

**TESTIMONY OF MARISA JACOBS**  
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***Senate Agriculture Committee - Michigan Field Hearing***  
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**TESTIMONY OUTLINE**

<b>MY JOURNEY INTO FARMING WITH SQUARE ROOTS</b>	<b>2</b>
<b>SQUARE ROOTS STARTED WITH AN IDEA</b>	<b>3</b>
<b>WHAT IS CONTROLLED ENVIRONMENT AGRICULTURE?</b>	<b>3</b>
<b>THE TECHNOLOGY WE USE</b>	<b>4</b>
<b>THE PRODUCTS WE GROW</b>	<b>4</b>
<b>THE SAFETY AND TRACEABILITY OF OUR PRODUCTS</b>	<b>5</b>
<b>THE BENEFITS WE CREATE</b>	<b>6</b>
<b>THE OPPORTUNITY FOR THE NEXT GENERATION OF YOUNG FARMERS</b>	<b>7</b>
<b>THE PARTNERSHIP WITH GORDON FOOD SERVICE</b>	<b>8</b>
<b>IN CLOSING</b>	<b>8</b>
<b>APPENDIX 1 - CNBC ARTICLE NOVEMBER 12, 2019</b>	<b>9</b>
<b>APPENDIX 2 - PRESS RELEASE MARCH 6, 2019</b>	<b>12</b>
<b>APPENDIX 3 - PRESS RELEASE OCTOBER 26, 2021</b>	<b>13</b>
<b>APPENDIX 4 - PRESS RELEASE APRIL 5, 2022</b>	<b>17</b>

Chairman Stabenow, Ranking Member Boozman and members of the committee, my name is Marisa Jacobs. I am a Senior Associate Grower with Square Roots. Thank you for the opportunity to testify today.

## **MY JOURNEY INTO FARMING WITH SQUARE ROOTS**

Originally from Clarkston, Michigan, I obtained a Bachelor's of Science in Environmental Studies and Sustainability from Northern Michigan University. During that time I took botany courses and was introduced to an indoor agriculture program starting up at my university. Connecting my love for plants and sustainability, indoor farming revealed itself to be a possible career path for me.

Over time, I became interested in food systems and the challenges created by food deserts. I had the opportunity to do an internship at a nonprofit educational farm in the Upper Peninsula in an area that would be classified as a food desert. This nonprofit put gardens on abandoned plots of land to bring food to the community. It was also a farm-to-school program to get kids connected to nourishing food.

In evaluating different job opportunities in Michigan after graduation, I came across what Square Roots was doing with Gordon Food Service in Grand Rapids, Michigan. Square Roots seemed to combine technology, botany, and a focus on solving the issues I had become passionate about. This is why I ultimately chose to apply to become an apprentice grower for Square Roots.

When I started as an apprentice grower, I began to learn the systems that make the farm run. I learned about the tech, systems and plants themselves, and production, harvesting, washing/packing and ultimately the sales side of the products. Being an apprentice is really learning from scratch. I know that The Farm Bill authorizes programs to support and train beginning farmers, including the Beginning Farmer and Rancher Development Program, which thanks to Senator Stabenow's leadership, received permanent mandatory funding in the 2018 Farm Bill. This Farm Bill program could be used to train future generations of indoor growers.

After several months in the program, I took on an associate grower position. I assisted the senior growers with training new apprentices and then taking on some responsibilities of my own. These included following my newly learned training, processes/procedures, care of plants, and proper documentation. Later, having more in-depth knowledge of the work and connection with other farmers I was promoted to a senior associate grower. This leadership opportunity allows me to train the next generation of farmers behind me which will also allow us to scale our operation to match Gordon Food Service's footprint. I am learning how to give feedback, engage, and motivate my team as well as further refining my craft. Right now I am managing the basil packing process, assuring the appropriate quality and quantity to sell. I am also working on improving the microgreens zone, including creating new labels for our systems and improving our yield.

At Square Roots, we use our technology to look at all environmental conditions and indoor elements of the farm to make sure plants are healthy. I can do this all from my iPhone, using the

Square Roots Farmer Toolbelt app, whether I am at the farm in Grand Rapids, Michigan or in Brooklyn, New York. This allows us to be more efficient and correct issues in real-time.

I am so grateful for the opportunities provided by Square Roots to evolve and grow. I would now like to provide background on Square Roots for the benefit of the Committee.

## **SQUARE ROOTS STARTED WITH AN IDEA**

Square Roots was founded by Kimbal Musk and Tobias Peggs, brought together by a shared desire to try to strengthen communities through local food systems.

