

THIS MONTH...

- Business as usual for PhytoLux at Plessey
- CEH continues to reduce plant growth energy and maintenance costs
- Article in Horticulture Week Magazine - by Sally Drury - LED lighting systems



Business as usual for PhytoLux at Plessey

Most people working in the horticulture industry will by now be aware that Plessey has signed an exclusive global license agreement to manufacture and sell the PhytoLux® horticultural lighting solutions and products and as a result, has taken on the operational, technical and commercial activities of PhytoLux.

Michael LeGoff, CEO of Plessey, comments; *“During recent years the PhytoLux team have worked hard to deliver LED lighting solutions for their business partners, whether they be a university, research organisation or commercial grower. As we look to the future under the Plessey banner, we will continue to focus on understanding the problems being faced by our partners and delivering innovative products and solutions to help solve them. The technology behind the PhytoLux product range has already been proven and therefore offers a commercially viable solution for the industry right now. Coupled with the access the PhytoLux team now has to the Plessey facilities, expertise, next generation of LEDs and integrated electronics, we are anticipating that we will achieve even greater results in the future”.*

CEH continues to reduce plant growth energy and maintenance costs

CEH is the Centre of Excellence for integrated research in terrestrial and fresh water ecosystems and their interaction with the atmosphere.

Following a successful 9 month trial at their site in Edinburgh to determine the energy and maintenance cost savings that could be achieved, the Centre for Ecology & Hydrology (CEH) installed PhytoLux Attis7 LED plant growth lights at their Bangor and Edinburgh sites in 2015. In March 2016 Attis-7'S were also installed within the growth rooms and Grodome at the site in Wallingford.

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Attis-7's in the Grodome at the Centre for Ecology & Hydrology, Wallingford, Oxfordshire



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LED Lighting Systems

The benefits of growing crops under LEDs are interesting growers, nurserymen and research establishments, Sally Drury discovers.

Judging by the number of hits on the Horticulture Week website last time we published an article on LEDs, there must be a lot of growers and nurserymen who find it an interesting topic and want to know more.

In the past, plant lighting such as SON-T lamps have been used. While providing light, traditional lamps tended to be expensive to buy and run. They consumed a lot of energy and, being slow to turn on and off, did not respond quickly to changes in ambient conditions. On top of that, they produced excessive heat — not only a waste of energy but also making it difficult to achieve optimum growing conditions, to the point where cooling might actually be needed.

Plus, rapid light loss tended to occur after 12,000 hours runtime and the light might not be evenly distributed due to the nature of the bulb and the fitting. But above all, these traditional lamps often did not match the requirements of the crop, typically hitting a small band of 560-630nm and thus falling far short of the wider PAR optimum.

LEDs, or light-emitting diodes — the same as the light flickering away on your computer — only emit light of a designated narrow band wavelength. Combining LEDs of different wavelengths gives the ability to control the colours that plants need and thus to control the plant in terms of photosynthesis, growth, flowering and fruiting. LEDs could be considered to be better than sunlight because they are controllable.

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All 3 sites originally used traditional SON-T Growth lights which are expensive to run, so the objective of the trial was to determine if both electricity and maintenance costs could be reduced by using Attis-7 LED plant growth lights whilst matching current lighting levels and plant response with no negative effect on plant growth. The target of a minimum 70% cost reduction was met.

Nigel Parfitt, Building & Services Manager at CEH, comments, *"It is important that organisations such as ours constantly seek to test new technologies that will keep our costs down. In this case, not only does the PhytoLux Attis7 result in a significant cost reduction, it also provides an improved plant response, level of light and ultimately a better result than we had previously"*.

Steve Edwards, Product Director at Plessey, responds; *"We have developed and proven our LED plant growth lighting product range with input from major organisations in the UK such as CEH. This exciting technology provides clear benefits of reducing energy and maintenance costs for commercial growers and research organisations whilst maintaining comparative or improved plant response. We are therefore delighted that CEH has extended the use of Attis-7's into the grow rooms and Grodome at Wallingford"*.

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Now add in the fact that LEDs last longer, are cheaper to run and produce less heat, meaning the lamps can be placed closer to the plants and have less effect on temperature. Plants are cooler and transpire less. The light itself needs no ballast — no bulky box. It is not surprising then that LED lighting has been something of a hit for horticulture, both in research applications and for production in controlled environments, and their use has dramatically increased over recent years.

Making the switch

One facility to make the switch from SON-T lamps to LEDs is the University of Bristol Unigro-installed rooftop Grodome at the Life Science Building. When horticultural greenhouse manager Tom Pitman showed me around the horticultural research facility this time last year, 6,00W high-pressure sodium SON-T lamps were used for plant-growth purposes. At the beginning of the design process back in 2011 it was thought that LEDs were not the right offer. But now is a different story.

Pitman and the university's sustainability manager (energy) Chris Jones recognised that SON-T lamps use a high level of energy and saw an opportunity to reduce energy consumption and costs by changing to modern LED plant-growth lighting. Pitman and Jones were aware of the work carried out by Phytolux at Rothamsted Research and other universities, and arranged for a trial to investigate the potential energy saving of LEDs.

A comparison trial was set up using the Phytolux Attis-7, winner of the Horticulture Week award for innovation at the 2015 Four Oaks Trade Show, to measure the effect on the quality of plants grown compared to the use of traditional SON-T lights already installed in the Grodome. Compact fluorescent lamps were also

considered as a low-energy alternative control.

The Phytolux lights performed well, with growth more vigorous and plants stockier and darker than their counterparts under SON-T and fluorescent lighting. Energy saving was calculated at 71 per cent, beyond the 60 per cent target set by Pitman and Jones, and the predicted carbon saving amounted to 44 tonnes per year.

The payback period on investment was calculated as 2.5 years on energy alone. The Attis-7 LEDs require minimal maintenance and have a low heat output, meaning additional savings will be made on maintenance costs and substantial savings on air-conditioning.

Replacement lights

As a result of the trial, the University of Bristol replaced its SON-T lights with Phytolux Attis-7 LED units in July 2015. But it is not just research facilities that are benefitting from the latest lighting technologies.

Three years ago UK strawberry grower Wallings Nursery started trialling LEDs in its production houses in Lawford. It was able to supply Sainsbury's with UK-grown strawberries at Christmas thanks to LEDs from Phytolux.

To view the full article, click here;

<http://www.hortweek.com/led-lighting-systems/products-kit/article/1390337>

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