

EU-Asia Link Project ENLIGHTEN

LED-based illumination facility for plant cultivation

The facility was designed for study of the influence of illumination spectrum on plant growth and development.

The facility consists of 12 LED-based illumination modules of 25 W electrical each. Modules of three types with different groups of LEDs were fabricated. The main photon flux (90%) in all modules is emitted by red (627 nm) LEDs (LUMILEDS™ model LXHL-LD3C). The additional short wavelength component was different in different modules: Royal Blue (455 nm; LUMILEDS™ LXHL-LR3C), Cyan (505 nm; LUMILEDS™ LXHL-LE3C), or UV (365 nm; NICHIA NCSU033A).

Each solid state lamp module is equipped with an independent, dimmable switch-mode power supply Philips Xitanium™. The constant illumination level is maintained by the OSRAM DIMM MICO luminance sensors connected to the power supplies.



Results of the first experiments are summarized in the paper:

A. URBONAVIČIŪTĖ, P. PINHO, G. SAMUOLIENĖ, P. DUCHOVSKIS,
P. VITTA, A. STONKUS, G. TAMULAITIS, A. ŽUKAUSKAS, L. HALONEN,
Effect of short-wavelength light on lettuce growth and nutritional quality,
Sodoninkyste ir Darzininkyste, **26**, 157-165 (2007).