Tobias Peggs, a tech entrepreneur, previously worked for Walmart managing mobile e-commerce for international markets. In this role, Peggs built mobile applications allowing over 300,000,000 customers to do their weekly grocery shopping. This piqued his curiosity about global food sourcing in different climates, and how innovation might allow food traditionally purchased through global supply chains to be grown locally, year-round. He approached Musk, who asked whether this idea could be good for people and the planet, as well as profits. This led Peggs and Musk to create Square Roots - using technology to bring locally grown food to people in urban areas, while empowering a new generation of young people to become farmers and future leaders in the agriculture industry. This type of agriculture is a high tech form of “Controlled Environment Agriculture”.

## **WHAT IS CONTROLLED ENVIRONMENT AGRICULTURE?**

Controlled Environment Agriculture (“CEA”) is an advanced form of hydroponically-based agriculture where plants grow within a controlled environment to optimize the quality, safety and yield. CEA creates an enclosed environment where plants can be grown locally, organically, without the need for pesticides, year round, regardless of the climate or availability of nutrient rich farm soil.

Typical features of a CEA environment involve use of limited or recycled water, automatic air temperature and humidity control, solar panel lighting and heating, and tunable 24-hour illumination. The LED equipment can be controlled throughout a growing session to emit a programmed spectrum of light that optimizes photosynthesis for different types of plants. In many cases, soil is not required but plants are “planted” in a natural material and bathed or misted with a high-nutrient liquid. This reduces the need for fertilizers, herbicides, and pesticides.

The earliest example of CEA was the invention of a greenhouse, the origin of which dates back to 1597. In America, greenhouses were present near the time of the American Revolution - George Washington himself built a conservatory at Mount Vernon in 1780. The early greenhouse lacked the technology that the modern CEA environment relies upon today. Further, while early greenhouses and conservatories were considered a luxury, decreasing availability of agricultural land, climate change, reduction in water supply, and population growth make modern CEA solutions a necessity.

## **THE TECHNOLOGY WE USE**

Central to our ability to move fast and meet demand is our modular, indoor, farm-tech platform. Capital-efficient and pre-fabricated inside upcycled shipping containers, ready-to-go indoor climate controlled farms can be shipped and deployed just-in-time to any site in the world, immediately creating the perfect conditions for growing the highest quality food, regardless of local climate conditions or time of year. The overall growing capacity of any Square Roots farm can seamlessly scale up or down depending on demand in the local market.

Square Roots farms utilize a water-efficient growing system and vertical growing towers which require significantly less water and space than outdoor farms. A single 40-foot steel shipping container provides 320 square feet of growing space, but can produce hundreds of pounds of fresh produce, every week, 52 weeks a year. Each container is retrofitted with long, narrow towers studded with crops that are hung on tracks from the ceiling in rows. Plants get their water and nutrients from irrigation pipes running along the tops of the towers and their energy not from the sun but from narrow strips of LED lights. This contained and climate-controlled environment allows for the optimum harvest of fresh and flavorful herbs and vegetables that are non-GMO, pesticide-free and meet our high standards for quality and safety all year round.

Our technology stack surrounds our farmers with data, tools, and insights to help them make smart decisions in real-time, so they can grow as much food as possible using the fewest resources possible. At the simplest level, there's an app which helps the farmers manage their day-to-day tasks. The farms are cloud-connected, and integrated with the farm plan. The farm essentially "knows" that it's a certain crop, what day of the growing cycle that crop is on, and what specific care the plants need.

But that's just the surface. We're tracking millions of data points a day on climate, nutrients and everything else that will ultimately impact quality, yield and taste. As the system is constantly learning how to grow better food, we're able to push those insights to the farmers as they go about their day. We control every aspect inside the farm, including light, water, temperature, humidity, etc. with the idea to replicate the most favorable growing conditions of all time, from climates all over the world at different points in history.

## **THE PRODUCTS WE GROW**

We've designed our farms to provide responsibly-grown food in areas close to the end consumer. Our hydroponic system uses 95% less water than conventional agriculture, our farms require zero pesticides, and the location of our facilities cuts down dramatically on food miles and food waste by enabling delivery of fresh produce within 24 hours of harvest, all year round.

Meanwhile, our latest farm design is easily configured for both vertical and horizontal-stacked growing formats—a new and unique capability that means we can grow a wide range of crops to meet a variety of local market needs. To date, we've grown over 200 different varieties of herbs, microgreens, leafy greens, fruits, and even root vegetables—and we're just getting started!

However, not all products we could grow are in demand or are efficient for our operation. As a plant or vegetable grows and creates biomass, it requires more energy. And in an effort to utilize very little energy, contain costs and get products to market sooner, we focus on leafy greens or herbs with less biomass. For many herbs, seed to harvest takes 28 days.

