



PHILIPS

Horticulture
LED Solutions

Case study
Desmet

Izegem, Belgium

Philips GreenPower LED toplighting

Higher lettuce yields **in the winter**

LEDs clear the way to higher production and better climate control



“

I want to get the highest yields of **the best quality crops** out of every square meter.”

Johan Desmet, Co-owner Desmet Lettuce Nursery



Background

Johan Desmet and Mirjan Vandoorne began the year-round cultivation of lettuce in Izegem, Belgium in 2004 with a greenhouse of 18,000 m². In 2012, this was expanded with a new facility of about 14,000 m², equipped with five meter high beds, a Combined Heat and Power (CHP) system, screens, and a transport system. They also installed a hydroponic MGS (Multi Gutter System) which makes it possible to grow lettuce on water. A variety of root ball lettuces are grown in the gutters. To increase the return on this intensive lettuce cultivation method, the owners decided to use Philips HPS lighting at 45 $\mu\text{mol}/\text{m}^2/\text{s}$ for the greenhouse lighting system.

The challenge

“With this intensive cultivation method in water gutters, I want to get the highest yields of the best quality crops out of every square meter,” says Desmet. To maximize

his production potential, he began looking for ways to increase the lighting levels. However, he quickly reached the limits of using the HPS to increase light levels given the constraints of the Benelux climate. More light means more heat in warm periods of the year, which can cause tipburn on the leaves. LEDs, on the other hand, produce less radiant heat and more light per Joule compared to the HPS. With LEDs it is also possible to control light and warmth separately. That’s why it is possible to increase the number of lighting hours and light levels. Based on this, Desmet expected to achieve much higher light levels with the LEDs. He contacted Philips to work out an efficient lighting plan.

The solution

In 2013 the Research Station for Vegetable Cultivation (Proefstation voor de Groenteteelt (PSKW) in Sint-Katelijne-Waver, Belgium compared Philips HPS lighting

and Philips GreenPower LED toplighting, at light levels of $50 \mu\text{mol}/\text{m}^2$, with each other. In the LED cell, red lettuce varieties showed better red coloration in the winter and had less tipburn damage. The Red Oak Leaf lettuce was compacter and the Lollo Rossa heads were significantly heavier. In the next trials, LED toplighting at light levels of $25 \mu\text{mol}/\text{m}^2/\text{s}$ was added to the HPS and LED cells and higher light levels were tested. This again improved red coloration and reduced tipburn damage in the full LED cell.

These trial results were the deciding factor for Desmet. He decided to equip the new facility with a full LED toplighting solution of $80 \mu\text{mol}/\text{m}^2/\text{s}$. Philips LED Horti Partner Mais Automatisering installed the 2,610 Philips GreenPower LED toplighting modules over an area of $14,460 \text{ m}^2$. With this system he can significantly increase production in the winter period.

Desmet made a conscious choice for Philips. "From the very start I believed in the potential of LEDs and I had the most confidence in the knowledge that Philips has."

“

Because the LEDs produce hardly any radiant heat,
**I can light the greenhouse when the exterior climate
is too mild.”**

Johan Desmet, Co-owner Desmet Lettuce Nursery

Benefits

The installation of this hybrid lighting system clears the way to higher production because the lights can be turned on at moments when the exterior climate is too 'mild'. The plants get the light energy they need at the right moment. By increasing light levels and lighting hours, Desmet expects to shorten his growing cycles. He predicts that the heads of lettuce will be stronger and more compact with a better red coloration compared to the situation with HPS lighting alone. The system has been running for a few months now and until now Johan is satisfied.

For Johan, LED technology is a possibility to further improve his business results. He firmly believes that with LED's he is no longer hindered in optimizing his production and that concessions do not have to be made. "I can fully push the accelerator and get as much production as possible from every square meter in my greenhouse."



Facts

Horticulturalist/grower

Desmet lettuce nursery

Sector

Vegetables

Crop

Lettuce

Location

Izegem, Belgium

Solution

Philips GreenPower LED toplighting

Philips LED Horti Partner

Mais Automatisering

Benefits

Higher production, more compact growth and better red coloration of the lettuce



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