

# HORTI-FACTS

LEDs USED TO IMPROVE PROPAGATION  
AND PRODUCTION



*Rodney Elliott, General Manager at Integrated Botanics*

## CASE FILE FACTS

COMPANY	Integrated Botanics
LOCATION	Mansfield, Texas
CROPS	Propagation of annuals, perennials, herbs, vegetables, vining plants, ground covers and tropicals
TECHNOLOGY	Philips GreenPower Production Modules DRB (LEDs) & Philips GreenPower Flowering Lamps

*Prepared by HortAmericas 2013©*



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LED Horti Partner

## Background

Integrated Botanics was founded as a young plant producer in 2002 in Mansfield, Texas. A significant amount of the starter plants produced are sold to neighboring Seville Farms. The remainder are sold through brokers. In 2012, Integrated Botanics produced about 12 million inputs, including seedling plugs and vegetative cuttings.

Integrated Botanics operates 1 acre of environmentally controlled greenhouses. The company is planning to expand its production area with an additional acre of greenhouses.

## Challenge

Integrated Botanics built a germination room consisting of a room within a room configuration. A non-functioning cooler was installed inside the head house around which was built a metal building. The germination room was equipped with environmental controls in order to provide a constant temperature and a humidifier to maintain a relative humidity of 95-100 percent. General manager Rodney Elliott wanted to install lights to accelerate germination.

Elliott was also interested in replacing incandescent bulbs with LEDs to provide photoperiod control and to extend the daylength on some crops to hasten flowering.

*“The goal of using the LEDs is to initiate germination of seedlings with a side benefit of reducing stretch,” said general manager Rodney Elliott. “The LEDs provide both red and blue light, which is a better wavelength spectrum, and they also provide more usable light for the plants than the fluorescents.”*



*Production Modules in a germination chamber*

# Solution

Working with Hort Americas, Integrated Botanics installed Philips GreenPower LED deep red/blue Production Modules in its germination room and began using them in January 2013 for the production of seedling plugs. Elliott said a side benefit of the LED Production Modules is that they help to control seedling growth and minimize stretch.

In Integrated Botanics' production greenhouses fluorescent bulbs have been replaced with LED Flowering Lamps to provide photoperiod control on dahlias, garden mums, asters, petunias and hibiscus.

Elliott has also attached Philips GreenPower LED Production Modules to Cherry Creek Systems irrigation booms to provide photoperiod control and for daylength extension.

"I wired the LEDs into the boom on a solenoid switch so I can light the crops," he said. "LEDs are really directional so you can treat the light almost like water. We have crops in the greenhouse essentially that

don't need light or may not want light with crops that need the light. So this LED light-boom irrigation installation is a very versatile set up."

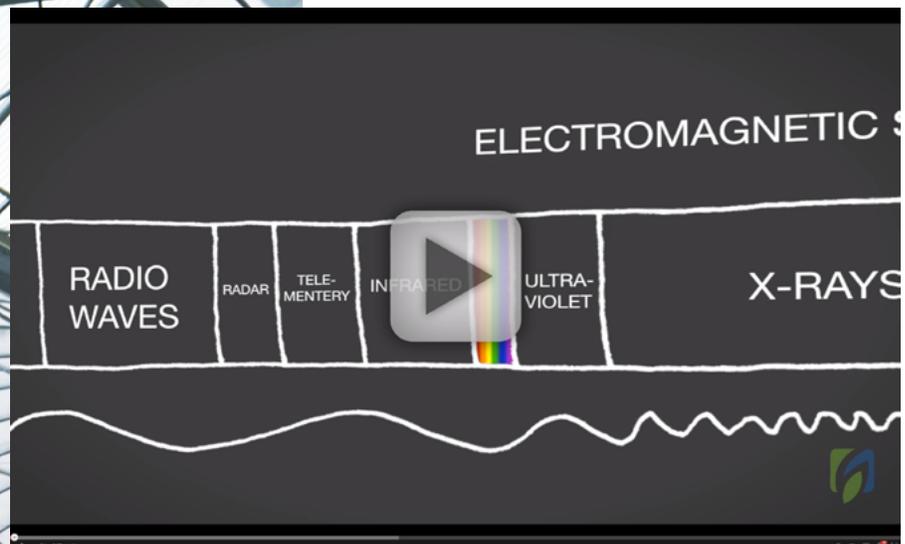
Elliott is currently using 12 LED Production Modules on one boom.

