

Summary tomato trial

- **Date:** June 2021
- **Cultivation:** Tomatoes
- **Location:** World Horti Center
- **Researcher:** HortiTech

In the World Horti Center (WHC) in Naaldwijk, two 76.8 m² departments were used to test how the crop responds to the Climalux CLX V1000 lighting for 36 weeks. The study started with three stems per square meter, but was increased to four stems per square meter in week 10, 2021. The trial ended in week 22 of 2021.

In week 37, 2020, tomato plants of the Annico van Enza Zaden variety were planted in departments 2 and 3 at Verify, location World Horti Center in Naaldwijk. Ten Climalux CLX V1000 lamps were installed per department of 76.8 m², with a maximum power of 1000 Watt per lamp.

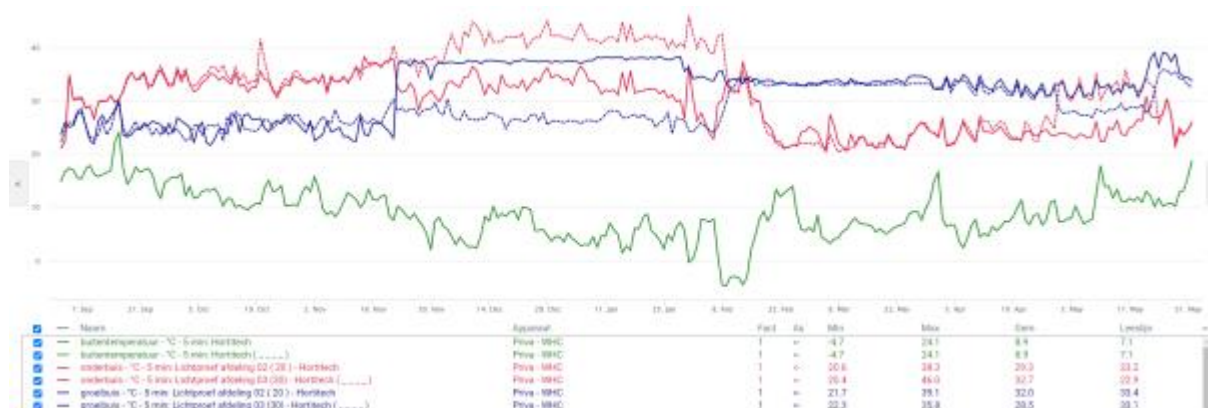
Due to the relatively small departments, a larger number of lamps than usual in practice was chosen, resulting in more lamps per square meter for the most realistic possible light distribution. To keep the test comparable to the practical situation, the dimming function of the lamp was used.

During cultivation, an average of 403.05 kWh/m² of electricity and 11.11 m³/m² of gas was consumed in section 2. In section 3, 401.40 kWh/m² of electricity was consumed and 12.83 m³/m² of gas. It should be noted that the research department is enclosed by other departments and therefore does not have a facade in contact with the outside air. The consumption values may have been slightly positively influenced by this, but correction of the measured values was not possible.

Energy

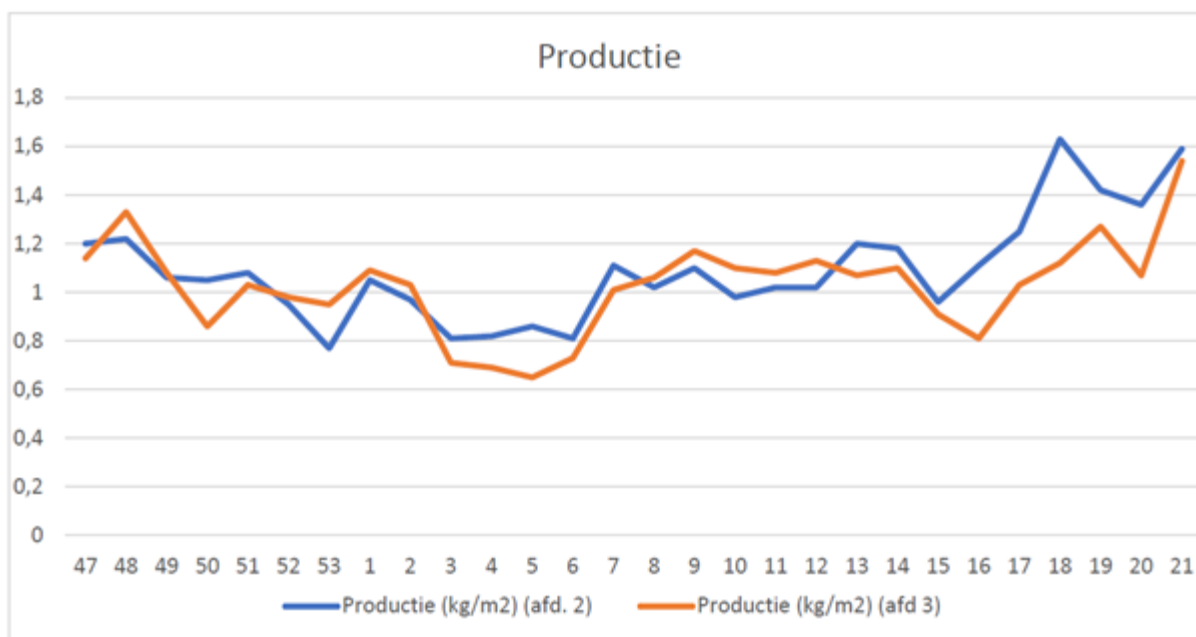
The existing heating network of the greenhouse was used to heat the cultivation. A pipe rail network with 10 pipes of 45 mm in diameter, lying on the ground and a growth pipe network with 4 growth pipes, 40 centimeters above the cultivation mat. The cultivation strategies applied are based on exposure time, light intensity during the day and day and night transition.

The graph below clearly shows that department 2 was heated primarily with the growth tube and department 3 was primarily heated with the pipe rail. The energy savings that are achieved with this mainly come from fewer length meters of heating pipes in the growth pipe network.



Production

It has been shown that a good harvest result is achievable with the Climalux CLX V1000 during the cultivation period between week 37, 2020 and week 22, 2021, if the right strategy is applied. It has been shown that by capitalizing on the advantages of the CLX V1000, high production can be achieved in 'difficult' production times.



This graph clearly shows that it is not the fruit weight but the number of pieces that determines the production. The graph shows the fruit weight and the number of pieces in the left vertical axis and the production in kilograms/m2 in the right vertical axis. The final production in department 2 was > 30.6 kg/m2 and in department 3 > 28.74 kg/m2. The reference crop was in the middle of these two figures.

Conclusion

In summary, the following can be concluded from the trial:

- The application of the correct cultivation strategy in combination with the Climalux lighting system has a positive effect on both energy consumption and production;
- Reduced heat consumption;
- Significant reduction of gas and electricity consumption;
- All energy from the lamp, both light and heat, benefits the cultivation.
- A better microclimate through better air circulation, reducing disease pressure declined;
- A more manageable greenhouse climate, where less energy is lost due to unnecessary ventilation;
- Better control over the amount of light on the crop in conjunction with the light from outside the greenhouse.

Additional information

Would you like to know more about this tomato trial? Please contact Niels Damen, operational manager. He can be reached directly via n.damen@climalux.nu or +31 6 18 67 81 29.