**Case File Facts**

**Company**: Urban Produce  
**Location**: Irvine, Calif.  
**Crops**: USDA-certified organic microgreens, wheatgrass and herbs, which are sold to grocery stores and restaurants in California, Arizona, and Nevada. The company is scheduled to start selling to multiple national supermarket chains during 2016.  
**Technology**: Philips GreenPower LED Production Modules.
Background

Urban Produce was formed in October 2013. Although company president and CEO Ed Horton Jr. grew up in a family greenhouse business in Texas, he spent 20 years working as a technologist for Thompson Reuters Corp.

Horton returned to growing plants in 2013 when he purchased the original patents from the designer of a high density vertical growing system. Urban Produce owns the patents on its technology in the United States and six other countries.

Using his technology background, Horton automated the vertical production system further.

Urban Produce is located in a 28,000-square-foot building in an industrial park in Irvine, Calif.

The vertical production system sits on about 6,000 square feet of floor space which produces the equivalent of 16 acres of outdoor field production. Each 24-foot tall vertical growing unit consists of 25 rows of plants. The 354 growing units are on a conveyor system that moves them through light tunnels and water/nutrient watering tunnels.

Challenge

When Horton began to design his production system he was looking to make it as sustainable as possible.

“We know from a consumer’s standpoint that locally grown produce has now surpassed organic as the number one interest by consumers,” said Horton. “Organics is number two. Both are very important. Because we are controlled environment agriculture we have the ability to grow 365 days a year.”

When Horton was designing the vertical production system he needed to determine how many moles of light each crop needed in order to grow the plants the most efficiently and economically.
Solution

Because Urban Produce is a controlled environment agriculture grower it is able to grow year-round.

“Artificial light allows us to grow 365 days a year,” Horton said. “We looked at a variety of different light fixtures, including sodium vapor, metal halide and LEDs. We brought in a number of companies to talk about their lights. We chose Philips LED Production Modules because they were a better fixture in terms of being waterproof, providing 50,000 hours of light usage and offering lower energy consumption.”

Horton worked with Hort Americas to determine which Philips fixtures would work best with his vertical production system.

“There are two light tunnels with LED fixtures on both sides,” he said. “There are 25 rows of plants so there are 25 fixtures on one side and 25 fixtures on the other side of the tunnels. The automated conveyor system moves the plants through the fixtures. The fixtures are all pointed at the plants as they go through the tunnels.”

The conveyor system that moves the trays of plants through the light tunnels can move at various rates of speed.

“The conveyor system is always moving,” Horton said. “We want equal air and light distribution on the plants. Even though the carrier is moving 24 hours a day, the lights adjust based on the crop being grown. The lights may be on for 20 hours and off for four hours.”

Horton worked with researchers at the University of Arizona Controlled Environment Agriculture Center and University of California-San Luis Obispo along with technical representatives at Hort Americas to determine the necessary levels of light for the crops he planned to grow.

“Knowing how many moles on a 24-hour basis were needed for the production of wheatgrass and microgreens determined how many fixtures to install,” Horton said. “Hort Americas has helped us set up light tests for the potential new crops that we are trialing. We are doing research in our lab on 19 different crops. We must come out with new products. We have to come up with a more diverse product line, which is what we always planned on.

“...reducing our carbon footprint and generating water in-house using atmospheric water generation. We are working hard to be a sustainable eco-friendly company for generations to come.”
Benefits

Horton is preparing to add more LED fixtures so that he will be able to increase the number of moles of light for the new crops that he is bringing online.

“We will go through financial modeling looking at energy consumption and revenue,” he said. “After reviewing the financial models I’ll be able to decide how many more light fixtures I’m going to install.”

Horton is planning to expand his company nationally with five additional production locations.

“I am meeting with a number of capital partners to put together the plan for these other production facilities,” he said. “In the initial planning we are looking at having four separate production units in a 100,000 square foot building. Each of the units will be separate allowing us to have different climate controlled environments for temperature and light levels for the crops we will be growing. We will also look to start licensing our growing units to growers worldwide.”

Urban Produce LLC, (949) 600-9888; info@urbanproduce.com; http://urbanproduce.com.

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