

A Farm Grows in a Brick City

Transforming agriculture and communities

Marc Oshima

Co-Founder | Chief Marketing Officer, AeroFarms
AeroFarms, Newark, NJ, USA

Key messages

- > AeroFarms in Newark, NJ, USA, is an urban farm that grows without sun or soil in a fully controlled indoor environment.
- > AeroFarms is the first and only agriculture company to date to be honored by the Ellen MacArthur Foundation as one of the Circular Economy 100.
- > The design of the system permits the pesticide-free cultivation of nutritious produce in an area with poor air quality, seven percent unemployment, and significant public health problems.
- > AeroFarms has a working farm in a school: proximity to the produce as it is grown encourages the students to adopt and maintain healthy eating habits.

The role of urban farms in the health of a city as we see it

Newark is a vibrant city with a story-filled history and innovation in its soul, but it is one of the sickest cities in America. According to a 2010 Centers for Disease Control (CDC) study, 60 percent of the population was overweight, infant mortality rates were above 10 per 1,000 live births, and one in four children has asthma, most likely due to poor air quality.¹ One might wonder why AeroFarms, a global leader in agriculture technology innovation and builder of the world's largest indoor vertical farm, has chosen to make Newark its home.

When looking to improve health outcomes in a city like Newark, one might imagine a state-of-the-art hospital or community centers with diet and lifestyle education. While those are both worthy endeavors, we are challenging city officials, community members and health professionals all over the United States to think: farm.

“We are challenging city officials, community members and health professionals all over the US to think: ‘farm’”

A new kind of farm

AeroFarms is not just any farm. And not just any urban farm. We grow without sun or soil in a fully controlled indoor environment, leading the way for indoor vertical farming, enabling local production at scale to feed the masses. We use a method called aeroponics to mist the roots of our greens with nutrients, water, and oxygen and they grow in a special cloth of our own design. We use 95 percent less water than field farming and have developed a closed-loop water circulation system that recirculates water to our plants. This innovation made us the first and only agriculture company to date to be honored by the Ellen MacArthur Foundation as one of the Circular Economy 100, a select group of global companies focused on eliminating waste and improving our positive impact on the environment and sustainability. It is this impact that has led us to become a certified B-Corporation.

We use LED lights to create a specific light recipe for each plant, giving the greens exactly the spectrum, intensity, and frequency they need for more effective photosynthesis in the most energy-efficient way possible. This engineered lighting allows us



Interior of AeroFarms' vertical farm in Rome Street, Newark, NJ



to control size, shape, texture, color, flavor, and nutrition with razor-sharp precision and increased productivity.

We are constantly monitoring all the macro- and micro-nutrients for our plants to provide them with everything that they need to thrive. We are able to take the exact same seed from the field and grow it in half the time needed by a traditional field farmer, leading to 130 times more productivity per square foot than a commercial field farm.

.....

“We are 130 times more productive per square foot than a commercial field farm”

.....

The design of the system, combined with the environmental controls we strictly enforce, allows us to grow produce without using pesticides. We are able to provide consumers with clean, ready-to-eat greens that do not need to be washed. All of this means that the greens we grow are extremely high quality with consistent delicious taste, stellar nutrition, and year-round availability. And we do it all in an area with poor air quality, seven percent unemployment, and some seriously concerning health trends.

Local hiring

Newark, NJ, is a city in need of new industries and healthy food. As a mission-driven company, we think about how our work can

positively impact all our stakeholders, particularly the community. We have created more than 120 jobs with year-round employment, on-the-job training, and opportunities for advancement. In his March “State of the City” address, Mayor Ras Baraka explained that only 18 percent of the jobs created in Newark go to Newark residents. We are particularly proud of the fact that we have been able to hire locally, and over 85 percent of our team lives within 15 miles of our farm, creating a deep connection with the community. That’s part of the reason that Mayor Baraka encouraged Newarkers to “buy Newark” by buying our greens from the brand-new Newark Whole Foods Market and ShopRite Newark.

