Novel LED light source for plant growth

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24. 09. 2018

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Austria-Czech Republic

European Regional Development Fund

Pilot project introduction

- Project partners
  CEITEC Plant Sciences Facility & VBCF Plant Sciences Facility
- Complementary equipment/expertise used for the project (including pictures, if possible)
  LED light setup present at the CEITEC PlantS Facility, expertise in the LED technology at the GMI
- Basic project idea
  To co-develop a novel and multifunctional LED light source for plant growth that intends to replace the fluorescent tube illumination in all 22 VBCF phytotrons.
- Project goal
  To improve the quality and functionality of plant lighting boosting the plant research in the cross border region:
  - **Homogenous light conditions (intensity and spectrum, spatial and time scale)**
  - **Adjustable light spectrum (e.g. for germination testing, reproductive tissue induction in *Marchantia*, high-light stress, etc.)**

- Potential end-users:
  - **Academic plant research groups (basic and applied research)**
  - **Food security agencies (AGES)**
  - **Plant breeding companies**

Project implementation

Close cooperation between VBCF PlantS, CEITEC PlantS and GMI LabSupport

TECHNOLOGY SCOUTING
On-site meetings with potential technology providers
Facility and company visits
Regular contact via phone, e-mails and regular meetings and workshops

Co-development of numerous (4) **PROTOTYPES**
Prototype **TESTING**: spatial light homogeneity, HT phenotyping, in collaboration with users

DECISION on final design and supplier - **ORDER**

REMOVAL old light – **INSTALLATION** new LED lights – **TESTING** – **USER FEEDBACK**

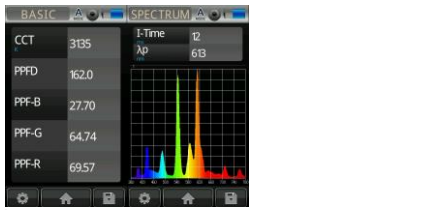
Project results

Development and implementation of two LED products:

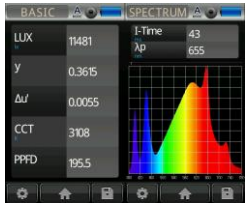
1. **Standard light** (18 phytotrons)
   fixed spectrum variable intensity
2. **High-tech LED solution** (4 phytotrons)
   adjustable spectrum, intensity and high-light

…with improved light homogeneity, quality and functionality

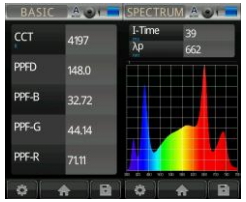
Fluorescent tubes

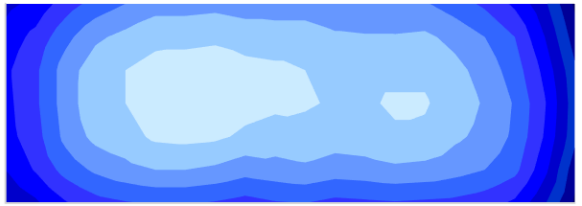


1. High-tech LED



2. Standard LED





100-110 110-120 120-130 130-140 140-150 150-160 160-170 170-180 180-190 190-200 200-210

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