智能照明与现代农业

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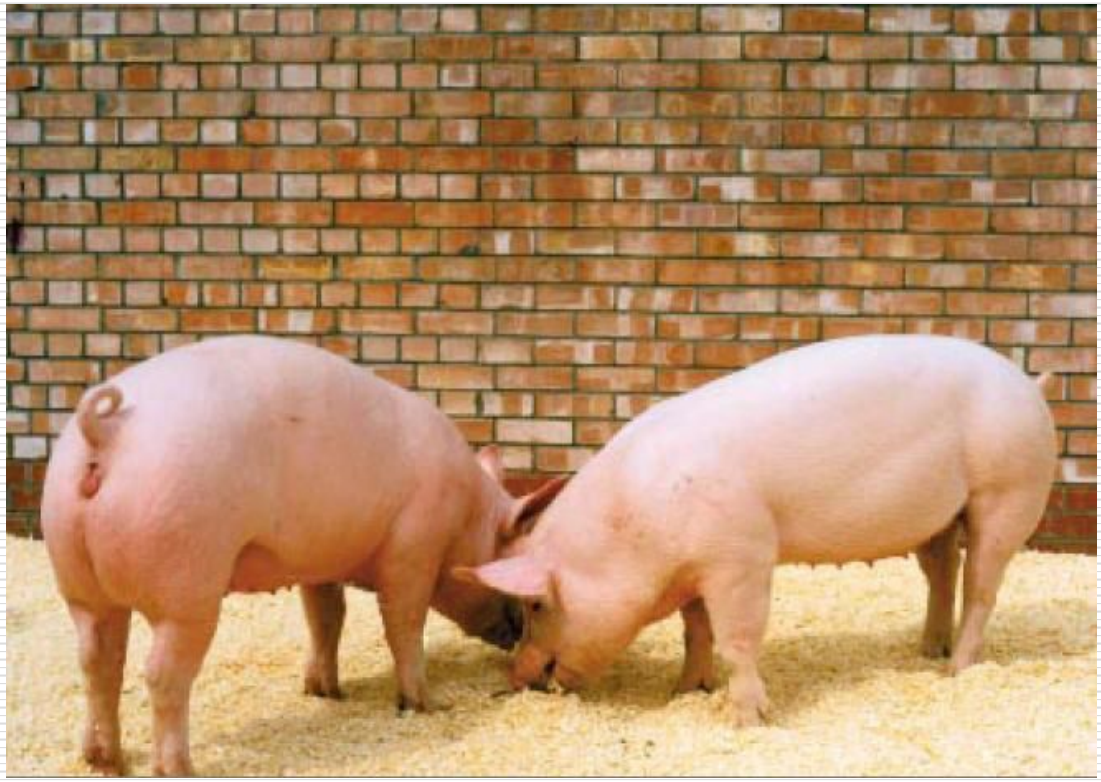
- 智能照明的特点
- 面向农业照明的设计
- 在农业照明中应用的展望

