “blue light wake-ups”**

If you have a hungry plant or a sudden specific nutrient deficiency, you can use the open

stomata to apply a foliar fertilizer to the undersides of the leaves. This is a way to rapidly deliver nutrients.

In general, the morning is the best time to utilize this technique and the blue light stimulation can further enhance the benefits. The stomata are wide open and it gives a chance for the plants to dry.

Interestingly enough, the stomata are used to determine the CO<sub>2</sub> concentrations in paleo environments. In atmospheres with higher concentrations of CO<sub>2</sub> there are fewer stomata on the plants in the fossil record. In paleo environments low in CO<sub>2</sub>, more stomata were needed to ensure enough gas uptake to effectively ensure photosynthesis.

Growers are already seeing the [flowering benefits of using Heliospectra light recipes](#) with shorter flowering periods using end of day far-red treatment. What would a combination of higher yields and faster flowering mean for your business?

If you are ready to find out how Heliospectra can help you accomplish this, [contact us today](#).

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