



PHILIPS

Horticulture
LED Solutions



IWASAKI BROS.



Your recipe
for growth.

**Faster production.
Stronger rooting.**

Improve the growth of your ornamental
crops with Philips LED lighting

“ Evolution in lighting leads to **a revolution in growing**”

Through years of continued development and research by Philips Lighting in the use of LED lighting for a variety of horticulture crops, more and more growers are experiencing the wide-ranging benefits of growing under Philips GreenPower LEDs:

- Faster crop cycles
- Quicker and stronger rooting
- Compact growth
- More lateral branching
- Improved plant structure
- Reduced stretching
- Robust growth without PGRs
- Predictable growth

Improve your growing operations with not just light but the right light. The right light - Philips LEDs - enables you to grow and ship higher quality annuals and perennials, liners and plugs, seedlings, tissue culture and nursery stock with predictability and confidence.

Philips will help you use light to gain maximum value and return from your growing operations:

- Close collaboration with your Philips representative and Philips certified Horti Partner to understand your situation and devise a lighting plan that fits your growing needs and your financial situation
- Ongoing guidance and support of Philips Plant Specialists to ensure a crop-specific light solution to help you meet your growing objectives
- Accurate calculations and detailed lighting plans from our Light Specialists to support the most desirable outcomes in the most effective and efficient manner.



“

Overall, we took about one week to three weeks off of our grow time in the plug tray and we're not seeing as much of a transplant shock.”

Kathleen Baughman
Iwasaki Bros., Inc.



“

The Begonias rooted one week faster - it was amazing”

Dave Redoutey
Bordine's Farm

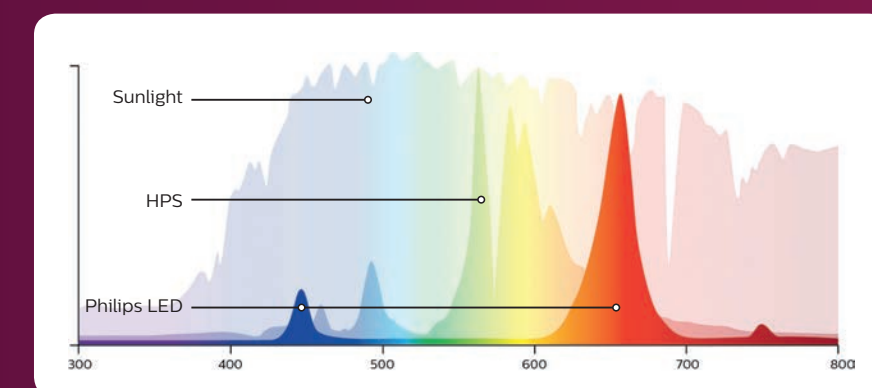
When **natural light** is not enough

Natural light often falls short on delivering what crops need for optimal growth. Never is that more evident than the short, cloudy, or foggy days of winter. Without supplemental lighting, a run of low light days can cause problems and delays in meeting your spring delivery dates.

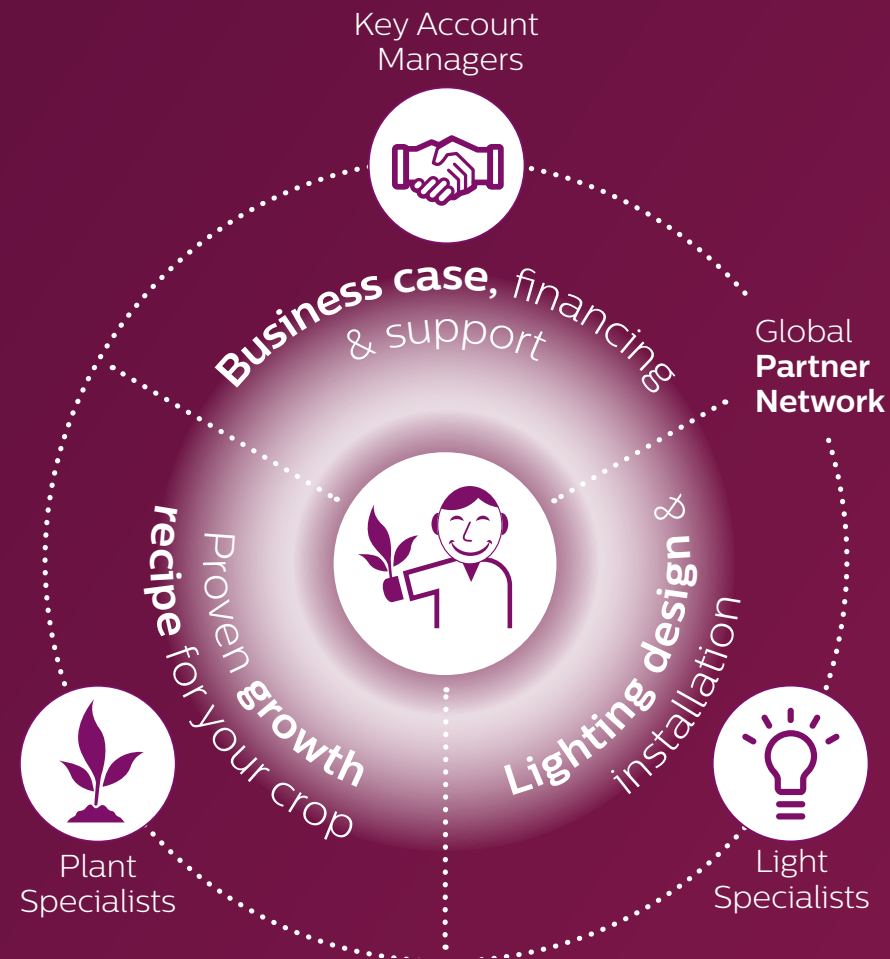
Philips LED lighting allows you to grow with greater predictability and confidence.