光照明在现代农业的应用

- 植物

光照明在现代农业的应用2nd

- 动物



目前光源应用的情况

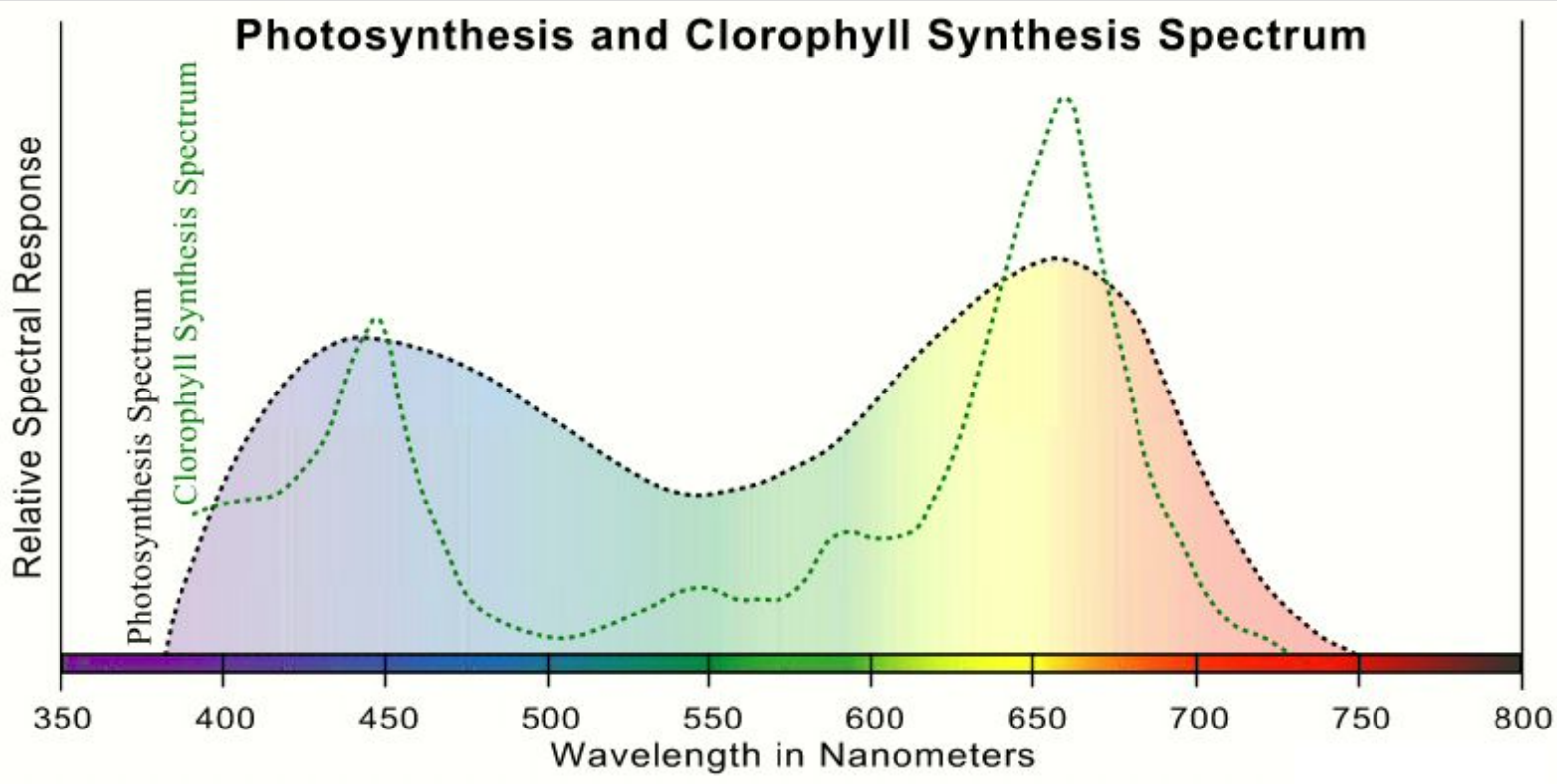
- 白炽灯

- 荧光灯

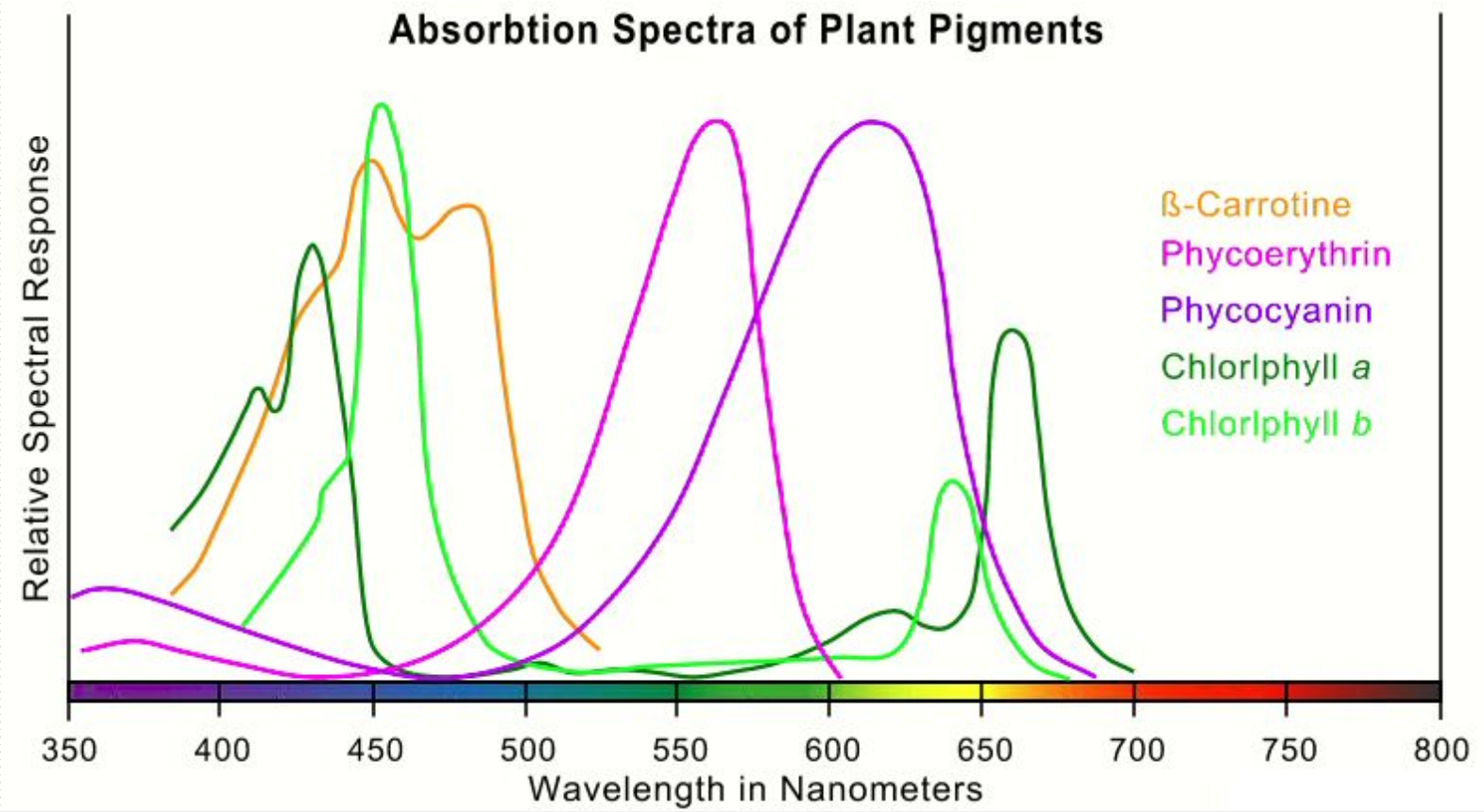
