

This Farm of the Future Uses No Soil and 95% Less Water - KEY

NARRATOR: You can't see it on the outside, but this old industrial neighbourhood is an agricultural oasis. Inside this former laser tag arena, about 250 kinds of leafy greens are growing in huge quantities, to be sold to local supermarkets and restaurants.

This is AeroFarms, a massive indoor vertical farm in Newark, New Jersey.

DAVID ROSENBERG: Our mission is to build farms in cities all over the world so people have access to fresh, great tasting, highly nutritious food.

NARRATOR: Crops are stacked more than 30 feet high inside this 30,000 square foot space. They're grown using aeroponic technology.

DAVID ROSENBERG: Typically in indoor growing, the roots sit in water and one tries to oxygenate the water. Our key inventor realized that if we mist nutrition to the root structure, then the roots have a better oxygenation.

NARRATOR: AeroFarms says the root misting system allows them to use 95% less water than a regular field farm. They also use no pesticides or herbicides. Instead of soil, plants are grown in reusable cloth, made from recycled plastic. And instead of the sun, there are rows and rows of specialized LED lighting.

DAVID ROSENBERG: A lot of people say, sunless? Wait, plants need sun. In fact, the plants don't need yellow spectrum, so we're able to reduce our energy footprint by doing things like reducing certain types of spectrum.

NARRATOR: This sophisticated climate controlled system cuts the growing cycle in half, so crops can be grown all year round, but with a much smaller impact on the environment.

DAVID ROSENBERG: There's all these stresses on our planet. 70% of our fresh water contamination comes from agriculture. 70% of our fresh water usage goes to agriculture. One third of our arable land has been degraded in the last 40 years. All these macro trends point to the fact that we need a new way to feed our planet.

NARRATOR: One of the early champions of vertical farming is Columbia University ecologist Dickson Despommier. In 1999, Despommier and his students proposed that vertical farms could feed overpopulated cities while using less land and less water.

They would also cut greenhouse gases by eliminating the need to transport food over long distances. And the idea is finally taking root. Over the past few years, vertical farms have sprouted all over the world, including in Vancouver,

Singapore, Panama, the UK, and around the US. Here in Newark, AeroFarms is building out another new farm in a former steel mill, one that's bigger than a football field. Once it's fully operational, it's expected to produce two million pounds of greens a year-- all grown vertically.

DAVID ROSENBERG: We listen to the plants very carefully to try and understand what they're telling us and try and optimize all these different qualities of the plant. It's a tough business, but it's one that's going to stay and it's going to have a bigger and bigger impact.

NARRATOR: Do you think vertical farms will help solve our food production problems?

Let us know in the comments below. And check out this next episode to see how this major US city is striving to become zero waste.

ROBERT REED: When I started at Recology 23 years ago, the recycling rate was around 38%. Today, we've more than doubled that.

NARRATOR: So far, San Francisco has diverted 80% of its waste away from landfills, and its success has been getting global attention.