For all intents and purposes, we're growing the same food as the outdoor farmer. We think about genetics, inputs, and care for the plants in the same way. We source our seeds such that they are non-GMO, the same as an organic farmer. It's the same food - just grown in the city or in an industrial area, and grown all year round.

## **THE SAFETY AND TRACEABILITY OF OUR PRODUCTS**

Square Roots' *Farmer-First* technology platform surrounds its farmers with data, insights, and tools so they can grow high-quality food year-round, using the fewest resources possible. The end-to-end technology platform enables farmers to track every aspect of the business—who did what, and when, alongside environmental parameters. The data is used to track and optimize the business, but it also helps with food safety. The technology enables every plant to be tracked from seed to shelf.

Square Roots' *Transparency Timeline* uses a QR code on every package to enable customers to trace how their food was grown and who grew it—fostering deeper connections between customers and their local farmer. This allows the consumer to trace back the exact farm, tower, zone, and farmer who harvested the product. The QR code also shows a timeline of the growing period - from seed to harvest to transportation and delivery - the full lifecycle of the product. In the event of a quality issue or recall scenario, the code also allows us to trace forward, to notify those who received the product so they can be contacted. This is very unique to Square Roots, and allows us to narrowly isolate issues and provide the recipient appropriate instruction. This targeted approach alleviates undue stress for consumers, food waste from disposing perfectly safe products, and replacement costs sometimes arising from, for example, broad CDC consumer advisories in the case of the Romaine Lettuce listeria outbreak (see Appendix 1).

Our farms include all the necessary infrastructure to run a state-of-the-art, food-safe and people-safe commercial operation. This includes cold storage, biosecurity, climate-controlled packaging space, distributor loading docks, and more. Meanwhile, our farms are Harmonized Good Agricultural Practices (“GAP”) certified, in line with the USDA's standards, and operate to strict COVID-19 safety protocols to keep farmers and the local community safe.

As a CEA farming company Square Roots continuously looks to cultivate trust with our buyers and consumers. Each Square Roots farm is accredited with a Global Food Safety Initiative (“GFSI”) equivalent standard, under the USDA. We look to participate with an additional voluntary CEA aligned standard in the near future.

Food Safety in indoor container farming is different from outdoor farming for many reasons. Our farms do not use soil, or have risk of contaminants by animals, wind or water runoff. We have

the ability to create a specific growing environment that is monitored 24/7. Our internal monitoring program includes, amongst other things, pathogen testing.

In addition to traditional food safety practices, we also apply safe food handling practices, including cleaning and sanitation. The cadence in which we do this is critical. We are constantly assessing the practices themselves, and what the data is telling us to determine if we need to make process, hardware, or environmental improvements. From all of this, we need to maintain good record keeping. The records, together with the data we are constantly collecting in our software, track data over long periods of time. This allows us to analyze trends, perform root cause analysis, then issue corrective action or improvements.

## THE BENEFITS WE CREATE

1. **Improving Access to Fresh Food.** As urban populations explode to a projected 6.8 billion people by 2050, vertical farming enables us to grow delicious, safe food close to the people who need it.
2. **Reducing Energy Consumption in Farming.** Controlled Environment Agriculture and our proprietary processes and technology allow us to produce products with limited water consumption, without harmful pesticides and reduced likelihood of contaminants.
3. **Reducing Environmental Impact.** Growing crops local to where they are ultimately consumed reduces carbon emissions from traditional farming equipment and transportation of the crops to urban areas.
4. **Reduce Food Waste.** With precision growing, there is no need to overplant to hedge against nature. We are able to grow on-demand to meet customer needs. Because of the proximity to the end consumer, and extended shelf life, there is limited spoilage in the supply chain.
5. **Sustainability of Farming Industry.** America's farmers are critical to our economy and food system. However, many family farms do not have succession plans for aging farmers. While CEA is not a complete solution, it can help fill the gaps as the average age of a Square Roots farmer is 25, decades younger than the [average age](#) of nearly 58 for all U.S. farm producers.

Kimbal Musk, our Cofounder and Executive Chairman, says: "COVID-19 exposed major weaknesses in the industrial food supply chain, and accelerated the already fast-growing local farming movement. Square Roots can now deploy commercial-scale, controlled-climate farms, fast, in locations across America to meet demand for local food, all year round. My wider mission is to bring responsibly-grown, local food to everyone in America. With Square Roots, we're going to do it fast."

While COVID-19 wreaked havoc across the industrial food system, consumers increasingly valued local food, which in turn accelerated the adoption of indoor-grown produce. Consumers, forced to stay at home and cook, were able to experience the consistent peak-season flavor of

our locally-grown greens. Meanwhile, retailers appreciated the reliability, longer shelf life, and complete traceability of all Square Roots' products. As a result, we've seen a big increase in retail demand this year, and our products are now available in more than 250 stores.

