Growing LABOR PAINS Part 3

Our final segment in this series on greenhouse labor management gathers input from a grower who operates as close to an autonomous greenhouse as one can get.

BY CARL SILVERBERG

If you take a two-hour drive east from Chicago, you pass a mixture of suburbs, small cities and some classic Midwest family farm country. Then you get to the industrial areas of Indiana — that stretch of America often called the Rust Belt — dotted with former bustling towns, now filled with abandoned warehouses and shuttered industrial plants. In the middle of all this is one of the most technologically advanced greenhouses in the U.S.

Pure Green Farms is in South Bend, Indiana, and grower Johnathan McCullar runs a brand new greenhouse designed to take advantage of all the indoor technology available. With over 100,000 square feet of produce, McCullar manages the entire operation with about 10 employees. I wanted to know, does he only have 10 people because he can't find more people to work in his facility or because that's all he needs?

"We just don't need that many people. In terms of attracting labor as we expand and build more facilities, we have to develop a brand that will quickly attract more people. We're competing with Costco and Walmart, those types of employers for entry-level workers," McCullar says. "On the other end, the higher-skilled workers, we see college grads who graduate understanding scientific papers, with great horticulture knowledge, and with a good grasp of data analytics, which is a lot of what we do here. That's a good thing because we don't have a lot of time to teach someone."

We talked a bit about the impact of COVID but McCullar focused on what has changed since he graduated from the University of Florida about eight years ago. Interestingly, he discussed the impact of technology but talked about a different aspect of growing than just a need for greenhouse skills.

"Technology has changed the greenhouse a lot, but the basics are still the same. You still have to create the perfect environment around the seed. How we do that has changed the most. For example, consumers are more aware of practices on farms," he says. "They want to feel good about the products they're buying, and that the people they're buying

LEDs and sophisticated climate control systems are becoming standard to controlled environment agriculture, says Johnathan McCullar, grower at Pure Green Farms. *(Photos: Pure Green Farms)*

their food from are using good farming practices. For example, using more biologicals instead of pesticides; good bugs fighting bad bugs.

"When I was in school, LEDs were so much in the future, it was like flying cars. Now, it's commonplace everywhere, even in your house. Climate control systems are way more advanced than they were eight years ago. The whole goal now is autonomous growing, keeping your settings at a steady pace throughout the year automatically. The grower no longer has to manipulate the settings or crunch the numbers."

He was painting a picture of the greenhouse of today and the kind of grower who will be operating and working in that greenhouse tomorrow as well. McCullar pointed out that what's driving the technology revolution is not a desire to employ fewer people or a reaction to the labor shortage. It's the availability of technology that's making decision-making more precise.

"If you look up above the floor level, we have a scanning system that goes back and forth captures images twice a day. It's sort of like Google Earth in my greenhouse. It's pretty cool to be able to view your crop … you can see subtle changes, differences in the greenhouse from one side to the other. I can tell someone we have microclimates, but I can see it with iUNU and I can prove it. It's an AI learning system and I can compare images from the same day last year that I'm on this year. It helps me decide things like how we use that data, how we make decisions on our nutrients, how we run our climate. Technology can be a very powerful tool."

One of the hot topics in the greenhouse industry is the concept of an autonomous facility. Part of it is being driven by the availability of technology, part of it by the scarcity of labor, and part of it by the promise of increased production and decreased costs. What is so attractive about an autonomous greenhouse? Is it the desire to deal with a seemingly endless scarcity of workers and the fact that the average grower is 57 years old?

"There's an (return on investment) ROI equation and it has very little to do with labor. For example, our facility was designed with the idea that we will have a certain amount of people, and for our business model to make sense, for the numbers to work, we have to be fairly autonomous. We need the best settings for climate control, keeping the climate steady, no big spikes and dips for things like temperature, humidity, and light.

Pure Green Farms grows, packs, and ships leafy greens hands-free in the Midwest. Located in South Bend, Indiana, the growing facility uses environmentally friendly practices to grow greens through its high-tech, climate-controlled space.

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"An autonomous growing system also has to be energy efficient. I don't think the human aspect goes away but the sensors and the instruments will just get better and better so you will need fewer people in the greenhouse. We're removing that feeling where, 'Oh, it feels like the temperature is too hot so I'm going to make a change to the settings.' That grower can't see the overall outcome because he or she doesn't have all the data in their head of what happened the last time they tried to do that. But the computer does. What I think we'll see is a partnership between growers and technology. Systems will analyze data and growers will match it with their perception of what's really happening in the physical space."

In the end, it turns out that the labor shortage isn't the driver of using increased technology in the greenhouse. Students are coming out pretty well prepared for life as a grower and the industry is seeing a qualified group of graduates who are familiar with technology, comfortable with technology, and eager to put it to use.

The reality is that the real problem is at the entry level, where the CEA industry is experiencing the same issues and problems as virtually every other industry in America. Technology will allow advanced greenhouse operations to compensate for the lack of labor. Older greenhouses that haven't been renovated or kept up with technological advances are the ones that will continue to experience growing labor pains. gpn

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