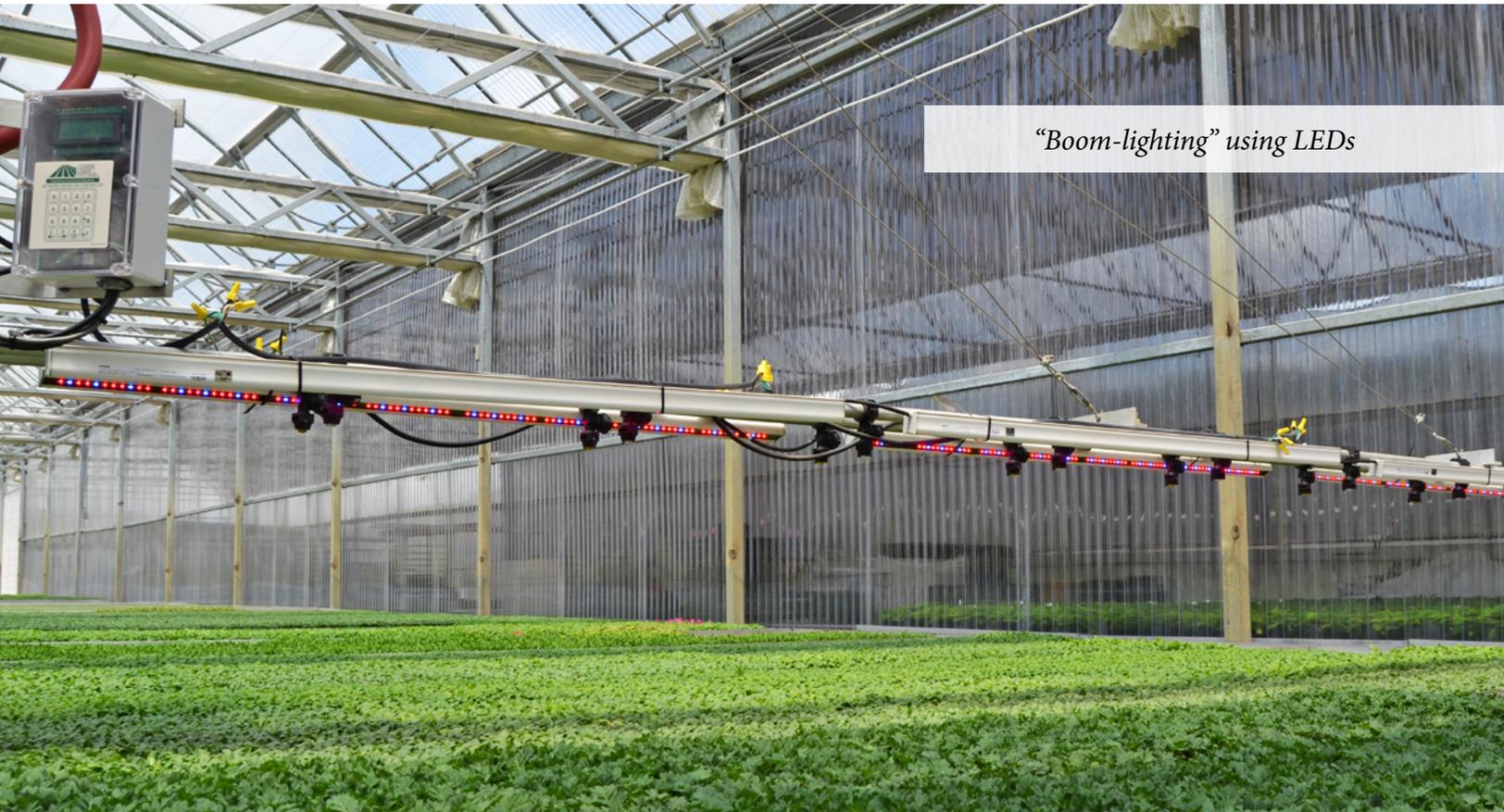
"We are going to do some trialing to determine if we can reduce the number of modules per boom," he said. "We knew for sure that 12 modules would work so that is what we started with. I don't think that we will be able to go lower than six modules per boom because the light given off by the LEDs is fairly directional. If we went with fewer than six modules per boom we wouldn't get the coverage we needed."

Elliott said that having the LEDs on the booms is like a watering cycle.



*Flowering Lamps for photoperiodic lighting*





*“Boom-lighting” using LEDs*

“We trialed how many minute intervals between each pass along with the length of the house,” he said. “We played around with that to get it right. The speed of the boom also has to be right. Right now we are overcompensating and running the booms as slow as we can to get the maximum amount of moles on the plants for the night period that we do.

“We haven’t tried the booms on every crop that we can try it on. We still have work to do which is exciting. There are certain crops that I know will benefit from the lights.”

## Benefits

Elliott said the biggest advantage of using LED Production Modules over fluorescent lights is that they have very little heat output. He said the fluorescent lights would raise the temperature in the germination room by 20°F just from the ballasts and bulbs. The LED Production Modules only raise the temperature 5°F. He said this was a big improvement because it made it much easier to control the temperature in the room with the LEDs. Another benefit of the LEDs is that they may help prevent the seedlings from stretching.

For more information: Integrated Botanics, (866) 854-0233; [www.integratedbotanics.com](http://www.integratedbotanics.com). Hort Americas, [infohortamericas@gmail.com](mailto:infohortamericas@gmail.com); [www.hortamericas.com](http://www.hortamericas.com).