



Techno FarmTM

World's Leading Vertical Farmer Spread Reaches 99% Operating Rate at

Techno Farm Keihanna, with Stable Production of 30,000 Lettuce heads/3 tons/day

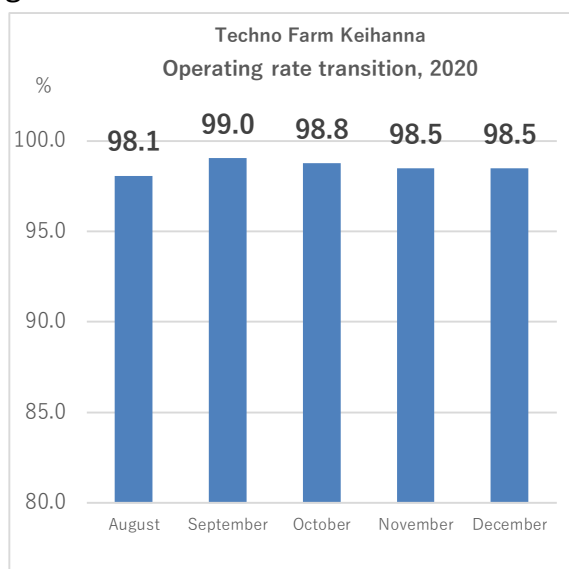
January 12, 2021

Kyoto, Japan. --Spread Co., Ltd. (HQ: Kyoto, Japan; CEO: Shinji Inada, hereinafter "Spread") has reached the operating rate of 99% ^{*1} at Techno Farm Keihanna, world's first large-scale, automated vertical farm. Stable production at a large-scale automated vertical farm, with production capacity of 30,000 heads of lettuce per day, and running at full strength, is an achievement yet to be demonstrated at any other facility worldwide. This will further support Spread's expansion, as it strives to establish a model for sustainable agriculture.

The Challenge of Large-Scale Vertical Farming

Stable production at large-scale is considered one of the toughest challenges in vertical farming. Spread's Kameoka Plant was first in the world to achieve profitability and an operating rate of 97% in 6 years. Techno Farm Keihanna started operating in November 2018. It has now achieved a stable operating rate of 99% and has delivered monthly average product weight of over 3 tons since October, 2020.

^{*1} Calculation is based on the number of harvested heads compared to maximum capacity of the farm.



Stable Production and Environmental Sustainability

[Spread's Technologies, implemented at Techno Farm Keihanna]

① High-level Synergy of Automated Cultivation and Human Operations

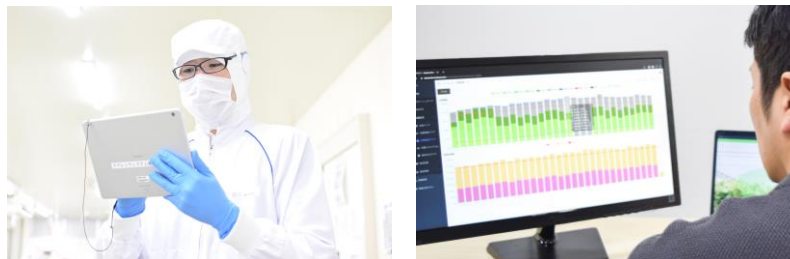
Spread succeeded in automating most of the labor-intensive processes, to make the whole process inside the farm more efficient and cost-saving.

② Precise Environmental Control Technology for Large Spaces

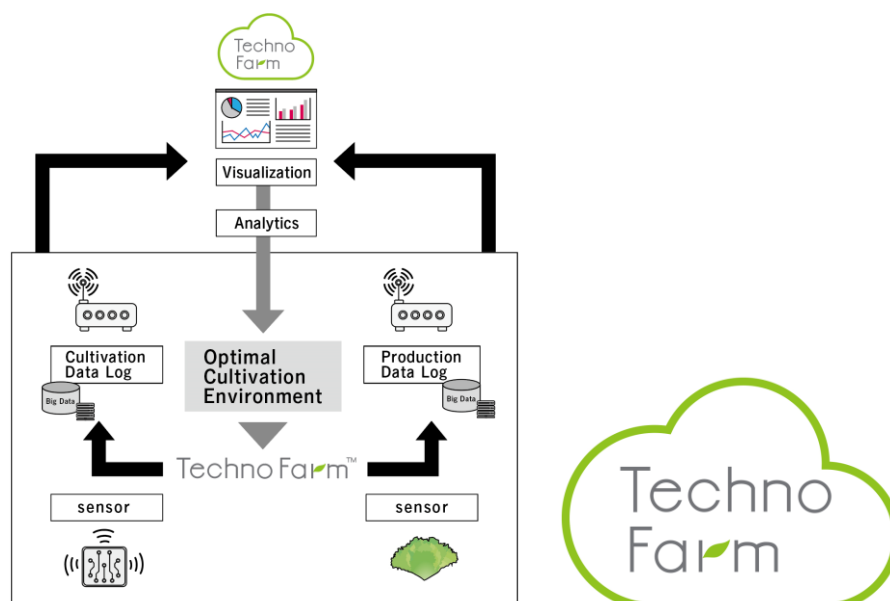
Spread's unique technology ensures there is little variation in temperature and humidity, even at a large scale. Analysis of the actual cultivation environment allows for stable production and consistent high quality.

③ Techno Farm Cloud: Unified IoT-based Management System for all Farm Operations

The visualization of cultivation data has brought efficiency improvements to farm management. Through analysis of the cultivation and post-harvest data, Spread maximizes cultivation efficiency and achieves truly smart agriculture.



