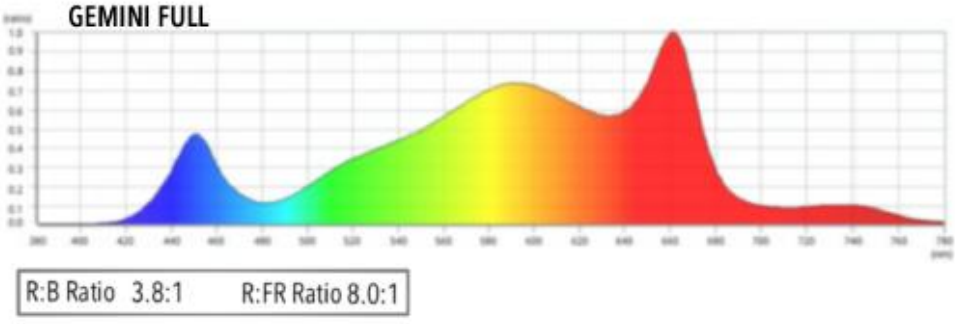
GEMINI for Flowering Rooms – Best Practices Guide

A 9-week flower duration has been shown to produce increased flower sizes and overall yield. This guide will take you through suggested light settings for each stage of growth during this period. It is important to also consider CO2, nutrient concentration, Soil Moisture, and PVD for optimal results.

Below are images of the GEMINI Light, the GEMINI light controller, an indoor grown hemp plant in the flowering stage, and a lighting spectrum that is emitted from the GEMINI under the **FULL** auto light setting.

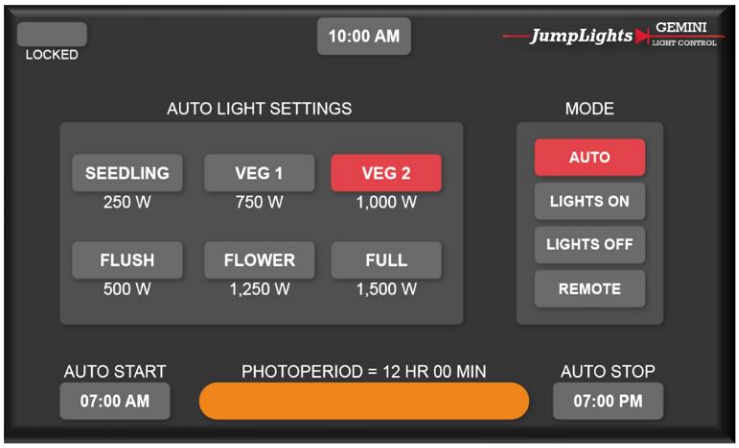


Week 1 (Preset: Veg 2; Photoperiod: 12 HR; Mode: AUTO)

The first week of flowering can be done using the **VEG 2** setting. This setting has a Red:Blue ratio of 3:1 which means there is relatively more blue and less red than both the "FLOWER" and the "FULL" light settings. The power level for **VEG 2** is 1,000W; which is enough power for flowering but at the same time – less power than the "FLOWER" and the "FULL" light settings.

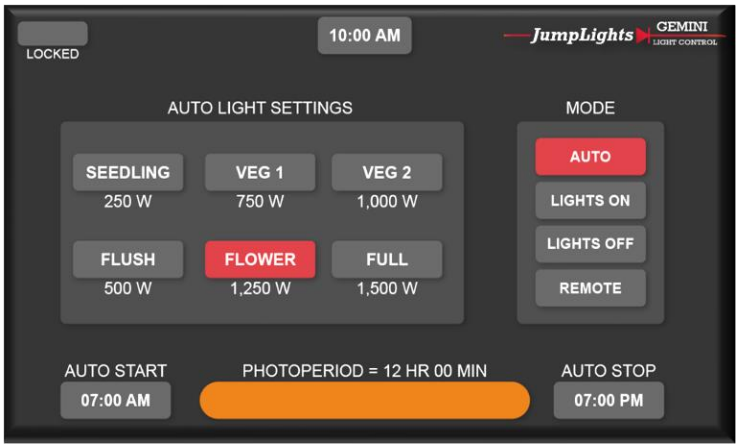
The benefits of having relatively more blue and less red and far red in the first week of flowering are less stretch and easier visual inspection. The first week of 12-hour photoperiod light duration will induce flowering, but before the signs of the first flowers appear, the plants will still act as if they are in the vegetative state and are preparing the roots and shoots for optimal nutrient reception and assimilation. This is also helpful if any physical manipulation of the branches will take place.

