Hort Americas 2020 Station Report
NCERA-101
Chris Higgins
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Our Story in 2020

Hort Americas has continued to partnered with Big Tex Urban Farms and the State Fair of Texas. Our joint efforts continue to include:

1. Continue to strive to be a thought leader in the development of urban agriculture in hot and humid climates.
2. Testing and proving equipment in medium-tech greenhouses located in a hot and humid environment.
3. Providing residents of South Dallas communities, which have been designated USDA food deserts, with access to fresh produce through a variety of local charities (partners.)

The greenhouse is located on the state fairgrounds just feet from the historic Cotton Bowl. The hydroponic production systems include: (2) floating rafts systems, (1) organic raised bed, (2) nutrient film technique (NFT) systems, multiple multilayered ebb-n-flow growing systems, (2) separate dutch bucket systems and new for 2020 are (2) additional grow racks, a new dutch bucket system and a new grow bag/gutter system for vine crops.

Technology Systems

Each of the production systems utilizes unique technology designed to work both operationally and economically in a medium-tech greenhouse. This technology includes:

1. LED grow lights from Current, powered by GE including the new 600w grow light (+1800 ppf).
2. LED grow lights from OSRAM.
3. Wireless sensor technology from 30MHz.
4. A nanobubble generator from Moleaer.
5. Custom-built, multilayered grow racks from Hort Americas for germination, propagation and microgreen production.
6. Grosense water management system and sensor.
7. BlueLab Pro-Controller and handheld sensors.
8. VAF Fans
9. Possible fog systems for 2020.

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Working with Drew Demler (Big Tex Urban Farms) and Stephen Ritz (Greenbronx Machine)

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Installation of new high-output LED grow lights. (L1000 supplied by GE)

Products and Processes Currently Being Demonstrated

Remember our goals are not to conduct pure research. Our goals are to take commercially available (or close to available) products and technology and prove that we can make it work under real world growing conditions using local labor. We are looking for results that would be economically viable if commercial growers were to invest in them. The State Fair greenhouse is open to the public and the results will be shared through either the Hort Americas blog or Urban Ag News.

Current demonstrations include:

1. Reduce the cost capital cost of adding dissolved oxygen to our raft systems.
2. Reduce the amount of LED grow lights needed by using higher power (600w) lights. Continue to focus on trials: broad spectrum (white light) vs pink or purple light.
3. Better understand the suitable applications for wireless technologies and sensors. Understand if multiple dashboards make financial sense for growers.
4. Find the best solutions for helping new growers with limited experience grow vine crops.

Updates since 2019.

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What have we learned?

-That it is possible to inject oxygen directly into a basic venturi and that sustained increased DO levels will increase root health and plant mass in warm/hot temps.
-That growing hydroponic tomatoes with off the shelf organic hydroponic fertilizers is either not really commercially possible or that we just don't know how to do it.
-Setting DWC systems up on an autofill not only saves time, but prevents the browning of roots from excess chlorine when adding larger amounts of city water at once.
- That sensor technology is great for small farms, but that we are still trying to determine how much growers can afford to pay for.
- That in a greenhouse environment red/blue lights are perfectly acceptable and that if red/blue lights continue to outperform other LEDs in intensity and efficiency, this is likely the best investment for the grower.

Problems

Labor. This will continue to be a problem for us.
Products. Remember our mission is to use products currently commercially available or close commercially available. Many of the products don't work for the conditions we are putting them in. This could be based on a variety of issues from economics to scale to durability.

Accomplishments

Our project is only 1½ years old and we have already provided more than 400,000 servings of fresh locally-grown produce to the residents of South Dallas.
Further developing the Urban Ag Movement for Dallas, Texas. (2020 Invite Only Event.)

Our Mission

To link the North American controlled environment agriculture community with the technologies, products and services needed to grow profitable crops while at the same time doing right by the communities and environments we conduct business in.