In parallel, working hand-in-hand with our strategic partner Gordon Food Service—one of the largest food distributors in North America—we've been supporting and supplying restaurants throughout the pandemic. We're as excited as anyone to see diners begin to venture out once more, and the restaurant industry bounces back.

## **THE OPPORTUNITY FOR THE NEXT GENERATION OF YOUNG FARMERS**

In a 2018 report, the Food Institute at George Washington University estimated that the global hydroponics market will be worth more than \$27 billion by 2020. While CEA has drawn the attention from large institutional investors as well as tech entrepreneurs, traditional farm credit institutions largely ignore this section. Access to capital is reported as the greatest challenge to CEA producers.

Notwithstanding the foregoing, CEA is drawing talent into the farming industry. The 2019 Global CEA Census Report indicated that 60% of CEA founders were under the age of 40 when they started their business. While the average age of traditional farmers in the US was 58 years old, indoor vertical farmers are on average under the age of 30. Research suggests that younger people are moving to cities at a higher rate, are more adept at technology and are more likely to be interested in sustainability. The same report also suggests that indoor vertical farming offers a career path for individuals without a lot of experience, though the individuals must possess or be willing to learn the requisite skills. Very few universities offer courses or programs that help students learn these skills, but two that do are in the State of Michigan - Michigan State University and Northern Michigan University. The USDA estimates that between 2020-2025, employment opportunities in food and agriculture will remain strong for college graduates, creating approximately 59,400 jobs annually, and at least 7,900 of those in food and biomaterials production.

Square Roots has created 30 jobs in the State of Michigan, and will create at least 20 jobs per farm in future farm developments. Square Roots scalable technology platform empowers young farmers to grow delicious real food in urban farms close to the consumers. Imagine every urban consumer now has a direct relationship with their local farmer, who is growing delicious food they can trust.

Known as The Square Roots Farmer Toolbelt, our proprietary operating system (OS) provides day-to-day guidance to farmers while capturing millions of data points throughout growing cycles across our network. This data can then be analyzed to determine how changes in certain environmental parameters impact factors like yield, taste, and texture. Our system learns faster as we deploy more farms and our network gets larger, all while helping farmers determine how to grow more, better tasting food with fewer resources. Training new farmers—and empowering the next generation of leaders in indoor agriculture—has always been core to our mission, and

the Farmer Toolbelt is a key enabler in our ability to offer accessible pathways for young people to enter the high-tech farming industry.

The Square Roots Next Gen Farmer Training Program is a unique program that gives people a foundation to become future leaders in the food industry. The training program creates pathways to learn about not only agricultural science and farm management but also marketing, community outreach, leadership and business.

## **THE PARTNERSHIP WITH GORDON FOOD SERVICE**

Together, Square Roots and Gordon Food Service (“GFS”) have created a partnership with the ambition to build indoor farms adjacent to GFS distribution center locations across the US and Canada. The partnership plans to expand through the Midwest and the Northeast in 2022, where a year-round indoor growing season has obvious advantages in satisfying demand for fresh, local produce.

Gordon Food Service is the first broadline foodservice distributor to place a controlled environment agriculture farm on its premises in order to bring fresh, hyper-local produce to its customers year-round. GFS has a long history of innovation, and the partnership with Square Roots represents a continuing pursuit of innovations that better serve our foodservice customers, and their customers’ customers, by bringing fresh, nutritious and local food to communities while also being good stewards of the environment.

Square Roots products are sold through GFS’ vast distribution and grocery retail network. Specific items may be targeted for specific customers and segments, depending on market demand and opportunity. The items produced today include basil, mint, chives, lettuce and microgreens. The first farm, housed on GFS’ Home Office headquarters in Wyoming, MI was opened in 2019 (see Appendix 2). The second farm expanded the first farm (see Appendix 3). A third farm just opened in Kenosha, WI and a fourth in Springfield, OH (see Appendix 4) later this year.

Together with GFS, Square Roots can scale its operations to drive significant positive change throughout the foodservice industry. Our partnership enables us to participate in and ultimately benefit from the establishment of local urban farmers that grow high-quality, high-value produce and better serve urban markets.

## **IN CLOSING**

I am grateful for the opportunity to testify in front of the Senate Agriculture Committee. We are also grateful for Senator Stabenow’s efforts and foresight to authorize the Office of Urban Agriculture and Innovative Production at the USDA in the 2018 Farm Bill. We hope to see grants, funding or other programs available in the Reauthorized Farm Bill to further support CEA and apprentice programs for the next generation of farmers.