- HID

- LED

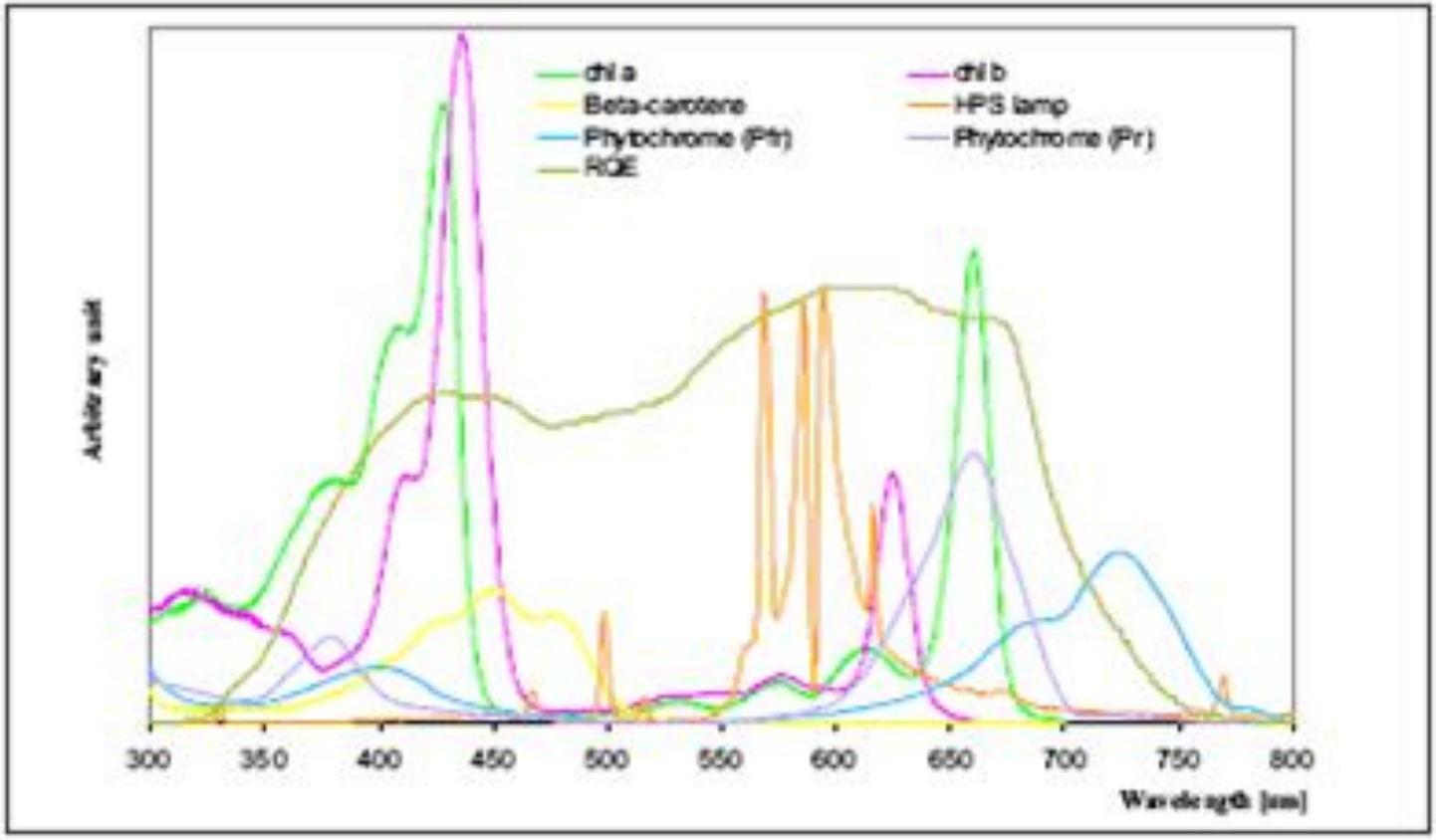
目前光源应用的情况


Photosynthesis and Clorophyll Synthesis Spectrum
Relative Spectral Response
Photosynthesis Spectrum
Clorophyll Synthesis Spectrum
350
400
450
500
550
600
650
700
750
800
Wavelength in Nanometers

