TEKNIK Bloem

CASE STUDY

TOP CROP PLATFORM AT

Kannuksen Kauppapuutarha

Increasing PPFD on the Vertical Face of Vine Growing Crops Without Additional Energy Consumption

Bloemteknik Ltd
www.bloemteknik.com

KANNUKSEN KAUPPAPUUTARHA

Kannuksen Kauppapuutarha is a second-generation grower of Finnish vegetables. Founded by Eino and Leila Hauhtonen in 1977, today they produce over 1,000,000 kg of greenhouse cucumbers , 350,000 iceberg lettuces and 150,000 potted lettuces per year.

Over 1 million kg of cucumbers produced every year.

Over 350,000 iceberg lettuces & 150,000 of potted lettuces produced annualy.

Year-round production **without chemical pesticides**, ensuring taste and quality.

The Challenge

Kannuksen Kauppapuutarha collaborated with Helle-Tech for expert advice in identifying and deploying the most effective greenhouse lighting solution. Three objectives were defined:

1. Select a Toplight that most effectively penetrates the upper canopy to deliver sufficient PAR for sustained photosynthesis in the lower foliage.

2. Choose the optimal spectrum for cucumber & lettuce cultivation in Finnish greenhouse conditions to maintain consistent, high-quality yields throughout the low-light winter season.

3. Maximise energy savings without compromising yield.

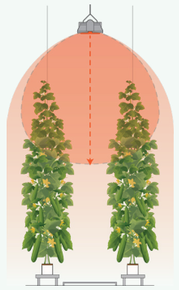
"We've consistently seen improved cucumber yields using adjustable light engine technology, compared to competing light engines" says Timo Helle.

"We're delighted with the results and excited to continue our partnership with Helle-Tech & Bloem on the next phase" says Aleksi Hauhtonen, CEO of Kannuksen Kauppapuutarha.

The Bloem Solution

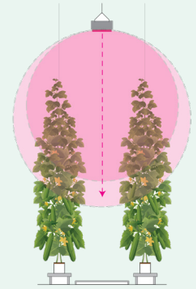
1. Adjustable light engines outperform static LED optics within high wire applications.

HPS Toplight
No tilt



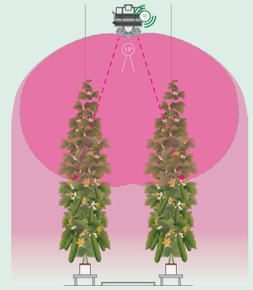
Static HPS Reflector

Standard LED Toplight
No tilt



Static LED Optics

Bloem Top Crop
15º tilt



Adjustable Light Engines
120 - 210º optics

- **12% Increase in Vertical PPFD** vs.static light engines
- **Enhanced Light Uniformity**
- **Maximised PAR Light-use Efficiency**

2. Light recipes containing at least 10% blue (400–500 nm) and 10% green (500–600 nm) consistently outperformed those dominated by red light, particularly recipes with up to 90% red (600–700 nm) in Finland.

The blue content promoted enhanced chloroplast development, increased leaf thickness, greater biomass accumulation, and improved protein synthesis, all contributing to superior fruit quality and overall plant health.

Meanwhile, the inclusion of green light significantly improved light penetration through the canopy, boosting photosynthetic activity in lower leaf layers. It also aided visual clarity, making it easier to identify pests, pathogens, and nutrient deficiencies.

The Results

43% Increase in yield

An increase in harvestable fresh weight of cucumbers, achieved without raising energy consumption.

HIGH WIRE CULTIVATION LED SOLUTIONS

Top Crop Platform

Patent pending adjustable light-engines for uniformity leadership within indoor farming toplight applications.

Designed to increase PPFD on the vertical face of your vine growing plants, minimise supplementary PAR light deviation and maximise system light use efficiency to the benefits of plant quality, enhanced yield, and production consistency.

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