## APPENDIX 1 - CNBC ARTICLE NOVEMBER 12, 2019

### KIMBAL MUSK'S SQUARE ROOTS IS ON A MISSION TO FEED THE WORLD — AND EVENTUALLY ASTRONAUTS ON MARS

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Mary Stevens | CNBC

#### KEY POINTS

- Elon Musk's brother, Kimbal, is on a mission to feed the world and train the next generation of farmers.
- He co-founded Square Roots with CEO Tobias Peggs to grow non-GMO crops in reclaimed shipping containers, even in urban areas.
- The company is installing its container farms at Gordon Food Service facilities and other grocery stores across the U.S.
- Square Roots made CNBC's 2019 Upstart 100 list, released Tuesday.

One-third of the world's food supply is wasted, according to [research](#) from the UN Food and Agriculture Organization. Now a start-up called [Square Roots](#), co-founded by Kimbal Musk (Elon Musk's brother) and Tobias Peggs, wants to reduce that waste by growing food as close as possible to the point of use.

Based in Brooklyn, New York, [Square Roots](#) has developed and installs "modules" — hydroponic farms in reclaimed shipping containers that can grow certain non-GMO vegetables around the clock and without pesticides. Today they are producing mint, basil, other herbs and leafy greens. The company made CNBC's [2019 Upstart 100](#) list, released Tuesday. The modules, which employ software-controlled LED lighting and irrigation systems, can be set up in the parking lot of a grocery store or even inside a large warehouse or industrial building, enabling a food maker to access fresh ingredients locally for use in their dishes or packaged products.

According to CEO Peggs, raising at least some crops close to where they will be eaten helps reduce the food damage and spoilage that occurs during shipping from a point of harvest to a faraway destination.

Growing food in a tightly controlled microclimate also means those crops can have better flavor and yield than counterparts that are grown in traditional farms, said Peggs, who added that in the great but unpredictable outdoors, everything from changes in soil acidity to humidity can harm crops.

Those who buy Square Roots produce can scan a QR code on the packaging to read a "transparency timeline," with details about their fresh food, like the identity of the farmers who grew it and when it was harvested and delivered to the store.

One day Square Roots aims for its technology to work off-world. Kimbal Musk, who is Square Roots' executive chairman and also holds board seats at SpaceX and [Tesla](#), said: "I'm focused on bringing real food to everyone (on Earth), but the farming technology we are building at Square Roots can and will be used on Mars."

Peggs, who has a Ph.D. in artificial intelligence from Cardiff University, has a history of building businesses with Kimbal Musk. Peggs was the CEO of a social media analytics firm called OneRiot, which Musk co-founded. They sold it to Walmart in the fall of 2011.

Peggs and other OneRiot employees joined Walmart Labs, and helped the retail giant roll out mobile apps and analytics in international markets. That was when Peggs became intrigued with the potential for software to help feed the world.

Square Roots faces significant competition in what's known as indoor ag or sunless farming, including venture-backed competitors Bowery Farming, Plenty, Freight Farms, Gotham Greens and AeroFarms, among others. Their potential to reduce the environmental footprint of agriculture is yet to be determined.

Modern agriculture accounts for 24% of greenhouse gases and is the No. 1 source of pollution on the planet, according to environmental researcher Paul Hawken, the founder of Project Drawdown, a nonprofit that points to ways global warming can be reversed.

Hawken told CNBC, "Indoor ag may or might not pencil out with respect to sustainability when all the energy and inputs are totaled." That's because indoor farming requires more human-made energy but less transport and distribution energy.

Moreover, crops from indoor farms might not match the nutrition of soil-grown crops, because the medium the plants are grown in is either hydroponic or assembled substrates. Hawken wrote: "What makes plants superfoods and nutritious is stress, not 'perfect' temperature-controlled growing environments. Phytonutrients that are vital to human health do not develop to the same extent indoors. Sun, UV radiation, insects, dryness, competition, wind and wide temperature variations ultimately make plants strong, delicious and nutritious." But it will bring locally grown, organic produce — part of a healthy diet — to markets that may not have much of it otherwise, he said.

Square Roots is aiming to work with partners that use renewable energy as much as possible to power their modular farms, said Peggs. One recent example is Square Roots' partnership with Gordon Food Service in Grand Rapids, Michigan, which runs its business partly on wind power. The company has agreed to roll out Square Roots modular farms across their network of hundreds of retail stores and food production and distribution facilities in the U.S. in coming years.

Rather than a plant factory, where you'd spend tens of millions to build an industrial-scale facility that could take two to three years, we pop up in a new city in a matter of weeks.

Another objective of Square Roots is to inspire more people to become farmers. Wherever it installs its modules, crops are grown and systems are managed by employees who have enrolled in Square Roots' Next-Gen Farmer Training Program. Throughout the year, the trainees get to learn about everything from plant science to computer science from Square Roots, while also earning a salary and health benefits — which aren't always available from similar internships and apprenticeships.