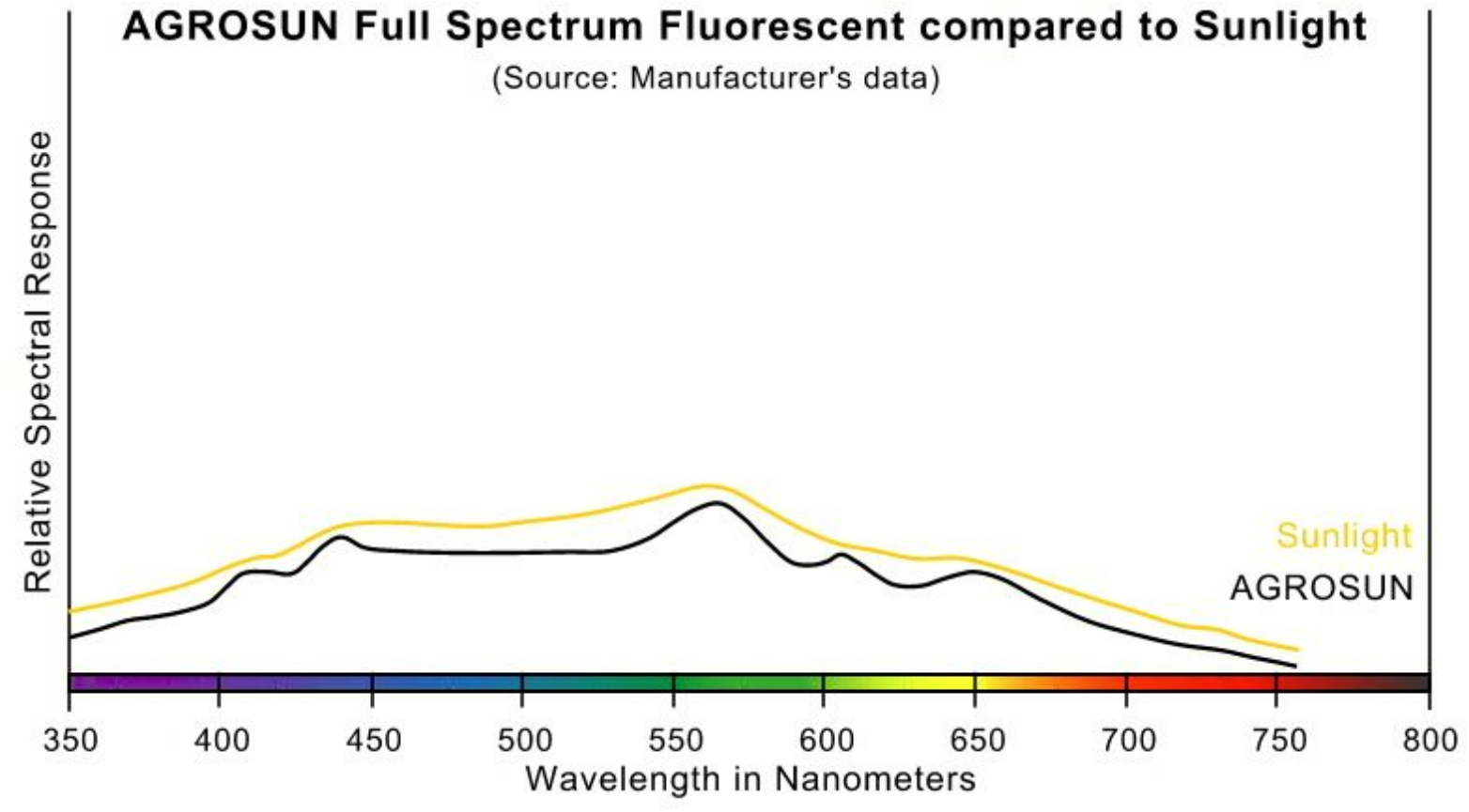
目前光源应用的情况


Absorbtion Spectra of Plant Pigments
Relative Spectral Response
ß-Carrotine
Phycoerythrin
Phycocyanin
Chlorlphyll a
Chlorlphyll b
350
400
450
500
550
600
650
700
750
800
Wavelength in Nanometers