Not all light is equal

Light is energy that stimulates plant growth. The right light, called photosynthetic active radiation (PAR) light, powers plant growth. And unlike the PAR light of sunlight and HPS fixtures, Philips GreenPower LEDs deliver targeted PAR light in the focused wavelength of blue and red with the highest photosynthetic efficiency. This PAR light is proven to support optimal photosynthesis and improved plant development and morphology.



Helping your business **to grow**



Our approach

Let Philips help you use the right light to gain maximum value and return:

- Close collaboration with your Philips representative and Philips certified Horti Partner to understand your situation and devise a custom lighting strategy
- Continued guidance and support of Philips Plant Specialists to ensure crop-specific light solution
- Accurate calculations and lighting plans from our Light Specialists to support the most desirable outcomes



Light recipes: the right ingredients for every crop and growing phase

Philips knowledge of lighting includes almost a decade of dedicated experience developing light recipes that maximize light in a greenhouse environment

As the global leader in general lighting and horticulture lighting technology, Philips continues to collaborate with growers and research institutes around the world. The knowledge that is gained through these relationships is used to fine tune our GreenPower LED products to ensure we continue bringing the greatest value to growers.

Recognizing that not all growers and crops are alike, the support you receive from Philips horticulture team includes developing a dedicated light recipe that takes into account your situation: crop and variety, greenhouse location, growing strategy and greenhouse structure. Our custom light recipes combine light spectrum and intensity, lighting hours, light uniformity and light positioning



“

We started using Phillips LED modules to solve issues in our propagation of Heuchera tissue culture. **Problems with transplant timing, labor efficiency and overall root and shoot quality were solved, not to mention we decreased losses significantly”**

Marco Verdel
Battlefield Farms

Because there's more to light

Your recipe for growth



Philips GreenPower LED toplighting

- Energy-efficient overhead LED lighting
- Slim profile doesn't block natural light
- Passively cooled - no moving parts
- Several spectral options available
- 175 watt - 215 watt
- 200V - 400V input voltage
- 520 - 500 $\mu\text{mol/s}$ photon flux ¹
- 2.3 - 2.6 $\mu\text{mol/Joule}$
- UL/CSA approved
- IP66 rated ²

Dimensions

- Length: 1.26 m / 49.8 in
- Width: 5.5 cm / 2.2 in
- Weight 3.2 kg / 7.1 lb



Philips GreenPower LED High Output production module

- Ideal for multi-layer cultivation in growing environments with little or no daylight
- Low radiative heat allowing maximum use of space
- Replaces T5 fluorescent fixture
- 37 - 41 watt
- 120v- 277V input voltage
- 83 $\mu\text{mol/s}$ photon flux
- 2.0 - 2.2 $\mu\text{mol/Joule}$
- UL/CSA approved
- IP66 rated ²

Dimensions 150

- Length: 1.51 m / 59.4 in
- Width: 4.1 cm / 1.6 in
- Weight: 1.7 kg / 3.7 lb



Philips GreenPower LED flowering Lamp

- Energy-efficient alternative to incandescent or HPS for day length extension
- Replaces the incandescent bulb
- Easy replacement with E26 medium base (most common bulb base)
- 11 watt - 13 watt
- 100V - 120V input voltage
- 20 - 25 $\mu\text{mol/s}$ photon flux
- 1.8 - 1.9 $\mu\text{mol/Joule}$
- UL/CSA approved
- IP44 rated ²

Dimensions

- Length: 12.7 cm / 5 in
- Width: 12.7 cm / 5 in
- Weight: 0.2 kg / 0.4 lb

Value of natural and supplemental light sources:

Spectrum: colors exclusively focused on photosynthesis

Control of winter lighting hours

Control light and heat separately

Easy cleaning and minimal maintenance

Reliable and consistent operational intensity

Instant start: no warm up period



1) DR/W/FR/MB offers photon flux of 410 - 430 $\mu\text{mol/s}$

2) IP Ingress Protection rating: classifies the degrees of protection provided against the intrusion of solid objects, dust, accidental contact, and water in electrical enclosures. Visit www.dsmt.com for more information on IP rating system.

