



Popular Posts

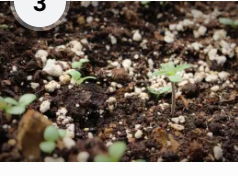
- 1



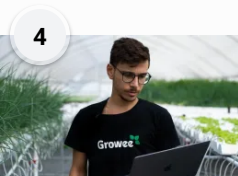
A better way to grow CEA tomatoes?
June 16, 2023
- 2




Plant Agricultural Systems to develop 1,100 acres of West Texas CEA
July 7, 2023
- 3



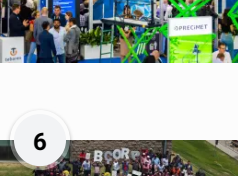
Innexo BV expands Fluence research partnership for new acceleration program
May 18, 2023
- 4



Israeli AgTech startup Growee targets micro hydroponic growers in North American expansion
June 7, 2023
- 5



Fluence set to educate and innovate at GreenTech Amsterdam 2023, June 13-15
June 9, 2023
- 6



NatureSweet Achieves B Corp Certification
June 23, 2023

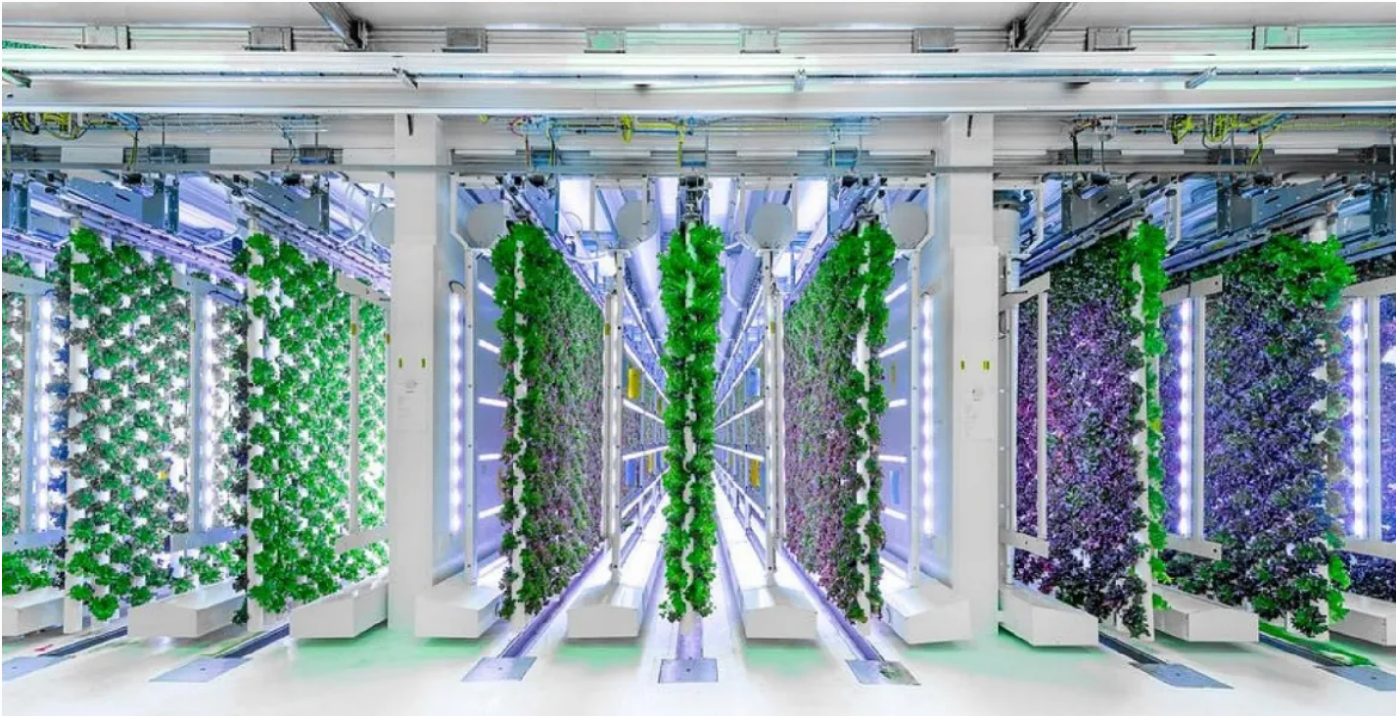


CEA NEWS • RESEARCH

What's next for Sweden's Ljuskårda and its Life Cycle Assessment?

LCA-guided plans for the vertical farm focus on maximum sustainability impact

July 15, 2023



When Swedish vertical farming company **Ljuskårda** set out to develop a sustainability plan, the company took an uncommon step: To ensure it made informed decisions, Ljuskårda pursued a comprehensive, research-based Life Cycle Assessment (LCA) based on actual key performance indicators (KPIs) from its commercial vertical farm.

"We had a clear mission to understand, scientifically, where we could have the biggest impact in terms of our sustainability work," says Co-founder and Chief Research & Development Officer **Erik Lundgren**.