VEG 2 has an optimal power level for the first week in flowering. This is because the light intensity at the canopy will be around 600 $\mu mol*m^{-2}s^{-1}$ – enough intensity to provide strong root and shoot development before signs of first flowers and also enough light intensity to prevent stretch. This power level is low enough to maintain cooler temperatures within the room – possibly accelerating the date of first flower due to temperature differences (vernalization).



Week 2 or First Signs of Flower (Preset: FLOWER; Photoperiod: 12 HR; Mode: AUTO)

At first signs of flower, the light setting may be set to the **FLOWER** light setting, as shown below.



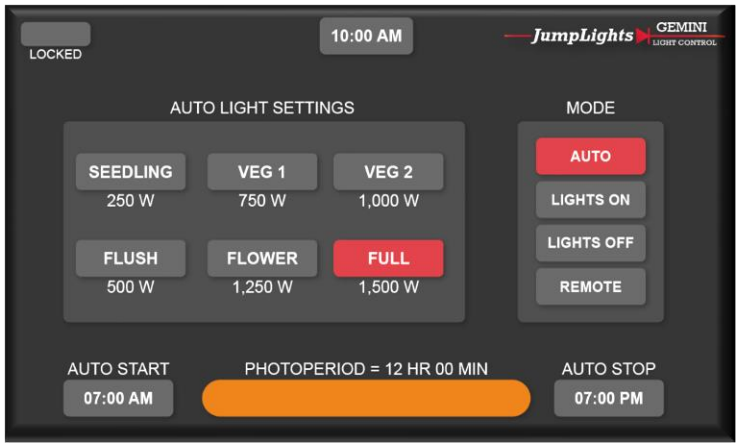
Signs of flower development mean that the plant will now assimilate nutrients to develop the flowers more fully. The higher R:B ratio of 3.9 and lower R:FR ratio of 7.9 in the **FLOWER** setting allow the development pathways for flower growth to be optimized.

This setting of 1,250W power will provide more than 800 $\mu mol*m^{-2}s^{-1}$ of light intensity at the canopy while limiting heat and power use. This amount of light is effective while the inflorescence is smaller and the plant is not quite ready for peak light intensity.

Week 5 (Preset: FULL; Photoperiod: 12 HR; Mode: AUTO)

At week 5, there should be strong flower development and enough leaves present to accept high light intensity for photochemical conversion. This is when the light setting may be switched to the **FULL** setting.

It's been shown that increases in light up to 1,500 µmol*$m^{-2}s^{-1}$ will provide an increase in net photosynthetic rate. The GEMINI's capability at full power and 1,500 Watts is greater than 950 µmol*$m^{-2}s^{-1}$. This high light intensity is very effective for the plant in this phase, with high rates of photosynthesis and a great emission spectrum having a R:FR ratio of 8.0 and a R:B ratio of 3.8:1. All of this is possible with the GEMINI, even at less than 800 Watts per 4' x 4' canopy area. It is recommended to keep the temperature in the room between 25 and 30 °C and increase the CO2 levels to around 700 µmol.



Week 8 (Preset: FLUSH; Photoperiod: 12 HR; Mode: AUTO)

In the final stage before harvest, it has been shown that simulated drought conditions increase flower size, concentration of cannabinoids, and yield. The **FLUSH** preset is perfect for this. The R:B ratio of 2.7 is the lowest of the flower stage settings, allowing for ease of visual inspection to see when the trichomes are perfect for harvest. This setting is also only at 500W which is ideal for drought conditions. When the plants are undergoing a stress condition such as drought, it is preferrable to use lower light levels as to not damage the plants.