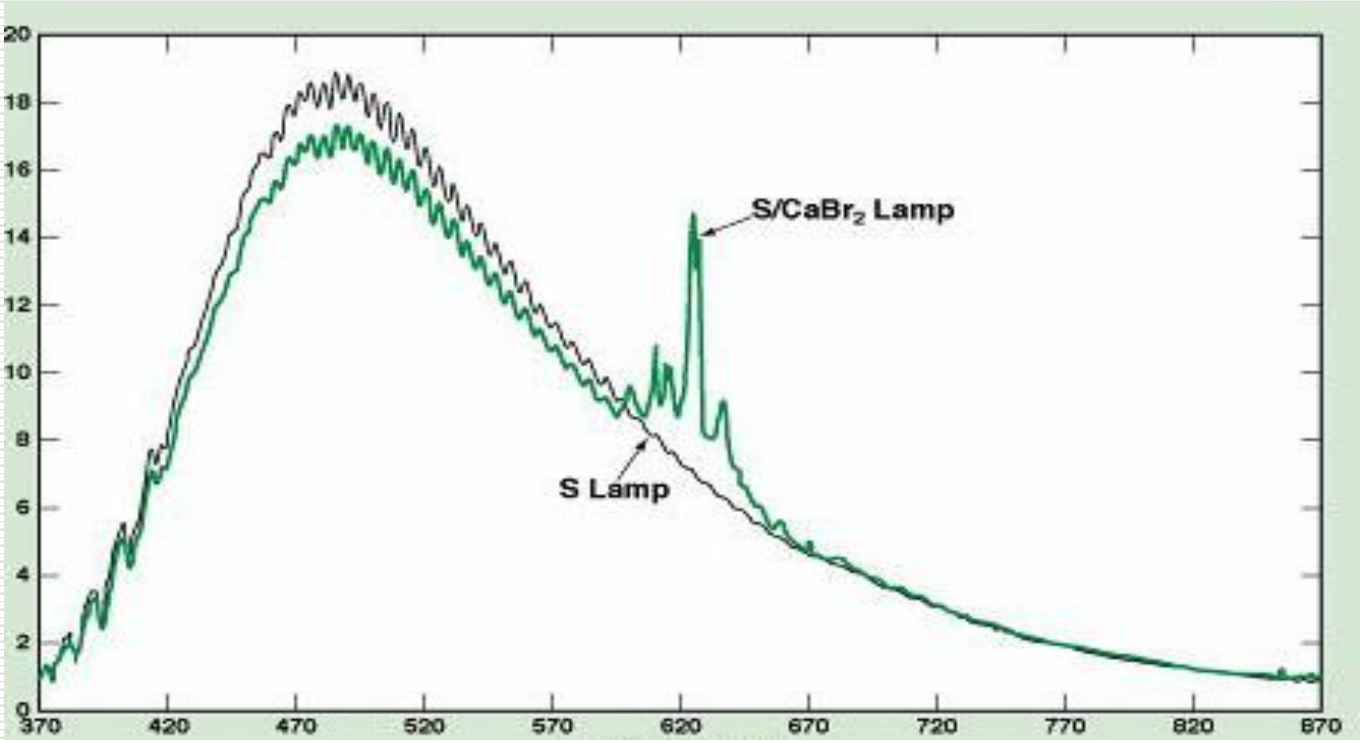
目前光源应用的情况


chl a
chl b
Beta-carotene
HPS lamp
Phytochrome (Pfr)
Phytochrome (Pr)
RQE
300
350
400
450
500
550
600
650
700
750
800

目前光源应用的情况


AGROSUN Full Spectrum Fluorescent compared to Sunlight
(Source: Manufacturer's data)
Relative Spectral Response
Sunlight
AGROSUN
350
400
450
500
550
600
650
700
750
800
Wavelength in Nanometers

目前光源应用的情况

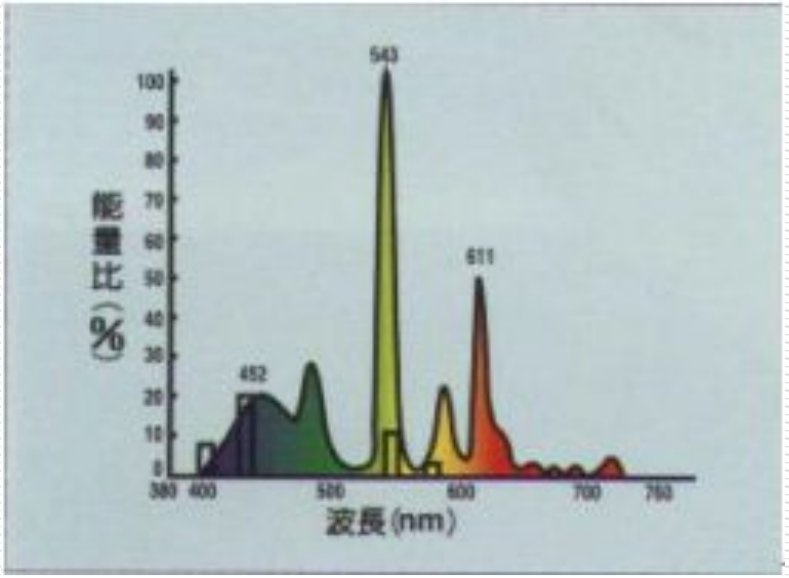

S/CaBr$_2$ Lamp
S Lamp
0
2
4
6
8
10
12
14
16
18
20
370
420
470
520
570
620
670
720
770
820
870

