



Horticulture LED Lighting Solutions
www.vegeled.com

Colasse SA



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- Located in Belgium (Liège Area)
- LED Lighting fixture manufacturer since 2006
- Horticulture LED Lighting developed since 2008 with the support of the HE Condorcet & CARAH Research Center.
- +- 1.3 million € turn over, 5 persons on payroll
- Markets : Belgium, France, Germany, Ireland (40% exp)
- Key Customers:
 - FR: IRD, INRA, RATP, Un. Toulouse, Montpellier, Lille, Rennes
 - BE: HE Condorcet, ULG Gembloux Agro Bio Tech, KU Leuven

Key points of plant lighting



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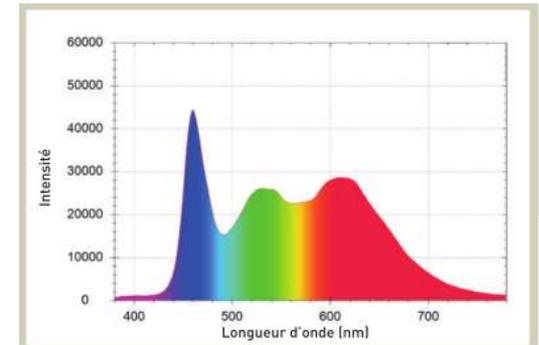
- Intensity
 - The light intensity must be adapted according to the type of plants and the desired plant behavior
- Spectrum quality
 - The light spectrum can be fine tuned to influence the plant morphogenesis and organoleptic properties (R-B and R-FR ratios)
 - It defines the photosynthetic “efficiency” of the light
- Homogeneity
 - Light homogeneity is a key to achieve a common growth pattern on a specific area.

Key points for LED lighting fixtures



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- Intensity
 - Depends on power (W) and conversion rate (Photons/W)
 - Depends also on optics quality, reflective index on materials in the grow area, distance between source and plants
- Spectrum quality
 - Depends on the choice of LED combination
 - Single P White LED -> blue peak + 1 P peak
 - Dual P White LED -> blue peak + 2 P peaks
 - Single color led -> narrow peak
- Homogeneity
 - Depends on optics and geometrics



