

Vertical Farming: The Art and Science of Growing Up

In the next three decades, the world's population is expected to mushroom by 2 billion people, with 40 percent of them living in urban areas. More people means more need for housing and development and less space for farmable land—it also means that food production will need to ramp up considerably to feed 9 billion people across the globe.

That's where vertical farming comes in. Rather than using flat land and spaces to grow food, vertical farming moves up, growing food in layers in controlled indoor environments. Also known as controlled environment agriculture or indoor agriculture, vertical farming uses about 90 percent less water than traditional methods, not to mention its year-round availability.

The vertical farming market is projected to grow to \$7.3 billion by 2025, with a compound annual growth rate exceeding 20 percent, according to recent [research](#), based on the method's significant benefits and advances in technology.

The farms of the future

When most people think about agriculture, they likely envision a traditional farm with crops and livestock, influenced by the whims of Mother Nature. Controlled environment agriculture, on the other hand, employs light-emitting diodes, humidity and a carefully controlled temperature to create the ideal conditions for growth—no pesticides needed. The goal is to produce the greatest amount of food possible in the least space.

While start-up and operating costs can be an issue, the benefits to vertical farming extend far beyond the challenges. Crops grown this way have a longer shelf life and better flavor and appearance. Working conditions are safer and more consistent. More crop varieties can be grown. And tempestuous weather conditions that can harm soil quality and crop yield is not an issue indoors.

Finally, as more people choose to “eat local,” vertical agriculture offers a simple way to provide locally grown food and cut down on the carbon footprint of fruits and vegetables, which are often transported long distances before consumers can take a bite. Localization also results in shorter distribution times, which also supports both environmental goals and product quality.

Why predictable food production matters more than ever

While the global pandemic has affected every industry, the food supply chain was impacted from day one. Initially, many facilities that produce or distribute food were closed while the face of the workforce also changed and shrank.

Headlines highlighted the massive amounts of food going to waste in the wake of school and business closures. Consumer demand also continues to change as many people continue to work and spend most of their time at home.

Despite these hurdles, the pandemic has opened new doors and avenues for innovative food systems, such as vertical farming. This option offers efficient production and distribution to urban and rural areas alike.

Put your money where your mouth is

Investors are paying attention to the growing trend of indoor farming, providing more than \$1 billion in funding from 2015-2020. [Agrify Corporation](#), which develops premium grow solutions for indoor agriculture, recently went public, with trading commencing on Jan. 28, 2021. Agrify creates sustainable products and solutions, including vertical farming units, LED lights, cultivation software and more, for plant factories to support industry evolution.

While most companies in this sector remain private, that may change in the near future as vertical farming continues to grow upward and outward.