Because Square Roots is supplying fresh-grown herbs to more than 70 stores in New York City, that means a significant number of its next-gen farmers are city dwellers who never expected to be working in agriculture.

Peggs said he's betting on modular farms over other indoor agriculture approaches precisely because of their flexibility. "Rather than a plant factory, where you'd spend tens of millions to build an industrial-scale facility that could take two to three years, we pop up in a new city in a matter of weeks."

## SQUARE ROOTS & GORDON FOOD SERVICE PARTNER TO GROW LOCAL FOOD IN CITIES ACROSS NORTH AMERICA

**Brooklyn, NEW YORK (March 6, 2019)** — Square Roots, the technology leader in urban indoor farming, and Gordon Food Service, one of the country’s leading food service providers with distribution operations spanning North America as well as 175 retail locations across the US, have officially joined forces to bring the latest advancements in locally-grown, real food to customers across North America, all year-round. The strategic partnership will ultimately see new campuses of Square Roots’ indoor farms built on or near Gordon Food Service distribution centers and retail stores across the continent, enabling year-round growing of premium quality herbs, greens, and more, and made available to Gordon Food Service customers.

This partnership reflects a shared vision and commitment by both organizations to invest in a modern, unique offering to meet growing customer demand for local food across North America. It also signifies the first, significant expansion to new locations for Square Roots and its unparalleled farmer training program, enabled by the company’s scalable “farmer first” technology platform. The Square Roots and Gordon Food Service exclusive partnership comes at a time when customer tastes and palates are seeing an increasing demand for fresh, high-quality, local food.

“Customers want an assortment of fresh, locally grown food all year round. We are on a path to do that at scale with Square Roots and are excited to be the first in the industry to offer this unique solution to our customers,” said Rich Wolowski, CEO of Gordon Food Service.

Square Roots’ mission is to bring local, real food to people in cities by empowering the next generation of leaders in urban agriculture. The company combines a high-tech farming platform with a unique [“Next-Gen Farmer Training Program”](#) to train passionate people to become future leaders in the food industry.

Meanwhile, Square Roots’ [Transparency Timeline](#) enables customers to trace exactly how and where their food was grown and who grew it, simply by scanning a QR code on its packaging. Now, having partnered with Gordon Food Service, this unique ability to bring technology-enabled local food will soon become a reality for food-conscious consumers across North America. And the Next-Gen Farmer Training Program will soon open up doors for even more driven young people, arming them with the skills to take part in building a better food system for our future.

Tobias Peggs, co-founder and CEO of Square Roots, continued, “This partnership means we will grow delicious, local, real food at huge scale. We’re so happy to be working with a mission-aligned partner in Gordon Food Service - leveraging technology to bring real food to a huge number of people across the country, while delivering real social impact by empowering thousands of young people to become our country’s future farmers.”

More information about Square Roots can be found on the company's [website](#).

### **ABOUT SQUARE ROOTS**

Square Roots is the technology leader in urban indoor farming. Its scalable “farmer first” technology platform brings fresh, healthy food to urban areas year-round, while simultaneously training future generations of farmers.

Founded in 2016 by serial entrepreneurs, Tobias Peggs and Kimbal Musk, Square Roots has a mission to bring local, real food to people in cities across the world while empowering the next generation of leaders in urban farming.

Central to the Square Roots mission is a “Next-Gen Farmer Training Program”—a year-long program that puts participants at the forefront of the indoor urban farming industry while they are growing food as part of the Square Roots farm team. Using a unique and scalable technology platform, these young farmers are armed with intuitive tools, enabling them to quickly learn how to grow food that is more sustainable, healthy, and profitable. During their year at Square Roots, they’re also educated on plant science, food entrepreneurship frameworks, and engaging local communities—preparing them for successful subsequent leadership roles in urban agriculture.

### **ABOUT GORDON FOOD SERVICE**

Since 1897, we have delivered uncompromising quality and heartfelt service for our customers. We began as a simple butter-and-egg delivery service, and have grown to become the largest family business in the foodservice distribution industry by upholding the same approach for over 120 years—remaining passionately committed to the people we serve. Today we serve foodservice operators in the Midwest, Northeast, Southeast, and Southwest regions of the United States and coast-to-coast in Canada. We also operate more than 175 Gordon Food Service Store® locations in the U.S., which are open to the public and provide restaurant-quality products and friendly, knowledgeable service without a membership fee. By partnering with organizations from across industries—healthcare to education, independent and chain restaurants, and event planners—we help our customers create food experiences that people choose, enjoy and remember. To learn more about Gordon Food Service visit [gfs.com](http://gfs.com)

###

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## APPENDIX 3 - PRESS RELEASE OCTOBER 26, 2021