Learn more by reading these articles:
https://hortamericas.com/blog/news/big-tex-urban-farms-is-using-hydroponics-to-achieve-its-million-servings-mission/
https://urbanagnews.com/blog/exclusives/big-tex-urban-farms-uses-hydroponic-systems-to-teach-feed-local-dallas-residents/

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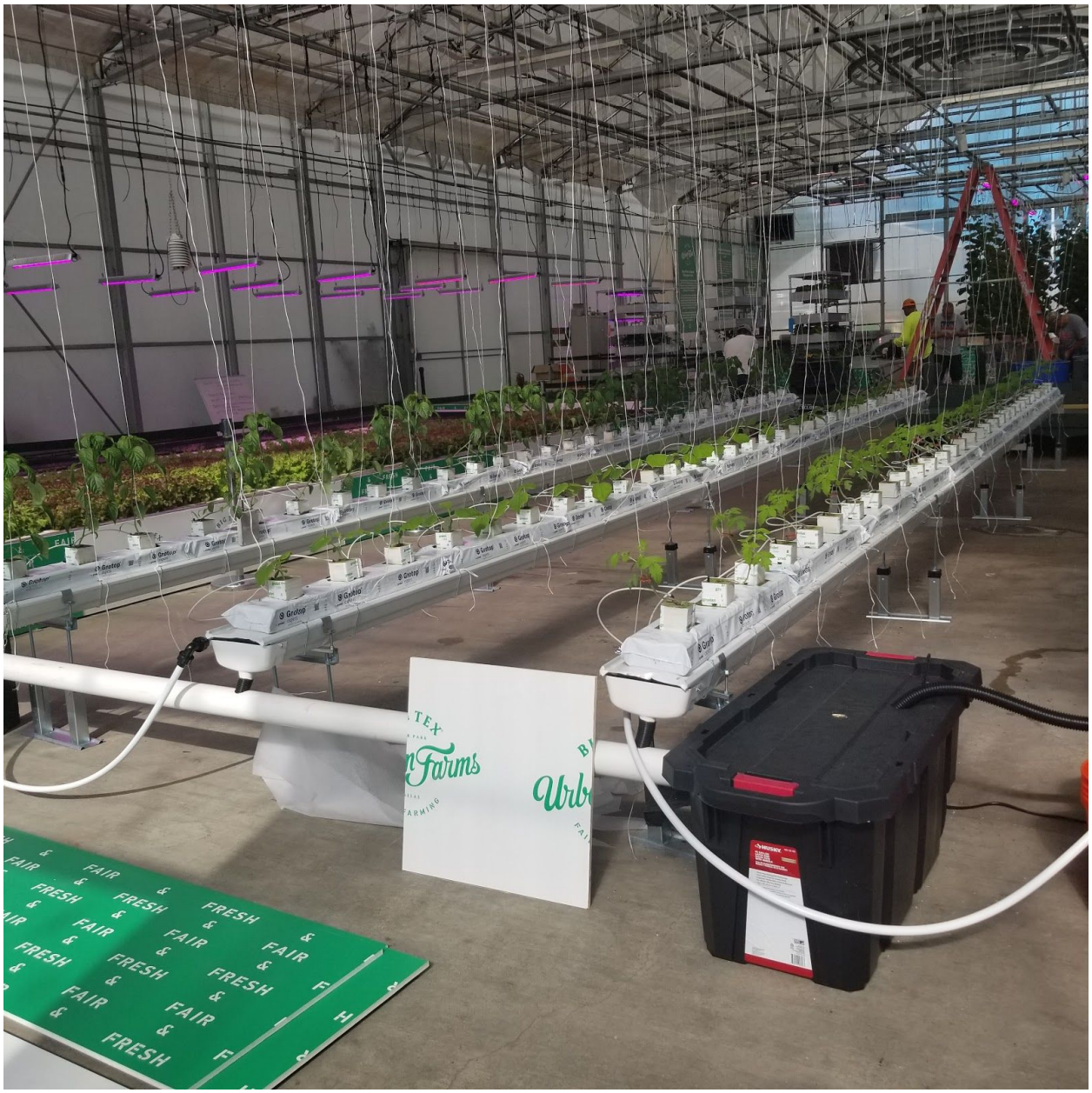