"So before we made a sustainability plan, we agreed to make a full LCA from cradle to grave and let the insight from this work guide us when making a long-term plan on how we can become better as a company."

Grown in a former furniture production warehouse in Tibro, Sweden, Ljuskårda's packaged lettuce goes to more than 500 retail stores throughout the country. Plant production accounts for about 1,700 square meters of the warehouse's 7,000-square-meter footprint. In 2022, the vertical farm's lettuce production was 520 metric tons.

To achieve its assessment goal, the Ljuskårda team approached scientists they collaborated with on previous projects. **IVL Swedish Environmental Research Institute** and **KTH Royal Institute of Technology** researcher **Michael Martin**, alongside researchers **Mugahid Elnour** and **Aina Cabrero Siñol**, completed the 14-month-long Ljuskårda life cycle assessment.

The peer-reviewed paper detailing the LCA, "**Environmental life cycle assessment of a large-scale commercial vertical farm**," has now been published in the journal *Sustainable Production and Consumption*. Citing the paper's publication, Martin notes, "It provides empirical evidence on the environmental sustainability of vertical farms, their sensitivity to modeling and data choices, and compares KPIs and the environmental performance of packaged lettuce with conventionally sourced lettuce."

Key takeaways from the LCA research

Details of Ljuskårda's comprehensive Life Cycle Assessment, found in Martin's published paper, offer many compelling takeaways, not only for vertical farmers but for controlled-environment agriculture (CEA) as a whole.

Lundgren is thrilled to point out one key finding was that Ljuskårda has already attained a 50% reduction in CO2eq footprint compared to imported and conventionally farmed lettuce. In addition, he says Ljuskårda's three top takeaways — and focus areas for further, continued improvement — are as follows:

- **Electricity:** The right mix of electricity is critical to sustainability gains. "We are already running 100% renewable in our mix, and we are soon implementing new projects to become 100% self-sufficient with solar," Lundgren says. But even with those advances, he adds, electricity is currently responsible for roughly 45% of Ljuskårda's CO2eq per kilogram of edible, consumer-ready, packaged lettuce.
- **Context/Location:** Context is integral to understanding Ljuskårda's results. "It makes a lot of sense to use vertical farming in areas with harsh climates that therefore have a high percentage of imports," Lundgren says. The vast majority of Ljuskårda competitors in the Swedish market are from Italy and Spain, with lengthy, complex, refrigerated transportation driving higher CO2eq. He adds that sustainability comparisons would be much different in markets dominated by local production and sourcing.
- **Yields:** Ljuskårda's LCA was based on actual metrics from one year of commercial production (excluding optimized tests and trials). Reducing CO2eq/edible kilogram through increased yields is a differentiator. Lundgren explains Ljuskårda has focused on pushing yields to increase kilogram/square meter production. "We are not really using less than others, just producing way more," he shares. To reduce its CO2eq/kg, the company hasn't focused on reducing the resources used, but on increasing the kilograms produced with the same resources.



Ljuskårda's supernormal salad greens

Leading from inspiration to impact

Lundgren emphasizes that making informed sustainability decisions remains a primary LCA goal. "There were a lot of bold claims from our industry, but no one seemed to have real numbers," he says. "Having a full LCA of our own commercial operation is important for our sustainability plan, but also to our communication. We now know who we are and what we do, therefore we can make bold claims, supported by research, that is helping us to inform and educate our consumers."

Ljuskårda is promoting the LCA results in its communications, marketing and packaging for the "normal greens grown a supernormal way," but Lundgren says that's secondary. "Most important is to guide us on where we should put time and resources to have the highest impact in terms of sustainability. We really want to align our efforts to where it makes the biggest change," he says. "We also decided, without knowing the results, to make our LCA a published and transparent article. To lead the way and inspire others to do the same."

Images: courtesy Ljuskårda

Latest Industry News

- 

Don't miss the 12th Annual Aquaponics Conference, September 15-17, 2023 in Albuquerque
July 17, 2023
- 

What's next for Ljuskårda and its Life Cycle Assessment?
July 15, 2023
- 

AeroFarms files for auction approval in Chapter 11 restructuring efforts
July 13, 2023
- 

Plant Agricultural Systems to develop 1,100 acres of West Texas CEA
July 7, 2023
- 

B is for B Corp: NatureSweet achieves B Corp Certification
June 23, 2023
- 

Fieldless debuts cardboard-based 'salad box,' leaves plastic clamshells behind
July 11, 2023
- 

Plant Agricultural Systems to develop 1,100 acres of West Texas CEA
July 7, 2023
- 

B is for B Corp: NatureSweet achieves B Corp Certification
June 23, 2023
- 

Fieldless debuts cardboard-based 'salad box,' leaves plastic clamshells behind
July 11, 2023



Categories

Business

Tags

accelerators

We value your privacy

CEA inSight uses cookies to enhance your browsing experience and analyze traffic on the site. By clicking "Accept All," you consent to our use of cookies. [Cookie Policy](#)

Customize

Reject All

Accept All