

# サボテン組：植物工場での食用サボテン生産

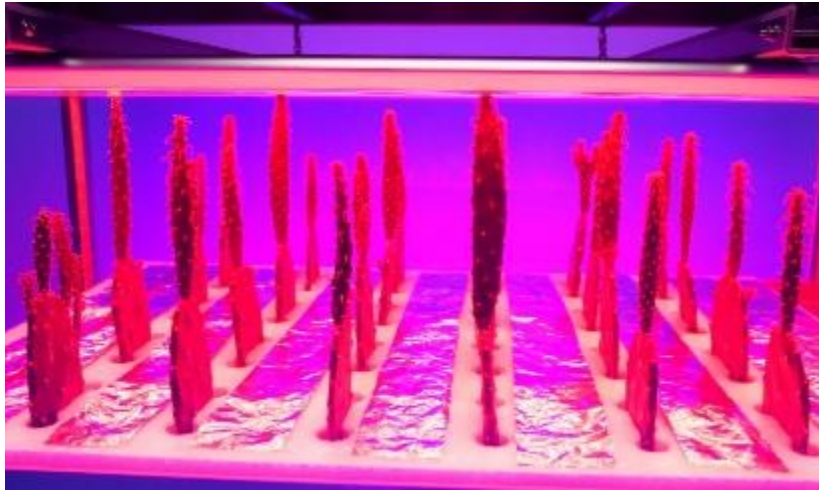
植物工場では厳密な環境制御が可能となり、生育促進、機能性向上、安全性向上などが期待できます。また食用サボテンは、栄養繁殖が可能、密植が可能、長期間の連続収穫が可能であるなど閉鎖型植物工場での生産に適した性質を多く備えており、植物工場は食用サボテン生産の強力なツールになると期待しています。

## 中部大学応用生物学部に設置されている植物工場



# 光が生育・形態・機能性に与える影響を調査

Red



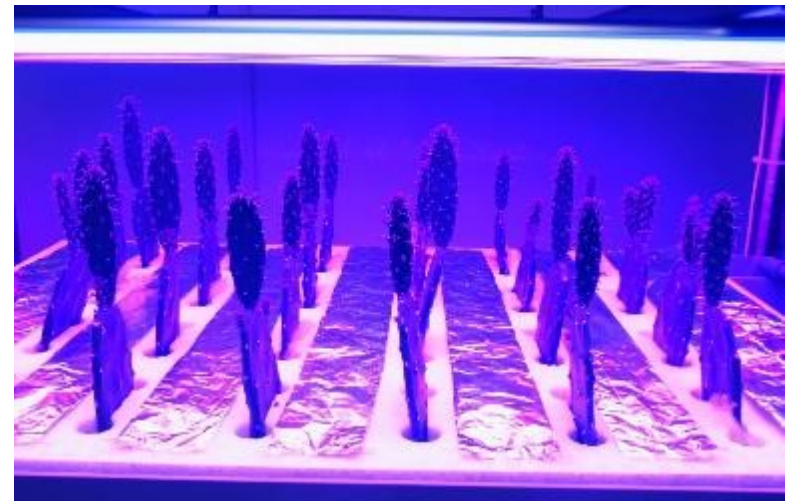
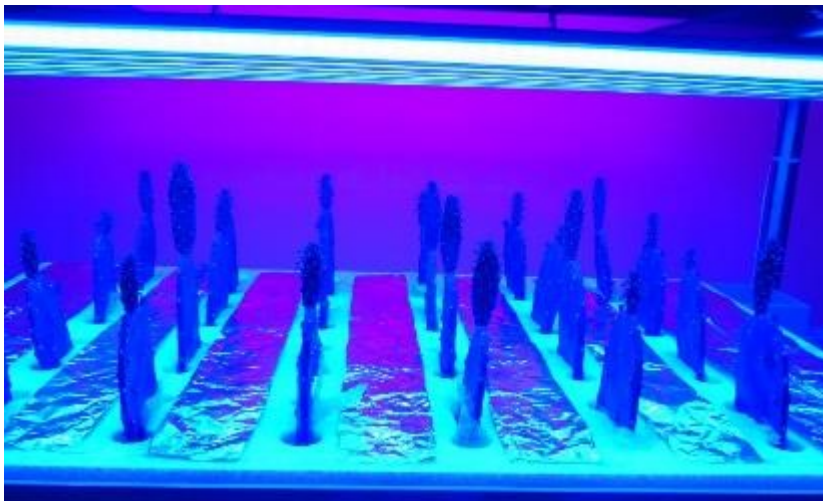
▶娘茎節成長速度は

**Red** > **R+B+G** ≥ **R+B** > **Blue**

**Red区**

▶2週間で15cm以上伸びる個体も

Blue



## Hydroponics Culture of Edible *Opuntia* ‘Maya’: Effect of Constant Red and Blue Lights on Daughter Cladodes Growth and Spine Development

Takanori HORIBE, Yohei IWAGAWA, Hiroki KONDO and Kunio YAMADA

*College of Bioscience and Biotechnology, Chubu University, Kasugai, Aichi 487–8501, Japan*

(Received May 28, 2016; Accepted July 4, 2016)

This study investigates the effects of constant red and blue LED light on the growth and spine occurrence of daughter cladodes in edible *Opuntia*. *Opuntia* cladodes were grown by hydroponic culture using the deep flow technique under red, blue, and simultaneous irradiation with red and blue light. Daughter cladodes developed from mother cladodes in all treatments, thus indicating that edible *Opuntia* can be grown under constant light and hydroponics culture. The speed of elongation growth of first cladodes was lower under blue light than with other treatments. The number of daughter cladodes was also the lowest in cladodes under blue light and was the highest in cladodes under red light. Thus, compared with red light, blue light appears to suppress daughter cladode development. The number of spines, an undesirable characteristic of edible cacti, was the highest on cladodes under simultaneous irradiation with red and blue light. Daughter cladodes under blue light had more spines than those under red light. Our results show that light wavelength strongly affects daughter cladode growth and spine number. Thus, controlling the light environment is important for improving edible cactus growth and quality.

Keywords : edible *Opuntia*, growth, hydroponics culture, LED, light environment, spines