Unique IoT-based management system, "Techno Farm Cloud", developed by Spread together with NTT Comware, allows for the digitalization of cultivation data.



Techno Farm Cloud System

[Environmental Sustainability]

① Water Recycling Technology

Techno Farm Keihanna recycles over 90% of the water used in cultivation, allowing for savings of 16,000 liters/day.

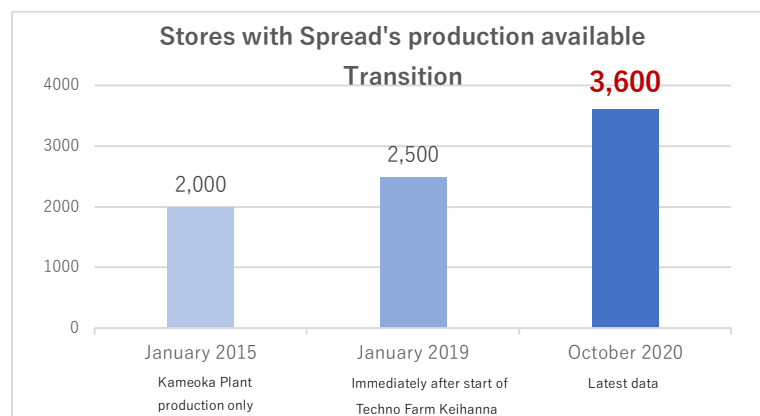
(This is equal to more than 10 million 500ml water bottles saved every year)

② Special LED Lights, Optimized for Vertical Farming

Spread's unique LED lights allow for a reduction in energy consumption by 30% compared to conventional LED lights. Implemented at both Kameoka Plant and Techno Farm Keihanna.

Strong Sales Performance

Demand for vertically farmed vegetables among consumers and food service industry has been rising. Spread has been steadily increasing shipment volume since the start of operations at Techno Farm Keihanna. Together with the utilization of an in-house logistics system, this has helped Spread to expand its presence among major Japanese retailers. At the moment, Spread supplies 3,600 stores across Japan.



Future Developments

Using the validated technology of the *Techno Farm*TM, Spread is pursuing further business opportunities through technological innovation and collaboration with stakeholders, both in Japan and overseas. Spread aims to provide solutions for the global problems of climate change and food security, and to deliver the SDGs through the creation of a truly sustainable society.

[APPENDIX]

◆ **Kameoka Plant, the Profitability Pioneer of Vertical Farming**

Capacity : 21,000 heads/2.1t/day

Spread's Kameoka Plant cracked one of the toughest challenges in commercial vertical farming. Since starting operations in 2007, Spread has developed sophisticated environmental control technologies, and significantly improved the overall operational efficiency at the Kameoka Plant. Together this has brought the operating rate to 97% and enabled Kameoka Plant become profitable for the first time in 2013.



◆ **Techno Farm Keihanna. Stable Production via Innovative Technologies**

Capacity : 30,000heads/3t/day

Started operations in 2018. The first vertical farm to utilize next generation food production system *Techno Farm*TM. At the R&D facility attached to the farm, development of the new cultivation techniques, as well as AI and IoT systems is underway. As the mother plant of *Techno Farm*TM, Techno Farm Keihanna will serve as the foundation for the never-ending evolution of new technologies.

Innovative technologies, allowing for simultaneous increase in productivity and environmental sustainability:

- Automated cultivation
- Saving over 16,000 liters of water per day via water recycling
- Advanced environmental control
- Energy saving due to LED lighting, tailored for vertical farming usage
- Upgrade in operational efficiency due to IoT-based management system



◆ **Next Generation Food Production System *Techno Farm*TM**

Developed by Spread with the help of partner companies, *Techno Farm*TM builds on the know-how developed at the Kameoka Plant in more than 10 years of its operation.

Automated cultivation, water recycling and environmental control technologies, specialized LED lighting as well as IoT and AI make for simultaneous increase in productivity and environmental sustainability.

Spread will continue to promote this technology as an essential part of sustainable agriculture.

URL : www.technofarm.com/en



[APPENDIX]

◆ Over 60 Million Packs Sold in Total.*1 Vertically Farmed Vegetables Brand *Vegetus*

Vegetus helps to add a fresh new color to customer's dining tables, striving to be good for people and the Earth alike. It is a favorite of children who enjoy our lettuce.

Spread's current lineup includes 3 unique varieties: crunchy Frilly Lettuce, smooth and sweet Pleated Lettuce, soft yet crispy Fringe Lettuce. Each of these delivers a clean and fresh taste and is rich in beta-carotene.*2

Vegetus is easy to prepare and fits into any meal, not only salads or sandwiches. URL : www.vege-tus.com (Japanese only)



◆ Contribution to SDGs



Examples of Spread's contribution

- Goal 2: Promotion of sustainable food production
- Goal 8: Labor saving through automation and digital transformation
- Goal 9: IoT-based management system for efficient cultivation
- Goal 12: Helping to reduce food loss due to most part of lettuce being edible
- Goal 13: Promoting resilient agriculture
- Goal 15: Efficient usage of land resources and pesticide-free cultivation
- Goal 17: *Techno Farm*TM partnership business

Spread contributes to the achievement of SDGs through its efforts in vertical farming. Through innovative technologies and efficient supply chain, it also strives to develop a Global Food Infrastructure and to protect food security for the people of the world.

*1 Actual numbers of lettuce, produced and sold by Spread

*2 *Vegetus* clears Japanese Ministry of Health, Labor and Welfare standards for the "beta-carotene rich" vegetables. (equal or more than 600µg/100g)

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