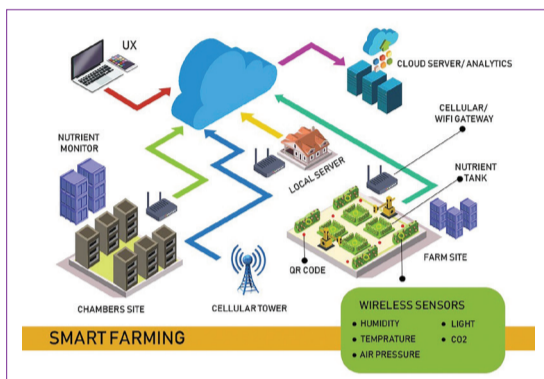


智能室內種植系統 Smart Indoor Farming System

透過調控最佳植物生長環境加快生長
Accelerating the growth of the plants by developing optimal growth profiles

專利申請編號：201910531726.0 (中國)

智能室內種植系統由多個人工智能及數據驅動系統組成，能夠就個別植物品種制定最合適的光合活性輻射照明、澆水及營養供應程序；同時通過先進的傳感技術，實時收集來自各用戶（規模由小家庭至大型農場）的植物生長和環境數據，建立並比較植物生長檔案，為不同品種調控出最佳控制參數，再把參數輸入系統當中，以強化植物生長。該系統可安裝於城市建築物內，有助善用室內空間種植蔬菜，從而維持可持續和穩定的食物供應。適合以此系統種植的植物種類繁多，例如沙律菜、馬鈴薯、紅菜頭和香草等。



智能室內植物種植系統
Smart Indoor Farming System



智能種植箱
Intelligent Growth Chamber

特色與優點

- 自動化的種植過程提高食物安全
- 可控制的光照系統能加快植物生長，例如可把意大利生菜的生長周期縮短約一半
- 自動化的環境感測和控制系統為不同植物提供最佳的生長環境
- 為建立各植物的生長檔案提供數據收集和分析平台
- 電腦系統控制施肥程序
- 可調節規模和多變的模組設計可靈活地配合都市環境
- 與傳統種植方式相比，減少百分之95用水

應用

- 室內種植
- 建立各植物生長檔案的研究平台

獎項

- 國際發明家協會聯盟組織特別大獎 (2019年6月)
- 美國矽谷國際發明展 - 評判特別嘉許金獎 (2019年6月)



Red Light (630-660nm)

- Essential for the growth of stems and the expansion of leaves
- Regulates flowering, dormancy periods, and seed germination

Blue Light (400-520nm)

- Overexposure to blue light can inhibit the growth of certain plant species
- Needed in low intensity to stimulate particular responses in plants

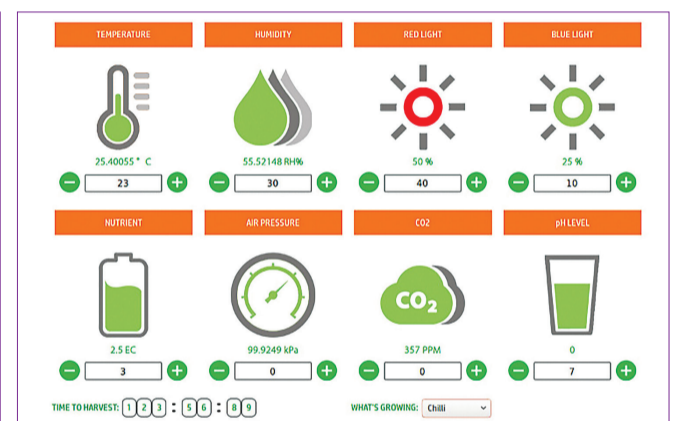
Far Red Light (720-740nm)

- Reduces the time a plant needs to flower
- Plants exposed to this wavelength tend to produce larger leaves

Green Light (500-600nm)

- Regarded as unimportant in photosynthesis

光合活性輻射照明及不同波長對光合作用的影響
Photosynthetic-active-radiation lighting and the effects of different wavelengths on photosynthesis



用戶控制界面
User Control Interface

Patent Application No.: 201910531726.0 (China)



大型室內農場
Large-scale indoor farm

Our smart indoor farming system comprises AI-based and data-driven systems which together generate optimized photosynthetic-active-radiation lighting, watering and nutrient supply programmes for individual plant types. Adopting advanced sensing technologies, it allows real-time collection of plant growth and environmental data from users ranging from home users to large-scale farms. Growth profiles corresponding to different conditions are constructed and compared to give optimal sets of control parameters which are fed back to the system for enhancing plant growth performance. It can be set up in urban buildings for sustainable and stable supply of plant vegetables. Plants suitable for this cultivation platform include salad greens, potatoes, beets, herbs, etc.

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Special Features and Advantages

- Improvement of food safety by a fully automated process
- Programmable photoperiod and light intensity with specific wavelengths to promote growth, e.g. shortens the growth cycle of Italian lettuce by about 50%
- Optimal growth environment for different plant species using sensors and an automated control system
- Provision of research platform for developing optimal growth profiles with automated data collection and analysis
- Plant nutrient control using a computer controlled nutrient feeding technique
- Flexible installation for urban environment with modular and scalable design
- Reduction of water consumption by 95%

Applications

- Indoor farming
- Research platforms for building up plants' optimal growth profiles

Awards

- IFIA Best Invention Award - International Federation of Inventors' Associations (Jun 2019)
- Gold Medal with the Congratulations of the Jury - Silicon Valley International Invention Festival (Jun 2019)

Access More info via mobile



Notes: Subject to data charges by mobile operators