

GROWING FERNS FROM TISSUE CULTURE TO THE GREENHOUSE WITH A LIGHT RECIPE

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Each crop prefers a specific light environment. Together with the grower a light expert can develop a light recipe for optimal growth. By using LEDs, the grower can choose from various light characteristics and combining them can result in additional benefits to the crop. Propagating ferns in a controlled environment missed the aspect of plant hardening. By developing a light recipe for multi-layer fern propagation, plant hardening was realised with LED-lighting.

Philips Lighting and fern propagator Vitro Plus have developed a propagation and growth system for 460 m² ferns on 28.8 m². The development of a light recipe made the transition possible from tissue culture to hardened plantlets in climate rooms.

Light recipe

Each crop requires its own specific light climate. Assimilation light is used because light is a limiting factor and can easily be controlled. By varying factors like intensity, light sum, day/night, direction, distribution and light quality, it is possible to develop the

optimal light environment for each crop. LEDs have the additional advantage of a low temperature, making it possible to position them very near to the crop. Together with Vitro Plus, a light recipe was developed for fern tissue culture to grow in climate rooms.

Hardening plants

A drawback of fern tissue culture with TL-lighting was the temperature, making multi-layer growth very difficult. LEDs provided an answer, allowing Vitro Plus to grow ferns with only 40 cm space between layers. It also became possible to harden the plantlets from tissue culture enabling proper growth in climate rooms. Following an initial test and analysis, a light recipe was then upscaled and fine-tuned to result in a product and application, complete with business case and financial support. Thus, by developing a light recipe for multi-layer growth, it became possible to grow 460 m² of ferns in 16 layers on only 28.8 m² floor space.

Multi-layer production under LEDs has various advantages and this concept has been proven with ferns at Vitro Plus together with Philips Lighting. Light recipes have been developed and tested for other crops as well, making them directly applicable in practice.

Partners in this HortiSeminar: Philips Lighting, Vitro Plus