### **Square Roots and Gordon Food Service Celebrate New Michigan Indoor Farm, Expanding Partnership to Grow More Local Food Across the U.S.**

*Co-founded by Kimbal Musk, Square Roots' cloud-connected, climate-controlled, indoor farms are an investment in the future of food systems, putting local, technology-enabled farmers at the center.*

*Square Roots has more than doubled output for its classic crops like basil since the beginning of the pandemic, while introducing a new range of herbs and salad mixes to meet rising demand for local food.*

October 26, 2021 (Wyoming, MI) — Square Roots, the technology leader in indoor farming, and Gordon Food Service, one of the largest food distributors in North America, held a ribbon cutting ceremony to celebrate their new indoor farm opening in Michigan, taking another step to expand a shared vision to build indoor farms together across the continent — enabling local food at a national scale.

“In partnering with Square Roots, we are delivering on our ambitions to make nutritious, local produce available to everyone, throughout the year, regardless of the local climate,” said Rich Wolowski, CEO of Gordon Food Service.

“This new indoor farm in Michigan means we can grow delicious, nutritious food, all year round, in responsible ways,” said Tobias Peggs, Co-Founder and CEO at Square Roots. “Furthermore, we have an ambitious and exciting roadmap to build additional indoor farming facilities across the country with Gordon Food Service, as we work to prove that the future of food can be good for people and the planet, as well as being good business.”

Located at the Gordon Food Service headquarters in Wyoming, Michigan, the new farm was deployed in just 3 months using Square Roots' modular technology platform. Inside the farm, multiple different climates are constantly monitored and controlled by the company's proprietary

software, allowing Square Roots farmers to grow a wide range of crops to meet a variety of local market needs.

Square Roots produce is now available at grocery stores including Gordon Food Service Stores, and through Gordon Food Service customer restaurants, as well as ecommerce platforms across the Great Lakes region. Square Roots is seeking to address a \$35.4 billion total produce category at retail<sup>1</sup>.

In addition to its farming operations, Square Roots continues to invest in the Midwest — recently opening a 5,000 square foot manufacturing facility in the region, where it now creates and assembles key components for future farms.

### **Key stats:**

- Square Roots operates two indoor farms in Michigan, with the capacity to produce over 2.4 million packages of herbs and leafy greens annually. Approximately 50,000 plants are grown at any given time in each farm.
- Square Roots grows a wide variety of produce, including premium herbs like basil, dill, parsley, and cilantro; microgreens; and salad mixes made with crisp baby lettuce leaves, mizuna, kale, tatsoi, broccoli, and cabbage.
- Square Roots' commitment to the local community has created over 30 local jobs in the Midwest. The local team includes farm managers, growers, engineers, delivery drivers, technicians, produce packers, and more.
- Square Roots offers extensive ongoing training opportunities for employees, in addition to full benefits, ownership in Square Roots, and accelerated career paths to propel professional advancement.
- Square Roots' sustainable, cloud-connected farms use 95% less water than conventional farming methods and enable precision growing to exactly meet customers needs — practically eliminating food waste on site. Meanwhile, Square Roots products are sold in 100% recycled and 100% recyclable packaging.
- All Square Roots farms are Harmonized Good Agricultural Practices (GAP) certified, in line with the USDA's standards, and operate to strict COVID-19 protocols to keep farmers and the local community safe.

### **About Square Roots**

Square Roots is the technology leader in indoor farming. Its mission is to bring local, fresh, real food to people in cities around the world - setting new standards for transparency and responsibility while empowering a new generation of leaders in agriculture. Founded by serial entrepreneurs, Kimbal Musk and Tobias Peggs, its range of fresh produce is available in more than 200 retail locations around the country including Gordon Food Service Stores, Fresh Thyme Market, D&W Fresh Market, Meijer's market format stores, Whole Foods Market, and Busch's Fresh Food Market. Square Roots' strategic partnership with Gordon Food Service reinforces a larger shared ambition to build commercial scale, climate controlled indoor farms together across the continent - enabling local food at a global scale, year round. For more information, please visit [www.squarerootsgrow.com](http://www.squarerootsgrow.com).

### **About Gordon Food Service**

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<sup>1</sup> Total Produce in MULO (Latest 52-Week Period Ending 9/5/21)

Since 1897, we have delivered uncompromising quality and heartfelt service for our customers. We began as a simple butter-and-egg delivery service, and have grown to become the largest family business in the foodservice industry by upholding the same approach for over 120 years—remaining passionately committed to the people we serve. Today we serve foodservice operators in the Midwest, Northeast, Southeast, and Southwest regions of the United States and coast-to-coast in Canada. We also operate more than 175 Gordon Food Service Store® locations in the U.S., which are open to the public and provide restaurant-quality products and friendly, knowledgeable service without a membership fee. By partnering with organizations from across industries—healthcare to education, independent and chain restaurants, and event planners—we help our customers create food experiences that people choose, enjoy and remember.

