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FEATURES

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Vertical Farming: Things to Know for a Successful Grow

Lorrie Schultz

Recently, I had the opportunity to sit down with Dr. Abhay Thosar, who leads the Fluence Horticultural Services team, and Chris Bezuyen, who leads the Technical Services team at Fluence. The conversation centered on the strategies around vertical farming and how a grower should approach starting their own grow.

Lorrie Schultz (LS): If a grower wants to get into vertical farming, what's the first advice you would give?

Dr. Abhay Thosar (AT): Never compare vertical farming products to those from open agriculture. These are two entirely different realms with wildly different inputs and outcomes. With controlled environment agriculture (CEA), growers can have full control and optimize every step of the process from seed selection to packaging.

Chris Bezuyen (CB): Start with the crop. The specific crop you choose will dictate the infrastructure, technology and processes that you need. A lot of growers make the critical mistake of beginning with engineering. They install the racking, trays and shelves, then assume that they can insert any crop in their facility and grow it well, but this is not the case. Instead, growers should study and understand the market, select a viable crop they want to grow or are passionate about, and then build the entire operation around that selection.

LS: What are some common mistakes that new growers make in vertical farming?

AT: The most common mistake is not selecting the correct cultivar. This is very important, and it is why growers need to work not only with Fluence, but also with a breeding company to develop the cultivars. When you start with the right cultivar, you can then begin to build your whole operation around it and cultivate success through optimization and automation.

CB: Many new growers are unaware that traditional breeding is done either in the open field or under high pressure sodium lights. Fortunately, more breeding companies have developed cultivars that are genetically tuned to work specifically in vertical and CEA environments, as opposed to field environments. Fluence provides LED lighting solutions to the horticulture research industry, so we know the cultivars that are specifically developed and optimized for LED spectrum recipes. At Fluence, the science always comes first.

AT: I think expertise is vital. At every stage, there needs to be departmentalization, specialization and optimization. Many operations are doomed to fail from the outset because they do not hire a professional grower with the proper experience and expertise. I cannot stress this point enough: Get professional support at every step of the grow process. You need a team specialized in growing, engineering, packaging, marketing and even operational management. If a grower can streamline and optimize each stage and process, that's where you will start to see the profitability.

LS: What is a major misconception among new or aspiring growers in this cubic space?

AT: Many growers think, "Well, vertical farming means I can only grow leafy greens and microgreens." They believe they are limited to a handful of crops. But this just isn't true. My team helps growers select and cultivate a vast variety of crops that include tomatoes, cucumbers, herbs and plants for medicinal use. There is so much you can do and there is even more yet to be done.



CB: There's so much technology in traditional farming methods, but vertical farming takes it to the next level. Vertical farming is highly innovative, but innovation does not necessitate "high tech." There are vertical farms that utilize state-of-the-art technology and expensive machines, but there are also successful vertical farms with basic technology, and simple practices and procedures. Fluence can help any size vertical farm to optimize, scale and profit, whether they are operating a 25-ft.-high bay environment or something smaller, like a repurposed retail space. Whatever is in the cube [the cubic environment] will change based on the needs of the crop.

LS: What are the main challenges when entering "the cube" of vertical farming?

AT: The first challenge is, of course, capital investment. Lighting takes up—in most of the cases I've seen—almost 25% to 30% of the total CapEx. This is a big commitment and a crucial consideration. And I think growers need to consider the different aspects of lighting: everything from form factor to spectrum intensity, efficacy, control, scalability and dozens of other factors. But it is also important to study and understand the market because that's going to help determine what you grow, which will dictate the other aspects of the facility and operation.

CB: I think one of the biggest obstacles is that vertical farming is a new methodology. Jurisdictions and municipalities are a little bit slower to create zoning and incentives to encourage vertical farming because it is nontraditional. How do you accurately zone a vertical farm? Historically, vertical farms have been categorized as "factory environments" and yet they are not factories in the pure sense of that word. Legislation is often slower than innovation and this is certainly the case with vertical farming.

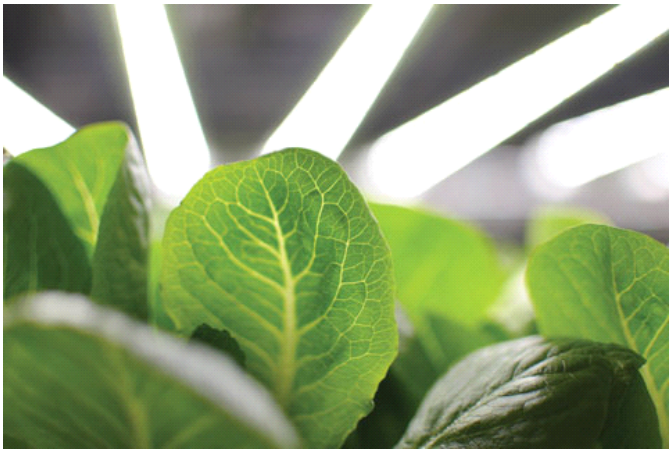
LS: How does Fluence help new or current growers maximize and optimize their "cubes"?

AT: I bring the growing expertise, whereas Chris brings the engineering expertise. Growers need to think about both and often they don't. We are like two circles that cross over each other —like a Venn diagram— and the magic happens in the middle. CEA literally starts with control … and we help growers develop a comprehensive control strategy that includes lighting.

CB: This is one of the advantages of working with Fluence. We are not just a lighting company; we are a science-backed company, and we have teams that are focused on supporting growers from a horticulture perspective or a growing perspective, but also a technological perspective. It's not just about lighting; it's also about growing successfully beneath those lights. It's not just about the sale; it's about the customer's success under those lights and that's the benefit.

LS: How does Fluence's RAZR Modular LED lighting solution give growers the edge they need?

CB: It's one that can be adapted for any form factor methodology of vertical farming. It's one that is extremely flexible and easily customizable to whichever configuration is required. It conforms to any growing structure or infrastructure you have—from the small, pod-based farms to container farms to the massive high bay vertical farms. It offers flexibility of spectrum, flexibility of mounting method and light intensity.



The other primary benefit of Fluence's RAZR solution is its incredible scalability. Thanks to a wide variety of mounting accessories and plug-and-play cables, a grower can easily add RAZR Modular to any new cart or racking system they bring into their operation. That means regardless of how their growing structure evolves over time, the grower can count on the same lighting consistency and performance throughout their operation.

Furthermore, our lights are all DLC-listed so that they qualify for rebates frequently offered by utility companies looking to promote energy conservation. They're designed in such a way that they interface seamlessly with master control systems, allowing the grower to control their facility from a single master computer. This singular interface is far more user-friendly and effective than having multiple discrete systems being individually controlled. We develop products that are focused on the grower's needs, then we develop technological solutions around control strategies. We look at it holistically, not just from the lights down. We look at the entire ecosystem.

AT: It all goes back to the objectives that the grower would like to achieve for the particular crops. Even though we are a lighting company, we are not just focused on lighting solutions. We discuss the impact of different parameters on the plant response, along with the lighting solution to achieve the specific objectives. We discuss all the other factors that impact the crop along with the lighting. Our ultimate goal is to support the grower and provide a well-rounded solution to ensure their success.

Lorrie Schultz is the senior vice president of the Fluence global marketing team. For more details on LED lighting, visit www.fluence.science.