智能照明

- 生长条件的优化
- 降低成本
- 保护环境
- 提高机械化程度

面向农业照明的设计

- 不同光谱的技术

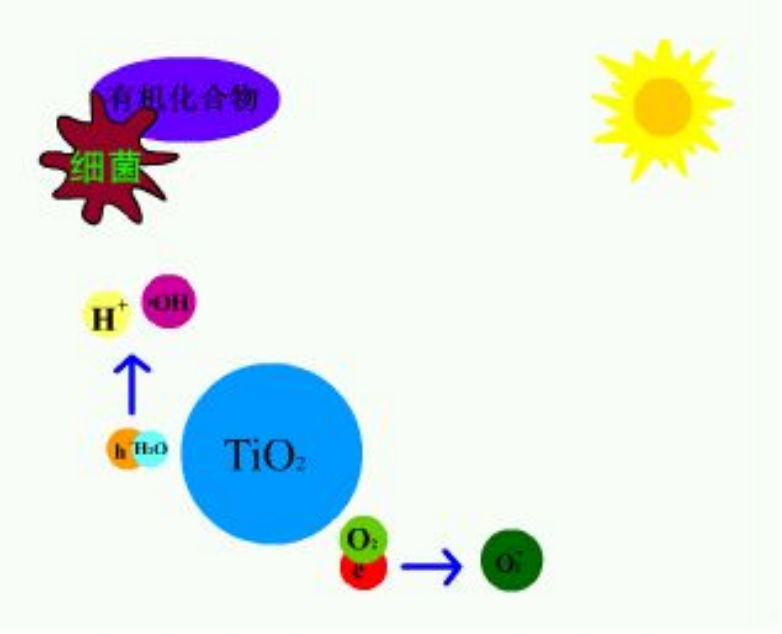


面向农业照明的设计

- 抗潮湿环境的设计

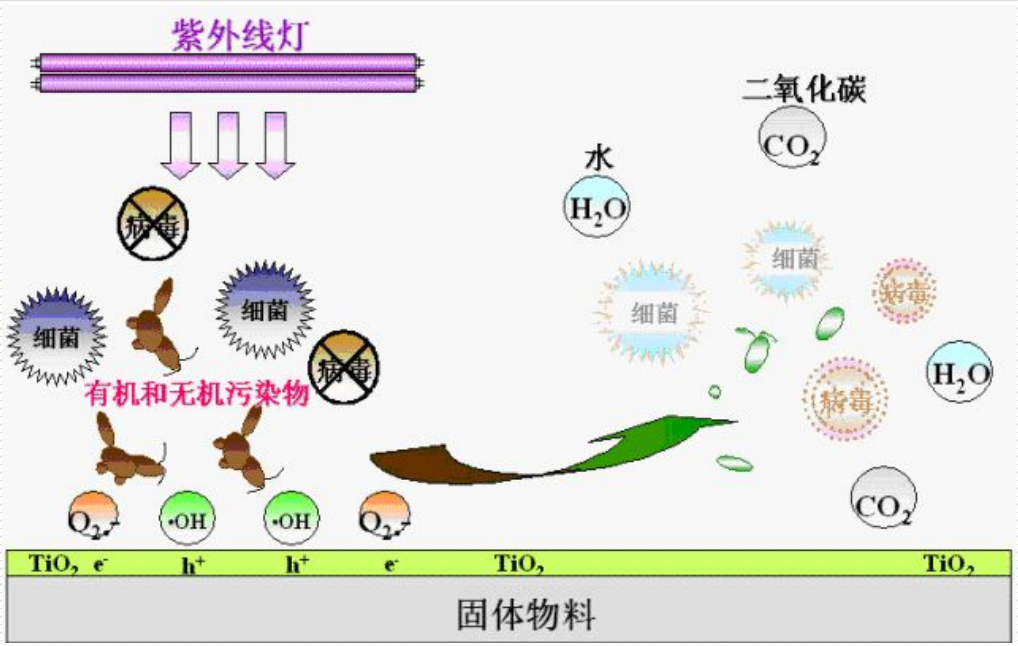
面向农业照明的设计

- 防灰尘的设计
- 消除污染的设计



面向农业照明的设计