On Wednesdays, when we open our doors to the community to purchase greens straight from the farm, we meet new people every week who are just learning that agriculture is happening at scale in their industrial backyard. There is a sense of pride in their city that encourages people to try new foods. Indeed, on our AeroFarms team, the pride that comes from seeding, tending, harvesting and packing these greens leads to a willingness to try baby greens – and for many of our team members, baby greens in any of the area restaurants or stores were, until recently, hard to come by.

We also help combat “food deserts” – areas designated by the US government as not having access to full-service grocery stores in their area. We open our doors to the community every week to sell freshly harvested greens so as to make eating healthy easier for our neighbors. We sell to a wide range of customers from major supermarkets, to major food service

companies, to institutions/schools, to restaurants, to farmers' markets, to families. Our whole goal is democratizing access to good healthy food.

Farm to school: Cultivating food habits

Our impact in the community goes deeper than converting its empty buildings, hiring its residents, or stocking its local grocery shelves.

Our farming technology is very flexible in adapting to different spaces, and we have a working farm in a school – Philips Academy Charter School – that is located in a low-income community in Newark, NJ. The six-foot-tall two-tiered growing tower is right in the school's dining hall, creating the shortest farm-to-table experience around. The farm is chef-driven and teacher-guided, but ultimately student-managed, and the students love seeing how their food is grown. The integration of healthy, scratch-made foods into curriculum across grades and subjects, implemented by Ecospaces Education Program Director Frank Montesana and Chef Robert Wallauer, has even garnered the attention of former First Lady Michelle Obama, who visited the school in April 2016 as a part of the Let's Move campaign garden tour.

.....
“Growing and harvesting the greens themselves gives the students a real connection to food”

Growing and harvesting the greens themselves gives the students a real connection to food like nothing else can. When the students take pride in growing greens, they are more than likely to eat them. And this is not simply anecdotal: research backs it up.

According to Cooke, who reviewed research on healthy eating in childhood, “perhaps the most important determinant of

a child's liking for a particular food is the extent to which it is familiar. Put simply, children like what they know and they eat what they like.”²

So, proximity to this revolutionary way of growing doesn't just spark the students' imaginations, encouraging them to ignore convention just like our inventor-in-chief Dr Ed Harwood is constantly doing; it actually teaches them to love greens.

Through this small farm and the remarkable program the school has built around it, not only are we able to facilitate the healthy feeding of hundreds of children at this crucial stage of their growth, but we are also fostering lifelong habits that will spread outward through their communities and down through generations. As noted by Wadhera, “the... perceived recollection of frequent consumption of foods in childhood was significantly related to current liking for the vast majority of the foods, including nutritious foods such as vegetables.”³

Providing nutritious meals to at-risk children is important, but we are able to do so much more. We are helping shape their palates and appreciation for how their food is grown – in a sense, programming their habits for the rest of their lives. The value of that is unquantifiable.

We envision a world where urban farms, especially technologically advanced, extremely productive farms like ours, are actively sought out by urban centers not just as a provider of healthy, fresh, local produce, but as harbingers of good eating habits. When a farm becomes a part of a community as we have, the community loyalty can run deep and the knock-on effects for health and wellness can be deep and lasting.

.....
“We envision a world where urban farms act as harbingers of good eating habits”

.....
Correspondence: Marc Oshima,
AeroFarms LLC, 212 Rome Street, Newark, NJ 07105, USA
Email: marcoshima@aerofarms.com

References

01. www.governing.com/gov-data/obesity-rates-by-state-metro-area-data.html
02. Cooke L. The importance of exposure for healthy eating in childhood: a review. *J Hum Nutr Diet* 2007;20:294–301. doi:10.1111/j.1365-277X.2007.00804.x.
03. Wadhera D, Capaldi Phillips ED, Wilkie LM et al. Perceived recollection of frequent exposure to foods in childhood is associated with adulthood liking. *Appetite* 2015;89:22–32.



Baby mixed greens grown by AeroFarms