



PHILIPS

Horticulture
LED Solutions

Case study
Battlefield Farms Inc.

Rapidian, Virginia, USA



Philips GreenPower LED production module

The **right light solution**
to help you maximize your
propagation

A consistently lower loss rate with each tray of Heuchera tissue culture



“

We started using Philips 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, Head Grower Manager



Background

Established in 1990, Battlefield Farms Inc. is a growing operation located in central Virginia. Battlefield Farms produces a diverse year-round plant production of annuals and perennials on their state-of-the-art, automated facility and supplies plant products to garden centers, big box and large retailers, and grocery stores in northeastern United States. The Battlefield Farms operation now includes 45 acres of covered production area and approximately 20 acres of outdoor production area.

Since 2010, Battlefield Farms has participated in a Sustainability Certification Program called MPS-ABC, which promotes sustainability in the horticulture sector. And in 2014, Battlefield Farms Inc. was recognized for environmental achievement from the Virginia Agribusiness Council.

The challenge

The acclimation and hardening of tissue culture requires a unique propagation strategy because of an extreme sensitivity to moisture, temperature, and light. As a result of this sensitivity, many growers experience high failure rates when propagating tissue culture. If the tissue culture's growing environment is not near perfect, the grower can experience a significant reduction in yields. For Battlefield Farms, this was a particular problem when attempting to cultivate Heuchera from tissue culture using natural greenhouse conditions as Battlefield Farms struggled with the following:

- Poor propagation rates
- Delayed transplanting due to inconsistent and unreliable growth rates
- Missed transplant deadlines
- Increased demand on labor and time resources to manage staggered transplant dates

The solution

After learning of the successes that growers in Europe were experiencing with LEDs particularly in city farming and vegetable production, Marco Verdel, Battlefield Farms' Head Grower Manager, began investigating LEDs as a possible solution to ongoing propagation challenges. Verdel, along with Battlefield's Research and Development Manager, Travis Higginbotham, pursued a trial of the Philips GreenPower LED production module with Heuchera tissue cultures. Their objective was to compare growing Heuchera tissue culture under LEDs in a controlled environment against Battlefield's current growing methods.

After several consultations with the Philips Horticulture LED team—key account manager, plant specialist, and application engineer, and in cooperation with the Philips horticulture sales partner from Fred Gloeckner Company—a trial was set up using a Philips GreenPower LED production module in the deep red /blue spectrum. The trial consisted of placing LED production modules, 5" apart and 14" above tray racks.

Benefits

Battlefield Farms recognized the importance of looking at the success of propagation as well as assessing the quality of the crop as transplanted and through to the finished crop stage. Verdel and Higginbotham noted a significant increase in finish times with the Heuchera. And as Higginbotham said, "For the most part we did not have to do anything special for the plants and just let them grow."

The results of Battlefield Farms' LED production module trial exceeded Verdel's expectations:

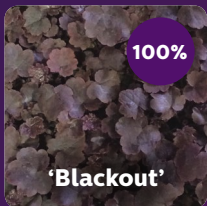
- **Faster:** a five-seven day faster finish time
- **Reduction in labor:** plants were ready for transplant one week earlier
- **Increased yield:** consistently lower loss rate with each tray
- **Reduction in labor:** uniform finish time eliminated the need to pick through trays

Higginbotham said, "Once we moved past the initial hurdle of using a new product, we experienced many efficiencies—the convenience of a fixed watering schedule, less focus on controlling humidity, and we didn't have to use PGRs. Growing Heuchera TC under the Philips LEDs was easier and much more efficient, and solved a significant problem with a specific crop. The Philips LEDs offer us an opportunity for efficient year-round sustainable propagation."



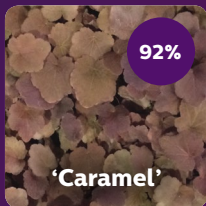
"We experienced as much as a **32% reduction in Heuchera tissue culture loss.**"

Marco Verdel, Head Grower Manager



100%

'Blackout'



92%

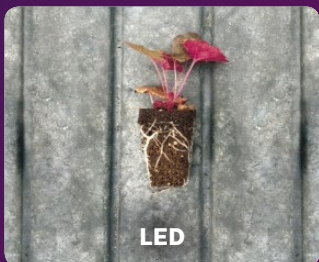
'Caramel'



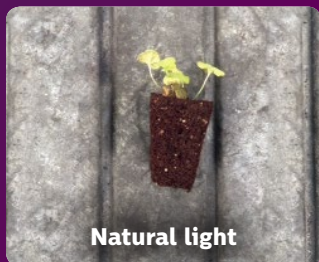
85%

'Citronelle'

Transplant success rate of Heuchera tissue culture under Philips LED lighting



LED



Natural light

Facts

Horticulturalist / grower

Battlefield Farms Inc.

Sector

Ornamental, perennial, potted, bedding and holiday plants

Crop

Heuchera propagated from tissue culture

Location

Rapidian, Virginia, USA

Solution

Philips GreenPower LED production module

Philips LED Horti Partner

Fred C. Gloeckner

Results

- Up to a 32% reduction in tissue culture loss
- Tissue culture finished almost one week faster

BATTLEFIELD



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Document order number: 3222 635 70087
07/2015
Data subject to change

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