

## FEATURE: Vertical farmers innovate ways to maximize output

**AGRICULTURAL EVOLUTION:** Urban Crops utilizes LED lights and hydroponics in sterile environments to grow crops in a fraction of the space previously required  
AFP, WAREGEM, Belgium. 10 OCT 2016

As cities expand, eating up swathes of countryside in the process, agricultural pioneers are finding new ways to grow the fresh produce society needs, in containers, empty buildings and any other spare space they can find to create new vertical farms.

“We are just trying to imitate nature. It’s not as futuristic as it might sound,” said a smiling Maarten Vandecruys, the youthful founder of Urban Crops, a new Belgian company specializing in indoor growing systems with the help of LED lamps.

Behind him, in a spooky, futuristic purple halo of light, stand rows of shelves dedicated to horticulture. It is a closed environment with no natural light.

The purple glow is the result of red and blue lamps and is believed to provide optimal growing conditions.

Vandecruys prides himself on the completely automated agro-system he has set up in Waregem, eastern Belgium. At the Urban Crops lab, a conveyor belt circulates containers of germinated plants that are placed in a special substrate, using no earth to reduce the risks of disease linked to animal life and other external factors.

The containers are introduced to a closed room, the walls of which are lined with shelves.

Under the artificial light the plants develop in a controlled environment, fed through a hydroponic system — water laced with the ideal mix of mineral salts and essential nutrients.

No pesticides are required in this sterile environment and, as the LED lamps do not heat up, they can be placed close to the plants, allowing for tight layers of plants.

According to Vandecruys, the future of vertical farming is to expand to an industrial scale.

“It’s just an evolution,” not an agro-industrial revolution, a natural progression from fields to greenhouses, then from greenhouses to vertical farms, he said.

With his system, a 50m<sup>2</sup> space can be transformed into 500m<sup>2</sup> of usable “land,” and plants grow two to three times faster than outdoors, further increasing yields.

In the Urban Crops laboratory, up to 220 mature lettuce plants are produced each day in a 30m<sup>2</sup> room using just 5 percent of the water required in traditional agriculture.

However, for Samuel Colasse, a teacher and researcher at the Carah agronomic research center in Hainaut, eastern Belgium, the concept of urban farming is “currently not very convincing” in countries like France and Belgium, where the distances between the fields and the towns “aren’t enormous.”

However, in a highly urban environment, such as New York, “there are projects which work pretty well,” he said.

And in hostile climatic conditions, or in some military or refugee camp situations, such “somewhat futuristic” ideas could be envisioned, Colasse added.

Colasse has produced everything from bananas to rhododendrons in his laboratory.

For Urban Crops, the uses of its vertical farming technology are virtually boundless.

The company foresees its products being used in pharmaceutical labs to produce plants with medicinal qualities, in supermarkets that could sell their own hyper-fresh produce — and at the same time cut out the transport costs — or in isolated communities in Scandinavia and elsewhere.

For now, its clients have more modest ambitions.

For example, a top restaurant wants to experiment with the flavor, texture, size and color of its ingredients through subtle changes to the light, temperature and nutrients during the growing process.

Urban Foods claims to have produced a type of salad rocket, the taste of which “explodes” at the back of the throat.

And for the domestic goddesses, or gods, there are individual shelving and lighting setups to grow your own herbs or cherry tomatoes.

Swedish furniture giant IKEA has already jumped vertically onto the home-farming bandwagon, launching its own range of assemble-it-yourself vegetable kits.