

Propagation using LED-light in a multilayer system

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Aim of the project

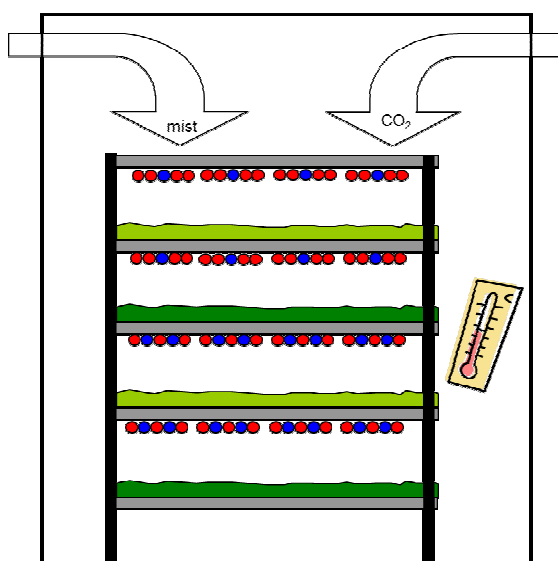
Investigating the possibilities of propagating nursery stock in a conditioned climate room, using LED light in a multilayer system.

Light colour influences plant development

Plants are sensitive to different colours of light, especially blue, red and far-red. Branching and rooting can be influenced. LED light gives a specific light wavelength, so it is possible to provide the plants with the optimal light mixture, depending on the desired plant development.

Advantages of a multilayer system

- Optimal light spectrum can be given for faster or better rooting or increased branching;
- Humidity, temperature, enrichment with CO₂ can be optimised
- Efficient use of space
- Alternative system if new glasshouses are not acceptable in the landscape



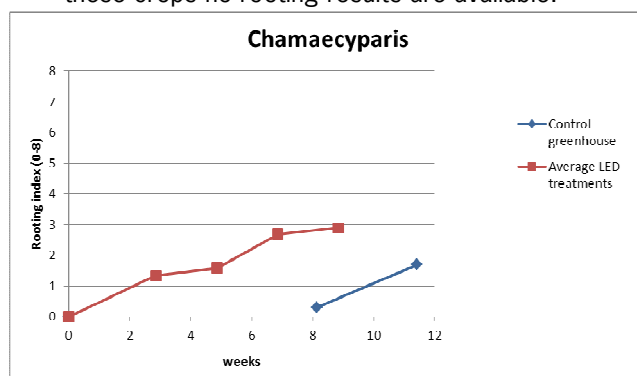
System design for propagation in a multilayer system with LED. Per crop and per phase the cuttings can be provided with the right light spectrum and intensity.

Propagation experiment

In spring 2011 the first experiment was done with five woody ornamentals (including Buxus and a conifer) and different red/blue ratios and light intensities. In this experiment the effects on root initiation were investigated at relative low light intensities (10 - 35 $\mu\text{mol}/\text{m}^2/\text{sec}$).

Preliminary conclusions

- Red light stimulates rooting (in Buxus and Ceanothus)
- Supplementary far-red lights enhanced rooting of Buxus, but slowed down rooting in Ceanothus.
- Buxus and Ceanothus need at least 25 $\mu\text{mol}/\text{m}^2/\text{sec}$
- Rooting of Chamaecyparis can be accelerated in a multilayer LED system.
- Juniperus and Lavandula were infected by fungi, so for these crops no rooting results are available.



The LED treatments have accelerated the rooting process compared to standard treatment in the greenhouse.