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## APPENDIX 4 - PRESS RELEASE APRIL 5, 2022



### **Indoor Farming Leader Square Roots Opens New Farm in Springfield, Ohio; Partnering With Gordon Food Service to Further Expand in the Midwest**

*New climate-controlled, cloud-connected facility is the company's fourth farm built in partnership with Gordon Food Service and second farm to open in 2022*

*First harvests are scheduled for summer 2022, reaching local consumers across Ohio in the Cincinnati, Columbus, and Dayton metropolitan areas*

April 5, 2022 (Springfield, Ohio) — Square Roots, the technology leader in indoor farming, and Gordon Food Service, one of the largest food distributors in North America, today announced the opening of a new climate-controlled, indoor farm in Springfield, Ohio.

“Our partnership with Gordon Food Service, combined with our modular, smart-farm platform, means Square Roots is able to rapidly open a number of new farms this year,” said Tobias Peggs, Co-Founder and CEO of Square Roots. “With our new farm in Springfield, we are now making locally-grown food available, all year, to new consumers across Ohio, while also creating exciting jobs in the community.”

“The new farm we’ve announced with Square Roots in Springfield accelerates our shared vision to build more indoor farms together across the continent,” said Rich Wolowski, President and CEO of Gordon Food Service. “Together, we are enabling local food at a global scale, meeting the rising demand for produce that is fresher, responsibly grown, and traceable from seed to shelf.”

Springfield will be home to the fifth Square Roots farm located in North America and is the second new farm Square Roots has announced in 2022, following the recently announced opening in Kenosha, Wisconsin. Square Roots already operates two commercial-scale indoor farms in Michigan, and another facility in Brooklyn, New York.

The new farm in Springfield harnesses Square Roots' smart-farm technology platform and software-controlled hydroponic growing systems to produce more food with fewer resources 365 days a year, regardless of outdoor weather conditions. Square Roots' approach uses 95% less water than conventional field farms and features repurposed urban infrastructure — creating ideal growing climates inside refurbished upcycled shipping containers that are stacked vertically to reduce the company's impact on the land. By deploying a network of local farms in strategically located cities like Springfield, Square Roots also ensures a shorter supply chain and less distance between people and their food, reducing food miles and minimizing food waste.

Square Roots farmers in Springfield will soon be harvesting long-lasting herbs such as basil, cilantro, dill, and parsley, alongside nutritious salad mixes and chef-favorite microgreens. The Springfield farm has the capacity to produce more than 2.4 million packages of herbs and leafy greens annually. All Square Roots produce has at least 14 days of extended shelf life and is completely free of pesticides and GMOs.

Square Roots is recruiting locally in Springfield and the surrounding areas and on April 14, the company will host a virtual job fair to help Ohio-based job seekers looking to learn more about opportunities in the high-tech agriculture industry. Square Roots offers extensive ongoing training opportunities for employees, in addition to full benefits, ownership in Square Roots, and accelerated career paths to propel professional growth.

### **About Square Roots**

Square Roots is the technology leader in indoor farming with a mission to responsibly bring its locally grown food to people in cities around the world, all year round. Square Roots is setting new standards for transparency and responsibility, while training a new generation of leaders in agriculture to create a more sustainable food system. Founded by serial entrepreneurs, Kimbal Musk and Tobias Peggs, its range of fresh produce is available in more than 250 retail locations around the country including Gordon Food Service Stores, Whole Foods Market, SpartanNash corporate stores, Fresh Thyme Market, Meijer's market format stores, Busch's Fresh Food Market, FreshDirect, and Morton Williams. Square Roots' strategic partnership with Gordon Food Service reinforces a larger shared ambition to build commercial-scale, climate-controlled indoor farms together across the continent - enabling local food at a global scale, year round. For more information, please visit [www.squarerootsgrow.com](http://www.squarerootsgrow.com).

### **About Gordon Food Service**

For 125 years, Gordon Food Service has delivered uncompromising quality and heartfelt service for our customers. Beginning as a simple butter-and-egg delivery service, we've grown to become the largest family business in the foodservice industry by upholding the same approach since 1897—remaining passionately committed to the people we serve. Today, we serve foodservice operators in the Midwest, Northeast, Southeast, and Southwest regions of the United States and coast-to-coast in Canada. We also operate more than 170 Gordon Food Service Store locations in the U.S. By partnering with organizations from across

industries—healthcare to education, independent and chain restaurants, and event planners—we help our customers create food experiences that people choose, enjoy, and remember.

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