Startups Stirring Up the Future of Food

Presentation:

David Rosenberg, CEO, AeroFarms

(Transcription by RA Fisher Ink)

Rosenberg: Hey, everybody. Good afternoon. Zoe, wonderful overview of food, and food tech, and ag tech. That was exciting. And I'll share where AeroFarms fits in. And we're a vertical farming company and we have a video. This is of our eighth farm, and then there's going to be images. That's of our ninth farm that we built, the largest vertical farm in the world. That's in Newark. So if you want to try some of the product outside, it was grown in here and it sold in New Jersey in Whole Foods and ShopRite, here in New York City through FreshDirect, through a brand called Dream Greens. But, not here to sell Dream Greens, more to tell you about our interaction in ag and tech.

So here we can grow a plant using, on average, about 95 percent less water. We do that—well, so first, I'll start out by saying 95 percent less water, zero pesticides, herbicides, fungicides. Our productivity per square foot over a field farmer is about 360 times higher, up to 390 times higher than a field farmer. In New York state, in California, it might be about 130 times higher because of the crop production. So we can grow a plant in average 15 days. A year ago, that was 16 days. Just through data analytics, data science, we were able to actually bring it down. Just using the same seed, just giving it what it wants when it wants it, how it wants it, to now in 15 days. That's 23 crop turns a year versus, given seasonality, three in the field.

And, ultimately, this enables fresh food 365 days a year. We've grown about 400 different varieties of plants, and we think we can grow anything. It doesn't mean we grow everything. We really have a careful lens on what the economics are. Right now, the economics work best in leafy greens. Specifically, we grow baby greens; we grow herbs, microgreens. All these designations are, basically, maturity. It's when you harvest. When you eat salads, that's baby greens and that usually has the best texture, and flavors, and nutritional density.

And my biggest surprise in this journey—I'm not from the farm industry, I grew up in the Bronx.

[LAUGHTER]

We do farm in the Bronx, occasionally. But, my biggest surprise is, we could influence taste and texture. So here, just like if we eat differently, sleep differently, exercise differently, that changes our biochemistry. And, [in a] similar way, if we get a plant to eat differently, sleep

differently, exercise differently—and, as weird as it sounds, that's what we do. We manipulate these abiotic stresses to influence plant growth, so we could influence these taste, textures, and nutritional density, shelf life, color, texture of a plant.

So for example, I brought three specific leaves here, outside. So a kale, an arugula, and a mustard green. And here, if you try the arugula, you will taste the pepperiness. If you try the kale, you'll notice that, unlike traditional kale, it's a softer leaf. Also, it's less bitter. If you try the mustard green, you'll see that it tastes like mustard.

And we, to illustrate the data analysis, will take the same seed, grow it lots of different ways. So give it lots of different types of spectrum at different intensities, different frequencies, different minerals and elements. So on average, there is let's say 20 different minerals and elements. We'll focus, like, "Let's give this one more iron, this more zinc, this more magnesium, etc., etc., and see what the influence of the plant is. Let's change the temperature, the humidity, the pH, the airflow, the CO_2."

So the 'aer' in AeroFarms refers to aeroponics, so we mist nutrition in the root structure to give it healthy oxygenation of the root structure. So to give you an illustration of what our team looks like, we're 130 people; most of which have a tech background. We have plant biologists, physiologists, pathologists, molecular biologists, microbiologists, that are looking at what all these different changes in the plant do. So how, when we mist nutrition and create the right oxygenation, what does it do the physiology of the root structure, and how does that influence plant growth?

At the same time, we have all these engineers. So we have mechanical, structural, electrical, industrial systems engineers, all these engineers constantly looking at reducing the capex, reducing the opex, and understanding what's the right mechanical system to grow a plant of different types of varieties, whether it's leafy greens or something very different. And then we're constantly with the lens, since Dave asked me to share from the environmental standpoint.

My inspiration in building this company was reducing water. And there, this was not a cost-savings initiative, this was just more ambitiously, environmentally minded. How do we do this? And our design principles are very much woven in. The concept of doing more with less. So there's IP infiltration. How do we leave in nutrients and micronutrients? How do we filter out algae? Here, from an environmental standpoint, we don't have to wash the food. When you wash food, we don't think of, when it says triple-washed, what that means. But it's all the pesticides, herbicides, fungicides we want to wash off. So we developed a way to grow with zero pesticides, so there's nothing to wash off. So it has a very pristine flavor.

Same thing with spectrum. What's the energy hog of spectrum? Does it optimize photosynthesis? Can we strip it out? So it's why one by one, our growth media is a cloth. It's made out of recycled materials that's reusable. So very much working as we build a company to improve our footprint on the environment.

I see I'm out, so I'll leave it there. Thanks.

[APPLAUSE]