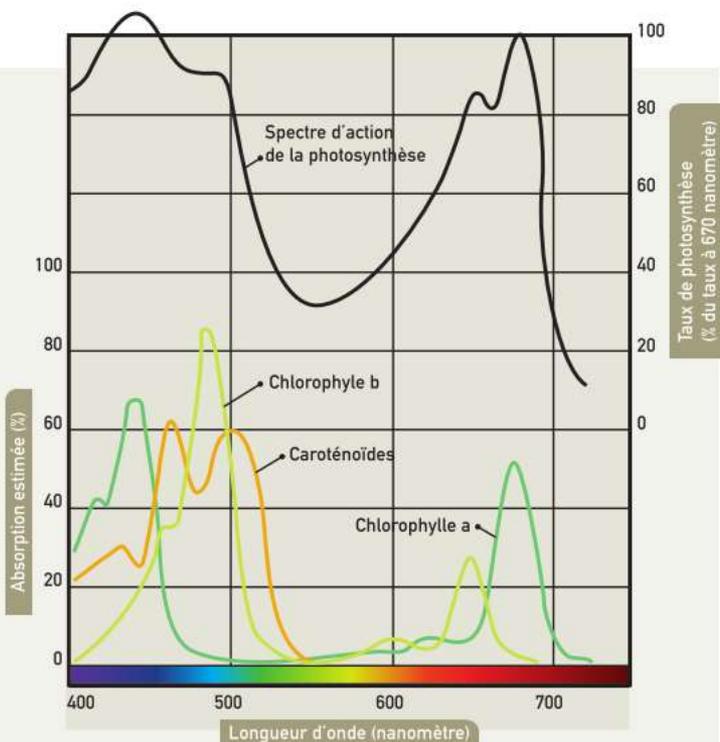
Dual P Spectrum white 4500K



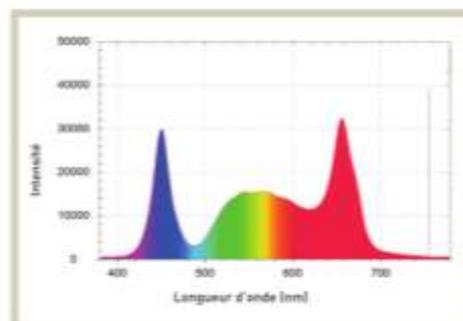
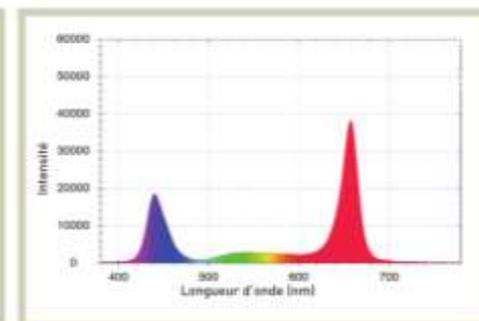
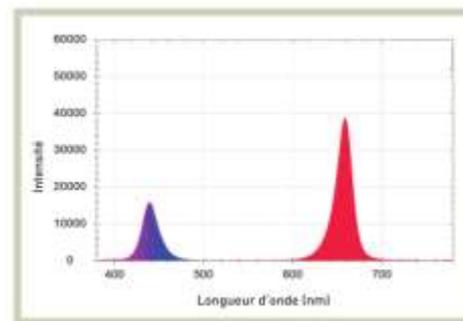
Spectrum

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- Photosynthesis action spectrum



- Typical LED Floodlight Spectrums

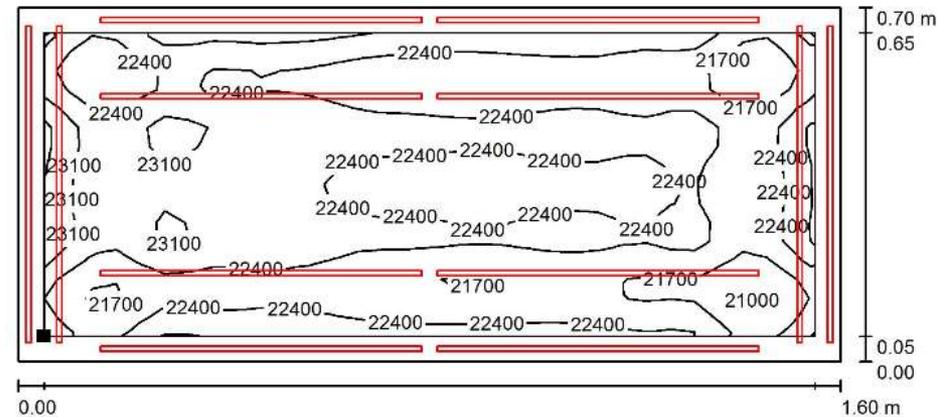
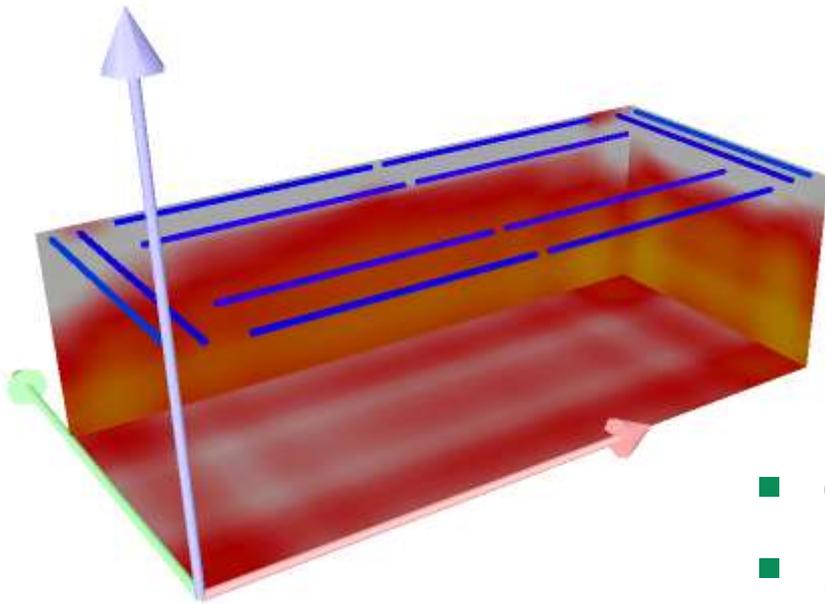


Homogeneity



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- Requires to make a model of the growth area, of the sources light distribution and positions



- Grow bank 1.6x0.7m
- $375 \mu\text{mol/s/m}^2$ @ 50cm from LED
- $U_0 : E_{\min}/E_{\text{moy}} = 0.924$



Other Important points

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- Heat Management
 - The use of LED instead of HPS lamps can reduce the energy consumption by 2 on some productions
 - There is less radiated heat than discharge lamps
 - LED age faster on warmer areas -> accelerated light decay
 - Passive Cooling with heat fins -> footprint !
 - Active Cooling with fans -> noise, reliability !
- Protection against the environment
 - Ingress Protection index must be adapted to working conditions
- Light quality & **People Safety**
 - Photobiological Safety and Well Being Code for Workplaces must be taken into account where people and plants are in the same area with lights on.

Colasse SA – Contact us



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