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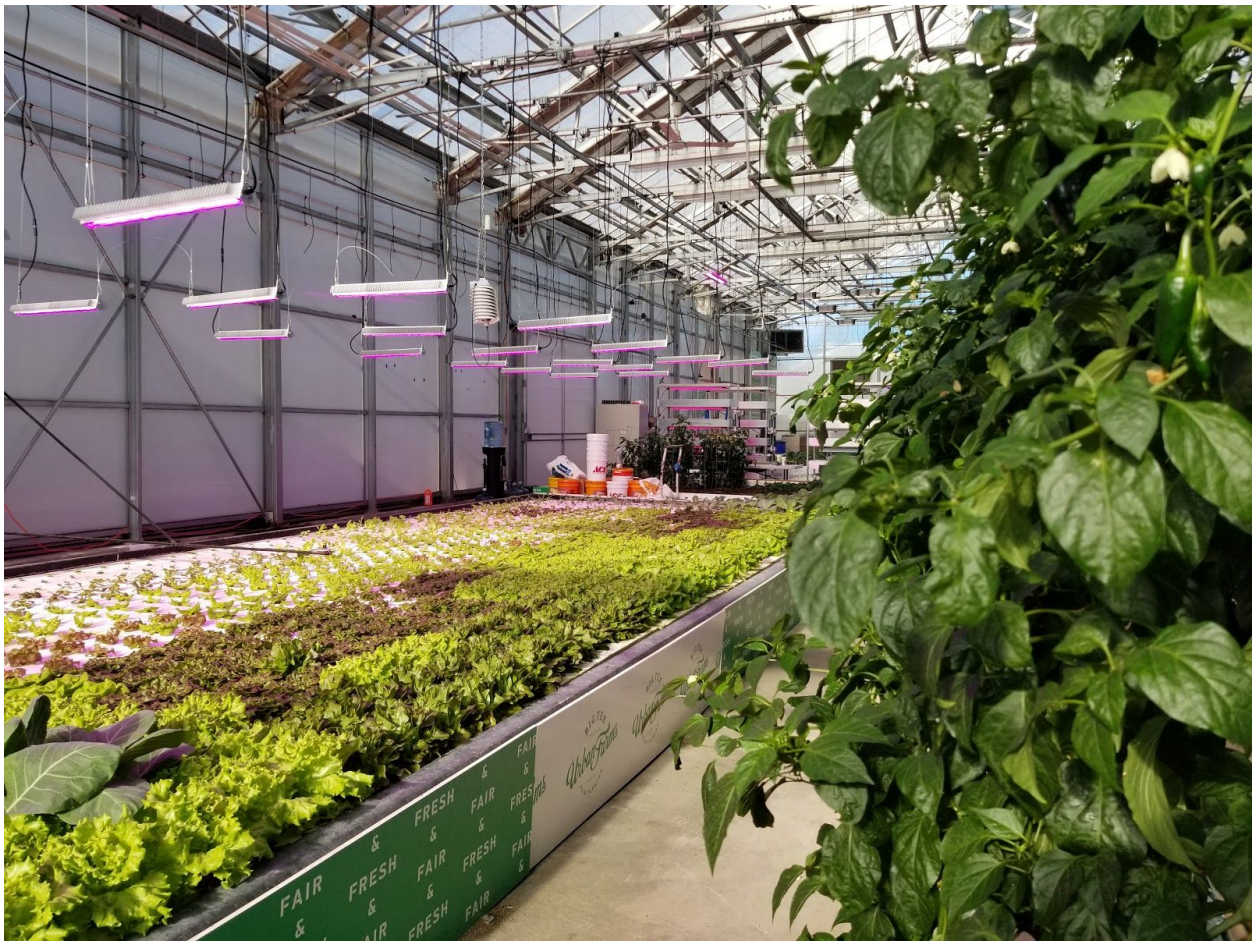

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