消除污染的设计



在农业照明中的展望

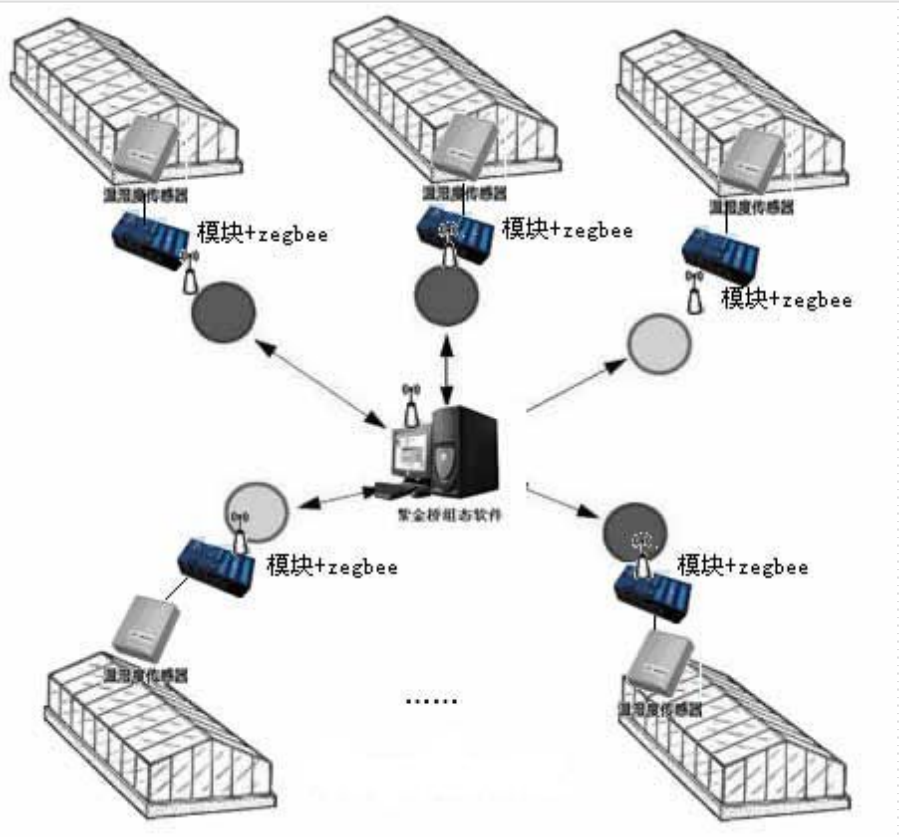
- LED照明的大量应用

在农业照明中的展望

- 机械化

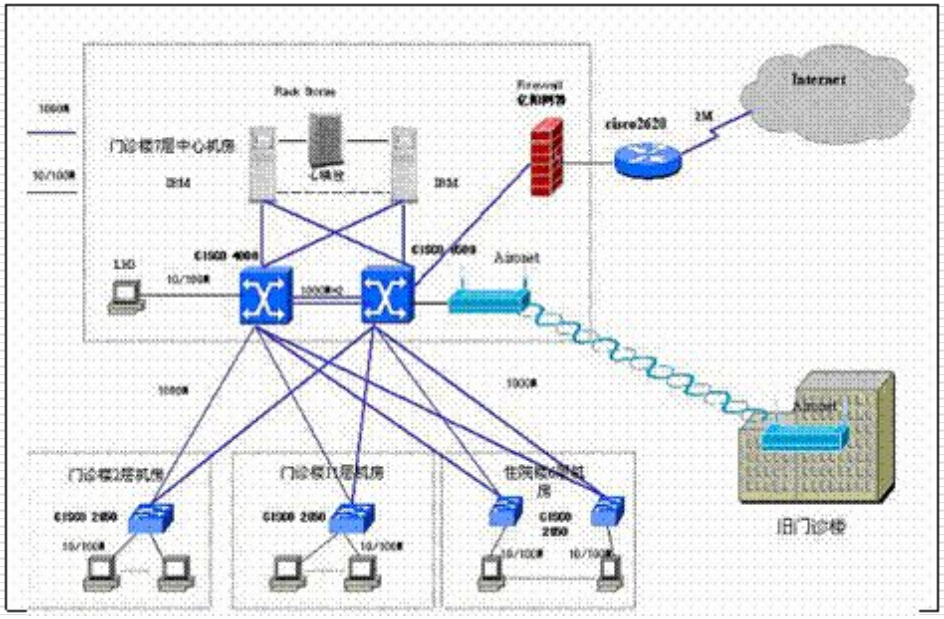
在农业照明中的展望

- 自动化



在农业照明中的展望

- 信息化



在农业照明中的展望

- 个性化

高科技让现代农业更美好！

谢谢大家！

多多指教！