Faster production, stronger rooting, and reduced energy costs with Philips LED toplighting



In 2016, Jim Iwasaki, owner of Iwasaki Bros., Inc. began exploring LED lighting as a supplemental lighting alternative to energy-consuming HPS fixtures. After consideration of several LED lighting options, he selected Philips GreenPower LED toplighting for the company's first LED installation.

Iwasaki installed more than 500 Philips LED toplights in a Deep Red/Blue Medium Blue spectrum (DR/B MB) over three growing areas covering just over 27,000 square feet: unrooted cuttings, seed trays, and finishing.

Grower

Iwasaki Bros., Inc.
Hillsboro, Oregon

Situation

Iwasaki Bros. is one of the largest wholesale growers of bedding plants, perennials, herbs and hanging baskets in the northwest U.S.

Due to a cloudy and rainy climate that is typical in winter and early spring, Iwasaki Bros. replaced their HPS with supplemental LED lighting to reduce energy costs and improve plant growth.

Light solution

Philips GreenPower LED toplighting

Results

- 5-7 days faster rooting of URC
- 10-14 day faster finish of hanging baskets
- Reduced pre-transplant and post-transplant herb losses

“

we can get **an extra cycle of plants through a greenhouse** and that's **very exciting, very profitable.**”

Jim Iwasaki
Iwasaki Bros., Inc.

Learn more at www.philips.com/IwasakiBros

“

With the LEDs, “the plants are coming in **much more compact and that's making the transplant supervisor very happy.**”

Kathleen Baughman
Operations Manager

LED



HPS



Heuchera Tissue Culture



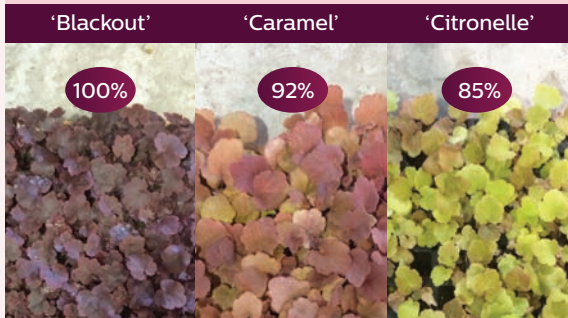
“The Philips LEDs offer us an opportunity for efficient year-round sustainable propagation.”

Grower
Battlefield Farms
Rapidan, Virginia

Situation
After learning of successes that European growers were experiencing with LEDs, Battlefield Farms investigated LEDs to address challenges with propagating and transplanting Heuchera tissue culture.

Lighting Solution
Philips GreenPower LED production module

- Results**
- Up to a 32% reduction in tissue culture loss
 - Finishing time almost one week faster compared to under traditional lighting
 - Reduced labor by reducing the need to pick through trays



Transplant success rate under Philips LED lighting

Learn more at
www.philips.com/Battlefield

Bedding Annuals and Perennials



“Compared to HID, plants under Philips LEDs showed much better rooting and all around more compact growth.”

Grower
Bordine's Farm
Grand Blanc, Michigan

Situation
Bordine's Farm wanted to improve transplant rates and reduce rooting time of their bedding and perennial plants to ensure meeting peak season customer demand at the company's four retail garden centers.

Lighting Solution
Philips GreenPower LED toplighting

- Results**
- 7-10 day improvement in rooting time
 - Increased basal vegetative bud development without the use of PGRs
 - More compact growth when examining and measuring to the height of the apical point



Learn more at
www.philips.com/Bordines

Perennials and Bedding Plants



“We have experienced greatly reduced crop times with an increase in overall plant quality while using less energy.”

Grower
Walters Gardens
Zeeland, MI

Situation
Walters Gardens pursued an alternative to HPS lighting to better help manage finish times and ensure timely delivery of plants for industry trade shows while reducing overall crop loss rates.

Lighting Solution
Philips GreenPower LED toplighting

- Results**
- 10-14 day faster finish for select cultivars: Dianthus and Hibiscus
 - Faster and better rooting
 - Increased survival percentage in plug trays



Learn more at
www.philips.com/WaltersGardens

Bedding annuals



“Reduced our growth cycles by almost a week, which allows us to get a better turnover and more profit.”

Grower
Amos Zittel & Sons
Eden, New York

Situation
A fierce winter snow storm in November 2014 destroyed nearly 2.5 acres of Amos Zittel & Sons greenhouses. With the rebuild of new greenhouses, this Eden, New York grower decided to invest in Philips LED lighting for their brand new greenhouse.

Lighting Solution
Philips GreenPower LED toplighting

- Results**
- Reduced growth cycles by almost 7 days
 - Enabled separate control of light and heat
 - Faster growth and improved appearance of plants



Learn more at
www.philips.com/Horti



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